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Communication

Exxon is right: Let us re-examine our choice for a cap-and-trade system over a carbon tax

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A R T I C L E I N F O

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ABSTRACT

This commentary examines the impact of the recently launched European Union Emission Trading System (EU ETS) in terms of emission reductions and cost to the public. The study points out that a capand-trade system may not be the most cost-efficient mechanism to reduce greenhouse gas emissions. It also lists seven main differences between such a system and a carbon tax along the following issues: amount of emissions reduced; flow of revenue to the public purse; cost of the system to the public; marginal cost of carbon emission reductions to the firm; generating excess rent; price setting mechanism and stability of system; as well as duration and commitment. When looking at emission reductions along these dimensions, it becomes clear that an internationally coordinated carbon tax may be a quicker and cheaper way to reduce greenhouse gas emissions worldwide.

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In early January 2009, Exxon Mobil's Chairman and CEO Rex Tillerson made a statement supporting a carbon tax rather than a cap-and-trade system, because he believes it to be a more direct, transparent and effective approach to cutting greenhouse gases.¹ After having followed climate change mitigation policy for over eight years, I have to say that for the first time, I agree with Exxon. It appears that their calculations and mine have come to the same conclusion: the massive carbon market that we have constructed under the Kyoto Protocol and the European Union Emission Trading System (EU ETS) has cost a lot of money but it has not reduced emissions. If reducing greenhouse gas emissions was the aim of the carbon market, it has failed miserably. I say 'if', because it is striking how the EU ETS, for example, has been incredibly successful in transferring money from taxpayers and consumers to governments and large utilities yet so incredibly unsuccessful in reducing greenhouse gas emissions. In Poznan, a European Commission representative called the first phase of the EU ETS a 'learning phase' that may have brought windfall profits to utilities in the region of 70 billion Euros²—a very expensive educational experience for our EU and national policy-makers. Seeing that we did not reduce emissions, it can almost be labeled corruption, or at least deceit of the public.

The EU ETS gobbled up taxpayers' and consumers' money in three ways: first, by placing on the asset side of companies'

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balance sheets emission allocations that were given to them for free by their government, firms were able to increase their value, because the allocations had monetary value as soon as trading opened. Second, utilities informed their customers that an increase in electricity prices was necessary now that carbon pollution has a price under the EU ETS, despite the fact that they were allocated sufficient pollution permits for free. Finally, national governments across the EU in addition to the EU administration itself had to build an enormous bureaucracy to deal with the allocation, trading and accounting of the units. Many companies took legal action to challenge their allotted amounts of pollution permits which increased governments' workloads.

It is not surprising then that there is some skepticism towards emission trading in Europe. Also, taxes are not necessarily demonized in Europe as much as they are in the US but instead often seen as a way to guide behavior and raise capital for a welfare state. The question of choosing between a carbon tax and a cap-and-trade system can therefore be posed in Europe and now, thanks to Mr. Tillerson, also in the USA. In my opinion, we should be asking what the difference between the two systems is before we place all our eggs in one basket. I have come up with seven differences to be contemplated, but this is not exhaustive.

1. Difference 1: amount of emissions reduced

A *carbon tax* is usually negotiated at the national level. The level of the tax therefore depends on the national political climate. Emissions will be reduced as long as tax savings are higher than



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¹ http://www.independent.co.uk/news/world/americas/oil-giant-comes-in-from-the-cold-1297558.html

 $^{^2\} http://regserver.unfccc.int/seors/attachments/file_storage/3p5hkuxvz9i4ety. pdf.$

the cost of reduction. There is no upper limit to possible emission reductions. On the other hand, a *cap* on emissions means a cap on emission reductions. There will not be more emissions reduced than the cap indicates across the system. Since the cap is set through political bargaining across countries or parties, it is often set at the lowest common denominator. This mark then becomes the upper limit of emission reductions as parties will sell off emission reductions that are made beyond their commitment. Emissions are reduced as long as the permit price is higher than the cost of the emission reduction. The price varies constantly with market movements. An additional component of any governance mechanism can be dynamic benchmarking where all firms are required to match the best performance in the market after a set timeframe.

2. Difference 2: flow of revenue to the public purse

Both a carbon tax and a cap-and-trade system that auctions off certificates generate revenue for the government. This revenue can be used to sponsor green projects, such as renewable energy, that require high up-front investments. A *carbon tax* generates continuous revenue flows, but it is uncertain how much will accrue over time as industry adjusts to the tax and lowers emissions. The revenue stream can be expected to increase in boom times and decrease in a recession as industrial activity slows. The *cap-and-trade* model has more certainty in terms of allocated amounts but greater uncertainty in terms of the price per allocated unit, as that is determined by the auction. The revenue income to the government is a one-off payment.

3. Difference 3: cost of the system to the public

Governments have been collecting taxes for centuries. Adding another type of tax is not that difficult to do administratively. Measuring emissions could be done in a standard, verifiable way. There could be some time and effort spent on political wrangling to come up with the tax rate at the start of the system, but this is also within common political practice. A cap-and-trade system requires the government or another central player to take on the function of a bank. Accounts must be set up for each participant, emission reduction allocations have to be calculated and verified, units have to be traded instantly and each party has to keep their commitment at the end of the trading period. A compliance mechanism must be put in place, with possible trading penalties, dealing with a possible shortage or flooding of units by the end of the trading period. The first phase of the EU ETS saw massive amounts of complaints by firms on the calculation of their permits and eventually a substantial over-allocation of permits in almost all participating EU countries. At the UN level, the Kyoto Protocol has required the climate secretariat to employ a great number of people to cope with all the intricacies of carbon trading. In addition, some of this activity has been outsourced to companies at the cost of the public purse. Financial institutions will also be allocated some of this funding as they are needed as mediators in trading transactions.

4. Difference 4: marginal cost of carbon emission reductions to the firm

The cost of carbon emission reductions in an economy is low at first, as 'low-hanging fruit' are addressed, and then increases as carbon reductions become more difficult to obtain. Eventual structural change may be quite costly. Having said that, as technology matures, it may actually become cheaper to reduce emissions over the long term. A *carbon tax* rewards emission reductions at an equal rate no matter how much the reduction cost. Firms will reduce emissions as long as the cost of reduction is lower than the carbon tax rate. A tax can be adjusted over time to steer emission reduction volume. A *cap-and-trade* system addresses 'low-hanging fruit' emission reductions quickly because they are highly rewarded. As the price decreases with the flooding of the market with these cheap emission reductions, more difficult reductions will receive a lower reward. Overall then, structural change is not rewarded as highly as making the current system more efficient. The price should decrease towards the end of the commitment period, although there may be a spike at the end if emission calculation information was not accurately communicated.

5. Difference 5: generating excess rent

A cap-and-trade system inherently bears potential excess rent for the participants and 'helping agents'. Firms that reduce emissions more cheaply can benefit from selling units strategically. As the price fluctuates, there is much room for speculation, especially since there is always the gamble towards the end of the commitment period to see whether the participants have arrived at the emission reductions and publically available calculations were accurate. There is also room for arbitrage between systems, for example, through the certificates generated by the Clean Development Mechanism, which are tradable in different systems. Since this revenue stream is not mediated by a public body, it is not clear what that money will be spent on. If it is spent on supporting traditional ways of production and consumption, it may effectively contribute to an increase in carbon emissions. A carbon tax also requires 'helping agents' to advise firms on their reduction strategies and decision-making on technology as well as measuring emissions at the firm level, but not to the same extent as a cap-and-trade system would. Most of the revenue generated will accrue to the government that is collecting the tax. This money could be earmarked for green projects.

6. Difference 6: price-setting mechanism and stability of system

A *carbon tax* provides a clear price signal. The price of carbon emissions is stable until there is a change in national policy or governing political party. This price can be adjusted over time but it will not fluctuate as greatly as it would in a *cap-and-trade* system. The latter is due not only to supply and demand adjusting constantly to new information, but also to political bargaining. As parties are allowed to join or leave the system, the volume of units may change over time, even within a commitment period. Also, parties may default on their emission reductions or inventory calculations and therefore leave the system with a void of units. In fact, any miscalculation or misrepresentation of party emissions will have a significant impact on the price of emissions, and therefore on the whole system. This is not the case for a tax.

7. Difference 7: duration and commitment

A *tax* is usually set for a particular timeframe and then potentially renewed, adjusted or dismissed. It is therefore dependent on the political climate in the country. The actors affected by the tax will have to measure and report their emissions and pay the appropriate tax to the government. Having said that, carbon taxes can also be synchronized across countries, but there has been less of a track record of doing that historically. A *cap-and-trade* system can be set up locally but has been in the past negotiated internationally. Parties therefore cannot easily dismiss the system, as such a move would be subject to international pressure. Since it generates excess rent to external parties, other actors have a vested interest in pressuring governments to stay within the system. This generation of excess rent may be seen as a driver and an incentive to commit to emission reductions. Once an emission trading regime is up and running, it would be difficult to abandon, considering the large amount of money and effort that has been spent on building the governance structure, hiring employees to deal with the bureaucracy and learning on the part of all actors involved.

8. What is it that we want?

When we look at the intricacies of the systems, we can see that there are indeed subtle but potentially far-reaching differences between a cap-and-trade model and a carbon tax. When we ask the question of which system to choose as a society, we have to be clear on what we want as a deliverable. This should not be a difficult question to answer because, clearly, we want a system that lowers emissions at the lowest cost to society and provides environmental integrity. The above assessment demonstrates that a carbon tax lowers emissions quickly with lower costs to the public and has no upper bounds in terms of reduction potential. A cap-and-trade system, on the other hand, locks in a variety of actors and therefore ensures commitment from various sides and makes it more likely to negotiate an international arrangement.

In Europe, the cap-and-trade system that was initially proposed by prominent Americans, including Al Gore, has not been a great success in terms of lowering global emissions. Its premise to reduce emissions at the lowest cost is questionable, because when looking at the economy as a whole such a system may require more funds to be operational than a carbon tax. Furthermore, emission trading has not lived up to its promise of setting a clear price signal, as the market has been very unstable.

Emission trading can only work for the climate if ambitious targets are set and enforced. From our experience over the decade since the Kyoto Protocol, this has not happened. Let us follow Exxon's lead and call for an internationally coordinated carbon tax. Welcome aboard, Mr. Tillerson! Our policy-makers need to start drafting an effective tax reform to reduce our dependence on fossil fuels. After all, our governments will not need a 'learning phase' to implement a new tax regime. When it comes to climate change, we do not have time on our side.

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