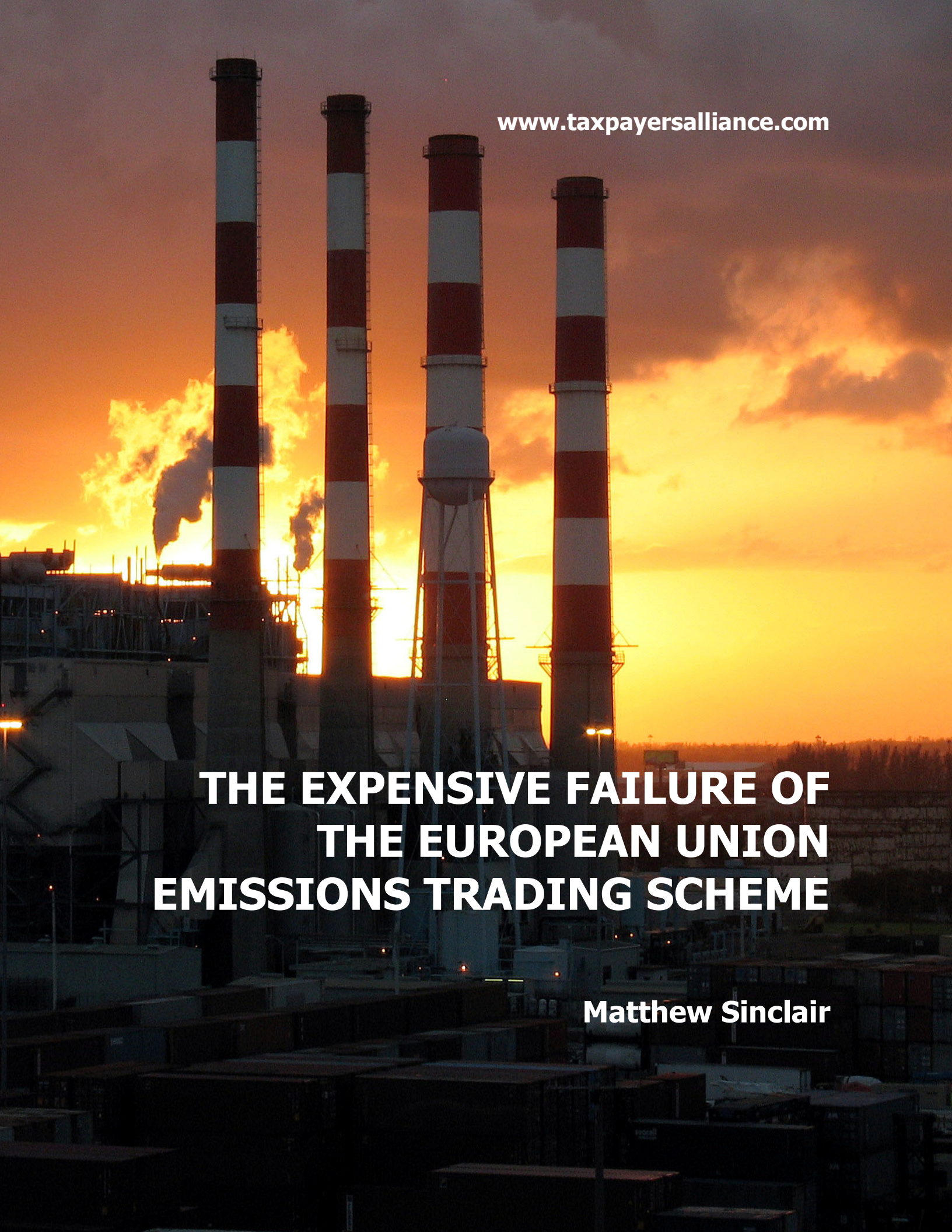

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THE EXPENSIVE FAILURE OF THE EUROPEAN UNION EMISSIONS TRADING SCHEME

Matthew Sinclair

Contents

About the author

Matthew Sinclair is the Research Director at the TaxPayers' Alliance. Since joining the TPA in May 2007, he has produced major reports on government capital procurement, environmental policy, NHS performance, the dynamic effects of corporate tax cuts, the economic and social burden of crime and the effects of aid policy, among others. He frequently represents the TaxPayers' Alliance on the television and radio, particularly on economic matters.

Executive Summary

This report presents new evidence that the European Union Emissions Trading Scheme (ETS) has failed to perform and is imposing serious costs on ordinary families. The main effect of the Scheme is to increase the cost of energy for households, businesses and other organisations. This increases household bills, but also increases business running costs and the cost of running public services such as hospitals.

The burden on consumers since the scheme was introduced on 1 January 2005 has been significant:

- We estimate that the ETS **cost British consumers nearly £3 billion in 2008**, equivalent to **around £117 per family**, by increasing the cost of energy.
- From its introduction to the end of 2008, we estimate that the scheme has cost **consumers across Europe between €46 billion (£33 billion) and €116 billion (£83 billion)**. Our **central estimate** is that the scheme has **cost consumers €93 billion (£67 billion)**. That is equivalent to around **€185 (£132) for every person in the ETS participating countries**. That is despite the emissions price having collapsed several times for prolonged periods.
- The report also presents estimates of the cost to consumers in every country participating in the scheme, in each year of the scheme's operation.

The British Government has not just accepted this significant burden on consumers, but has actively worked to increase it. Despite continuing rhetoric about reducing fuel poverty, the Government in fact used taxpayers' money to assist the European Commission in legal attempts at the European Court of Justice to forcibly reduce the supply of emissions allowances and thereby increase the emissions price further. The Treasury Solicitor's Office, responding to a TaxPayers' Alliance Freedom of Information request, has revealed the amount spent on two recent cases, both of which the Commission and the British Government lost:

- The cost of the Government's intervention in T-183/07 **Poland v Commission** was **£30,698.10.**
- The cost of the Government's intervention in T-263/07 **Estonia v Commission** was **£12,201.59.**

The report also looks at other problems with the design and operation of the scheme:

- The emissions price has been very volatile, collapsing by a third or more several times since the ETS was introduced. That makes it harder for businesses and families to plan and forces them to provide for more frequent swings in their energy costs; the financial cost of the scheme to consumers is compounded by its high volatility. That

high volatility also undermines the effectiveness of the scheme. Volatility in the price is likely to prove an enduring feature of the ETS carbon market.

- As the ETS pushes up electricity prices, it imposes the greatest burden on the poor and elderly, who spend the highest proportion of their income on electricity. And, on manufacturing industries where energy costs are a substantial portion of their total production costs. Energy firms make substantial windfall profits, even in competitive energy markets. Even when permits are auctioned, the scheme is still a highly regressive tax.
- The design of the scheme means that it doesn't balance the costs and benefits of cutting emissions, and can impose a massively disproportionate burden on consumers if the cost of cutting emissions is found to be higher than those managing the scheme expect. The price is already higher than many social cost estimates from prominent academics like William Nordhaus and surveys of the academic literature.

The Emissions Trading scheme isn't performing and is costing ordinary families and manufacturing industries a fortune. It should be abolished.

1. Introduction

The European Union Emissions Trading Scheme (ETS) was introduced in January 2005 as the centre piece of the European Union's policy response to the threat of climate change. It is the largest cap and trade scheme in the world, covering over 11,500 installations across all of the member states and Norway.

The theory behind the scheme is simple: a limit is placed on the amount of carbon dioxide that can be emitted in total and firms are then allowed to trade the right to emit, which produces an effective price on emissions and should mean that reductions take place where it is most affordable to do so.

In practice, things have been far more complex. There have been disputes, some reaching the European Court of Justice, over the National Application Plans drawn up by the different countries, which have to set out the right level of emissions for the thousands of installations covered by the scheme. The emissions price has been so volatile that energy companies and environmentalists have called for intervention to put in place a minimum price. There has been concern that energy companies have reaped billions in windfall profits. Most importantly, the scheme appears to have imposed a substantial bill on consumers and manufacturing industries.

Despite all this, European Union officials and many participating governments continue to hold the scheme up as a success and see their main task as expanding its scope and ambition. Jos Delbeke, the Deputy Director General of the Environment Directorate-General in the European Commission, recently told an audience in Berlin: "We are on the right path. We should embrace the opportunity offered by emissions trading- to go global and to reduce emissions worldwide."[1]

With the ETS well into its second phase, and other countries considering similar policies, it is the right time to try and assess whether it can function effectively and what price consumers have paid.

Section 2 of this report looks at the volatility of the emissions trading market and why the volatility is likely to prove an inherent feature of the ETS, however it is constituted. It then sets out how the design of the scheme means that the burden imposed on consumers can quickly become disproportionate, as the scheme doesn't balance the costs of reducing emissions against other priorities.

[1] Delbeke, J. *'Environmental policy in times of economic crisis – the example of the EU ETS'*, Speech in Berlin on accepting the Adam Smith Prize 2009, http://ec.europa.eu/environment/climat/emission/pdf/speech_berlin_290509.pdf, 29 May 2009

Section 3 examines why the ETS has produced substantial windfall profits for industry and burdens the poorest.

Section 4 presents new evidence suggesting that the scheme has already created significant costs for ordinary people.

Section 5 outlines the amount that the British Government spent supporting the European Commission in cases against Poland and Estonia where, if the Commission had won, it would have increased the burden on consumers.

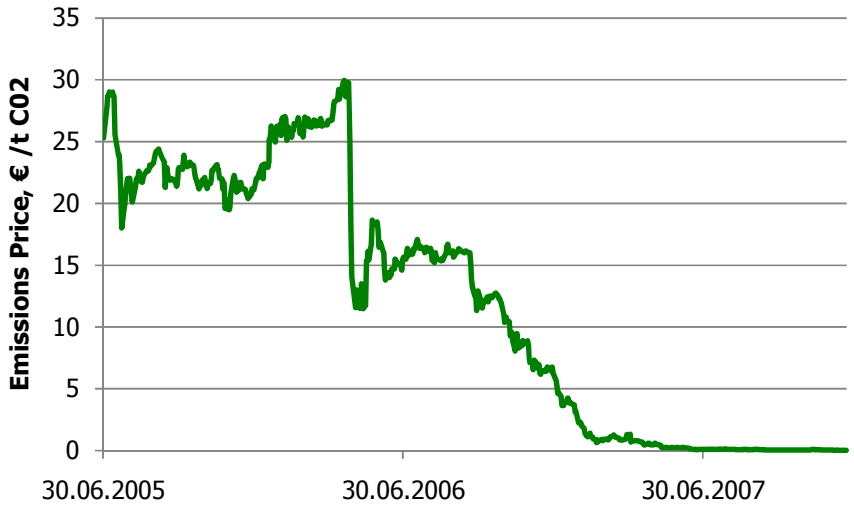
Finally **Section 6** concludes the report and argues that the scheme should be abolished.

2. Volatility

The emissions price has rapidly fallen by a third or more a number of times since the ETS was put in place in 2005:

- In 2005, the price fell from €29 per tonne on 11 July to €18 per tonne on 22 July. It then slowly recovered to just under €30 again by 24 April 2006 before collapsing again to just over €14 by 28 April. It then slowly declined effectively to zero for the rest of Phase I, falling below €1 per tonne in February 2007 and then continuing to decline.[2] This complete collapse in the price has been attributed to many of the participating countries allocating an excessive number of allowances, with the United Kingdom a notable exception.[3]

Figure 1: Emissions price, € /t CO_2, June 2006 to November 2007



- In 2008 the price fell from around €28 per tonne in July to around €15 in December. It declined further to just over €8 per tonne in February 2009. It has since recovered somewhat to a range between €13 and €15 per tonne.[4] This two thirds fall in the price, and stabilisation at half the original price, is generally attributed to the fall in economic activity in the recent recession reducing demand for emissions allowances.

[2] EEX Market Data
[3] Open Europe *'The high price of hot air: Why the EU Emissions Trading Scheme is an environmental and economic failure'*, 2 July 2006
[4] EEX Market Data

Figure 2: Emissions price, € /t CO_2, June 2008 to October 2009

This substantial volatility in the emissions price has important consequences:

- It makes it harder for firms and families to effectively manage their affairs as it makes their costs less predictable. Providing for more pronounced and frequent swings in their energy bills can clearly be expensive, particularly for those companies and households where energy is a large part of their total costs. That has to be understood as a significant, though difficult to quantify, additional cost of the ETS to consumers. The burden of the scheme is compounded by its unpredictability.
- It weakens the incentive produced by the carbon price to make investments that reduce emissions. A central objective of the ETS is to encourage investment in reducing carbon dioxide emissions. As Oliver Tickell, a prominent environmentalist, has said: "Wild fluctuations create a risk that deters some investors altogether and makes others demand a significant risk premium, putting up the price of capital."[5] EDF Energy have called for a floor on the carbon price to "encourage investment in low-carbon energy like nuclear power".[6]

Fixing the price would call into question the entire point of the trading scheme. The authorities responsible for the scheme believe that a clearer, central cap declining at 1.74 per cent each year will offer a more solid basis for the market and reduce volatility.[7] However, such hopes are likely to be disappointed. The following identity, which gives a simple picture of the key factors driving demand for allowances, helps to explain why:

Emissions = GDP x Emissions Intensity

[5] Tickell, O. 'Carbon: a market we can't allow to fail', *Guardian*, 29 January 2009
[6] Reuters *'EDF Energy calls for UK carbon floor price'*, 26 May 2009
[7] Delbeke, J. *'Environmental policy in times of economic crisis – the example of the EU ETS'*, Speech in Berlin on accepting the Adam Smith Prize 2009, http://ec.europa.eu/environment/climat/emission/pdf/speech_berlin_290509.pdf, 29 May 2009

While it can be possible for governments, companies and individuals to plan steady improvements in their carbon efficiency – and reduce their emissions intensity, demand for emissions allowances will also be driven by economic growth or recession. This can be seen in the recent steep fall in the price as a result of global economic downturn.

Changes in demand for emissions allowances are therefore unpredictable and have dramatic effects on the emissions price as supply is fixed. This is similar to the situation in the British housing market, where planning regulations limit supply meaning that demand is reflected almost entirely in the price. With a fixed supply of allowances, increases or decreases in demand are entirely reflected in the price. That is why other emissions trading schemes have seen similar volatility[8] and the effectiveness of the ETS is likely to continue to be undermined by a failure to produce a stable price.

While volatility in the price has so far taken the form of collapses, there is no reason to think that similar volatility cannot take the form of a sharp rise in prices:

- Just as the recession has seen the price collapse, unexpected rises in economic growth could increase demand for allowances and lead to rapid rises in the price.
- It may not be possible to improve carbon efficiency at the rate envisioned by those setting the ETS cap on emissions. Again, once that was appreciated it could lead to rapid rises in the price.

This is critical because the scheme can easily impose costs disproportionate to its objectives:

- Prominent academics have produced a range of estimates of the social cost of carbon dioxide emissions, the cost imposed on society now and in the future by the choice to emit. William Nordhaus, sometimes referred to as the "father of climate change economics", produced an estimate of $7.40 per tonne of CO_2.[9] Richard Tol has produced a survey of 211 estimates which suggests a social cost of carbon of $6.82 per tonne of CO_2 (converted from $25 per tonne of carbon at a rate of 100:25.29) and that newer estimates tended to suggest lower values.[10] The cost is projected to rise over time, but the current price under the ETS, of around €14 per tonne, is already higher than those social cost estimates and expected to rise significantly. That suggests the ETS may impose a burden disproportionate to its objectives even without being combined with other policies in this area like renewable energy subsidies and mandates.
- There is clearly uncertainty over both how large the damages from global warming will be and over how expensive it will be to avoid them. The cap and trade approach

[8] Green, K. P., Hayward, H. F. & Hassett, K. A. 'Climate Change: Caps vs. Taxes', *American Enterprise Institute*, June 2007
[9] Nordhaus, W. *'The Challenge of Global Warming: Economic Models and Environmental Policy'*, 24 July 2007
[10] Tol, R. S. J. 'The Social Cost of Carbon: Trends, Outliers and Catastrophes', *Economics Discussion Papers*, 2007

of the ETS does not strike a balance between the costs and benefits of reducing emissions. It could force families and firms to pay an excessive price to make cuts in emissions that could not be justified in a cost-benefit analysis, if the cost of reducing emissions is higher than those setting the target expect.

The high volatility of the carbon price doesn't just undermine its success. It threatens to impose huge and disproportionate costs on ordinary people and industry if cutting emissions turns out to be harder than those running the scheme expect.

3. Windfall profits and regressive taxation

Energy companies make windfall profits under the ETS. These windfall profits have been misunderstood as the product of firms abusing market power in some way, in fact the windfall profits are likely to be greatest in a competitive market. This point is quite counterintuitive but accepted within the academic literature on the ETS:

- Allowances are given to the firms for free but they are scarce and have a value, as can be seen from the price in the carbon market.
- That means that, whether firms are buying the allowances in the market or using those they have been freely allocated, the need to hold them pushes up the cost of production relative to not producing and selling the allowance or not buying it in the first place.
- Increasing the opportunity costs of production increases the price those firms charge consumers. All firms need to hold emissions allowances and, therefore, face the same costs and cannot undercut their rivals.

Another description of the process is provided in a Ruhr Economic Paper by Manuel Frondel, Christoph M. Schmidt and Colin Vance:[11]

> *"Electricity markets follow the same economic laws as other markets, but with some important particularities. Two key properties of electricity are that, first, it cannot be stored at low cost in large quantities and, second, its demand is highly price-inelastic in the short term, but subject to substantial temporal fluctuations. These properties imply a high degree of volatility of electricity prices. In the public debate, these substantial fluctuations are frequently misinterpreted as a sign of lacking competition among electricity producers. In a similar vein, public skepticism was also aroused by the ETS-induced increase in electricity prices following the largely cost-free allocation of CO2 emission allowances.*
>
> *Both phenomena, however, cannot be taken as indicators for the presence of market power. Rather, the electricity-price-raising impact of certificates would also arise under perfect and imperfect competition alike. Regardless of whether certificates are distributed at no cost or have to be purchased, they have a value that can be observed on a daily basis at exchanges such as the Leipzig Power Exchange. Because of the possibility to sell certificates and obtain a profit, a rational electricity supplier will only produce a megawatt hour (MWh) of electricity if the profit from electricity generation is at least as high as the revenue that would be garnered from selling the otherwise*

[11] Frondel, M., Schmidt, C. M. & Vance, C. 'Emissions Trading: Impact on Electricity Prices and Energy-Intensive Industries', *Ruhr Economic Papers*, #81, December 2008

required certificates at the market. The electricity price that a rational supplier therefore demands should cover production- and opportunity costs, where in this case the opportunity cost originates from the certificates' value. It bears noting that taking account of opportunity cost is not specific for the analysis of electricity prices. Rather, the concept of opportunity costs is deeply rooted in economic reasoning, and is applicable in many contexts.

Although opportunity costs are not incurred in the same sense as the actual costs associated with inputs to electricity production, such as natural gas, this kind of cost is nevertheless equally price-relevant: Irrespective of whether an emission allowance has been obtained via grandfathering or through an auction, the electricity producer always has the option of selling it at the exchange, rather than actually using it in the production process. That electricity prices need to reflect this option is independent of whether individual suppliers can exercise market power and of the allocation mechanism in place, be this grandfathering, auctioning, or some mixture of the two. Thus, the suggestions by politicians, consumers, and also cartel offices that electricity producers not include the value of grandfathered certificates in electricity prices is fundamentally at odds with free-market principles. Were the electricity sector forced to do so, rational electricity producers would certainly reduce production, thereby driving up electricity prices to the point that the sale of certificates would become the unattractive alternative relative to production. As a result, market laws ensure the inclusion of the certificates' value in the electricity price even in the presence of command and control measures."

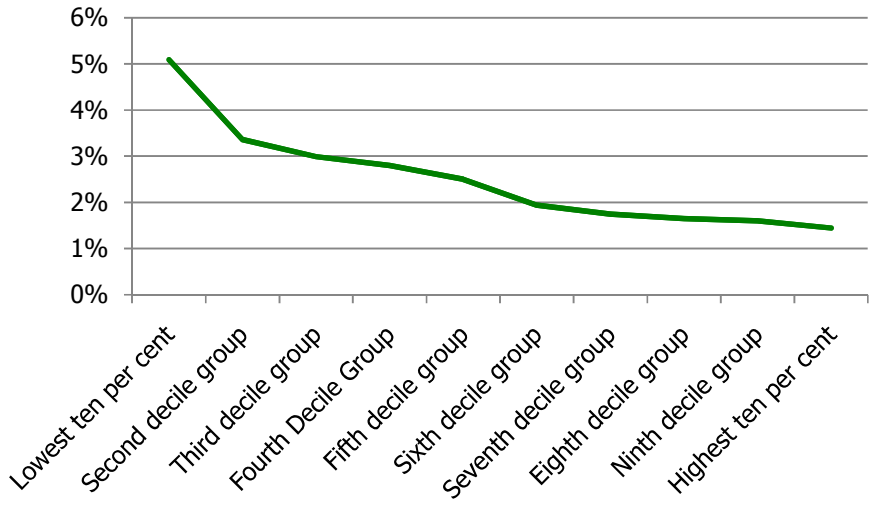
As a result, much of the burden on consumers from the ETS is a transfer to energy companies. There are clear concerns about the scheme providing such a windfall to the firms. Increasingly, permits are going to be auctioned, but substantial windfall profits will continue at least until 2021.

The increase in electricity prices also does not affect everyone equally:

- As figure 3 shows, those on lower incomes tend to spend a higher proportion of their income on electricity.[12]

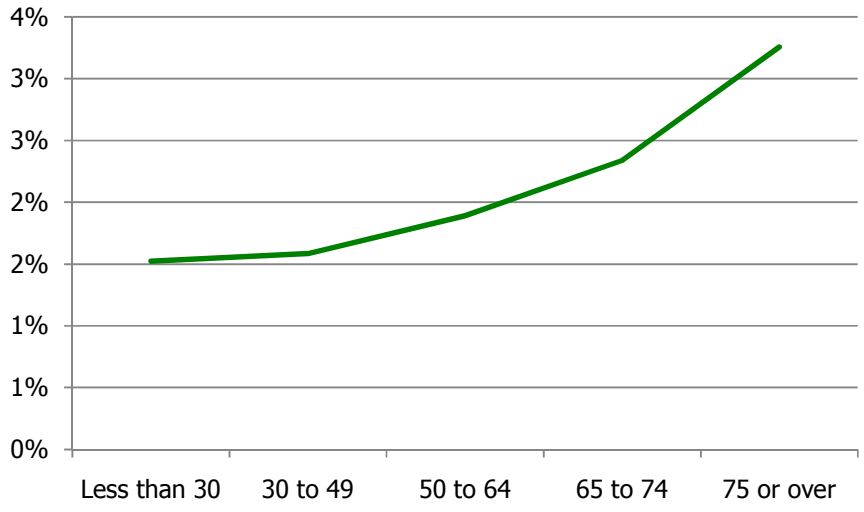
[12] Office for National Statistics, *Annual Survey of Hours and Earnings 2008* and *Family Spending 2008*

Figure 3: Spending on electricity as a percentage of gross income, by income decile



- As figure 4 shows, older people tend to spend more on electricity, as a proportion of their total expenditure, as well.[13]

Figure 4: Spending on electricity as a percentage of total expenditure, by age group

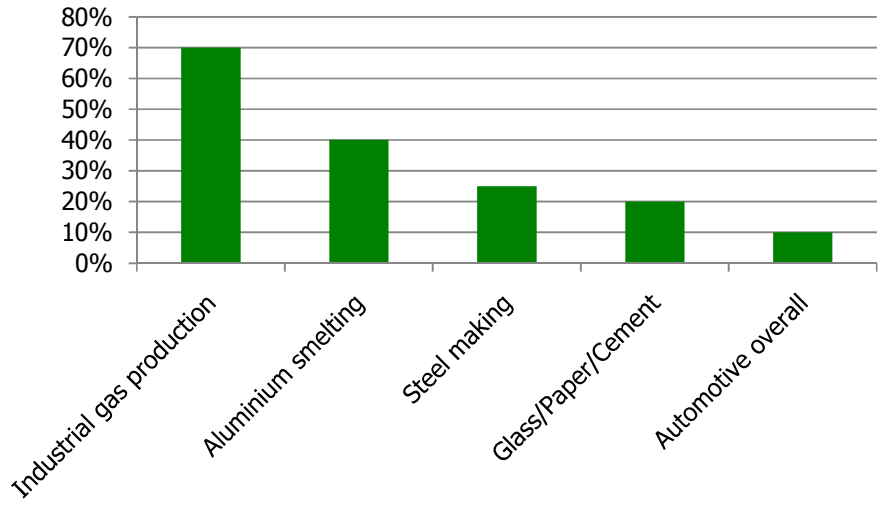


Needless to say, a transfer from the poor and elderly to energy companies is one that policymakers would normally avoid. Plans to move towards auctioning will make the scheme operate more along the lines of a tax, as the revenue would go to government, but it would be a very regressive tax imposing the greatest burden on the worst off and most vulnerable.

[13] Office for National Statistics, *Family Spending 2008*

Energy is also a substantial portion of the total production costs of many significant manufacturing industries, these rough figures are from industry sources:

Figure 5: Energy as a percentage of total production costs, by industry



Increasing costs to manufacturing firms has serious negative effects:

- Industry will struggle to compete, with jobs and income going to countries without such a burden on their manufacturing firms.
- If manufacturing capacity is moved abroad then emissions will not be cut at the global level.

While governments may attempt to help manufacturing industries threatened by these policies, such an increase in dependency on government assistance is likely to make the industry and the wider economy less competitive over time.

4. The cost to consumers

As explained in **Section 3**, in a perfectly competitive market the entire carbon price would be passed on to consumers. It is widely expected though, that for a number of reasons such a result in unlikely and a fraction of the carbon price will be passed through to consumers:

- Prices may be regulated, particularly in the electricity market.
- Companies may decide to restrain price rises in order to promote their political interests. In particular, electricity companies may be aware that perceived windfall profits will hasten moves to auction allowances and thereby significantly increase their costs.
- Uncertainty over the price of emissions and the actions of other energy companies may cause firms to restrain price increases, in order to avoid any risk of losing market share.

While it is not possible to use this expression in practice, the cost of the ETS to consumers can theoretically be summarised as follows:

$$\sum_{e=1}^{n} E(p_e)\beta_e$$

Where,

p = Price;
β = Pass-through rate;
e = Tonne of carbon dioxide emitted, and
n = Total number of tonnes of carbon dioxide emitted.

I.e. each tonne of carbon emitted will cost consumers the price the allowance might have expected to raise multiplied by the rate at which the carbon cost is passed-through to consumers in that particular instance.

That formula cannot practically be used to assess the cost to consumers of the ETS. There are two means by which it could be possible to estimate the effect of the ETS on prices:

1) Model the pattern of prices, based on variables such as fuel prices, before the implementation of the ETS then work out the difference between the modelled and actual prices, attributing the difference to the effects of the ETS.

2) Use annual data on average allowance prices and total ETS emissions from different countries combined with existing estimates of pass-through rates to produce a direct approximation of the cost to consumers

There are drawbacks to both approaches. The first approach is extremely vulnerable to omitted variable bias. If there were any other changes that occurred around the time of the introduction of the ETS that are not accounted for in the model, then it will produce extremely unreliable results. The second approach relies upon using existing estimates of the extent to which carbon costs are passed through that may not generalise well. For example, pass-through rates may increase or decrease over time and they are likely to vary significantly between countries.

For our report, we have taken the second approach. The risks of specifying the model incorrectly when using the first approach are extremely significant, particularly with an extremely complex and rapidly changing mixture of other interventions in the critical energy market. For example, Britain had an emissions trading scheme before the EU ETS, and its effect would need to be disentangled from the background pattern of energy prices, and most other countries have other major interventions in the market such as renewable energy subsidies.

The expression used in our research to calculate the total cost to consumers of the ETS between 2005 and 2008 is the following:

$$\beta \sum_{t=2005}^{2008} \left(\sum_{c} E_{ct} P_t \right)$$

Where,

E = Emissions;
P = Price;
β = Pass-through rate;
t = Year, and
c = Country.

This formula requires data on emissions, allowance prices and existing estimates of pass-through.

Emissions

The Community Independent Transaction Log records the issuance, transfer, cancellation, retirement and banking of allowances under the Emissions Trading Scheme. Annual data is released that provides the amount of carbon dioxide emitted from all of the around 10,500 installations across all of the 27 European Union member states and and Norway that take part in the ETS.[14] The data covers the period from 2005, when

[14] The full tables are available from http://ec.europa.eu/environment/climat/emission/citl_en.htm

the scheme was started, through to 2008. Extracting the totals for each country, for each year, gives the totals show in Table 1.

Table 1: Emissions by country, by year under the European Union Emissions Trading Scheme

Country	ETS Emissions, t CO_2				
	2005	2006	2007	2008	Total
AT	33,372,821	32,382,799	31,751,160	32,003,648	129,510,428
BE	55,363,198	54,775,289	52,795,293	55,463,954	218,397,734
BG	-	-	39,181,984	38,026,429	77,208,413
CY	5,078,877	5,259,273	5,396,164	-	15,734,314
CZ	82,454,615	83,624,950	87,834,755	80,075,385	333,989,705
DE	474,990,758	478,025,969	487,137,934	472,599,758	1,912,754,419
DK	26,475,717	34,199,587	29,407,354	26,545,260	116,627,918
EE	12,621,813	12,109,274	15,329,927	13,540,891	53,601,905
ES	183,626,970	179,724,855	186,573,429	163,454,804	713,380,058
FI	33,099,614	44,621,402	42,541,319	36,161,200	156,423,535
FR	131,263,785	126,979,046	126,634,804	123,442,083	508,319,718
GB	242,513,089	251,159,830	256,581,150	265,031,078	1,015,285,147
GR	71,267,735	69,965,144	72,717,005	69,853,893	283,803,777
HU	26,161,620	25,845,884	26,836,732	27,245,046	106,089,282
IE	22,440,996	21,705,324	21,246,113	20,381,698	85,774,131
IT	225,989,343	227,439,394	226,388,035	220,661,994	900,478,766
LI	-	-	-	19,883	19,883
LT	6,603,859	6,516,901	5,998,734	6,103,720	25,223,214
LU	2,603,349	2,712,972	2,567,231	2,098,895	9,982,447
LV	2,854,473	2,940,672	2,849,195	2,743,538	11,387,878
MT	1,971,258	1,985,765	2,027,364	-	5,984,387
NL	80,351,083	76,700,979	79,874,453	83,489,847	320,416,362
NO	-	-	-	19,342,240	19,342,240
PL	203,149,562	209,616,285	209,618,309	204,107,419	826,491,575
PT	36,425,912	33,083,868	31,229,218	29,914,270	130,653,268
RO	-	-	69,616,142	63,647,190	133,263,332
SE	19,381,609	19,888,862	19,040,519	20,007,104	78,318,094
SI	8,720,548	8,842,181	9,048,633	8,860,105	35,471,467
SK	25,231,753	25,543,225	24,516,816	25,488,101	100,779,895
Total	**2,014,014,357**	**2,035,649,730**	**2,164,739,772**	**2,110,309,433**	**8,324,713,292**

Prices

Data on the prices for allowances under the ETS is produced by European Energy Exchange AG (EEX). Their market data provides daily prices since the ETS was launched.[15] Unfortunately, there are not complete uninterrupted series for either of the two metrics presented: "Carbix EUR/EUA" or "Settlement Price EUR/EUA". The best measure is an average of the settlement prices weighted by daily volume, as that gives the best guide to the amount that someone selling an allowance could normally expect to get in return. Fortunately, the two metrics produce similar results. In 2006, for which uninterrupted series for both are available, the Carbix series had a linear average of 17.4 against a weighted average of 17.1 for the settlement prices.

As such, in those years, 2005 and 2008, in which the settlement price is interrupted we have combined the averages of the two series weighted by the number of days that they are used to account for.

The final average prices for each year are shown in Table 2.

Table 2: Average prices for emission allowances by year

	2005	2006	2007	2008
Price, € /EUA	20.40016	17.09592	1.49138	17.37918

[15] The full tables are available from http://www.eex.com/en/Download/Market%20Data

Carbon costs

Multiplying the average prices by the emissions for each year gives an estimate of cost to consumers if 100 per cent of the of the carbon cost were passed on. Those estimates are shown in Table 3.

Table 3: Carbon cost by country, by year under the European Union Emissions Trading Scheme

Country	Carbon Cost, €				
	2005	2006	2007	2008	Total
AT	€680,810,958	€553,613,897	€47,353,051	€556,197,096	€1,837,975,002
BE	€1,129,418,214	€936,434,223	€78,737,853	€963,917,931	€3,108,508,221
BG	-	-	€58,435,234	€660,868,079	€719,303,313
CY	€103,609,914	€89,912,136	€8,047,732	-	€201,569,782
CZ	€1,682,087,513	€1,429,645,859	€130,995,012	€1,391,644,371	€4,634,372,755
DE	€9,689,888,463	€8,172,296,030	€726,507,857	€8,213,395,329	€26,802,087,679
DK	€540,108,919	€584,673,568	€43,857,545	€461,334,799	€1,629,974,831
EE	€257,487,031	€207,019,238	€22,862,749	€235,329,555	€722,698,574
ES	€3,746,019,955	€3,072,562,610	€278,251,913	€2,840,710,138	€9,937,544,617
FI	€ 675,237,491	€ 762,844,134	€ 63,445,280	€ 628,451,932	€2,129,978,838
FR	€2,677,802,493	€2,170,824,225	€188,860,636	€2,145,321,936	€7,182,809,290
GB	€4,947,306,329	€4,293,809,573	€382,660,040	€4,606,022,287	€14,229,798,229
GR	€1,453,873,347	€1,196,118,842	€108,448,700	€1,214,003,242	€3,972,444,131
HU	€533,701,289	€441,859,290	€40,023,770	€473,496,505	€1,489,080,854
IE	€457,799,956	€371,072,587	€31,686,032	€354,217,158	€1,214,775,733
IT	€4,610,219,232	€3,888,286,782	€337,630,627	€3,834,924,077	€12,671,060,718
LI	-	-	-	€345,550	€345,550
LT	€134,719,794	€111,412,450	€8,946,393	€106,077,637	€361,156,273
LU	€53,108,742	€46,380,765	€3,828,717	€36,477,070	€139,795,294
LV	€58,231,712	€50,273,507	€4,249,233	€47,680,435	€160,434,888
MT	€40,213,983	€33,948,489	€3,023,570	-	€77,186,042
NL	€1,639,175,119	€1,311,274,171	€119,123,176	€1,450,984,914	€4,520,557,380
NO	-	-	-	€336,152,232	€336,152,232
PL	€4,144,283,997	€3,583,584,250	€312,620,590	€3,547,219,171	€11,587,708,009
PT	€743,094,510	€565,599,320	€46,574,637	€519,885,424	€1,875,153,890
RO	-	-	€103,824,134	€1,106,135,846	€1,209,959,980
SE	€395,387,966	€340,018,490	€28,396,656	€347,707,022	€1,111,510,130
SI	€177,900,593	€151,165,262	€13,494,952	€153,981,342	€496,542,149
SK	€514,731,851	€436,685,054	€36,563,893	€442,962,245	€1,430,943,044
Total	€41,086,219,371	€34,801,314,753	€3,228,449,979	€36,675,443,326	€115,791,427,428

Pass-through

There have been a number of estimates of the extent to which carbon costs can be expected to be passed through to consumers. Estimates for Germany and the Netherlands found pass-through rates varying between 60 and 100 per cent in the power sector.[16] On the basis of this estimate, other researchers have taken a mid-range of 80 per cent.[17] It should be noted though, that the experience of Germany and the Netherlands may not reflect that of other countries taking part in the Scheme. In particular, countries like France and Italy are likely to see lower pass-through rates thanks to extensive price regulation while Britain, with its particularly liberalised energy markets, is likely to see a particularly high degree of pass-through.

In this paper, we will therefore produce estimates of the cost to consumers on the basis of a 40 per cent and 80 per cent pass-through as well as the 100 per cent pass-through figures given above. This yields the results in Tables 4 and 5.

Table 4: Cost to consumers by country, by year under the European Union Emissions Trading Scheme with a 40 per cent pass-through rate

Country	Cost to consumers at 40% pass-through, €				
	2005	2006	2007	2008	Total
AT	€272,324,383	€221,445,559	€18,941,220	€222,478,838	€735,190,001
BE	€451,767,286	€374,573,689	€31,495,141	€385,567,172	€1,243,403,288
BG	-	-	€23,374,094	€264,347,232	€287,721,325
CY	€41,443,966	€35,964,854	€3,219,093	-	€80,627,913
CZ	€ 672,835,005	€ 571,858,343	€ 52,398,005	€556,657,749	€1,853,749,102
DE	€3,875,955,385	€3,268,918,412	€290,603,143	€3,285,358,132	€10,720,835,072
DK	€ 216,043,567	€233,869,427	€17,543,018	€184,533,920	€651,989,932
EE	€102,994,813	€82,807,695	€9,145,100	€94,131,822	€289,079,430
ES	€1,498,407,982	€1,229,025,044	€111,300,765	€1,136,284,055	€3,975,017,847
FI	€270,094,997	€305,137,654	€25,378,112	€251,380,773	€851,991,535
FR	€1,071,120,997	€868,329,690	€75,544,254	€ 858,128,775	€2,873,123,716
GB	€1,978,922,532	€1,717,523,829	€153,064,016	€1,842,408,915	€5,691,919,291
GR	€581,549,339	€478,447,537	€43,379,480	€485,601,297	€1,588,977,652
HU	€213,480,516	€176,743,716	€16,009,508	€189,398,602	€595,632,341
IE	€183,119,983	€148,429,035	€12,674,413	€141,686,863	€485,910,293
IT	€1,844,087,693	€1,555,314,713	€135,052,251	€1,533,969,631	€5,068,424,287
LI	-	-	-	€138,220	€138,220

[16] Sijm, J., Neuhoff, K. & Chen, Y. 'CO2 cost pass-through and windfall profits in the power sector', *Climate Policy*, 6, 49-72, 2006

[17] Frondel, M., Schmidt, C. M. & Vance, C. 'Emissions Trading: Impact on Electricity Prices and Energy-Intensive Industries', *Ruhr Economic Papers*, #81, December 2008

Country	Cost to consumers at 40% pass-through, €				
	2005	2006	2007	2008	Total
LT	€53,887,918	€ 44,564,980	€3,578,557	€42,431,055	€144,462,509
LU	€21,243,497	€18,552,306	€1,531,487	€14,590,828	€55,918,118
LV	€23,292,684.77	€20,109,402.98	€1,699,693.17	€19,072,174.13	€64,173,955
MT	€16,085,593	€13,579,396	€1,209,428	-	€ 30,874,417
NL	€ 655,670,048	€524,509,668	€47,649,270	€580,393,966	€1,808,222,952
NO	-	-	-	€ 134,460,893	€134,460,893
PL	€1,657,713,599	€1,433,433,700	€125,048,236	€1,418,887,668	€4,635,083,203
PT	€ 297,237,804	€ 226,239,728	€18,629,855	€207,954,170	€750,061,556
RO	-	-	€ 41,529,654	€ 442,454,338	€ 483,983,992
SE	€158,155,186	€136,007,396	€11,358,661	€139,082,809	€444,604,052
SI	€71,160,237	€60,466,105	€5,397,981	€61,592,537	€198,616,859
SK	€ 205,892,741	€ 174,674,022	€14,625,557	€177,184,898	€572,377,218
Total	€16,434,487,748	€13,920,525,901	€1,291,379,991	€14,670,177,330	€46,316,570,971

Table 5: Cost to consumers by country, by year under the European Union Emissions Trading Scheme with an 80 per cent pass-through rate

Country	Cost to consumers at 80% pass-through, €				
	2005	2006	2007	2008	Total
AT	€544,648,767	€442,891,118	€37,882,440	€444,957,677	€1,470,380,002
BE	€903,534,571	€749,147,378	€62,990,283	€771,134,344	€2,486,806,577
BG	-	-	€46,748,187	€528,694,463	€ 575,442,651
CY	€ 82,887,931	€ 71,929,709	€6,438,186	-	€ 161,255,826
CZ	€1,345,670,010	€1,143,716,687	€104,796,010	€1,113,315,497	€3,707,498,204
DE	€7,751,910,770	€6,537,836,824	€581,206,286	€6,570,716,263	€21,441,670,143
DK	€432,087,135	€467,738,855	€35,086,036	€369,067,839	€1,303,979,865
EE	€205,989,625	€165,615,390	€18,290,199	€188,263,644	€578,158,859
ES	€2,996,815,964	€2,458,050,088	€222,601,530	€2,272,568,110	€7,950,035,693
FI	€540,189,993	€610,275,307	€50,756,224	€502,761,546	€1,703,983,070
FR	€2,142,241,994	€1,736,659,380	€151,088,509	€1,716,257,549	€5,746,247,432
GB	€3,957,845,063	€3,435,047,658	€306,128,032	€3,684,817,830	€11,383,838,583
GR	€1,163,098,678	€ 956,895,074	€ 86,758,960	€ 971,202,594	€3,177,955,305
HU	€ 426,961,031	€ 353,487,432	€ 32,019,016	€ 378,797,204	€1,191,264,683
IE	€ 366,239,965	€ 296,858,070	€ 25,348,825	€ 283,373,726	€ 971,820,587
IT	€3,688,175,386	€3,110,629,426	€270,104,502	€3,067,939,262	€10,136,848,575
LI	-	-	-	€ 276,440	€ 276,440
LT	€107,775,835	€89,129,960	€7,157,114	€84,862,109	€288,925,019
LU	€42,486,993	€37,104,612	€3,062,974	€29,181,656	€111,836,235

Country	Cost to consumers at 80% pass-through, €				
	2005	2006	2007	2008	Total
LV	€46,585,370	€ 40,218,806	€ 3,399,386	€ 38,144,348	€ 128,347,910
MT	€32,171,186	€27,158,791	€2,418,856	-	€61,748,834
NL	€1,311,340,095	€1,049,019,337	€ 95,298,541	€1,160,787,931	€3,616,445,904
NO	-	-	-	€268,921,786	€268,921,786
PL	€3,315,427,198	€2,866,867,400	€250,096,472	€2,837,775,337	€9,270,166,407
PT	€ 594,475,608	€452,479,456	€37,259,709	€415,908,339	€1,500,123,112
RO	-	-	€83,059,307	€884,908,677	€967,967,984
SE	€316,310,372	€272,014,792	€22,717,322	€278,165,618	€ 889,208,104
SI	€142,320,474	€120,932,209	€10,795,961	€123,185,074	€ 397,233,719
SK	€411,785,481	€349,348,043	€29,251,115	€354,369,796	€1,144,754,435
Total	€32,868,975,497	€27,841,051,802	€2,582,759,983	€29,340,354,661	€92,633,141,942

It is only possible to produce an estimate of the cost of the ETS to consumers. But, the estimates provided above should provide a pretty reliable guide to the actual costs imposed. It is highly unlikely that the ETS costs much more than €116 billion or much less than €46 billion. €93 billion is our central estimate of the cost to consumers.

This is a significant burden to impose on European consumers. It is equivalent to roughly €185 for every person in the ETS countries over the lifetime of the ETS, or an average of around €46 a year. That is despite the collapse in prices during 2007 as it became clear that allocations were higher, relative to demand, than had been expected. That collapse cut the cost to around ten per cent of the level seen in other years.

Our central estimate for the cost to British consumers in 2008 is €3.7 billion. That is nearly £3 billion or over £117 per family. Even at a 40 per cent pass-through the cost is over £58 per family.

Our estimate is higher than that produced for the impact of the ETS on average household electricity bills by Ofgem,[18] but that difference can be explained:

- Their estimate is for 2009, when emissions prices have, so far, been lower than they were in 2008.
- Their estimate does not include the cost of the ETS in sectors other than electricity.
- Their overall estimate of the impact of environmental policies on electricity prices is considerably lower than that produced by BERR in the Renewable Energy consultation.[19] BERR's estimate suggests that climate change policies – particularly the ETS and the Renewables Obligation – contribute around 14 per cent to domestic

[18] Ofgem *'Updated Household energy bills explained'*, Factsheet 81, 6 August 2009
[19] BERR *'UK Renewable Energy Strategy – Consultation'*, Paragraph 10.5.3, June 2008

electricity bills and 21 per cent to industrial electricity bills while Ofgem put the overall cost at 8 per cent of an average household bill.

- Their estimate does not include the impact on non-household electricity consumers, as the purpose of their estimate is to help explain household electricity bills. However, increases in industrial electricity bills will affect ordinary families if they increase prices for other goods or reduce employment opportunities.

Some commentators have suggested that there could be significant rises in the carbon price, to as high as €65.[20] A carbon price at that level would mean a massive rise in the cost to consumers.

[20] Point Carbon *'EU carbon prices 'could hit €65' if EU takes 30% target'*, 3 June 2009

5. Supporting legal cases against Poland and Estonia

The British Government recently intervened in legal cases where, if they had been successful, it would have meant higher costs for consumers:

- Recently, the European Commission was involved in legal disputes with Poland and Estonia over what the cap on their emissions should be; the Commission wanted a tighter cap. A tighter cap would mean a higher carbon price and, therefore, higher costs for consumers. However, the Commission and the Government lost both cases.[21]
- Despite the Commission's strong hand in cases at the European Court of Justice, the British Government intervened and supported the Commission.
- The Treasury Solicitor's Office, responding to a TaxPayers' Alliance Freedom of Information Request, has revealed that the "costs of the United Kingdom Government's intervention in case T-183/07 Poland v Commission were £30698.10. This includes Counsel's fees of £16107.50". And, the "costs of the Government's intervention in Case T-263/07 Estonia v Commission were £12201.59. This includes Counsel's fees of £2629.50". That means that, in total, nearly £43,000 was spent on these cases.

This was clearly not in the interests of British taxpayers:

- Entering legal disputes with two new member states unnecessarily undermines attempts to establish good relations with their governments.
- A Commission victory would have led to higher energy prices for British consumers.

These legal interventions make it clear that the Government is working to increase the burden of the ETS on consumers.

[21] Mortishead, C. 'European carbon trading market takes hit', *The Times*, 24 September 2009

Conclusions

It is increasingly clear that the ETS just isn't working. The carbon price is so volatile that energy companies and environmentalists are calling for it to be fixed while ordinary families and manufacturing firms have to cope with an unpredictable addition to their energy bills. Windfall profits for energy companies are paid for by the poor and the elderly. We estimate that the total bill to consumers across Europe has been between €46 billion and €116 billion since the start of the scheme, with British families paying more than £117 in 2008. As the permits are increasingly auctioned, that will just mean the scheme is another tax, and a regressive one, supporting excess public spending.

Rhetorically, British politicians are out to bring down high electricity prices, and when it suits them they promise to get tough on energy companies. But, when combined with other climate change policies like the Renewables Obligation, the ETS is a big part of people's bills. The Department for Business, Enterprise and Regulatory Reform has estimated that climate change policies make up 14 per cent of household electricity prices and 21 per cent of industrial electricity prices.

Policy in this area is clearly a long way from serving the interests of ordinary families, who are paying a high price for such a flawed attempt to cut emissions. Their money is even spent on legal fights in the European Court of Justice to tighten the scheme and increase their electricity bills further.

Politicians should be looking to ease the burden on ordinary families struggling to recover from the recession and should abolish the ETS.