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The European Union Emissions Trading System: should we throw the flagship out with the bathwater?

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The European Union Emissions Trading System: should we throw the flagship out with the bathwater?

Abstract

The European Union Emissions Trading System (EU-ETS), presented as the ``flagship'' of European climate policy, is subject to many criticisms from different stakeholders.
Criticisms include the insufficient carbon emissions reduction, the competitiveness losses and the induced carbon leakages, the unfair distributional effects, the frauds and the existence of several other overlapping climate policy instruments. We review these criticisms and find the EU-ETS brought small but real abatements. The competitiveness losses and carbon leakages do not seem to have occurred. The distributional effects have indeed been unfair and fraud has been important. Finally, the scheme does not justify abandoning other climate policies. Some of these problems could have been avoided and can still be corrected by rethinking flexibility mechanisms and by adding some control over the carbon price.

Keywords: EU-ETS, climate policy, carbon price, flexibility mechanisms, carbon leakage, competitiveness, frauds, distributional effects.

Le système européen de quotas de CO_2 : faut-il jeter le "navire amiral" avec l'eau du bain ?

Résumé

Le système européen de quotas échangeables de CO_2, présenté comme le « navire amiral » de la politique climatique européenne, fait l'objet de nombreuses critiques émanant de divers acteurs : il n'aurait pas réduit les émissions, il aurait entraîné des pertes de compétitivité et une augmentation des émissions dans le reste du monde (fuites de carbone), ses effets distributifs seraient injustes, il serait vulnérable à la criminalité financière et constituerait une incitation à supprimer les autres politiques climatiques. Nous passons en revue ces critiques et aboutissons aux conclusions suivantes : les réductions d'émissions sont réelles quoique faibles, les pertes de compétitivité et les fuites de carbone ne semblent pas avoir eu lieu, les effets distributifs ont en effet été injustes et les fraudes importantes, enfin le système ne justifie pas d'abandonner les autres politiques climatiques. Une partie de ces problèmes aurait pu être évitée et peut encore être corrigée en adoptant une approche plus critique à l'égard des mécanismes de flexibilité et en encadrant le prix du CO_2.

Mots-clés : EU-ETS, politique climatique, prix du carbone, mécanismes de flexibilité, fuites de carbone, compétitivité, fraudes, effets distributifs.

The European Union Emissions Trading System: should we throw the flagship out with the bathwater?

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Abstract

The European Union Emissions Trading System (EU-ETS), presented as the "flagship" of European climate policy, is subject to many criticisms from different stakeholders. Criticisms include the insufficient carbon emissions reduction, the competitiveness losses and the induced carbon leakages, the unfair distributional effects, the frauds and the existence of several other overlapping climate policy instruments.

We review these criticisms and find the EU-ETS brought small but real abatements. The competitiveness losses and carbon leakages do not seem to have occurred. The distributional effects have indeed been unfair and fraud has been important. Finally, the scheme does not justify abandoning other climate policies. Some of these problems could have been avoided and can still be corrected by rethinking flexibility mechanisms and by adding some control over the carbon price.

Introduction

Presented as Europe's flagship policy to tackle climate change,[1] the European Emissions Trading System (EU-ETS) is on the brink of capsizing. The EU Emission Allowance (EUA) is worth less than 5 euros compared to more than 25 euros in July 2008. Since the beginning of its implementation, it has been denounced by carbon-intensive industries, because of its threat to competitiveness. It has also been accused by some green Non Governmental Organizations (NGOs) as commodifying the environment and being inefficient at reducing carbon emissions.[2] Several cases of fraud have made the headlines. Finally, as private electricity companies earned billions of euros at the expense of consumers, its distributional effects seem highly unfair to many.

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[1] "The EU-ETS is Europe's flagship policy to tackle climate change and is there to stay". Connie Hedegaard, http://europa.eu/rapid/press-release_SPEECH-11-527_en.htm

[2] Civil society organisations demand that the EU scrap its emissions trading scheme, February 5th 2013, http://www.stopwarming.eu/?news\&id=818

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The adoption of this policy by the EU seemed at first to align with most economists' recommendations. Many argued taxation and emissions trading systems should be favored over command-and-control regulations because they are more cost-effective (Hahn, 1989). In this context the European Association of Environmental and Resource Economists gave in 2005 its first award of European Practitioner Achievement in Applying Environmental Economics to Jos Delbeke, the Director General of the Directorate-General for Climate Action in the European Commission, for his active role in the implementation of the EU-ETS.[3] How can we explain this paradox? Were the economists' recommendations unwise? Are the criticisms unfounded?

Our diagnostic is that a major part of these problems are real but could have been avoided — and can still be corrected — by applying more closely the recommendations of economists rather than ignoring them. The flagship can still be refloated if member states have enough political will and if the Commission abandons its ideological opposition to the control of carbon price.

This article is structured as follows. First, we present the history of the scheme (1). Then we review the main criticisms that it has faced: no emissions reduction (2), competitiveness losses and carbon leakage (3), unfair distributional effects (4) and fraud (5). Finally, we analyse the interactions between this scheme and other climate policies (6), before concluding.

1. A brief history of the European Union Emissions Trading System

The EU-ETS was born out of two failures (Convery, 2009). The first was the impossibility of setting a carbon and energy tax in the EU at the beginning of the 1990s, due among other reasons to the unanimity rule for fiscal decisions in the European Community. The political impossibility of a tax thus raised the need for alternative policies. The second failure occurred during the negotiation of the Kyoto Protocol in 1997. To get the agreement of the United States and their allies, the European institutions had to accept flexibility mechanisms they once strongly opposed, among which the possibility to trade emission allowances between countries.

As the adage goes, there is no more zealous than the convert, and the Commission immediately turned itself into a fervent advocate of flexibility mechanisms, sometimes in an ideological way. It proposed the following year to implement an emissions trading system within the European Union. Five years later, the 2003/87/EC directive gave birth to the EU-ETS, a scheme divided into two distinct periods: a learning phase (2005-2007) and a second Phase corresponding to the commitment period of the Kyoto protocol (2008-2012). A major reform in 2008-2009 added a third phase for the period 2013-2020.

As shown in Figure 1, the evolution of the carbon price was highly variable. Largely superior to previous forecasts between May 2005 and April 2006, the EUA price during phase I (in green) collapsed when it was realised that emissions

[3] www.eaere.org/delbeke.html

Figure 1: Price of EUA on the EU-ETS (€/tCO2), 2003-2012. Source: Trotignon

in 2005 (and 2006) were (or were going to be) inferior to analysts' forecasts and to the global number of allowances in the market. As these allowances could not be banked for the next phase, EUAs of the first phase became worthless.

Where does this excess of allowances come from? For one part, one can paradoxically blame the scheme's efficiency. It induced an around 2% to 5% decrease in emissions, corresponding roughly to the allowances surplus. Alternatively, one can advance the little information that public authorities in charge of the allocation plans (the member states and the European Commission) had on the covered installations' emissions. Finally, the will of certain member states to protect their home industries may have worsened the situation.

While some member states like the United Kingdom played by the rules and distributed less allowances than expected emissions, others were extremely generous. In France, allocations largely exceeded emissions each year (see Figure 2). This is a unique case in the biggest member states and suggests a massive overallocation. The estimation of a 15% overallocation for France in phase I was in fact forecast independently by Olivier Godard (Godard, 2005) and the NGO Climate Action Network[4] after the disclosure of the first national allocation plan.

During the second phase (2008-2012), the cap was more binding at first (10% inferior to the first phase). The Commission had more information this time, as it knew the actual emissions of 2005 during the assessment of national allocation plans, and was able to restrain the generosity of the member states. During the second phase, the carbon price remained high until summer 2008, and then fell

[4]2004: http://www.rac-f.org/3eme-version-du-PNAQ-Un-pas-en

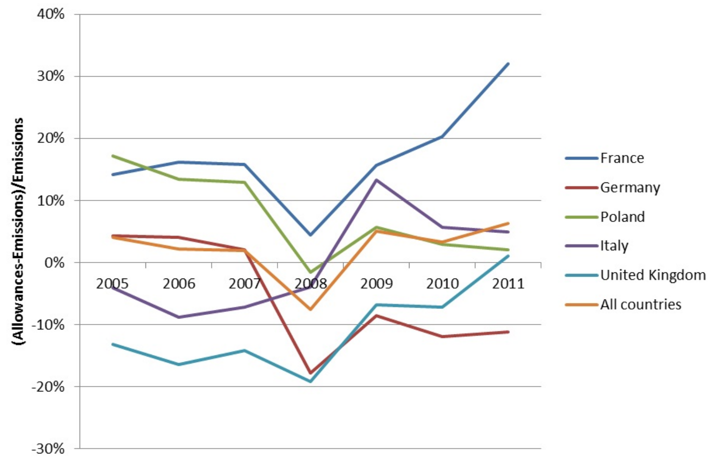

Figure 2: Surplus or deficit of allowances for the biggest states and for all countries of the EU-ETS, in percentage of emissions. Source: own calculations from Sandbag data (2013)

because of the economic crisis.

The economic crisis dramatically affected the construction sector and the automobile industry, in turn affecting steel and cement production which are the major non-electric EU-ETS covered sectors. Since 2009, emissions of EU-ETS sectors are widely lower than the number of allocations, increasing year after year the surplus of allowances. In 2014, this excess of allowances will reach 2 billion EUAs representing a whole year of emissions (EuropeanCommission, 2012). The price does not fall to zero like in 2007 only because of the possibility of public intervention designed to restore the EUA price.

2. Is the EU-ETS efficient at reducing emissions?

Evaluating the emissions reductions induced by the EU-ETS is a thorny exercise, because of the counterfactual emissions scenario it necessitates. Effective reductions can be assessed only against an hypothetical baseline, the emissions that would have occurred without the EU-ETS. There is a general consensus in the literature to conclude that the EU-ETS led to effective though small mitigation during the first phase (Ellerman and Buchner, 2008; Anderson and Di Maria, 2011; Delarue et al., 2008). To our knowledge, the latter are the only peer-reviewed studies numerically assessing abatements from the ETS. They find respective abatements for phase I of 120-300 MtCO2, 247 MtCO2 and 150 MtCO2 (only for the power sector for the latter), corresponding to 1.9%-4.9%, 4.0% and 2.4% of the global cap.

Things are much less clear for the second phase, where the exceptional economic recession makes the counterfactual scenario questionable. Laing et al.

(2013) review the grey literature and analyse abatements in the first and second phase. They conclude that the EU-ETS has driven around 40-80 MtCO2 of annual abatement for phase I and II, or 2%-4% of the total capped emissions. They remain ambiguous on the contribution of offset credits in this evaluation.[5] During the period 2008-2011, 556 million of these credits were delivered (Sandbag, 2013), corresponding to approximately 7% of the cap. Unfortunately some of this abatement is fictional: some projects were non additional, and the abatement induced by a part of the others were most probably overestimated (Zhang and Wang, 2011), though the exact quantification of this overestimation is contentious (Schneider, 2009).

The Commission partly amended the offset rules for the third phase (ban of offset credits coming from industrial gases, origin of offset credits centered on least developed countries, smaller amount of authorised offset credits). The environmental efficiency of the scheme could have been further enhanced by banning completely foreign offsets. For a given cap, actual abatement would have occurred within the EU territory, facilitating the measurement and control of actual abatement. Nothing forced the European Union to acknowledge offsetting in the EU-ETS. This excessive enthusiasm towards flexibility mechanisms only encumber the environmental efficiency of the EU-ETS.

Another related question is whether the EU-ETS has encouraged long-term investments and innovation in low-carbon technologies rather than short-term fuel-switching and energy conservation (Newell et al., 2013). A series of managerial surveys give contrasted results and suggests overall that the EU-ETS has affected investment decisions but in a very limited way (Martin et al., 2011; Rogge et al., 2011; Aghion et al., 2009). Calel and Dechezleprêtre (2012) use low-carbon technology patents data. They find that the EU-ETS had a small but positive effect on innovation. However, one can assert that actual carbon prices are far too low (and far too volatile) to provide a clear signal to investors.

3. Carbon leakage and competitiveness issues : what is the reality?

Adopting unilaterally an ambitious climate policy induces a comparative disadvantage for local firms manufacturing carbon-intensive products by raising their production costs. This raise can then drive firms to migrate production sites from carbon-constrained countries to "carbon havens", leading to local job destructions, relocations and profit losses for these sectors in the home country. In addition to potentially large damages to the economy, this production transfer would reduce the environmental efficiency of the whole climate policy as emissions in the rest of the world increase.[6]

[5] Offset credits were not allowed during phase I so the above-mentioned studies do not take them into account.

[6] Further to this competitiveness channel, carbon leakage can follow the international fossil fuel channel (Dröge, 2009). In absence of credible carbon storage options, abating countries will have to cut their fossil fuel consumption. This drives down the international prices of carbon-intensive fossil fuels such as coal and oil, leading to a rise of their consumption in coun-

All sectors do not face the same risks of competitiveness losses: the most vulnerable are those for which the carbon cost in production is high and the exposition to international competition is important (Hourcade et al., 2007). The allocation rules of the third phase of the EU-ETS are differentiated by sectors to take this risk into account, by defining two indices: the carbon cost in production (CCP)[7] and the exposure to international competition (EIC) [8]. Sectors at risk were those verifying one of these three criterions:

1. CCP>5% and EIC>10%,
2. CCP>30%,
3. EIC>30%.

Allowances will be grandfathered for the sectors at risk, on the basis of the average emissions of the 10% highest performing installations of a sector according to a benchmark, multiplied by the average production during the period 2005-2008. The allowances will be auctionned to the other sectors of the manufacturing industry not considered at risk (20% of allowances in 2013, increasing to 70% in 2020).

Those sectors (called Energy Intensive Trade Exposed sectors or EITE sectors) joined forces to defend their interests in the EU-ETS implementation process. The intense lobbying deployed by EITE sectors allowed them to obtain some concessions from the Commission: the final version of the directive is more favourable towards them than earlier drafts, both in the categorisation of the sectors at risk and in the allocation rules. For example, the inclusion of the third criterion added 117 sectors (increasing to 146 the sectors at risk of leakage out of 258 in the EU-ETS, see (Zhang, 2012)), and increased up to 53% the number of free allowances in the manufacturing industry (Clò, 2010) . The third criterion is the most controversial, as the exposure to international competition without high carbon costs does not constitute a good vulnerability indicator (Martin et al., 2012).

A substantial body of literature quantifies both *ex ante* and *ex post* the effect of climate policies on carbon leakage and competitiveness losses. Some authors evaluate *ex ante* the effects using mostly computable general equilibrium (CGE) models (Babiker, 2005; He et al., 2009; Elliott et al., 2010). Other develop sectoral models allowing a better disaggregation and a greater technological detail (Mathiesen and Moestad, 2004; Monjon and Quirion, 2011; Quirion, 2011).

A comparative exercise of 12 different CGE models sharing common hypotheses (Böhringer et al., 2012a) find that leakage is sensitive to certain hy-

tries with less stringent policies. Despite the overwhelming importance of the competitiveness channel in the climate policy debate, in virtually all models including the two channels, the international fossil fuel price channel predominates (Gerlagh and Kuik, 2007; Fischer and Newell, 2008).

[7]Direct plus indirect (electricity) costs divided by the gross value added (with a 20€/tonne carbon price and implicit technological hypotheses).

[8]Imports+Exports divided by Turnover+Imports.

potheses, especially fossil fuel supply elasticities for the international fossil fuel channel and Armington elasticities (Armington, 1969) for the competitiveness channel. The estimated carbon leakage ratio (the increase of emissions in the rest of the world in proportion to the decrease of emissions in the climate coalition)[9] ranges between 5% and 19% (mean 12%), when developed countries unilaterally abate 20% of their emissions. In terms of competitiveness losses, the decrease in production of EITE sectors is between 0.5% and 5% (mean 3%).

Ex post econometric studies measure the effects of the EU-ETS on carbon leakage and competitiveness (Reinaud, 2008; Lacombe, 2008; Quirion, 2011; Ellerman et al., 2010; Sartor, 2013). They find that the EU-ETS had no statistically significant effects. This may partly be due to the favourable conditions the EITE industries benefitted during the first two phases (free allocations for the most part of emissions, low carbon price and long term electricity contracts for aluminium producers). These studies are moreover only able to measure short-term effects like decreases in the utilisation rate of unit capacities but not long-term effects like the evolution of production capacities.

While the debate essentially focused on the negative aspects, unilateral climate policies can lead to two positive consequences, symmetrical to competitiveness losses and carbon leakage, if one assumes that environmental laws will favor innovation and generate technological progress (Dechezleprêtre et al., 2008). Even incomplete, the diffusion of these technologies would lead to a reduction of emissions in other countries, producing climate spillovers possibly offsetting carbon leakages (Gerlagh and Kuik, 2007).[10] Once third countries decide to adopt more binding climate policies, technological know-how acquired by pioneer firms could then be used to gain market share in emerging markets, lending a first-mover advantage to countries implementing unilateral climate policies.

What is the optimal policy to preserve the competitiveness of the European industry and limit carbon leakage? The Commission adopted capacity-based free allocation[11] over other allocation methods that seemed more efficient, such as border carbon adjustments (BCA) or output-based allocations (Meunier et al., 2012).

Output-based allocations give little incentive to decrease polluting goods production, and can effectively be considered as production subsidies. They have however the advantage of being politically easy to implement and generating few distributive effects (Quirion, 2009), and were chosen for the failed attempt to set a federal carbon market in the United States in 2009 (the Waxman-Markey

[9] A 50% leakage ratio does not mean that 50% of the emissions have leaked but that 50% of emissions reductions are undermined by emissions increase outside the coalition. Below a leakage ratio of 100%, the policy is environmentally beneficial.

[10] The EU-ETS experiment has been observed and some The lessons drawn by countries (New Zealand, Australia, Califonia, China, Corea, etc.) implementing emission markets from the EU-ETS experiment could be seen as “policy spillovers”.

[11] Allowances are given according to production capacities (whether they are used or not). Further there is a reserve for new entrants.

bill).

Border carbon adjustments consist of taxing imports (and possibly subsidising exports) according to their carbon content. Among all the policy options, they are the most efficient to reduce leakage. They have however detrimental distributional effects on developing countries if revenues are not handed back (Böhringer et al., 2012b). Their political consequences are also uncertain: they could constitute an incentive for third countries to join the abating coalition, or trigger a trade war or an unprecedented World Trade Organisation (WTO) dispute. Indeed, BCA were despised as “green protectionism” (Evenett and Whalley, 2009) and their WTO compatibility divides legal experts (van Asselt and Brewer, 2010). A prior negotiation with third countries rather than a unilateral imposition would be a key factor of success (Low et al., 2011). The use of revenues could constitute a levy of negotiation, for example by supplying the Green Climate Fund. Indeed, this fund designed to finance adaptation and diffusion of low-carbon technologies in developing countries is one of the most contentious issues in international climate negotiations (Godard, 2009).

4. Unfair distributional effects?

In 2006, Sijm et al. (2006) revealed that electricity companies passed along the price of their allowances to their consumers, shocking many observers (Gow, 2006). It is nonetheless a logical behaviour forecasted by economists well before the beginning of the EU-ETS (Bovenberg and Goulder, 2000). Even distributed free of charge, allowances have a value and carry an opportunity cost. Electricity companies, acknowledging this value, pass it along to the wholesale price and exchange allowances in the ETS market.

The price rise is desirable because it signals the carbon allowance scarcity to end-users, thereby incentivizing the most efficient options to reduce carbon-emitting electricity consumption. The scarcity rent thus created can however be seen as a public good, and should benefit all citizen instead of only a few shareholders.

According to Lise et al. (2010), these windfall profits amount to 35 billion euros for phases I and II. The reactions to this revelation helped the Commission to switch to auctionned allocations after 2013. This evolution is unfortunately limited to the electricity sector for now. De Bruyn et al. (2010) and Alexeeva-Talebi (2011) use econometric tools and find that the other industrial sectors covered by the ETS pass the price of allowances through to end-users. These sectors will continue to receive free allowances and benefit from windfall profits at least until 2020.

5. The EU-ETS: a bargain for fraudsters?

Three types of fraudulent activities were committed in relation to the EU-ETS : Value-Added Tax (VAT) fraud, identity thefts by cyber-attacks (phishing) and recycling of Certified Emission Reduction (CER) offset credits emitted by the Hungarian administration. Only the latter had an influence on the environmental efficiency of the ETS, as the other two did not change the overall quantity of permits (De Perthuis, 2011).

Every market has his VAT fraudsters. In the EU-ETS case, it consisted of buying VAT-exempted allowances on a foreign account and, when selling them, charging the VAT to the local buyer without transferring it to fiscal authorities. Europol (Europol, 2010) assessed the fraud to 5 billion euros in untransferred taxes. Two factors eased these frauds. First, allowances have a high value added, are very liquid and are immaterial goods. Second, regulations greatly vary from one country to another, and are sometimes non-existent.

Crisis measures were taken in the most affected countries, such as France cancelling the allowances VAT regimes. Even if necessary, these changes probably only displaced the fiscal fraud to other European countries. On 16th March 2010, the Commission adopted a directive to change the way the VAT was perceived on carbon emissions allowances (dubbed *reverse charge mechanism*). Despite more than 100 arrests in Europe (Europol, 2010), some havens for VAT fraudsters within the EU territory could remain if this directive is not carefully implemented. It should be noted that the fraud could have been avoided, had the market been reserved for the operators of covered installations and some carefully registered ones (like financial institutions and accredited NGOs), instead of being open to anyone in order to maximise market liquidity.

A second form of fraud known as phishing occurred in late 2010 and the beginning of 2011. Several market actors (industrialists, governments, traders) were victims of cyber-attacks, identity theft or hacking in order to steal allowances. The theft was probably worth 3 million tonnes of CO2 in January 2011, or approximately 45 million euros. To block these attacks, the Commission froze transactions between registers on 19 January 2011, before progressively reopening the registers after security checks. Finally, the Commission replaced the 30 national registers with a single platform. One can blame the Commission for its naivety: the accesses to registers were, for a long time, less secure than online bank accounts.

The last case of fraud, CER recycling, resulted from a regulatory failure exploited until 2010. CER used by national installations for their compliance could then be resold on the international markets. After CER credits were emitted by the Hungarian government, they reappeared in the EU-ETS. In this case, the environmental integrity of the market was altered: a recycled CER allowed covering for two tonnes of CO2. The modification of the European regulation on registers in April 2010 (article 53) should prevent CER recycling. They are now blocked on “withdrawal accounts” after their use for compliance by market operators.

6. Does the EU-ETS make other climate policies irrelevant?

As the EU-ETS caps emissions for covered sectors, if the cap is binding enough to be effective (which is not obvious), a policy aimed at reducing emissions in the same sectors will not induce any emissions reductions in the short term: it will only decrease the demand for allowances and, therefore, their prices. One can apply this reasoning to many policies that, without the EU-ETS, would influence emissions either upward (like the anticipated closure of nuclear power plants in Germany after Fukushima) or downward (carbon tax or energy efficiency regulations). In addition, most of these policies only apply to part of the emissions covered by the EU-ETS.

Consequently, adding a mitigation instrument to the ETS violates the equimarginal principle and increases the global costs for a given cap of emissions, as these additional policies promote costlier options. This mechanism was quantified for a consequent number of policies, using methods from the sectorial models to the general equilibrium models. The policies in interaction with the EU-ETS which are the most extensively studied are the promotion of renewables (Lehmann and Gawel, 2013) and energy efficiency (Child et al., 2008). This approach seems to condemn the EU climate and energy package adopted in 2008, which combines emissions, renewables and energy efficiency targets.

However, it is based on a strong implicit hypothesis: that a carbon price is adequate to give the right incentives to low-carbon technologies investors. The question is to know whether the EU-ETS is adequate to guarantee that, in the short term agents take efficiently into account the social costs of emissions (static efficiency), and whether the development of new low-carbon technologies is indeed encouraged (dynamic efficiency). Several elements (uncertainty, knowledge spillovers, barriers to technology diffusion, inertia of investments) challenge this premise and justify other complementary policies.

The first condition for an efficient EU-ETS is that the carbon price indeed reflects the emissions externalities. The EU-ETS suffers however from many uncertainties, on the supply side (regulatory uncertainty) and on the demand side (economic context uncertainty). Lecuyer and Quirion (2012) find that when uncertainty is high, if there is a risk that the carbon price collapses to zero (which is confirmed by the history of many emissions trading schemes), adding another instrument aimed at reducing emissions in the covered sectors contributes to reducing emissions and increases the social welfare.

Moreover, a certain number of market failures can hinder the right perception of carbon price by economic agents (Gillingham et al., 2009). Linking the EU-ETS to a real-time information program on electricity production externalities or to a dynamic pricing instrument like feebates on electricity fares may create synergies between these two schemes and give better incentives to consumers to take into account the effect of their behaviour on the environment (Sijm, 2005). Specific instruments can also help to reduce split incentives issues, such as the landlord-tenant dilemma (financing energy efficiency works in rented housing).

Other studies suggest that the EU-ETS does not give a strong enough incentive for innovation and the deployment of emerging low-carbon technologies. Fischer and Newell (2008) find that in the presence of knowledge spillovers, even if the carbon price is still the main driver of investments, the optimal instruments portfolio includes a research subsidy and a green electricity subsidy. Some obstacles can hinder the effective diffusion of abatement technologies, in particular in capitalistic sectors such as the electricity market, but also in diffuse markets such as dwelling refurbishment. Barriers to entry are very important in the electricity production market. Some mechanisms designed to share some of the investment risk could contribute to levelling the playing field and promoting competition in electricity production (Antoci et al., 2012). In the residential sector, financial services (such as credits with low interest rates) for small investors can efficiently complement carbon pricing (Giraudet et al., 2011). Finally, Vogt-Schilb et al. (2012) find that the inertia of low-carbon technologies investment associated with differentiated abatement potentials for each technology makes the equalisation of marginal abatements between sectors non-optimal and could justify the implementation of differentiated complementary policies.

For all these rationales, the scope of the above-presented argument is too narrow, and is insufficient to condemn other climate policies covering the EU-ETS sectors. Admittedly, these policies decrease the price of allowances, but in their absence, the risk is high that climate policy would be reduced to short-term measures like substitution between the use of gas and coal electricity power plants. Waiting for these measures to be used to their full potential before investing in longer-term solutions like renewable energies does not constitute an optimal emissions trajectory.

Conclusion

Uncertain emissions reduction, unfair distributional effects, massive fraud... In the light of these conclusions, should we drop the EU-ETS? The answer would probably be "yes" if an alternative efficient policy could be considered in the short term.

A carbon tax would indeed be much preferable. In the case of climate change mitigation, all studies since Pizer (1999) have indicated the superiority of a price instrument over a quantity instrument. Unfortunately for economists, the reasons that led to the failure of the European carbon tax in the early 1990s remain, in particular the unanimity rule for fiscal decisions. Moreover, some of the problems caused by the EU-ETS (in particular, the unfair distributional effects due to the allowances allocation rules) may have been the necessary price, initially at least, to avoid the industry sinking the EU-ETS in the same way it did the carbon tax.

It seems however clear that some of the problems faced by the EU-ETS are caused by the "convert zealousness" demonstrated by the EU in terms of flexibility mechanisms. First, the great share of allowed offset credits contributed to the excess of allowances since 2008. Second, the fact that any natural or legal person could be part of the market facilitated fraud. Finally, the strong fluctuations of the carbon price are not incidental. Quite the contrary, they are inevitable because the supply of allowances is perfectly rigid, whereas the demand oscillates according to the economic context and the implementation of other climate and energy policies.

Consequently, it is impossible to prevent both the collapse (like in 2007 or currently) and symmetrically the soaring of the carbon price, which would lead to a fierce reaction of heavy industries in the name of carbon leakage and competitiveness issues. The uncertainty on the abatement costs makes the EU-ETS — a pure quantity instrument — a very imperfect substitute for a carbon tax. The tax is out of reach of the EU, but it is possible to make the EU-ETS evolve in order to regulate the evolution of carbon pricing: all it takes is to set a price floor and a price ceiling during the auctioning of allowances. The price floor was adopted for the Australian EU-ETS... before being suspended to allow for the linking between the EU-ETS and the Australian EU-ETS.[12] Unfortunately, the European Commission is still extremely reluctant to take this option because of arguments that are largely ideological (EuropeanCommission, 2012).[13]

The other policy option preferred by the Commission consists of setting aside a certain number of allowances from the market. While this would increase the carbon price at first, it would not sustainably reduce the uncertainty of carbon prices. It is hoped that the ongoing debate will lead to a withdrawal of this opposition and a progressive shifting towards a price instrument, applying recommendations formulated by economists more than ten years ago, without stopping halfway.

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[12] http://www.climatechange.gov.au/minister/greg-combet/2012/media-releases/August/JMR-20120828.aspx

[13] "Discretionary price-based mechanisms, such as a carbon price floor and a reserve, with an explicit carbon price objective, would alter the very nature of the current EU-ETS being a quantity-based market instrument. They require governance arrangements, including a process to decide on the level of the price floor or the levels that would activate the reserve. This carries a downside in that the carbon price may become primarily a product of administrative and political decisions (or expectations about them), rather than a result of the interplay of market supply and demand" (EuropeanCommission, 2012).

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