



What were the main strengths and weaknesses of the EU carbon trading scheme at Phase 2? An economic analysis.

An assessment using Economic Theory

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Statement of Authenticity

I Matthew Morris attest that this project is my own work, and an honest representation of my skills.

I also confirm that it contains no unreferenced work of others.

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Introduction

This project is about *how the European Union set out to protect the emissions trading scheme against market failure and externalities*. The emissions trading scheme (ETS) was set up in 2005 by the European Union, the scheme is the EU initiative to assist the union in meeting both its immediate and longer-term emissions reduction objectives. More specifically, this project aims to assess the effectiveness of the European Union's emissions trading scheme at its second phase which ran from 2008 to 2012, by investigating what were the main issues that the ETS came up against in that period. There is significant information available in the public domain on the emissions trading scheme during this phase, as it's the most recent phase to be completed and analysis can easily be narrowed due to the study of just phase two.

At the end of trading period one (Phase 1) all existing allowances that were allocated became invalid. The second trading period (Phase 2) official began at the end of December 2007, to the end of 2012.

The ETS is a core mechanism of the Europe 2020 package, to reduce emissions by 20% in the European Union by 2020.

The scheme aims to meet objectives by “promoting reductions of greenhouse gas emissions in a cost-effective and economically efficient manner”. The directive implies meeting the EUs Kyoto protocol goals through cost-effective short-term abatement measures and effort sharing (Recital 5), as well as providing longer-term incentives for low-carbon investment and innovation to “deliver gradual and predictable reductions of emissions over time (Sartor, 2012, p.1).

The theoretical basis of this report will be formed around three main areas, a cost-benefit analysis, neoclassical economics and how climate change is analysed in neoclassical economics as a market failure of the kind associated with a negative production externality (Dawson & Santos, 2010, p.100),. The effect of these on the EU emissions trading scheme will be explored. First, the literature that was covered within DD309 will be reviewed, then moving on to the cost-benefit analysis on the EU 20/20/20 package which was undertaken by Professor Richard Tol. The paper written by Tol will be the launch paper for this project and the plausibility of his assumptions will be critiqued.

Moving on the economic analysis will form the basis of finding strengths and weaknesses in the emissions trading scheme, making use of outside research to form arguments, such as the paper “Government Failure and the EU ETS: What prospects for phase 3? ” by Andrés Jonathan Drew will be used to critically assess the ETS.

Finally, an analysis on Market failures in terms of positive and negative externalities will be discussed and analysed. This includes how EU policymakers intervened and should intervene to prevent ETS market failure.

Literature Review & Economic Theory

Cost-benefit analysis is based on a philosophy which broadly holds that the aim of governments should be to maximise the good of all members of society, as assessed by their preferences (Anand, 2010, p.420). Individual preferences are expressed by assigning monetary values. Cost-benefit analysis is grounded in the view that policies should be pursued only if they provide a net benefit to society and the view is that it is possible to be reasonably scientific in the methods by which benefit is assessed (Anand, 2010, p.420).

To undertake a cost-benefit analysis we need to be able to estimate the cost and benefit flows over the life of a said policy.

The benefit to society can be measured in various ways, but the economic version of measurement, has been highly influential over the past two centuries. Jeremy Bentham an eighteenth-century philosopher founded utilitarianism, of which the leading principle is often summarised as seeking to maximise the ‘greatest happiness of the greatest number’ (Anand, 2010, p.420).

The utilitarian social welfare function below, defines the total (or social) welfare as the sum of every individual in society. Using this formula, the utility of each individual is given equal weight.

The utilitarian social welfare function can be written as:

$$W = u_1 + u_2 + \dots + u_n$$

Figure 1 – The utilitarian social welfare function.

Two important questions the social welfare function gives rise to is, how can we measure utility and should we indeed give equal weight to the utility of each person in society? (Anand, 2010, p.420). Policies can be evaluated by examining the change in net benefits to consumers and producers measured by consumer’s surplus (CS) and producer’s surplus (PS). The suggestion is that social choices should be made to maximise the total surplus (W). This function is shown below:

$$W = CS + PS$$

Figure 2 – Denoting the total surplus by using (W), Consumers surplus (CS) and Producers surplus (PS).

To accept the utilitarian approach, the total surplus must represent a good measure of utility, implying that both the surpluses of consumers and producers are of equal weighting. This social welfare function approach can be combined with calculations derived from data concerning market supply and demand in order to study the welfare impacts of a wide range of public policies and project.

Both people and firms tend to value benefits that are gained today more highly than those in the future. Cost-benefit analysis gives more weight to costs and benefits that happen sooner, and less weight to those that occur later on (Anand, 2010, p.428). Monetary benefits today can be invested, however future benefits particularly monetary benefits are less certain. This is what is known as as discounting, or social discounting.

$$\text{Net Benefits} = \text{benefits} - \text{costs}$$

The net present value of a project that runs from time $t = 0$, the start of a project until year T is the sum of the discounted flow of all present and future net benefits (Anand, 2010, p.428)

The NPV formula is written compactly below, with t denoting any particular year within the time interval, sigma \sum is used to represent summation over the T years of the project:

$$NPV = \sum_{t=0}^T \frac{(B_t - C_t)}{(1 + r)^t}$$

Figure 3 – Compact Net Present Value equation

B_t and C_t are the benefits and costs that occur in year t , r is the discount rate. The larger the r , the more future benefits and costs are discount relative to earlier benefits and costs (Anand, 2010, p.428). A negative NPV value means that the project is not worth doing, this is the case, even if it is the best possible policy or project that could be undertaken.

The term below indicates net benefits that are discounted for year t :

$$\frac{(B_t - C_t)}{(1 + r)^t}$$

The discount factor for the year is represented as:

$$\frac{1}{(1 + r)^t}$$

Figure 4 - Discount factor for the year

Deciding on an appropriate discount rate means a variety of components can be reflected, from the current rate of interest, to how the value of welfare of future generations is weighed up.

Benefits are often tricky to quantify, especially in regards to the environment. Three main methods for producing monetary estimates of benefits have been developed, hedonic regression, shadow prices, and stated willingness to pay.

The threat to the environment is seen by some as not only more economically significant than a severe recession, but also more significant for the future of humanity than the direct threat from terrorist activity (Simonetti et al., 2010, p.33). Indeed the Fourth Assessment Report of the IPCC highlighted the seriousness of climate change and presented some stark projections.

“Continued greenhouse gas emissions at or above the current rates will cause further warming and induce many changes in the global climate system during the 21st century that would very likely be larger than those observed during the 20th century.” (Simonetti et al., 2010, p.33)

The blame for climate change has largely fallen on governments for failing to control producers and consumers. The environment does not respect national boundaries, therefore it's no surprise that national governments, working through regional, and international governance cooperate to mitigate climate change. This is where international/regional governments such as the European Union are able to focus on mitigation where national governments may not. This leads to two important questions regarding government intervention, the first being are environmental crises viewed as a government responsibility? Secondly, why, if internationally coordinated government intervention to save the environment is so clearly needed, is it so hard to implement? (Simonetti et al., 2010, p.33).

The environment is a good that is desired by all, we all desire the air we breathe or a good view, but it cannot be efficiently supplied on a market. The environment suffers several challenges being a public good. An individual can choose where to spend in terms of income and have power to decide which private goods they wish to purchase. However, that same individual can have no control over the purchase of the environment. Nobody can purchase a small portion of the climate. Thus, an environment that supports comfortable and healthy life is a public good, it's non-excludable and non-rival.

So, Market activity can compromise the climate, economists are increasingly devoting attention to analysing and quantifying the negative environmental impact of production and consumption (Simonetti et al., 2010, p.34). Policy recommendations are made to governments by economists in order to try to minimise the negative impacts.

Finally, why does climate change intrinsically require government intervention? (Simonetti et al., 2010, p.34). Firms in industries that emit greenhouse gases seek to maximise their own profits, like other economic agents, and other markets. They create environmental effects that fall upon other people, these are called externalities. The cost firms face are, the private costs, which do not reflect the true costs to others in society, since the costs of the environmental damage are dispersed globally, most of the costs do not fall on the firm doing the polluting.

Figure 5 – Supply and demand diagram

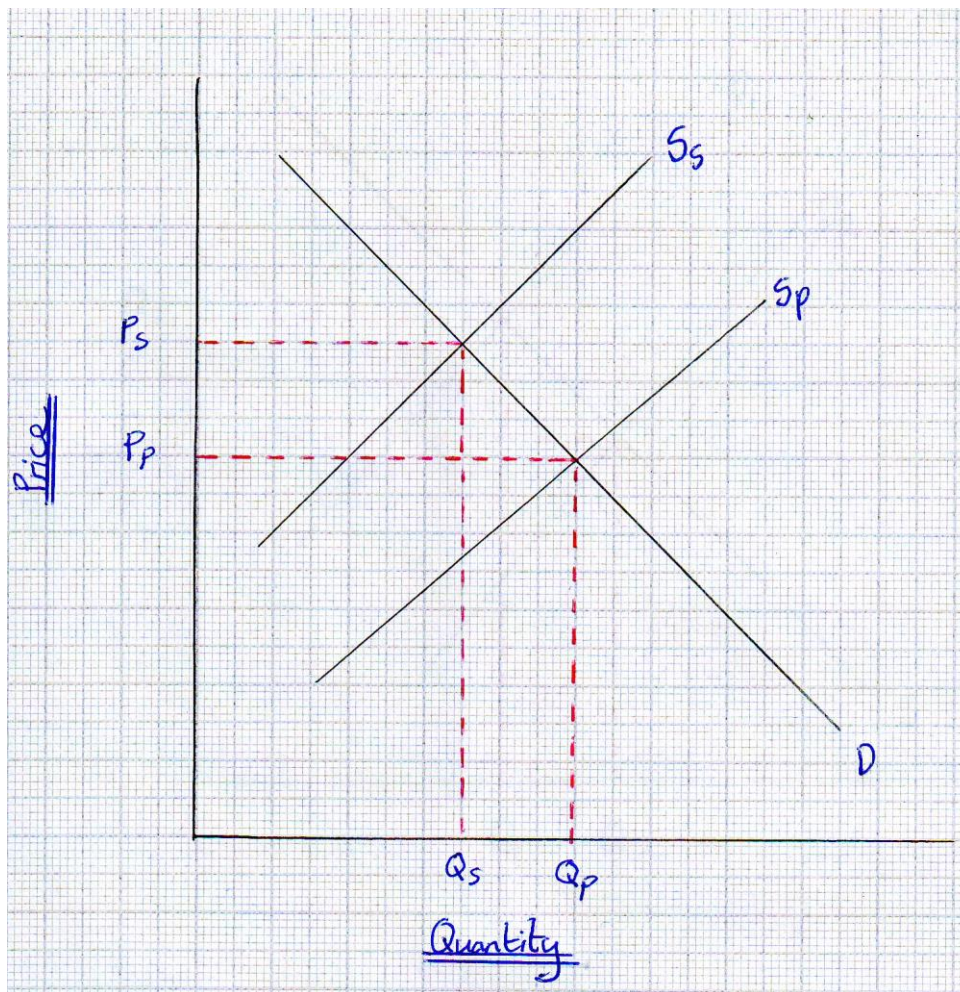


Figure 5 gives justification for a government to intervene. The supply curve drawn out S_p is the private supply curve for the industry, representing the sum of profit-maximising output of all the suppliers, they face only their private costs. The supply curve S_s , showing the supply that the industry would have were the firms also to include in their calculations all the social costs they create, the externalities the firms cause. If the quantity of a good supplied were to be reduced from Q_p to Q_s then market price would rise to P_s . There is no incentive for a firm to reduce externalities, thus the case for government intervention in the market becomes justified.

The neoclassical school of thought contends that market failure occurs when prices fail to reflect the cost of an environmental good or damage. All attitudes towards sustainability, apart from the free-market one, hold that market failure will occur. Market failure by definition occurs when the pricing mechanism fails to allocate resources that are scarce efficiently or fails to achieve a socially efficient outcome, termed a net social loss.

Tols core analysis in the paper is about climate change. The 2020 policy package also refers to the benefits of improved energy security, higher employment, and accelerated innovation (Tol, 2012, p.2) all of which Tol does not attempt to quantify or argue. The key benefit of the ETS is on about climate change which makes his paper suitable for further analysis.

Research Method

This secondary research project takes on the form of a case study, the case study was chosen as the best research method for this project for several reasons, these being, that they provide detail, they allow extensive questioning and an opportunity to survey theoretical models in greater detail, and finally they provide the seeking out of interpretation and analysis of terminology. The theoretical background of cost-benefit analysis, covering most neoclassical economic positions, and market failures particularly negative externalities, are all analysed using material from DD309, including a selection of reports, and journals from outside the module material all of which are referenced. This report makes use of both qualitative and quantitative data on environmental valuation, and examines the theoretical background to whether the European Union could intervene to assist the ETS in times of economic recession or when the scheme begins to falter (to avoid market failure or negative externalities) this is discussed in the Climate Brief paper, by Oliver Sartor, that will be analysed later on in this project.

The two main documents were both found using the following methods. Richard Tols cost-benefit analysis which forms the main anchor of this project, was found performing a search for “EU ETS cost-benefit analysis” using the Open Universities one stop search function. An EU directive from 2009 was found on Eurostat, the European Statistics database by using the term “Europe 20/20/2020” on the website. Article 29 of the directive referred to the better functioning of the carbon market and what measures will be taken by the European commission in the event of excessive price fluctuations, in other words what intervention will be taken by the EU.

The discussion will apply theory in the literature that has been reviewed here, to assess the main weaknesses and strengths of the ETS. In the discussion, special attention has been made to consider externalities both positive and negative and the case of intervention in the carbon market.

Discussion

The discussion and evidence section will consider the paper “A cost-benefit analysis of the EU 20/20/2020 package” by Richard Tol as a launching point for this report, all major findings will be addressed. All findings are linked back to the research question.

Richard Tols paper highlights:

“it’s the first-cost benefit analysis of EU climate policy for 2020, current carbon price in the emissions trading scheme can be justified by cost-benefit analysis, and that emission targets for 2020 cannot be supported unless a low discount rate is chosen” (Tol, 2012, p.1).

The European Union has yet to publish a cost-benefit analysis of Climate policy for 2020, the next two statements by Tol are contentious but ones he sought to establish in his paper. The ETS for carbon dioxide will be expanded in scope, the cap will be tightened, and permits will increasingly be auctioned (Tol, 2012, p.1). There is evidence that this did occur as specified from the directive 2009/29/EC, which was an amended version of directive 2003/87/EC, to improve and extend the greenhouse gas emission allowance trading scheme of the community. Article 10 of the directive specifies the auctioning of allowances. It states that from 2013

onwards, member states shall auction all allowances which are not allocated free of charge (Official Journal of European Union, 2009, p.9). This is in phase 3 of the scheme.

Tols cost-benefit analysis as with all formal policy evaluation and assessment is open to interpretation, however it is a superior guide to good policy. The results from any cost-benefit analysis should be treated with caution but not dismissed with out of hand (Tol, 2012, p.2). To undertake a cost-benefit analysis the procedure (at first sight seems fairly straightforward), all costs and benefits are to be identified, account may be taken of the distribution of the costs and benefits, and finally recommendations are then made by weighing up these costs and benefits. In terms of costs we have direct (private) monetary costs and external costs.

Identification of these costs is fairly easy. The problem begins with measurement, and the difficulties in measurement depend on the type of cost and benefit.

To understand Tol and his statements on cost effectiveness understanding the impacts of emission reduction is crucial. It's true that well designed, gradual policy can substantially reduce emissions at a very low cost to society, and likewise it's also true that poorly designed policies, or policies that seek to do too much too soon can prove to be expensive. Tol has selected some statements from other academic papers expressing ways in which the costs of emission reduction can increase, and the feasibility of meeting a particular target can decrease, these are:

- Different countries, sectors, or emissions face different explicit or implicit carbon prices
- The carbon price rises faster or more slowly than the consumption discount rate
- Climate policy is used to further other, non-climate policy goals
- Climate policy adversely interacts with pre-existing policy distortions (Tol, 2012)

Unfortunately, each of those conditions is unlikely to be met in reality. Tol points out the fact that only a select few countries have adopted emissions targets. A key issue here is that climate policy often targets carbon dioxide, which is one greenhouse gas, but on the other hand omits methane and nitrous oxide. Tol highlights that the emission trading system also has a provision for banking permits for future use, but not for borrowing permits from future periods, these are two inherent weaknesses in the ETS.

For Tol EU policy is not cost effective, and he states that the same target can be met at a much lower cost. If this is the case then the EU ETS is not cost-effective, which is a significant weakness. Tol comes to this conclusion due to analysis done in another paper titled "THE EU 20/20/2020 targets: An overview of the EMF22 assessment" by Christoph Böhringer, Thomas F. Rutherford, and Tol himself. However, the numbers in the paper are neither accurate nor precise (Böhringer et al., 2008). This therefore throws into question Tols statement on cost-effectiveness.

Tol, goes on to state that as cost-effectiveness is a condition for efficiency, this alone means that EU policy fails the benefit-cost test (Tol, 2012, p.4). He uses the marginal damage costs of climate change to the marginal abatement costs of the ideal policy rather than the actual policy. The second, limitation brought forward by Tol is that both marginal costs and marginal benefits are rather uncertain. So, the probability is computed by using the probability density function of the marginal damage cost of climate change (Tol, 2012, p.4).

Table 1 below displays some of these characteristics.

Table 1 – showing the mean and standard deviation of social cost of carbon (euro/tonne).

Table 1

The mean and standard deviation of social cost of carbon (euro/tonne CO₂) for a Fisher–Tippett distribution fitted to 232 published estimates, and to three subsets of these estimates based on the pure rate of time preference.

	Fitted distribution (weighted)			
	All	Pure rate of time preference		
		0%	1%	3%
Mean	49	76	24	5
StDev	81	71	26	5
Mode	14	35	13	3
33%ile	10	35	10	2
Median	32	58	20	4
67%ile	59	93	32	7
90%ile	135	177	58	12
95%ile	185	206	72	15
99%ile	439	265	103	19

Tol goes on to state that if all estimates of the marginal damage costs are used, there is a chance of 43% that the benefit-cost test is met (Tol, 2012, p.4). This is depicted in **Table 2** below.

Table 2 – Four alternative estimates of the social cost of Carbon.

Table 4

Cost-benefit analysis of the EU 20/20/2020 package: Four alternative estimates of the social cost of carbon (cf. Table 2), the probability of the EU policy meeting the benefit-cost test, the expected value of the benefit, the benefit-cost ratio for planned and cost-effective implementation of the EU policy; and the ancillary benefits needed to break even.

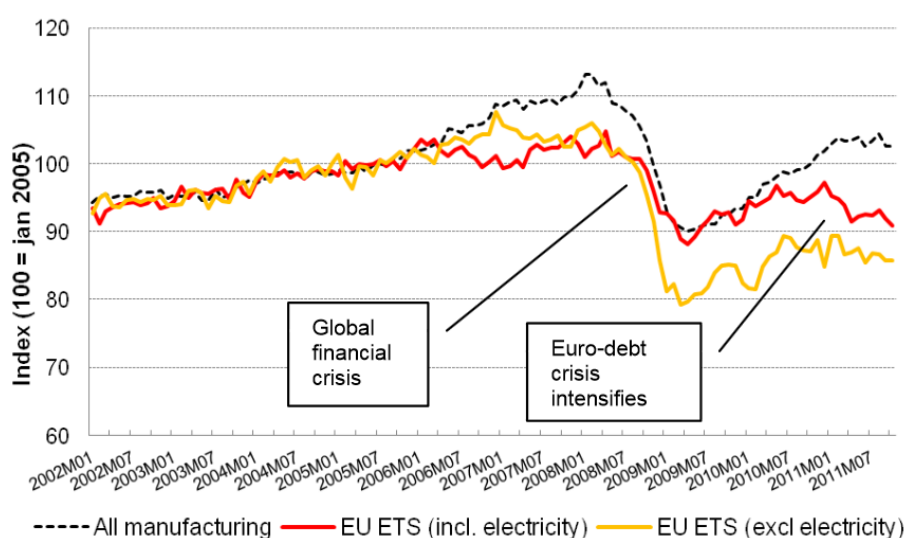
	All	0%	1%	3%
Social cost of carbon (€/t CO ₂)	49	76	24	5
Probability of EU policy meeting the benefit-cost test	43.1%	60.0%	26.1%	4.5%
Expected benefit (bln €)	66.1	102.2	39.1	7.1
Benefit-cost ratio (policy as proposed @ 209.3 bln €)	.32	.49	.15	.03
Benefit-cost ratio (cost-effective policy @ 115.8 bln €)	.57	.88	.28	.06
Required ancillary benefits (bln €; policy as proposed)	143.2	107.1	170.2	202.2
Required ancillary benefits (bln €; cost-effective policy)	49.7	13.6	76.7	108.7

Tol comes to the conclusion that EU climate policy can be justified by great care of the future, meaning a low discount rate and substantial aversion to risk.

Lower discount rates tend to increase the amount of investment that is justified, since costs come earlier than benefits. The choice of social discount rate raises major economic, political and ethical issues. The choice of discount rate has been a source of controversy in response to the UK's stern review of the economics of climate change (Anand, 2012, p.435).

This report now moves on to discuss intervention in the ETS in terms of carbon pricing, and the certainty over price and certainty over quantity. The trade-off being that the carbon market determines the carbon price. Phase 2 (2008-2012) began differently to phase 1, the spot price of an EU allowance had fallen from between €20 and €30 /tCO₂, to a low of €6.50 tCO₂ in January 2012. The fall can be explained by supply and demand for allowances. The euro-debt crisis led to a usually long-lasting reduction in industrial production and energy use (Sartor, 2012, p.2). **Figure 6** depicts EU industrial & energy production experiencing a deep recession, it can be seen that in the first quarter of 2008 at the beginning of the financial crisis the index dips significantly. This has substantially reduced emissions and thus the demand for ETS allowances. However, the supply of allowances in for 2008-2020 is fixed, they were set on the assumption of much better economic circumstances.

Figure 6 – EU industrial & energy production experiencing a deep recession.



Note: EU ETS indices weight individual sectors by their respective share of emissions.
Source: Tendances Carbone, CDC Climat Research.

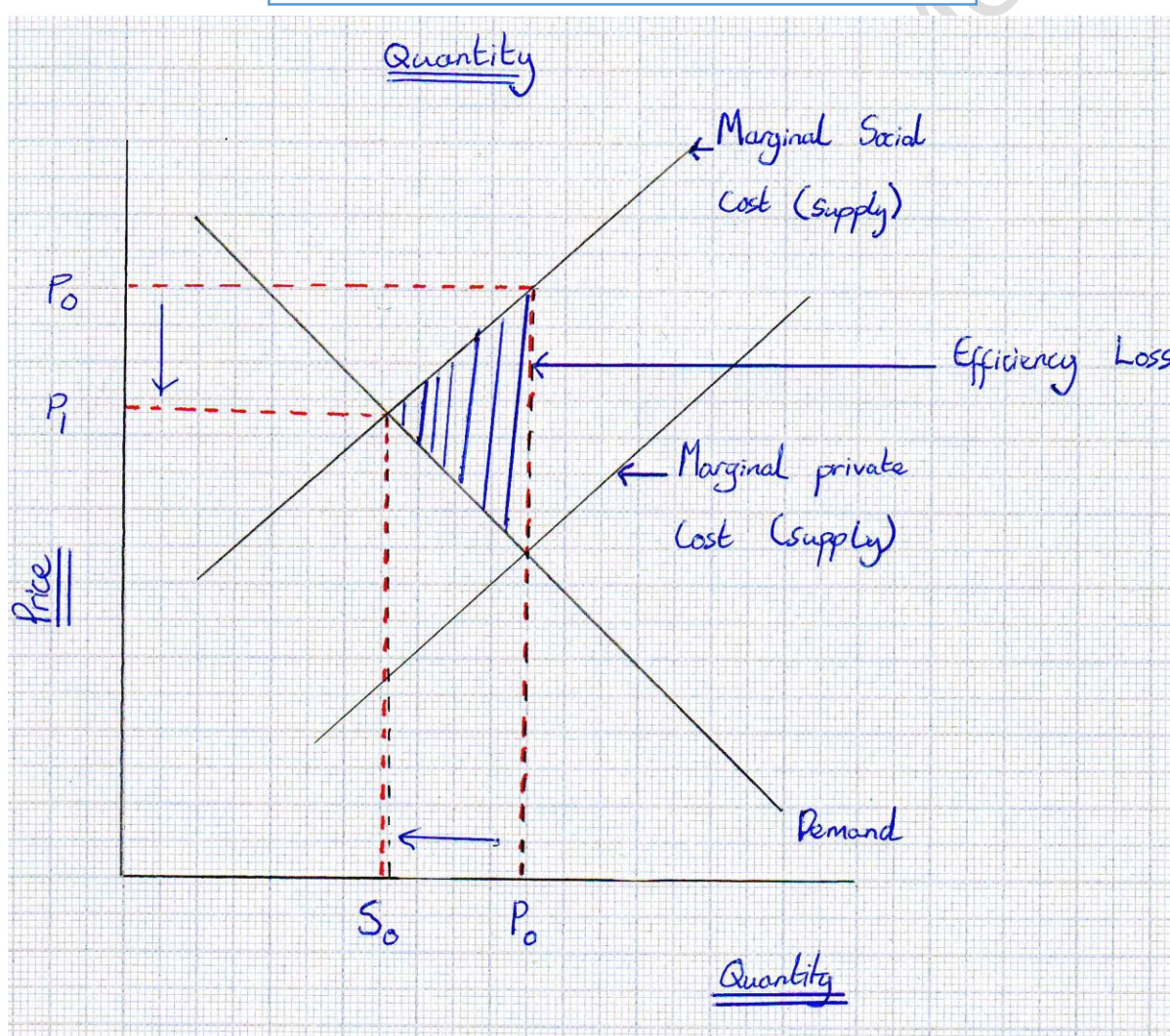
Oliver Sartor recommends in his paper that demand for allowances in the present should be closely related to the expected price of allowances in future (Sartor 2012, p.2). Allowances are bankable for use in future phases of the ETS, from phase 2. Sartor goes on to state that if market participants believe that the allowance supply will continue to be reduced over the next 10-20 years, and that this will eventually mean significantly higher carbon prices, than if prices are cheap this should create more demand for allowances today and lead to higher carbon prices in the future.

Under the current EU ETS design it's tricky for market participants to form longer term price expectations because of large uncertainties over the long run allowance supply (Sartor, 2012, p.2). The fact that the carbon market reacts much like any other market in times of financial crisis is an inherent weakness. At the time of writing Sartor noted that the uncertainties were reinforced by speculation that the EU Parliament will conclude that the current low price proves that the carbon market does not work and that it may be abandoned. Clearly at the time of writing this has not happened, and the EU is pressing on with future phases. It's interesting to

note that such a conclusion can be made at this stage such as abandoning the ETS as financial crises are cyclical issues, and it is likely that the EU is already aware of this fact.

Overlapping policies, have led to lower carbon prices by weakening demand for emissions allowances, discrediting the market in the process. For instance, the Climate and Energy package of 2009 set a target to reduce emissions by 20% relative to 1990 levels, to improve energy efficiency by 20% and have 20% of energy consumption sourced from renewables, by 2020. In phase 2 there is some evidence that prices lowered due to weakening demand for allowances. In the 2 days following the draft Energy efficiency directive by the European Commission on June 22, 2011, the EUA price fell 20%. This can be modelled using a simple supply and demand diagram as depicted in **Figure 7**.

Figure 7 – A supply and demand diagram depicting a reduction in demand weakening prices



Commentators in the market began questioning whether the carbon price was too low to incentivise low carbon investment for the future, and whether some form of direct intervention was needed in the market. The response by the EU Parliament's ENVI committee proposed that amendments be made to the Energy Efficiency Directive to withdraw a significant amount of allowances from the market during phase 3 (Sartor, 2012, p.3).

As Sartor states, the market initially surged at this decision and the allowance prices rose to 30% on the day of the announcement, and fell again after the political difficulty of passing the objectives become clear.

Sartor debates one of the most common reasons for intervention in the case for targeting a higher carbon price and that is that it would allow for a timelier rolling out of investments in low carbon capital stock innovation.

The debate whether to intervene in the carbon market to strengthen the carbon price boils down to a few questions. One key question is one regarding the allowance supply and whether it should be adjusted over the economic cycle? Given the excess of allowance supply over demand, the supply of allowances will not begin to force new emissions reductions until after 2020 (Sartor, 2012, p.5). The argument at time of writing was that the cap for phase 3 should be tightened.

An important question is then raised about whether it is desirable to manage the carbon price over the economic cycles, ensuring that in the short run the market is continually reducing emissions, or to ignore the temporary effects of economic cycles and focus on the long run trajectory of emissions that is still ensured by the ETS.

Figure 8 – Depicts emissions and carbon prices over several business cycles

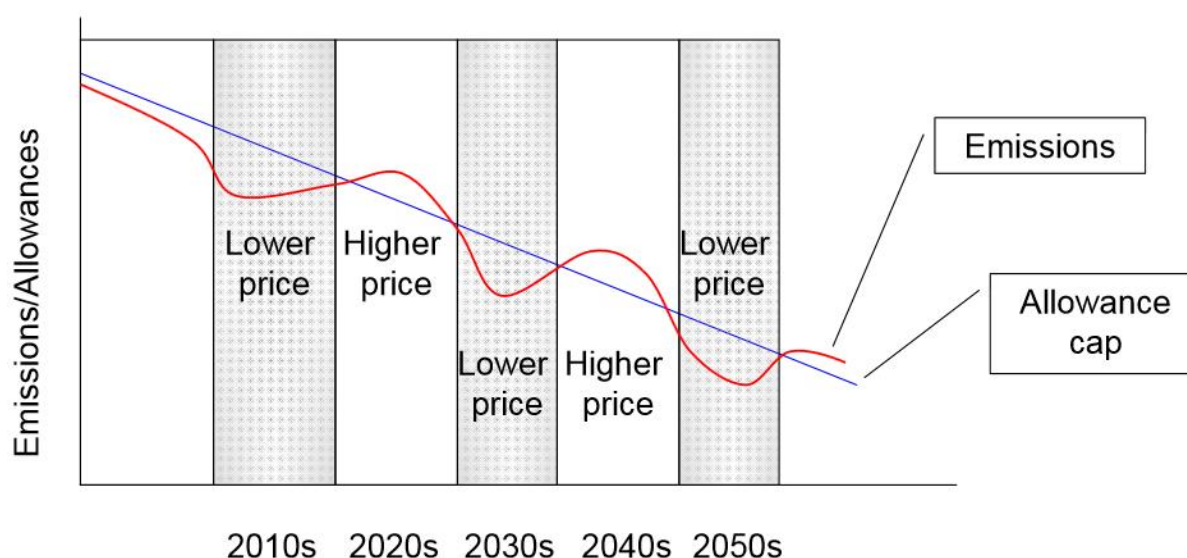


Figure 8 shows emissions and carbon prices over several hypothetical business cycles.

How might ensuring that the market is continually reducing emissions in the short run (i.e. allowing prices to go pro-cyclical) be desirable in terms of economic efficiency?

The benefits of allowing prices to go pro-cyclical are generally thought to be that costs are eased for business when economic times are hard and when the demand for carbon is low, but this would require that firms pay more for carbon when times are good and demand high. Surplus and deficits of allowances can change unexpectedly as the future is unpredictable. The recent global and euro financial crisis has demonstrated this.

Another argument is that the EU ETS is young and not yet a fully established climate policy instrument. Phase 1 was known as “learning phase” (Anne Theo Seinen, 2009), phase 2 has largely continued with this trend as amendments are tested such as the widening in scope of the system to include nitrous oxide emissions from the production of nitric acid by a number of member states (European Commission, 2015).

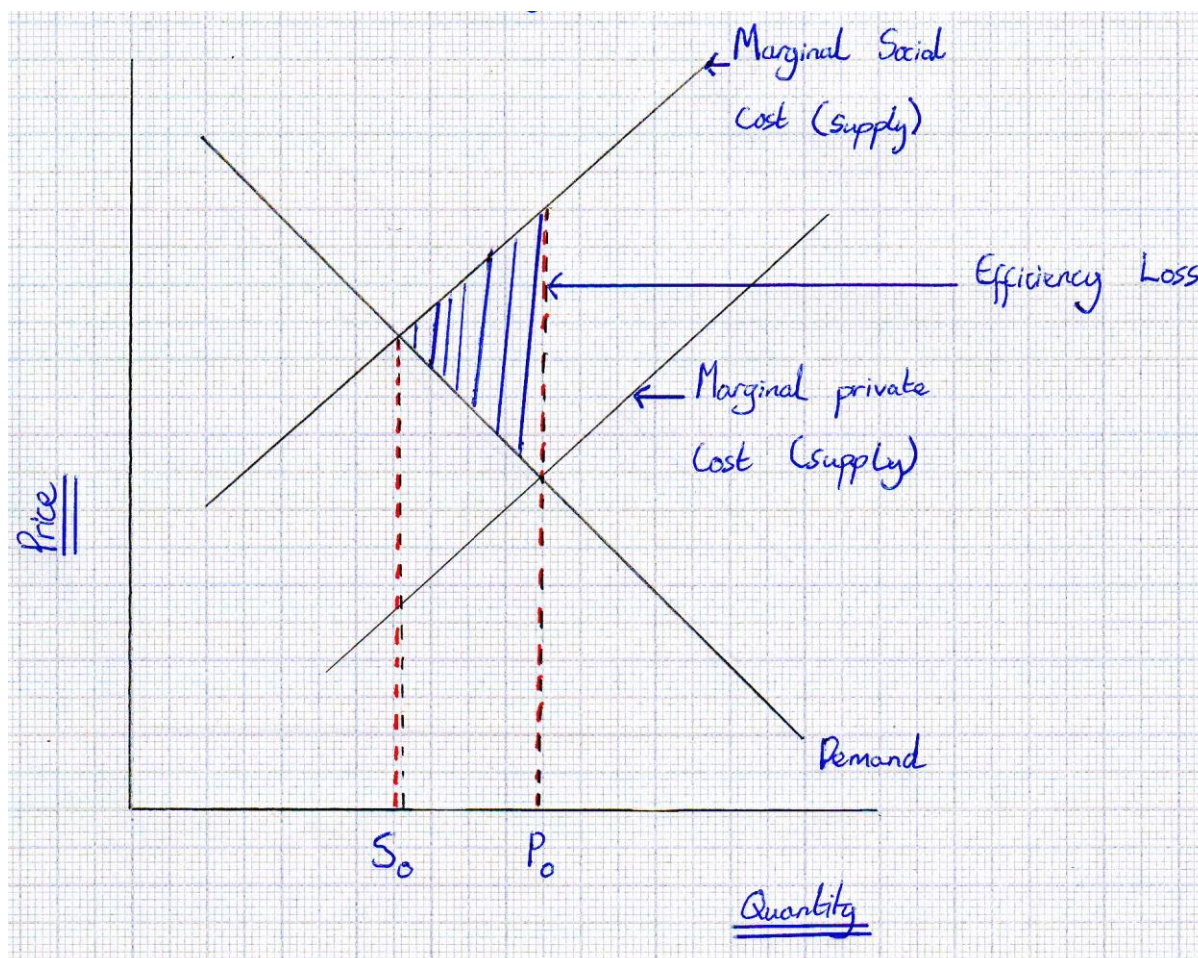
Finally, Market failures are brought to the fore, particularly externalities. The environment is a common resource and the air, the seas and other parts of the environment cannot be privately owned. They are part of the commons, so have non-excludability. The environment suffers from a term called the tragedy of the commons, when resources are commonly available at no charge, then people are likely to overexploit them. Another problem with the environment being a public good is that of externalities, more negative than positive. When an individual pollutes the environment, the costs are not distributed evenly.

Where property rights do not exist or are difficult to establish, the market does not always provide obvious solution to social problems (Drew, n.d, p.2).

This is particularly true of global public goods, like climate change, that also suffer from challenges of non-excludability and free-riding which cause collective action problems. Nicholas Stern describes climate change as ‘the greatest market failure of all time’ (Drew, n.d, p.2)

Various types of government intervention can correct these failures. However there are highly contentious debates as to how they should take place. **Figure 9** depicts a market failure in the form of a negative externality. Government intervention can be prescribed to promote collective action and internalise negative externalities. Public choice economist’s particularly unique critique of government intervention. The belief is that the political process is a marketplace, where actors are self-interested and preferential legislation is ‘sold’ to the highest bidder (Drew, n.d, p.2). Legislation is deemed suboptimal because the political process is prone to rent-seeking by firms that lobby for protective legislation (Drew, n.d, p.2). The assessment highlighted here by Andrés Jonathan Drew is that the political process could move to the bias incentives, of regulators and governments to act in their own interest rather than the broader remit of public interest.

Figure 9 – Depicts the effect of a negative externality and market failure



Carbon leakage is a problem for some industries at phase 2 of the ETS. Market-based instruments (MBIs) can reduce the risk of capture. Traditional command and control (C&C) instruments rely heavily on information provided by regulators in setting and enforcing rules (Drew, n.d, p.3). Design is done by regulation which requires knowledge of the marginal abatement costs of each installation, so that the efficient output levels can be set. Firms hold the technical expertise for this analysis into this, and this provides incentives for them to reveal information strategically in order to benefit from less stringent rules or regulations that create barriers to market-entry that reduce competition (Drew, n.d, p.3). As stated above, not all MBIs are effective at reducing carbon capture effectively. Capture is more likely using quantity-based (emissions trading) such as the ETS, than price-based (carbon taxes), many other governments around the world have used taxes as a way of capture. This is one main strength of the ETS over tax based systems. Setting and allocating quantities is more information intensive (Drew, n.d, p.3). Firms can use knowledge as an advantage to game the allocation system. The cap-and-trade model, if permits are totally auctioned, does not require knowledge of pollution abatement costs for each installation. Reducing the information asymmetry and rent-seeking (Drew, n.d, p.3).

Market-based instruments promote allocative efficiency better than command and control regulation can. MBIs incentivise behaviour through market signals rather than explicit directives. Drew states that “emissions trading provides incentives to exceed abatement targets because excess permits can be sold.” This is partly true, however as if the price is high enough, then firms will have an incentive to invest in new technology or abate. However, it’s price sensitive. Further on in the paper dynamic efficiency (technology) is discussed making this exact point, that in comparison to command and control instruments it provides incentives for firms to find cheaper abatement methods and sell excess permits on the market. Drew makes an argument that very little empirical evidence supports this theoretical claim (Drew, n.d, p4). Moving on to state that a recent analysis made by Driesen, finds that MBIs promote expensive innovation less than command and control approaches. Highlighting another drawback for MBIs.

Conclusion

The paper “a cost-benefit analysis of the EU 20/20/2020 package” makes use of a lot of referencing and quoting from additional papers by Richard Tol, also co-authored by himself. This may call into question his conclusion that EU climate policy is not effective. Comparative analysis of Tol's paper is difficult, as there is no other published emissions trading scheme cost-benefit analysis to compare against. What this report tried to do in this case was assess the process that was used, linking economics to economic theory. The fact that Tols cost-benefit analysis is open to interpretation was clearly highlighted in the discussion. Identification of the costs (where published) to begin the cost-benefit analysis is fairly easy. However, most analysis fails at measurement stage. Tol makes a statement that EU climate policy is not cost-effective, additionally stating conditions that are unlikely to be met in reality, but expressing ways emissions reduction can increase along with a decreased feasibility of meeting a target. The numbers in the paper which Tol are neither accurate nor precise for the cost-benefit analysis as they aren’t published by the EU. Tol uses marginal damage costs of climate change, to the marginal abatement costs of the ideal policy. Tol computes probability by using the probability density function of marginal damage cost to climate change. The social cost of carbon after this analysis is 43% which means the policy is not justified according to Tol.

The global and EU debt crisis led to reduced demand for ETS allowances, the allowances for 2008-2020, is fixed. A significant problem should further economic crisis occur. Sartor recommends that to strengthen the EU ETS and prevent it from market failure that demand for allowances in the present should be closely related to the expected price of allowances in the future. The reasoning behind this is economically sound with the belief being that if the participants in the market believe that the allowance supply will continue to be reduced, that this will lead to higher carbon prices, than if they were cheap, which should create more demand for allowances today and lead to higher prices in the future. The fact that the EU ETS reacts like any other financial market in times of economic crisis is highlighted as a weakness. Unlike other weaknesses in the ETS this cannot be corrected.

The danger of overlapping policies have in the past led to lower carbon prices by weakening demand for allowances. This can be prevented by policymakers assessing policy proposals and policies that are already in place correctly. Sartor states common reasons for intervention ranging from allowing for timelier rolling out of investments in low carbon capital stock (technology). Another question Sartor addresses is, whether it’s desirable to manage the carbon

price over economic cycles. Policymakers have various options available to control and manage the carbon price over economic cycles.

The issue of negative externalities such as, the tragedy of the commons, and the problem of the environment being public good are brought into the report. Government intervention can be used to correct these negative externalities to one extent. The public choice school of thought is that the political process is a market place, and the actors are self-interested. Drew highlights this as a potential weakness for the ETS. Legislation can be deemed suboptimal because of rent-seeking by firms lobbying for protective legislation. Therefore, policymakers within the EU may move to act in their own interest rather than of the citizens. Overall, this report has shown the ETS has resulted in a small benefit to reducing emissions, however, many economists have brought into question just how cost effective this is.

Appendices

1. EU Climate Policy 2020 – Open University library
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