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D7.08 Review of the evolution of the EU Emission Trading System (EU ETS), and the prospects for a global network of emission trading system.
Part B: Public choice perspectives of the EU ETS

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Public choice perspectives of the EU Emissions Trading System

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Abstract

This paper sheds light on certain public choice aspects of the development of the EU ETS, from the initial decision to abandon a carbon or energy tax to the particular way that it was designed. Despite difficulties in assessing the impact of the EU ETS on emissions or judging it in the broader context of climate policy developments, it suggests that a public choice appraisal is important both to explain potential design flaws but also as a way of better informing climate policy design. It presents a general public choice framework identifying the main economic agents influencing policy and considers their motivations, their likely influence, and the main target of their influence activity. The EU ETS cannot be assessed outside the context of other climate and energy policies pursued by the EU and the particular mix of policy instruments has often been criticised. This paper looks at the potential rationales for multiple instruments in climate change policy and considers how a public choice perspective might provide new explanations and justifications for multiple instruments. Despite broad recognition that politics and political economy interactions are central obstacles to progress on the climate policy front it is surprising how little the analysis of policy has been informed by a public choice perspective (or political economy more broadly). This paper is meant in part to highlight this lacuna and motivate further research in this direction.

Keywords: climate change policy, public choice and environmental policies, interest groups, tradable permits, green taxes, multiple instruments

Journal of Economic Literature classification: D23, D62, D72, D73, H23, Q57, Q58

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1. Introduction

The genesis and design of the EU ETS has all the hallmarks of political choices and influences weighing in heavily alongside theoretical economic arguments. In order to develop a public choice perspective of how a cap and trade system was chosen over alternatives (primarily a carbon tax), and the particular way that it was designed, it is informative to briefly sketch the rise to prominence of the cap and trade approach. Before 1960 the discipline of economics could only suggest a tax as means of addressing negative externalities or pollution following the early work of Pigou (1932). Two articles by Coase in (1959) and (1960), followed by papers by Crocker (1966) and Dales (1968) introduced the idea of an alternative to taxes in the form of tradable permits. The influence of these ideas was apparent in the studying of emission trading in the late 1960 by the US National Air Pollution Control Administration. Combining the growing concern for climate change with the theory of emission trading, Stavins (1988) recommended the creation of a global carbon market to manage GHG emissions (Calel 2013).

From the early 1990s onwards a policy network promoting the desirability of emission trading emerged. The basic arguments used in their support included their efficiency, flexibility, negotiability and potential for bargains between North and South. The members of the network involved a group of economists that produced numerous articles and were organised as a network informally and through UNCTAD where they published a report on emission trading in time for the 1992 United Nations Conference on Environment and Development (UNCED). This network developed in the context of international organisations in the United Nations Framework Convention on Climate Change (UNFCCC). It also spawned a UK network that was important in the way it brought a wide range of industrial actors into the debate and coincided with a period where firms facing potential climate change regulation switched strategy from active resistance to active engagement to shape policies in directions that were less threatening to their business. Emission

trading appeared more attractive than a carbon tax or prescriptive (command and control) policies (Paterson 2012).

A similar network occurred in the US though more informal because of the lack of policy momentum for a more ambitious policy. It involved members of the first network as well as actors with experience from the sulphur trading program in the US. The last network to emerge in the aftermath of Kyoto involved a new set of economists in the European Commission who replaced personnel that had been highly skeptical of emission trading during the Kyoto negotiation process. Skjaerseth and Wettestad (Skjærseth and Wettestad 2008b) have called this new group of economists the 'Bureaucrats for Emission Trading" (BEST) and distinguish civil servants of the Commission from consultants and lobbyists[i]. A EU-wide carbon tax had been initially proposed by the European Commission in the early 1990s but due to the overwhelming opposition from business and several member states the proposal was withdrawn (Calel 2013). In addition, carbon taxes required unanimity among members of the EU according to EU rules while trading could be agreed through a qualified majority. Grandfathering along with the lure of windfall profits helped bring on board industry (Convery 2009). From an initial position of EU skepticism towards emission trading the fast moving EU network developed and finalised the EU ETS system between 1998 and 2003 (Skjærseth and Wettestad 2008b).

Another part of the political process that solidified the adoption and spread of carbon markets relates to diplomatic bargains struck at the UNFCCC through the Marrakech Accords that can explain how negotiators came to agree to three mechanisms in Kyoto and the confluence of support by policy makers, business leaders and other environmentalists. The existence of a strong pro carbon trade network in conjunction with the diplomatic process also helps explain why alternative mechanisms were not considered at the time. Following earlier international environmental agreements such as that on acid rain or ozone depletion the UNFCCC negotiations had already decided to focus on international commitments in terms of quantitative caps. These translate easily to emissions trading systems but not into an internationally harmonised carbon tax[ii]. From

negotiations in 1997 and until the Marrakech accords in 2001 there was no clarity on whether agreement would be attained on operational rules for carbon markets. An ETS system that involved financial market actors had not even been anticipated, or even the idea that the demand in carbon markets could affect carbon emissions. According to Paterson (2012) it was the EU directive linking the EU ETS with the Kyoto Protocol provisions for the Clean Development Mechanism (CDM) and joint implementation (JI) that generated the demand for Certified Emission Reductions (CERs) that caused the expansion of carbon markets beyond the designers' original anticipations.

1.1. A brief assessment of the EU ETS

The emissions cap turned out to be too generous in Phase 1 (2005-2007) and in 2006 this became apparent and the surplus of allowances led to their price collapse. From 2006 - 2008 the allowance price range of €10-€30 along with the continued positive price of 2008 futures could have led to emission reductions. On aggregate, according to the EU Commission, emissions fell for EU ETS installations in absolute terms by approximately 8% between 2005 and 2010. When taking into account factors such as rising fuel prices and the recession some estimations attribute about a 3% fall to Phase 1 EU ETS. (Ellerman and Joskow 2008; Ellerman and Buchner 2008; Anderson and Di Maria 2011). It's very difficult however to predict what EU ETS installations would have done without the system, and direct comparisons with a very limited number of installations not covered by the EU ETS find that even the 3% fall vanishes (Jaraite and Di Maria 2011). Most of the reductions in emissions come in Phase 2 (2008-2012) and as much as two thirds of these have been attributed to the recession (New Carbon Finance 2009). Other estimates accounting for macroeconomic conditions find that the business as usual emissions are lower than the cap in Phase 2 and that only minor abatement will be required in Phase 3 (Lewis and Curien 2010). A more recent and more positive assessment on the effectiveness of the EU ETS cut in CO2 emissions suggests that the EU ETS overall has contributed to about a 2-4% reduction of the total capped (Laing et al 2014).

Based on the initial objective of Phase 1 to act as a learning period it is fair to say that much has been learned including the gathering of data on historical emissions though firms had an incentive to exaggerate these. One lesson learned the hard way was the oversupply of allowances in the initial phase and the problems associated with free allowances. Almost all the allowances given to companies had been allocated freely in accordance with historical emissions. This was deemed necessary to for the European Commission to gain the support of industry (Skjærseth and Wettestad 2008a). The free allocation of allowances also led to windfall profits to firms that were able to sell their free allowances. Power companies in Belgium, France, Germany and the Netherlands earned between €4.5 billion and €13.5 billion in a 'representative' year. A number of studies show that industrial sectors of the economy marked up their prices and earned windfall prices with estimates suggesting the windfalls of €4.1 billion for the 10 largest beneficiaries from the Phase 2 of the EU ETS (Alexeeva-Talebi 2010; Oberndorfer, Alexeeva-Talebi and Löschel 2010; Bruyn, Markowska and Nelissen 2010; Sijm, Neuhoff and Chen 2006). This impact of grandfathering was understood before the EU ETS was adopted (Burtraw et al. 2002).

Another objective of the EU ETS was to encourage low-carbon innovation and investment. While there are claims that this has been achieved the price collapse in Phase 1 along with the collapse following the recession raise doubts about this. Some studies find a small positive impact (Alexeeva-Talebi 2010; Anderson and Di Maria 2011) but as far as more substantial innovation one study finds that this has occurred among a very small number of firms (Calel and Dechezleprêtre 2012). There is only anecdotal evidence that the impact of the EU ETS on investment has been small but positive. Most of the abatement has occurred from switching from coal to gas in the power sector (Delarue, Ellerman and D'haeseleer 2008; Delarue, Voorspools and Dhaeseleer 2008; Ellerman and Buchner 2008).

Despite difficulties in assessing the impact of the EU ETS on emissions, or judging it in the broader context climate policy developments, it is important to undertake a public choice

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appraisal both to explain potential design flaws but also as a way of better informing climate policy design. In the following section a general public choice framework is presented and used to identify the main economic agents influencing policy. It considers their motivations, their likely influence, and the main target of their influence activity. The EU ETS cannot be assessed outside the context of other climate and energy policies pursued by the EU and the particular mix of policy instruments has often been criticised. The next two sections look at the potential rationales for multiple instruments in climate change policy and considers how a public choice perspective might provide new explanations and justifications for multiple instruments.

2. A public choice approach towards instrument choice and design

Helm (2010) has identified a potentially important lacuna in economists' assessment of the costs of mitigating climate change. While most analyses start from the premise that climate change represents a 'massive market failure' very little attention has been given to the corollary that government intervention at a scale needed to address this market failure will also unavoidably be on a massive scale. In most analyses and estimates of the costs of mitigation little attention has been given to policy cost or government failure. In short, most appraisals of the economic cost of shifting to a low-carbon society implicitly assume that governments and regulators will work flawlessly in designing and implementing policy. The EU choice and evolution of tradable emission permits to mitigate greenhouse gas emissions has been portrayed as an example of rent-seeking and capture of the policy design process making mitigation ineffective and a source of large rents (25 billion Euros) for the industry (Hepburn 2010).

There is an extensive literature on government failure that draws on a long tradition of public and social choice theory. The positive theory of regulation looks at how the behavior of self-interested citizens, organized interest groups, bureaucrats and politicians shape policy rather than treating the government as a benevolent dictator promoting the welfare of the public. Capture theory explains how regulators of an industry are co-opted to work for specific interest groups rather than the broader public. Even with well intentioned governments imperfect information on the part of the regulators will often prevent them from being able to select the right policies. Given the scale of institutional innovation and shifting landscape or rules required to decarbonize the economy, the potential for rent seeking is enormous.

In the public choice approach, a number of assumptions concerning the main actors in environmental policy making are often assumed to hold. Voters are assumed to cast their votes so as to maximize their expected utility. They may have environmental preferences but drawing on opinion polls the strength of these tend to be sensitive to economic

conditions (Scruggs and Benegal 2012). The main aim of emitting industries and their interest groups is assumed to be to minimize environmental regulation. Small well-organized groups are often better able to influence policy design than less organised groups or the wider public. The pioneers in public choice theory coined the terms rent-seeking and regulatory capture to emphasise the distortionary effect of this type of activity (Olson 1965; Tullock 1967). Politicians are assumed to be driven by the desire to get re-elected. With this aim they can be seen to be acting as 'transfer brokers' who redistribute welfare to the better organised groups in society (McCormick and Tollison 1981).

Figure 1 (Kollmann and Schneider 2010) shows the interdependence of voters, politicians, public administration, producers and interest groups. In a public choice perspective the interaction of these economic agents will determine the policy outcome. The following sections which draw heavily on Kollman and Schneider (2010) consider the potential motivations and influence of these economic agents with regard to environmental policy more generally and climate policy as well. It provides a brief overview of the public choice literature that is useful in discussing how climate policy may be shaped and what implications this may have on policy design.

It should be noted that the public choice perspective is one of many alternative political economy approaches to explaining or interpreting the formation of public policy[iii]. One of its key features is to apply the same utility maximizing rational choice model used for the consumer to capture the behavior of politicians and other actors involved in the policy process. To the extent that politicians' main self serving aim is to be elected or reelected they will rationally pursue policies that are likely to attract votes and campaign funding. In view of the developments in the realm of behavioral and experimental economics (or more broadly cognitive sciences) that have revealed important ways in which behavior departs from the rational choice model it is natural to wonder what the implications would be for public choice theory. Does this mean that individuals' voting behavior may not be rational? How might this affect politicians' strategy when seeking votes? If individuals are subject to certain 'irrationalities' does this mean that politicians will also depart from maximizing

their utility? If so, what are the implications for policy formation? How about the rationality of lobbyists, ENGOs and business associations? These questions raise concerns about a public choice theory that has not taken on board recent advances in our understanding of behavior but take us beyond the scope of this paper.[iv] It is important, however, to keep in mind this potential limitation of the public choice perspective.

2.1. Voters

There is a growing literature that considers how diffuse groups succeed in organizing despite the disadvantages (Lubell et al. 2006; Lubell 2002; Everett and Peirce 1991; Chong 1991). Ostrom (1990) has shown conditions that can help groups manage common pool resources or environmental problems to avoid the 'tragedy' of multi-person prisoners' dilemma type situations. Theoretical and empirical work has shown that individuals can overcome collective action problems present in promoting environmental objectives by forming large broad-based environmental groups. These can have an important influence in the political and regulatory arena mostly through voting since they usually can not compete with industry lobbies in terms of financial influence.

The ability of diffuse groups to bring votes may outweigh the influence of financial resources that cannot always be translated into votes. Denzau and Munger (1986) construct a model with three rational self-interest maximizing actors: legislators that supply public policy and seek to maximize reelection votes, organized interest groups that can supply campaign resources but not votes, and individuals who offer votes. With this model if voters are informed about the relationship between their preferences and policy proposals, interest groups cannot influence policy. More generally, one might assume that the more informed and interested that citizens are about environmental policy, the more likely they are to dampen the influence of interest groups.

There has been a continual increase over the recent decades in citizen sensitivity to environmental issues. In Germany, within the period 1984 to 2003, the public attitude towards energy sources shifted notably away from nuclear and toward renewable energy

sources. The results of a Eurobarometer survey in 2009 shows that 50% of European citizens consider climate change a serious problem (European Commission 2008). While a European Commission survey (Wüstenhagen and Bilharz 2006) found that 97% of respondents considered environmental protection very or fairly important, they ranked environment and energy issues below the top ten while unemployment, the economic situation and crime were at the top of the list.

Some recent happiness literature (European Commission 2009; Welsch 2006) shows that environmental pollution negatively affects individual well-being, suggesting that the general public 'has an intrinsic motivation to act in an environmentally friendly way' (Kollmann and Schneider 2010). Welsch (2009) find that "both a focus on environmental policy and higher environmental quality (in terms of lower emissions, in particular, of CO2, and less traffic) increase satisfaction with democracy in statistically and economically important ways". They also find that increases in public expenditure tend to decrease average satisfaction. Halla et al. (2013) find that the public's willingness to pay to prevent negative ecosystem impacts is near zero for small impacts but becomes positive for larger impacts.

Lack of information about market instruments in environmental policy is found to be an issue in France (Deroubaix and Leveque 2006), Ireland (Clinch and Dunne 2006) and Germany (Beuermann and Santarius 2006). A Danish focus group argued that it would not accept a policy it could not understand. Perhaps lack of information about the functioning of market based instruments results in questions about their effectiveness or overblown concern about the incidence of their costs. It's not clear, however, that more information will necessary foster greater acceptance. Information having to do with characteristics or the need for controversial development plans sometimes fuels distrust (Klok et al. 2006). This may be related to the general level of trust in authorities and their use of tax revenues and not the specific application. A number of reports in different European countries show a distrust of governments' use of tax revenues as well as a perception of being overtaxed already (Beuermann and Santarius 2006; Deroubaix and Leveque 2006;

Layton and Levine 2003; Santos et al. 2006). Lack of familiarity with market instruments is another reason that voters may prefer regulation.

The transfer of a tax burden or a permit price burden from producers to consumers will depend on the elasticity of price. With a low price elasticity this transfer will be larger. There is a large body of literature on energy related price elasticities (electricity tax, district heating, oil tax, gasoline/tax fuels). A meta-study of 43 studies found mean price elasticities for the demand for gasoline of -.34 in the short run and -.84 in the long run (Brons et al. 2008).

Feld and Frey (2002) argue that a rational voter would try to avoid paying a tax as the fine and the chances of being caught are very small. The greater the legitimacy of governmental authority the higher the level of trust and tax compliance. In Switzerland with high level citizen participation there is high tax morale even in view of the very high taxes. People generally dislike the word "tax" and seem willing to accept an equivalent policy that is simply labeled differently, like 'charge' (Brannlund and Persson 2012; Deroubaix and Leveque 2006). Jagers and Hammar (2009) provide evidence that the way carbon taxes are framed in public debate influence its popular support in Sweden. This could suggest that a permit is also influenced by framing.

In a study relating to Swiss citizens' preferences for three proposals for taxes on fossil energy, Thalmann (2004) found that political affinity and education played a role in voter behavior. Affinity to green and left-of-center parties and citizens with higher education had higher rates of approval of tax proposals. Income did not significantly influence voting behavior. A similar result using the same data was found by Bornstein and Lanz (2008) where ideology and social norms were found to play a role but not income or price effects.

A key problem when it comes to the 'demand' for climate policy on the part of the public is geographic and temporal mismatch between general benefits of mitigation accruing to society and the private costs that are borne by consumers and citizens. The costs of climate mitigation will be most prominent in the near term and by the advanced industrialized economies if there is an equitable distribution of emission reduction efforts.

The benefits from climate policy on the other hand will accrue mostly to future generations and these may be more concentrated in developing economies both because of the nature of the geographical distribution of climate change impacts but also because of their reduced capacity to adapt. From a theoretical perspective this means that the principal agents required to take action face a higher share of the mitigation costs relative to the benefits giving rise to a principal-agent problem (Eisenhardt 1989). There is also a strong incentive to free ride given the public nature of climate mitigation benefits (Olson 1965). In this regard theory would suggest that consumers 'willingness to pay' (WTP) for climate mitigation will be well below the social benefits of mitigation (Jenkins 2014). See Johnson and Nemet (Nemet and Johnson 2010) for a survey of studies on WTP for climate mitigation. The lower is the WTP the more likely that political opposition from citizens will mount with more stringent and visible carbon pricing policies. To the extent that carbon pricing policy is accompanied by rebates or tax offsets the public may be less resistant to carbon pricing. Public opinion research in the US by Leisorowitz et al. (2013) suggest that consumers are likely to sensitive to the initial or direct costs imposed by carbon pricing policies even if net costs are relatively small.

2.2. Politicians

Public choice theory assumes that the utility maximizing model of economic behavior for economic agents should equally apply to political agents. Rather than assuming benevolent politicians as special agents bent on promoting the general good or some social welfare function divorced from their own individual aims, they should be modeled as being motivated by their own set of preferences.

A common modeling approach is to assume that politicians gain utility by being re-elected (Mueller 2003) and accordingly they promote policies that the median voter[v] supports and is willing to pay for (Maux 2009). Böhringer and Vogt (2004) provide an empirical discussion of how the Kyoto negotiations were the result of the national median voters' willingness to pay.

While the view that the median voter is an important influence in shaping policy has broad currency within the public choice literature limitations are also recognized. For instance, political ideology is sometimes treated as a constraint so that politicians will aim to increase power and personal income while remaining true to an ideological view. The extent to which they can comply with their ideological constraint or pursue their other personal ambitions (power and personal income) or have to cater to the median voter will depend on the strength of the re-election constraint (Weck-Hannemann 2008).

According to (List and Sturm 2006; Franzese Jr 2002) a re-election constraint may only be valid for major political issues like income distribution and overall government but may be less important for secondary issues like environmental policy. See also (Maux 2009; Franzese Jr 2002; Tellier 2006) for a discussion of the partisan hypothesis and the question of the extent to which re-election is an important factor in a politician's decision to engage in environmental policy.

Frey and Schneider (1978) argue that the government will undertake policies in line with ideology only if its self-perceived chances of re-election are high, otherwise it will seek to please the median voter. To the extent that voters lack information about environmental issues, their significance and the alternative instruments available, and are concerned about the potential financial burden, we would not expect a high priority for environmental policy of the median voter (Kollmann and Schneider 2010). While the median voter may see environmental policy as a secondary issue there may be a smaller group of voters that place a very high importance on the issue so there may be value for a politician catering to these preferences to gain additional voters (List and Sturm 2006). An empirical study of US governors' public spending and environmental policies supports the hypothesis that secondary policy issues like environmental policies are strongly influenced by re-elections (List and Sturm 2006). Specifically, they found that governors advance less environmentally friendly policies even in states with a large green constituency if they face a binding term limit, but support such policies in states with a small group of green voters once they cannot be re-elected.

To the extent that voters are uninformed the median voter's demands may have less influence on politicians. Given that a single voter's influence on an election result is very small, a rational voter does not have a strong incentive to acquire political information, leaving greater leeway for a politician to pursue specific policies. "This lack of information on the voters' side offers scope for interest groups to influence politicians according to their own motives" (Kollmann and Schneider 2010, 3723).

While there is evidence that politicians may pursue environmental policies for purposes of re-election are there any reasons to expect them to prefer specific forms of regulation? Are they more likely to pursue market instruments or prescriptive measures?

Reasons for politicians to favor market instruments could include: (a) the likelihood that politicians are better informed about their efficiency advantages over command and control measures, that (b) they can generate revenues and thus be used to finance other projects or reduce taxes that may be attractive to the median voter (c) they may be easier to explain to the public as punishment for polluters (Kirchgässner and Schneider 2002), and (d) they may have greater control over defining winners and losers (Oberholzer-Gee 2002).

Reasons that politicians may favor prescriptive measures include: (a) the likelihood that a politician will pursue policies with highly immediate and noticeable utility gains to the median voter and where costs are the least visible as is the case with prescriptive measures relative to market instruments or grandfathering over a carbon tax (Felder and Schleiniger 2002; Weck-Hannemann 2008; Keohane, Revesz and Stavins 1998), (b) they are more familiar to the median voter, (c) they give greater leeway to the affected interest groups (Lehmann and Bosche 2003), (d) they may be supplied at a lower administrative cost (Felder and Schleiniger 2002), (e) they may serve as market-entry barriers to new firms and thus be favored by the affected interest groups (Oates and Portney, 2003; Keohane et al. 1996).

2.3. Affected producers and interest groups

Industries with high concentration of assets may have much to lose with the implementation of carbon pricing and would be expected to mount strong opposition (Murphy 2004). Such firms have "high asset specificity" where the value of the assets depends on particular market and regulatory conditions and are unable to easily redeploy. The sensitivity to the regulatory environment may be enhanced if these firms engage in cross-border trade and the regulatory changes are specific to their jurisdiction as may well be the case with a carbon price (Murphy 2004). Industries that fall into this category include carbon intensive fossil energy sectors like oil and coal mining and extraction or energy intensive firms in globally traded sectors like steel, chemicals and heavy manufacturing. They would be expected to strongly oppose the implementation of a carbon tax or price.

The small number of the affected industries and the large benefits associated with their collective action is likely to enhance the chances of overcoming collective action hurdles (Olson 1965). The highly motivated industrial constituencies are likely to engage with the political process to demand specific regulatory conditions (Stigler 1971). Their influence is likely to impact the specific design or form of regulatory outcome especially when the outcomes are widely diffused across other constituencies (Olson 1965; Stigler 1971).

Interest groups and their lobbying activities can influence the degree to which environmental policies are pursued by politicians, the kind of instrument used, its design and perhaps its implementation. Lehmann and Bosche (2003) identify four categories of lobbyists[vi] depending on the nature of the services they offer: (a) the provision of specific services for their members (service function), (b) influence of decision-making processes from the outside (lobbying functions), (c) influence of decisions from within (decision-making functions), and (d) participation in policy implementation (implementation function).

Organized interest groups can play an important role in providing the detailed expert knowledge necessary for formulating educated decisions in environmental policy. More than 2700 individuals and organizations are accredited as lobbyists by the European

parliament, with "in-house" lobbyists and trade associations representing 53% of these (Coen 2007). There are about 20,000 lobbyists in Brussels to potentially influence 15,000 Commission and European Parliamentary officials, giving some sense of the potential political influence of lobbying.

Lobbying can be defined as an organization or individual that seeks to influence policy without seeking to be elected (Coen 2007). Its role is not always welcome though an important and legitimate role for private and public interests in the policy process is generally recognized (Coen 2007).

In general producers will be able to spend more on lobbying than environmental advocacy groups. Nine of the ten major[2] environmental advocacy groups known as the Green-10 receive substantial funding from the European Commission. Using a regression model encompassing data from 800 interest groups Eising (2007) finds that the probability of having weekly contact with the European Commission is %50 higher for those groups that have a budget of 7.5 million euro relative to interest groups without a budget. This can be seen as one indicator of the importance of financial backing and how it may skew the nature of influence towards producer interests.

Producers' lobbyists are likely to have much more expertise and detailed information than environmental lobbyists especially with regard to mitigation costs. Many environmental groups have objected to permits because they are perceived as 'rights to pollute' and thus they are immoral (Oates and Portney 2003) or have the tendency to undermine an ethical stand towards the environment by commodifying it. Because possible damages from pollution are often difficult to quantify and monetize it may be difficult to calculate a tax rate and this is another reason that environmental advocacy groups might find market instruments objectionable (Oates and Portney 2003).

Smaller groups are more effective at lobbying and this favors business groups over citizens or environmental advocacy groups (Becker 1983; Brandt and Svendsen 2002).

Carbon taxes were the initial instrument of choice of the European Commission prior to Kyoto. Despite their attractive properties, carbon taxes are more the exception than the

rule. They confront greater opposition from fossil fuel interests whether from producers or users of energy (energy intensive industries, truck drivers, shipping) (Hunter and Nelson 1989; Potters and Sloof 1996; Goel and Nelson 1999; Godal and Holtsmark 2001; Skjærseth and Skodvin 2001; Levy and Kolk 2002; Van den Hove, Le Menestrel and de Bettignies 2002; McCright and Dunlap 2003; Markussen and Svendsen 2005; Pearce 2006; Beuermann and Santarius 2006; Deroubaix and Leveque 2006; Kolk and Pinkse 2007; Bridgman, Livshits and MacGee 2007; Bjertnæs and Fæhn 2008; Blackman, Osakwe and Alpizar 2010; Sterner 2012).

In EU-ETS sectors where powerful interest groups had greater representation they were able to get a preferential allocation of allowances and they managed to lower the overall burden within the EU-ETS (Goers, Wagner and Wegmayr 2010).

According to (Keohane, Revesz and Stavins 1998) environmental interest groups prefer grandfathering to auctioning and to emission taxes. In a two stage model where the type of policy is determined first and then an emission cap is set (Felder and Schleiniger 2002) shows that grandfathering increases the political influence of environmental policy groups and minimizes the emission cap.

Interest groups may be able to achieve a reduction in environmental taxes by pushing for a refunding rule that pleases voters and thus politicians. Their interest in pursuing such a tactic should be proportional to the extent that the interest group's members are the beneficiaries of the refunding scheme (Aidt 2010). Clearly from the perspective of reducing resistance to environmental taxes both a lowering of the tax and a more directed recycling to those most affected will 'help'. Daugbjerg and Svendsen (2001) argue that if the affected sectors of an environmental tax are heterogeneous it is difficult to find a politically acceptable refunding scheme as the energy-intensive firms, which are likely to have the most clout, will lose even with a full refund.

Lobbyists of business and industrial interest groups are likely to have greater financial clout. Their access to more detailed information and expertise will also strengthen their relationship with administrators, both in terms of their capacity to influence the debate but

also in their ability to 'assist' in the formation of policy. Environmental lobbyists suffer both from group size and financial resources.

Green interest groups in the European Union lobby the European Parliament while traditional interest groups focus on the bureaucrats (European Commission) (Gullberg 2008). This means that traditional interest groups are more involved in the early stages of policy making and thus are better able to shape the evolution of policy and thus the choices effectively available at the later stages (Kollmann and Schneider 2010). Markussen and Svendsen (2005) attempted to discern whether the design of the EU-ETS can be explained by the potential industry losers and winners in the early stages of its policy making. The industries lost in attaining their main objective, which was to install a voluntary system, but once a tradable permit system was decided they were able to attain the most beneficial policy design for the industry.

2.4. Public bureaucracy

Administrators play an important role in the preparation and early implementation of policy measures. Niskanen (1974) assumes that the leader of public administration seeks to enhance her power and influence through maiximizing her unit's budget and increasing the number of her employees. As administrators are not subject to re-election constraints, they would be expected to favor measures that are expensive and require the most administrative controls (Mueller 2003). Command and control mechanisms tend to be more expensive since monitoring them is labor-intensive. They also afford the administrators an informational advantage relative to the government as they wield the expertise. Administrators have greater familiarity with command and control measures relative to economic instruments, and importantly, they have a specific role to play which is often not the case with market instruments (Schneider and Volkert 2000; Stavins 2003).

One of the commonly acknowledged advantages of market instruments are the lower informational demands they put on the authorities especially when seeking to attain a cost-effective level of control among multiple sources of pollution. Prescriptive measures also usually involve continuous monitoring of many facilities that mean expenses for

information acquisition (Oates and Portney 2003). Yet from the perspective of administrators these advantages of market instruments look like disadvantages.

The start-up costs of the EU-ETS for Germany, with 1900 emitters taking part, was estimated to be about 7.5 million euro and the recurrent costs about 7 million euro per annum (Betz 2006). Austria, with 200 emitters involved an administration cost of 2 million euros in 2007. Kollman and Schneider (2010) point out that they are not aware of any literature comparing the transactions costs of alternative environmental instruments.

Overall, Kollman and Schneider (2010) conclude "that the affected producers and the public authorities are two groups with the strongest reasons to favor prescriptive policies".

Public choice and EU ETS

A public choice approach that considers the interests of the main players potentially influencing the choice of instrument selected by the EU and many of its design features is able to suggest reasons why tradable permits were preferred to taxes and why grandfathering was chosen over auctioning. It also provides explanations for why allowances were over-allocated and windfall profits were made. For similar reasons, where environmental taxes have been used in EU countries the taxes have generally been very low primarily providing revenues rather than incentivising mitigation. Despite the importance that the public places on environmental quality this does not seem to translate to the needed support for specific and potentially costly measures to tackle climate change, especially if the costs are more apparent as is the case with market instruments. The affected producers and interest groups are better organized and are financially more powerful than green groups. The regulated industries and public authorities both have the political power and resources to influence the design of policy. Though the regulated industries may have preferred no action and strongly resisted a tax, permits provided a way for the EU to appear to take action while the specific design (free allocation of allowances that included windfall profits) made climate policy acceptable.

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Public choice analysis has generally been used to explain departures of policy from recommendations made by economic theory. In the case of the EU ETS powerful lobbies are seen as preventing the design of a more effective instrument whether this is a carbon tax or a more stringent cap. There are many reasons why it remains difficult to assess the EU ETS partly because of the difficulty of determining what emission would have been without it and partly because of developments that allowed the EU to achieve its emission reduction targets despite the collapse of the carbon price. While the short term carbon price fluctuations have been attributed to changes in the prices of coal, gas, and oil, or weather and the business cycle (Alberola, Chevallier and Chèze 2008; Hintermann 2012), four structural factors have been considered to cause the unexpectedly low prices. Besides the financial and economic crisis (Neuhoff et al. 2012; Aldy and Stavins 2012) the other three are potentially design related problems and include the change in offset regulation (Neuhoff et al. 2012), the regulatory uncertainty (Blyth and Bunn 2011; Brunner, Flachsland and Marschinski 2012) Brunner 2012; Lecuyer 2013; Lecuyer 2011} and interaction with other policies (Fankhauser, Hepburn and Park 2010; Van den Bergh, Delarue and D'haeseleer 2013).

Interestingly, recent empirical analysis counters the widely held view that the economic crisis, renewable deployment and international offsets explain the fall and the persistently low emission price (Koch et al. 2014). These market fundamentals that affect the demand for emission allowances are found to account for only 10% of the price variation. The remaining 90% is largely unexplained. Koch et al. (2014) use stock price movements and the Economic Sentiment Indicator to determine the influence of economic activity and sentiments (including the crisis) on the price of emission allowances. While these are shown to have a greater influence than renewable deployment or international offsets they still only explain a small percentage of the variation. Koch et al. (2014) and Edenhofer et al. (2014) suggest that the key explanation for the persistently low price may be the lack of political credibility of the long term ambition to keep the supply of emissions adequately low. Unlike other markets where the supply is determined by resource constraints, with

carbon markets scarcity (supply) is politically determined. The markets are pricing in expectations that climate policy will not be particularly ambitious and this more than the present oversupply of emission allowances has been the dominant factor.

Since the low carbon price has been viewed as a sign of the design flaws of the EU ETS the discussion about the various potential causes highlight the difficulties of identifying the underlying problems or attributing the 'failure' to specific attributes. One of the potential problems that has drawn attention to political economy failures has to do with the way that EU climate policy has combined multiple instruments potentially undermining the effectiveness of a carbon price. The next section turns to this issue.

3. Multiple policy instruments: problems and virtues

Even though there has been a strong tendency in support of a single carbon price as the 'first best' optimal response to climate externalities, policy has generally involved the implementation of multiple and often overlapping instruments. It is generally the case that within national and sub-national jurisdictions one can find a combination of carbon pricing instruments, energy or output taxes, subsidies, prescriptive measures, information measures as well as voluntary programs (Bennear and Stavins 2007; Lehmann 2012). This is certainly the case with the European Union where member states in addition to the EU ETS have renewable energy adoption and energy efficiency targets that are implemented through a diverse set of domestic support systems like feed-in tariffs, tradable credits, subsidies, standards and production quotas. Most EU member states also implement additional energy or carbon taxes in a variety of sectors.

The use of multiple and overlapping environmental instruments is often viewed by economists as a departure from the theoretically correct use of a single instrument per market failure but there is a growing literature that recognises a number of potential rationales for a mix of climate policies (Bennear and Stavins 2007; Lehmann 2012; Jenkins 2014; Jaffe, Newell and Stavins 2005; Fischer and Preonas 2010; Gawel, Strunz and Lehmann 2014; IPCC 2014a). The general justification offered for multiple policy

instruments is the recognition that in the presence of multiple market failures (including policy failures, prohibitive transaction costs, institutional capacity constraints, political economy constraints) a "second-best" approach is warranted (Lipsey and Lancaster 1956; Bennear and Stavins 2007). In the case of climate policy this means that a price instrument alone may be suboptimal in the presence of other constraints.

A national emissions pricing policy could be complemented by a Renewable Portfolio Standard (RPS) in the electricity sector and an R&D subsidy. Other examples include connections between climate change policy and policies to tackle congestion and local pollution. Joint implementation of urban planning and fuel and carbon tax can help avoid urban sprawl in developing countries. This can be further assisted with infrastructure for modern public transport. These policies can be supported with the revenues from the carbon or fuel tax. On the other hand, taking a hands-off urban planning approach and subsidizing fuels can result in the growth of automobile use and urban sprawl. In a pre climate change context Hirsch (1995) famously referred to this as the 'tyranny of small decisions' in that individually people may choose to buy or use a car without recognising the implications of their collective actions which results in outcomes they would have preferred to avoid if they knew (congestion). Individuals are not given a choice over the actual ultimate outcome of their interactions, e.g., fast and easy mobility through public transport versus slow and frustrating mobility (dirty as well) with private cars.

A longstanding principle of public policy since Tinbergen (1952) is that the number of instruments should match the number of market failures in order to be cost effective. To the extent that climate change issues involve more than one market failure a single instrument like a carbon price would be inadequate. Carbon prices are meant to address the externality associated with GHG emissions, or the missing price associated with the atmosphere's capacity to maintain the average temperature at a specific level. Another market failure associate with the climate change challenge is the public nature of research and development that can play a central role in lowering the cost of a transition to a low carbon energy system. Introducing a carbon price for the emission externality and

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a subsidy for the innovation externality is thus warranted. While each policy separately can further both objectives, the specific nature of the failure is best addressed by a more focused policy. Fischer and Newell (2008) and Oikonomou et al. (2010) show that a price on GHG emissions in conjunction with a renewable energy subsidy achieves emissions reductions at significantly lower costs than either policy alone. A similar result is found when combining a carbon tax and an R&D subsidy (Schneider and Goulder 1997).

Consumers systematically underestimate their own future gains from purchasing more energy efficient durables. In these cases, a carbon price is best combined with a second instrument like that of an energy-efficiency standard to address the additional failure.

While these examples show that there are many good reasons for combining instruments, contrary to the general tendency in the literature to complain about veering off the first best single carbon price policy, there are of course instances where interactions between policies are problematic. The advantage of a single emission price in the absence of other market failures is that it promotes equality in marginal costs of emission reductions across all facilities and thus minimises overall cost of achieving any given target. If in the same jurisdiction an emission price is set as well as a performance standard, then the latter policy will either be redundant or could reduce the overall cost effectiveness of the mitigation target. The performance standard would be redundant if the emission price is stringent enough so that facilities will be complying anyway, but if it is not and the performance standard is leading to substantially higher abatement costs there will be a loss in cost effectiveness. The interaction between emission price policies and other policies depends on whether permits (quantity limit) or carbon prices (price stipulation) or a hybrid of these are used. If a cap-and-trade system is already in place the addition of a performance standard (or even an emissions tax) may bring no additional emission reductions (Shobe and Burtraw 2012; Fischer and Preonas 2010) since a compensating increasing in emission will take place elsewhere. On the other hand, if the performance standard were introduced in the presence of an emissions tax, overall emissions would be reduced since the price of emissions does not change (IPCC 2014a).

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European climate and energy policy consists of the EU Emission and Trading Scheme on the European level and a number of additional policies supporting renewable energy sources (RES) at the level of member states. The combination of a European cap-and-trade system alongside national RES support schemes has confronted strong criticism on the grounds of efficiency and effectiveness of policy intervention. Many of these criticisms have been based on first best accounts which clearly do not apply here given the many separate market failures identified in addition to the several constraints in addressing them independently. Sinn (2012) has been particularly prone to rely on first best accounts to take a strong stand against the use of additional instruments. Fankhauser et al. (2010) show how subsidies undermine the carbon price with the ETS. Pushing relatively costly RES technologies will increase the overall social cost of mitigation. By doing so they may lower the public acceptance of renewable energies (Frondel, Schmidt and Vance 2012) or more generally harm the political capacity for climate protection (Weimann 2008).

Another important dimension in the discussion on the effectiveness and form of multiple instruments relates to how these may be affected by broader economic and energy market conditions. Many of the support mechanisms for renewables came into being in a period of growing economies with high fossil fuel prices. In that context, subsidies for renewables were both politically viable and need not be too high to make them relatively attractive. The present context of low growth economies and low fossil fuel prices may have implications for the political and economic rationales of support mechanism for renewables or how these may interact with other economic instruments. See Papandreou and Ruzzenenti (2015) for a discussion of some potential impacts of fossil fuel prices for climate change policy.

A rather different critique drawing on political economy or public choice approach comes from Helm (2010). It is aimed directly at the way the EU ETS was designed so that it catered to specific interest groups rendering it ineffective but is also critical of RES policy and/or the combination of the two policies. According to Helm (2010) the EU-ETS has not brought about effective emission reductions nor should these be expected in the future.

The scale and scope of lobbying and rent capture was great. Phase one was primarily designed as a learning process and had little actual impact on emissions. While phase two (2008-12) envisaged a move to auctioning permits, participants managed to resist this, and in phase three the Climate Change Package further weakened the impact of the scheme. "The EU ETS moved from being a means to a carbon end, to being more of an end in itself. Prices proved volatile, and bore little relationship to the social marginal cost of carbon. It proved short term, too, outside the time dimension of key investment decisions in technologies such as second-generation renewables, nuclear, and CCS. And its impact on R&D has been negligible. As a result, serious attention is not being given to the proposal for a floor price—in effect a carbon tax" (Helm 2010). Helm (2010) suggests that an abandonment of the EU ETS for a more capture-resistant carbon tax would probably be more efficient but is unlikely because of the powerful vested interests. The main polluters like it, politicians have invested much political capital, it gives the illusion of "solving" pollution to more politically sensitive areas like aviation by giving them the opportunity to buy emission reductions elsewhere. Lastly, financial markets have a new profitable line of business that they will be keen on protecting and enhancing.

More recently Helm (2014) argues that European climate policy was built on a narrative in an era of optimism and comparative economic success of the early years of the twenty first century. This narrative included a belief that oil and gas prices would go ever upwards, new "green" industries and jobs would give Europe a comparative advantage, and energy intensive industries would locate in Europe as renewable energy became cheap. The core component of the EU's 2020-20-20-20 package was that current renewables (wind turbines and rooftop solar) would also be the winners. Success in renewables when combined with an overall cap from the EU ETS meant more room for other fossil fuels inside the cap like coal. The advocates of renewables claimed that costs would fall. They went up in the case of offshore wind and they fell largely because the Chinese dumped their panels on the European market. "The internal contradictions and confusions at the heart of European policy would probably have undermined its Climate

change framework on its own. Indeed they did: the EUETS price collapsed, resulting in the Commission trying to fix both the price and the quantity; the renewables emissions gains were offset in the EUETS; and the coal burn went up" (32). In addition to these design flaws the narrative upon which policy was premised changed dramatically with three external developments: Fukushima led to the retreat of nuclear in European countries, after Copenhagen it was clear that the world would not follow Europe's lead and the shale gas revolution put an end to peak oil and peak gas assumptions. "Whilst Europe has invested heavily in some of the most expensive energy technologies in the world, America has some of the cheapest. The final irony is that in the US the gas has squeezed out coal so much, that it has amongst the fastest falling CO2 emissions in the world while Germany's are actually going up. These three external developments have finally begun to register in Europe. Key steel and chemical companies are considering the exit route, and with mass unemployment in Europe and very low growth, the politics of energy prices is beginning to be felt" (33).

There is much packed into Helm's (2014) critique of the EU climate policy. Part of it has to do with the view that tradable permits are more susceptible to capture and pork barrel than carbon taxes. In a similar vein (Spash 2010) views emission trading as a distraction from the need to change behavior, institutions and infrastructure and more like the drug "soma" in Aldous Huxley's "Brave New World". It accords also with many of the broader critiques of the use of carbon markets that identify them with the rise of neoliberalism and see them as a ploy to depoliticize climate change policy without addressing it (Stephan and Lane 2015; Mirowski 2013). One problem with these critique is that they may confound the choice of instrument with the stringency of the instrument. Wherever carbon taxes have been implemented they also have been too low and if there is the political will for effective climate policy then both tax and permits systems may be designed appropriately. This is not to say that there are many dimensions that differentiate carbon taxes from tradable permit systems but these are usually not differences that justify criticism of tradable emissions (Goulder and Schein 2013). Another part of Helm's critique focuses on the

particular mix of EU climate policy instruments used and the extent to which they undermine each other. The use of multiple instruments is attributed to rent seeking and lobbying influence or capture. As discussed earlier there are good reasons to combine multiple instruments and while rent seeking may be behind the proliferation of instruments or the choice of the specific multiple instruments it is necessary to identify the specific problems arising from these instruments to be able to identify the design faults. One of Helm's arguments is that renewable support policies have undermined the emissions allowance price. This could be the case but there remain good arguments that carbon price policies need to be supplemented by support policies when considering the knowledge spillovers associated with low carbon technology innovation. In addition, the political economy critique could be turned on it's head in the sense that a complementary policy of support for renewables could be part of building the constituency needed for stronger climate policy or abetting the resistance against such policies. That's why it is important to be able to distinguish the political economy reasons for policy from the standard market correcting reasons and also to understand how to address political economy complications or what they mean for policy.

Most of the second-best theory literature on climate change that have justified multiple instruments has focused on the presence of multiple market failures such as knowledge spillovers inhibiting innovation in low-carbon technologies that may justify support policies to induce learning-by-doing or R&D subsidies (Jaffe, Newell and Stavins 2005; Lehmann and Gawel 2013; Nemet and Shogren 2013; Fischer and Preonas 2010). Similarly, information asymmetries provide a rationale for energy efficiency standards or labelling measures (Bennear and Stavins 2007; Jaffe, Newell and Stavins 2005). Comparatively little research, however, has focused on the constraints or failures that result from political economy considerations (Jenkins 2014).

4. Accounting for political economy interactions in policy design

Gawel et al. (2014) argue that the mainstream first best critique of the European policy mix and the public choice perspective on regulation, while different, "seem to be futile for

practical policy advice: either one strives in vain for the attainment of ideal, textbook-like policies or one succumbs to a fatalist diagnosis of merely symbolic politics" (176). Though this is a reasonable take, perhaps the bigger issue with the Helm (2010) critique is not its fatalism per se (which is implicit) but the lack of a public choice framework that is able to suggest alternative policies without moving back to first best options. It goes without saying that any account that incorporates transaction costs or political economy considerations will depart from ideal policy instruments. The more interesting question is how to compare realisable instruments in a non-ideal world.

In this sense Gawel et al. (2014) point to some more useful public-choice view on climate and energy policy. Brunner et al. (2012) show the commitment problem of climate policy can be addressed while Hanoteau (2005) shows how stringency of regulation might be increased with free allocation of allowances in a political economy model. "What seems to be lacking from the literature, however, is a realistic assessment of how the current main instruments of European climate and energy policy interact" (Gawel, Strunz and Lehmann 2014, 176). While most public choice analyses have focused on the ETS as a stand alone policy Gawel et al. (2014) assess the impacts of additional RES-support policies. Specifically, they consider how a political bargaining game within the context of multiple policy objectives may provide a rationale for a policy mix.

Starting from a first best premise that a single optimal emission cap is implemented by efficient instrument design, they consider the implications of introducing policy objectives beyond climate protection like RES targets or specific technology restrictions (e.g., nuclear). These additional objectives may be economically warranted (concern for externalities arising in nuclear energy production) or may reflect political objectives. The design of the ETS is seen as resulting from repeated bargaining games between regulators and interest groups seeking to maximise their rents. In one case they consider the impact of treating the overall cap on emissions as a function of a political bargain that may differ from the first best efficient level. In such a bargaining context the cap will be determined by the capacity that different interest groups have to influence the outcome. In

this context RES-deployment may actually lead to a more stringent politically determined cap. RES-support policies may lead to lower allowance prices and thus lower abatement costs for the ETS participants. If they are more influential than household electricity consumers who face higher retail electricity prices, the introduction of RES will make them less resistant to a more stringent cap. Stringency becomes increasingly politically feasible. This contrasts with the standard view that political feasibility is enhanced with a reduction of the overall costs of climate policy (Weimann 2008). According to this view since RES supports more expensive abatement activities it increases the costs of climate protection which reduces its political feasibility. Gwen et al. (2014) point out however that this does not really account for how the changing costs of polices affect the political bargaining game. If both the emission cap and the share of RES are subject to lobbying, then one needs to see how different interest groups are affected by these costs. If the ETS participants are more influential than other interest groups then regulators can gain their favour by transferring part of the abatement burden outside the ETS. As the RES subsidies are usually funded by a surcharge on the retail price the additional costs are primarily borne by electricity customers and small and medium enterprises while large industry customers are often exempt. In essence, by redistributing the costs of climate change from the industry affected by the cap to the customers, politicians may be able to implement more stringent caps.

In addition to the potential impact of RES policies on the abatement costs of powerful ETS participants, these policies act as support to those stakeholders advocating stricter emission caps (Bennear and Stavins 2007). Naturally, producers of RES-technologies will be another group lobbying for their use (Jenner et al. 2012) and will figure in the political calculus. "In sum, RES-support policies could be interpreted as the "political price" to pay for stricter emission caps" (Gawel, Strunz and Lehmann 2014, 179). The main point of the analysis is to show that once a step is taken away from the first best world it is far more difficult to determine what is the best policy given political feasibility constraints. They also show that by combining the political bargaining reasons that may make stringency of a cap

politically more likely and independent multiple objectives that policy may be aiming for (energy security, knowledge spillovers, restrictions on nuclear energy), the case for a policy mix over a single ETS instrument is strengthened even more. In support of their argument they Gawel et al. (2014) point out that the EU simultaneously established emission reductions and RES build-up in the "20/20/20" package and the RES projections were included when devising the ETS targets (Commission of the European Communities (COM) 2008; Commission of the European Communities (COM 2008). On the other hand, they acknowledge that it may not be easy to iteratively tighten the cap ex-post as the political bargaining model suggests. In this sense low allowance price do not by any means ensure that there will be a tightening of the cap.

In a similar spirit to Gawel et al. (2014), Jenkins (2014) looks for ways that political economy constraints can enlighten multiple instrument policy choice. Political economy constraints may involve a limit on a carbon prices that the public is able to accept; limits on initial increases in household costs or in factor price increases in particular salient goods or services (e.g., gasoline prices); or limits on the welfare losses for industrial constituencies. In the absence of first best policies multiple second best policies may exist. To the extent that carbon pricing will be suboptimal due to political economy constraints other means may available to reach mitigation targets.

Since consumers perceive the costs of different measures differently, taking this into account in instrument choice may be important. For instance, fuel standards for vehicle efficiency may impose higher net costs on consumers than a fuel tax, yet evidence has shown that they greatly favour these relative to fuel taxes (Karplus 2011). Subsidizing low-carbon energy adoption could dampen opposition from energy intensive industries. Providing transition assistance to specific sectors may weaken their opposition to climate policy, could expand markets for lower-carbon natural gas and win over these sectors' support for climate action. Linking mitigation strategies to near-term co-benefits (health, energy security) is already a common approach to gaining support for mitigation policies. Stiglerian demand for regulation could be boosted by strengthening industries that stand

to benefit from climate policies (renewable, nuclear, energy efficiency, biofuels, etc.) and build a self-reinforcing cycle of political support (Jenkins 2014). Jenkins (2014) suggests that beyond supporting low-carbon energy sources or other mitigation options when justified by standard market failures, the presence of political economy constraints may make otherwise market distortionary support warranted in the spirit of second best theory. The coordination of separate policies can lead to greater cost-effectiveness of achieving objectives. It can also enhance political feasibility by 'mainstreaming' climate policy or linking it with other policy objectives that have broad recognition (Kok et al. 2008).

5. Conclusions

In considering the implications to giving policy advice when policy making is influenced by lobbying two diametrically opposing views are identified by Gawel et al. (2014). One approach says that economists should engage in "lobbying for efficiency" (Anthoff and Hahn 2010) in order to provide a counterweight to special interest groups and increase the overall efficiency. A darker view of what can be done is taken by (Spash 2010) who suggests that all hope of saving ineffective instruments like ETS should be abandoned. "After all, the reason for emission trading is that corporations and the technostructure proved too powerful for the political process to establish a tax or direct regulation in the first place" (192). The only remedy Spash contemplates is fundamental but unlikely changes in economic structure, institutions and behavior.

There is another view held by Helm (2010) that Gawel et al. (2014) lump together with the first view (lobbying for efficiency) that is actually different and has had considerable influence in the public choice literature. Helm (2010) suggests three remedies to the problem of capture and lobbying he associates with the design flaws in the EU[vii] climate policy. These remedies are seen as ways of minimising rent seeking or capture. Greater use should be made of market based instruments that leave less room for political intervention and pork barrel (in the case of climate policy he means a carbon tax rather than cap and trade), the forming of institutional architectures (like an independent board

choosing targets and instruments) that will have greater credibility and will be more immune to influence, and the use of less complex schemes that are harder to capture. This is not so much "lobbying for efficiency" which is like ignoring the political economy problem, but more a suggestion of means of constraining the government from it's potentially self-serving politicians. It is similar to the position taken by Sunstein (2005) in supporting the legally required use of cost benefit analysis in public decision making to increase transparency and accountability and to make it difficult for influence peddlers distort or capture policy decisions. This is a common theme in public choice theory that attempts to think of institutional means of constraining self-serving motives of legislators and bureaucrats. In some sense it is a natural extension of welfare economic thinking to the realm of the state. Just as the market needs correcting to align private and public interests, the state requires institutional correctives to align private and public interests. Though this view has strong critics that see it as part and parcel of a neoliberal approach that aims to minimize the discretion of the state, there is much that is valuable in contemplating forms of government failure and potential remedies.

Another approach is also common in the public choice literature though it is often stated with little analysis of how it ultimately should influence policy options. In this approach political feasibility is treated as an additional important constraint to instrument choice and design, or policy more generally. This is the approach taken by Gawel et al. (2014) and Jenkins (2014) but is also the approach that is at least implicit in the IPCC Fifth Assessment Report (2014b) that has given far greater prominence to institutional dimensions of climate policy than previous reports. This approach takes as a given that policy process is unavoidably interest-driven and it suggests that policy advice should incorporate this into the analysis. "Political feasibility should be a main criterion when evaluating current policies and drafting recommendations" (Gawel, Strunz and Lehmann 2014, 181). "Viable policy can neither build on combating the influence of organized interests nor on visionary social change" (181). In the context of the EU climate and energy policy Gawel et al. (2014) take this to mean that ETS and RES-policies should be seen as a

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potential means of tightening the cap and this should be a top priority. "Supporting RES in general (albeit deficiencies in detail) might be in a sense a well-nigh clever contribution in practice to the aims of least-cost and effective energy and climate policy under real-world conditions" (181). Jenkins (2014) takes a similar position on potential policy in the US that combines some lower carbon price augmented by other instruments like support for renewables precisely to take into account political feasibility constraints. Both Gawel et al. (2014) and Jenkins (2014) attempt to incorporate the idea of political economy constraints into the modelling exercise which is critical if we are to move beyond simply stating the importance of political feasibility constraints. These, however, remain early and fairly stylized models. For instance, while Gawel et al. (2014) provide a rationale for why RES policies may ultimately be a good policy in a political bargaining context, they do not provide an analysis of why this would be the best of the real world 'tricks' to generate political leeway in strengthening climate policy. In other words, there may be other less 'wasteful' ways of 'convincing' the most influential.

There is yet another approach implicit in some of the literature that comes out most prominently in Paterson's (2012) account of how the move towards carbon markets may be essential in building coalitions (financial interests and sunrise industries) that may lead to a 'virtuous feedback cycle' where as new groups become stakeholders in climate policy and strengthened by initial policy they can join the lobbying for stronger climate policy. This is more of a political-economy equilibrium analysis showing how changing balances of power in the economy initiated by some policy choices can feedback into future political power and policy choice. In a different context Acemoglu (2013) discusses how the support of minimum wages should not be judged just on standard economic analysis but should incorporate the political implications. Specifically, by strengthening trade unions that have played a central role in democratization of politics such a policy may enhance the democratic functioning of the state and this will further feed back into a more innovative and dynamic inclusive economy.

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This paper has touched on some public choice aspects of the EU ETS, presenting the potential ways that economic agents have influenced the instrument choice and its design. It has also considered some implications of public choice analysis to the question of multiple instruments. The public choice and political economy literature on climate change is still very much at an early stage though its breadth is far greater than indicated in this discussion. Though the literature has gone some way in providing explanations of climate policy much less work has been done on considering the implications of political economy analysis for climate policy design.

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Figures and Tables

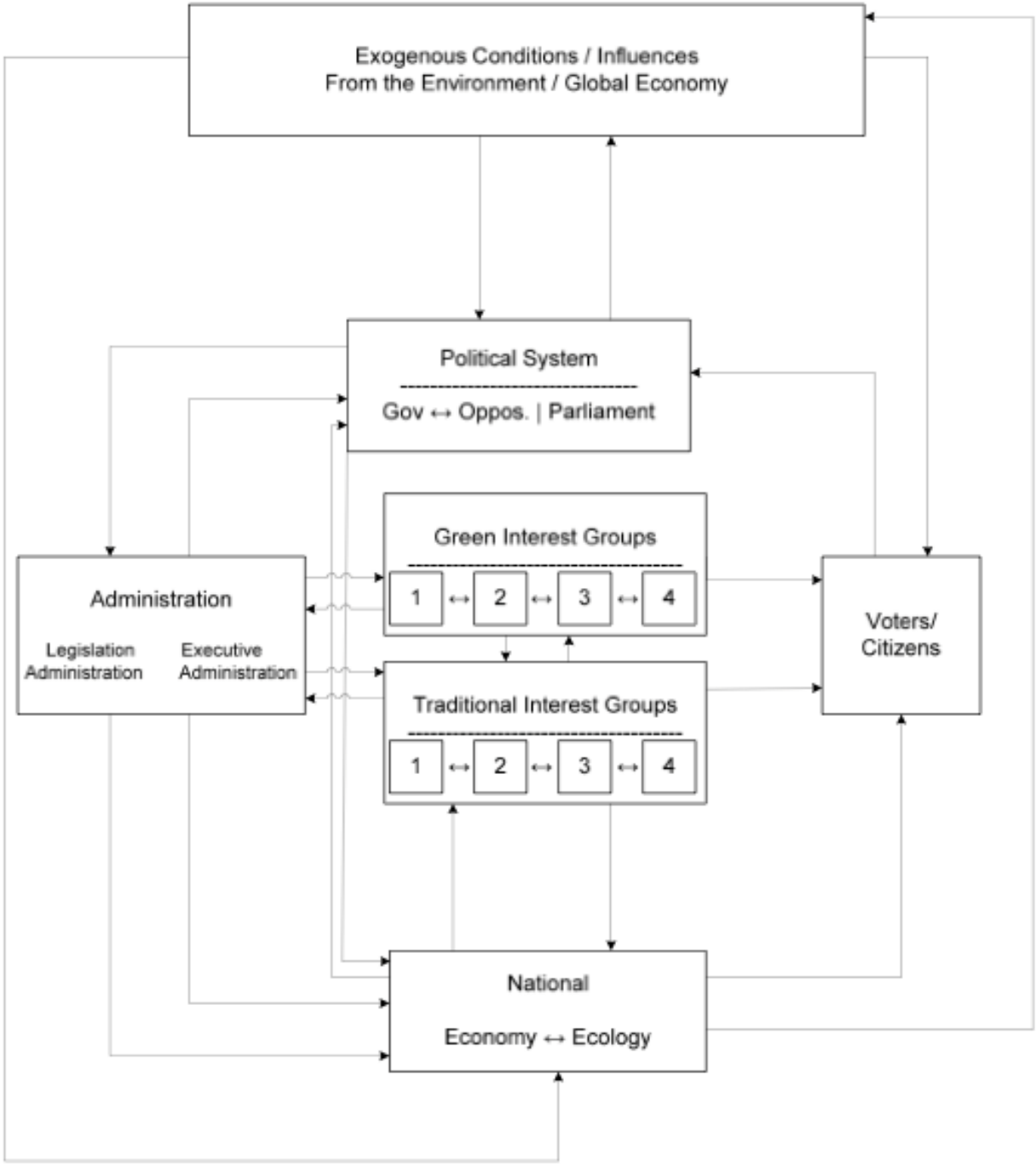

Figure 1: A public choice framework indicating the potential interactions between economic agentsSource: Kollmann and Schneider (2010)

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Endnotes

[i] Some important members moved between the commission and think tanks.
[ii] See Hourcade (2002) for a detailed account of the negotiations favouring a 'quantity' over a 'price' approach.
[iii] See Papandreou (2014) for a brief discussion on alternative political economy (including public choice) explanations of the emergence and spreading of carbon markets.
[iv] See Viscusi (2015) for a discussion of some of the challenges and potential insights of a behavioral public choice theory. Interestingly, for our purposes, many of the examples he uses relate to environmental and energy policy.
[v] The classical Downsian model envisages a two party system with the ideologically flexible politicians veering towards to the median voter to capture a larger proportion of the vote. Surprisingly, the literature on multiparty systems leads to a similar conclusion, with the party located at the mean of voters' ideal point either governing itself or being part of the governing coalition (Mueller 2003).
[vi] These are BirdLife International, Climate Action Network Europe, CEE Bankwatch Network, European Environmental Bureau, European Federation of Transport and Environment, Health and Environment Alliance, Friends of the Earth Europe, International Friends of Nature, and WWF European Policy Office. Greenpeace Europe that is among the ten does receive funds as it has a policy of not accepting governmental support.
[vii] Much of his criticism in his article is primarily aimed at the UK climate policy.