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Fair Trade and Harmonization of Climate Change Policies in Europe

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Laurent Viguier [†]

Abstract

In March 2000, the European Commission presented a Green Paper on greenhouse gas emissions trading within Europe, supporting implementation of a Community-wide scheme in which the design and regulation of all essential elements would be harmonized at the Community level. The present paper analyzes economic arguments used to justify such a coordinated scenario, showing these arguments to be based on misleading rhetoric about fair trade and harmonization. Diverse allocations of emissions allowances across Member States are justified in theory. In practice, too, no empirical evidence or model-based results demonstrate that an uncoordinated European trading scheme would adversely affect competitiveness to any significant extent or substantially increase industrial relocations.

Contents

1. INTRODUCTION

In May 1999, the European Commission (EC) adopted a communication outlining how the European Union (EU) might prepare for implementation of the Kyoto Protocol. According to the EC, one of the best ways for the Community and its Member States to prepare might be for them to acquire their own emissions trading experience during a pilot phase (EC, 1999a). To facilitate this process, the Commission presented, in March 2000, a "Green Paper" constituting the start of a consultation process that will allow all stakeholders, Member States, businesses, and NGOs to offer opinions on the various policy options (EC, 2000a).

Following on its earlier communication regarding an EU post-Kyoto strategy (EC, 1998), the Commission states in its Green Paper that the Community should establish its own internal trading regime by the year 2005 to better prepare the EC and its Member States for the start of global emissions trading in 2008 under the Kyoto Protocol. Alternative design options for the domestic allocation of allowances are offered for EU emissions trading, but the Commission defends a "harmonized Community-wide scheme" in which the Community would:

- establish an aggregate quantity of assigned amount units (AAUs) to the trading bubble on an EU-wide level,

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- mandate sectors to be included in the trading bubble (as a first step, the EC foresees opening the trading system to the energy sector and energy-intensive industries),
- determine the number of AAUs to allot each trading sector in all Member States, and
- let Member States to determine how allocations are made (*e.g.*, by auctioning or grandfathering) to entities within the trading bubble.

Several arguments have been used to support this proposal for a harmonized allocation scheme. First, since most Member States find it increasingly difficult to control greenhouse gas (GHG) emissions (see **Table 1**),[1] it seems necessary to reinforce actions at both the Member State and Community levels in order to demonstrate that the EU is committed to implementing the Kyoto Protocol, increasing the EU's political credibility at the international level (EC, 1999b). Second, one could argue that international trading rules are needed to make climate policies more acceptable to powerful industrial lobbies that perceive diverse allocation rules as being unfair (FIELD, 2000). Third, a centralized system might reduce administration and transaction costs substantially (CCAP, 1999a). Fourth, domestic rules for allocating emissions permits should be harmonized at the international level to avoid potentially adverse effects of environmental regulations on international competitiveness (EC, 2000a). In the present paper, I take a critical look at this last argument, which has generated some controversy (see, for example, Zhang, 1999; Woerdman, 2000).

Table 1. *CO_2 Emissions from European Union Member States*

EU Member States	**Emissions 1990** *(in MtC)*	**Emissions 1998** *(in MtC)*	**Percent Change 1998–1990**	**Burden Sharing Agreement 2008–2012** *(% from 1990)*
Luxemburg	3	1	-63.2 %	-28.0 %
Germany	269	235	-12.7 %	-21.0 %
Denmark	14	16	13.2 %	-21.0 %
Austria	13	15	11.0 %	-13.0 %
United Kingdom	155	145	-6.8 %	-12.5 %
Belgium	28	31	9.9 %	-7.5 %
Italy	109	118	8.2 %	-6.5 %
Netherlands	44	48	11.3 %	-6.0 %
France	99	107	7.9 %	0.0 %
Finland	16	17	6.1 %	0.0 %
Sweden	14	14	2.6 %	4.0 %
Ireland	8	10	27.5 %	13.0 %
Spain	57	68	19.6 %	15.0 %
Greece	21	25	18.3 %	25.0 %
Portugal	11	13	25.8 %	27.0 %
EU-15	**861**	**863**	**0.2 %**	**-8.0 %**

Source: European Environmental Agency (2000)

[1] Although the European Community has committed itself to reducing its greenhouse gas emissions by 8% during the period 2008-2012 compared to 1990 levels, the European Environmental Agency reports that the Community's total GHG emissions are projected to *increase* (under a baseline scenario) by 6% between 1990 and 2010 (see <http://themes.eea.eu.int/toc.php/issues/>).

2. FAIR COMPETITION

The first sort of reasoning is that the allocation of AAUs among sectors and firms must be harmonized in order to prevent Member State initiatives from (1) distorting competition *via* subsidies (*fair competition*) and (2) challenging internal market functioning (*free trade*). In order to favor a domestic sector opened to international competition, a Member State could exempt it from the emission reduction program (EC, 2000a, p. 17). A Member State might also be tempted to exclude that sector from the trading regime and apply to it a lax non-trading policy (CCAP, 1999a, p. 11). According to the Commission, such exemption and exclusion risks would be limited in a Community scheme, since most important sectors would be included in the trading bubble and subject to comparable emissions constraints. The European Commission also explains that a diversity of allocation methods (*e.g.*, auctioning and grandfathering) would not give competitive advantage to existing companies, to the detriment of other existing companies or new entrants.

This latter argument is correct. Firms that receive carbon allowances free have no competitive advantage *vis-à-vis* those that must buy allowances. In each case, the decision to increase output has an opportunity cost equal to the cost of the allowance. The grandfathering of allowances makes the owners of a firm wealthier, but does not change their marginal production costs (Koutstaal, 1997; Zhang, 1999).[2]

The arguments about exemption and exclusion risks described above are also theoretically valid. We know from the theory of economic regulation that interest groups can use their lobbying power to bring about redistribution of resources through regulation, especially when regulators are "captured" by those whom they are supposed to regulate. In general, interest groups try to influence environmental policies to reduce new constraints on production. In certain cases, though, they can be tempted to use environmental regulation as a barrier to market entry in order to extract a monopoly rent. For example, all carbon/energy taxes introduced to date in five European countries include one or more forms of compensatory measures ranging from total exemption for certain sectors to reduced rates for most energy-intensive industries, ceilings for total tax payments, and subsidies for energy audits. Exemptions and other compensatory measures were introduced to address concerns about the competitiveness of energy-intensive industries, based on arguments that these industries would be put at a disadvantage relative to similar industries operating in countries without such taxation (Baron, 1996; Baron and ECON-Energy, 1997).

Can a case be made for the harmonization of trading systems in Europe? Claims in the affirmative are based on a fear that environmental regulations could be exploited to support strategic trade policy: Governments might be expected to increase their own national welfare at some other country's expense by supporting their own firms in international competition (Brander and Spencer, 1983); exemption and exclusion are thought to be two means by which governments could achieve such a goal. This argument is based on the assumption that, in general, government is capable of making optimal choices—that is, of selecting the best sectors

[2] The same reasoning can be applied to new entrants: grandfathering of allowances does not raise entry barriers for new companies since the permits owned by established firms are for them an opportunity cost which is as much a part of the cost of a firm as permits that must be bought from others (Koutstaal, 1997).

to exempt or exclude in order to increase national welfare. However, strategizing with environmental policy to positively impact national income is not easy. The risk of "government failure" must be considered. As noted by Krugman (1987), the amount of knowledge that a government must possess in order to make "net" welfare-improving interventions is great because of general equilibrium effects: "When a particular sector receives a subsidy, this gives firms in that sector a strategic advantage against foreign competitors. However, the resulting expansion of that sector will bid up the price of domestic resources to other sectors, putting home firms in these other sectors at a strategic disadvantage. Excess returns gained in the favored sector will thus be offset, to at least some extent, by returns lost elsewhere. If the government supports the wrong sector, the gain there will conceal a loss in overall national income." Thus, the net impact of regulatory diversity and government assistance to open sectors on a nation's overall competitiveness and welfare is not obvious.

Model-based analyses of carbon taxes and GHG emissions trading confirm empirical conclusions reached for other environmental concerns about the effects of exemption on net trade.[3] Using a static open general equilibrium model, Böhringer and Rutherford (1997) showed that if Germany unilaterally reduced its emissions to meet a 30 percent reduction target, its employment and exports in energy- and export-intensive sectors would decrease despite these sectors' exemption from the target, although less than they would if a uniform carbon tax were to be imposed. Jensen (1998) analyzed exemption from a carbon tax in the case of Denmark with a static, multisectoral computable general equilibrium (CGE) model. The results confirmed that exemption increases welfare losses (by 50%, in the case reported) and that the impact of exemption on production level depends on general equilibrium effects (for example, production does not increase in exempt sectors in which the share of high-cost inputs from non-exempt sectors is high as in metal works and cement). Using the EPPA-MIT model to analyze a carbon trading system in the U.S., Babiker *et al*. (2000) likewise found that exemption from a cap does not necessarily improve the net trade position or competitiveness of all the exempt sectors. Exempting "tradable goods"[4] from the U.S. emissions reduction program with a full trading system, in fact, worsens the trade position of other U.S. industries,[5] compared with full emissions trading with no exemption.

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[3] After examining five energy-intensive industries, Tobey (1990) concluded that environmental regulations' relative stringency in different countries has not affected the countries' net exports. Grossman and Krueger (1991) found that pollution abatement costs in U.S. industries didn't influence their patterns of bilateral trade and investment with Mexico. Reviewing and analyzing over one hundred empirical studies, Jaffe *et al*. (1995) also concluded that, although the long-run social costs of environmental regulation may be significant—including adverse effects on productivity—studies attempting to measure the effect of environmental regulation on net exports and overall trade flows have produced estimates that are either small, statistically insignificant, or not robust to tests of model specification.

[4] *Tradable goods* include goods produced by energy-intensive industries, agriculture, the fuel sector (*i.e*., coal, oil, gas, and refined oil), and "other industries" (*i.e*., those that produce minerals, textiles, lumber and other wood products, metal products, transport equipment, electronic equipment, machinery and equipment, other manufacturing products, gas, water, buildings, trade, and other services).

[5] For the definition of *other industries*, see Footnote 4.

3. RELOCATION AND A "RACE TO THE BOTTOM"

Regularly, European and broader international debates give voice to fears that climate change policies could alter industry-location choices and that States will enter a "race to the bottom"—that is, a country might lower its environmental standards below socially efficient levels (SELs) to further its competitiveness in international trade (Barrett, 1994). For example, such fears widely contributed to the failure of the EU carbon/energy tax in 1992 because of a lack of harmonization among Organization for Economic Cooperation and Development (OECD) countries (Godard, 1998).[6] Today, the European Commission and Member States are especially concerned about the potential impact of EU trading rules on competitiveness. Harmonization is presented as the best means to avoid unfair competition and reduce the incentive for industrial relocation and "eco-dumping."

In principle, we should accept the idea that diverse environmental regulations across countries could cause capital relocation, and that this possibility of industrial flight might therefore serve as incentive for eco-dumping. If a firm has the choice of staying in a strict environmental regulation area or moving to a "softer" environmental area, its decision will depend on its ability to reduce carbon-related costs within its production function. Logically, the firm would decide to relocate outside the strict area if such a measure would be more cost-effective than any option to abate emissions in an effort to minimize the tax burden at the current location. If this possibility exists—that is, if there is international mobility of capital—a country may have the incentive to lower its environmental standards below the SEL in order to attract capital (thereby eco-dumping). This decision is rational for a country if its welfare costs linked to eco-dumping are perceived to be less than the benefits to be gained from new productive activities.

The Green Paper presents harmonization as a way to prevent unfair competition and industry relocation due to diverse standards across Member States. However, diversity can arise for two reasons. While it can occur when countries use eco-dumping strategies, more generally it arises because the utility function of populations and the production function of polluters differ across countries.[7] If utility functions differ and/or if marginal abatement costs vary across countries, diversity—and resultant industry relocations—is fair and efficient. As noted by Bhagwati and Srinivasan (1996, p. 163), environmental diversity is perfectly legitimate and "can arise not merely because the environment is differently valued between countries in the sense that the utility function defined on income and pollution is not identical and homothetic, but also because of differences in endowments and technology across countries. Hence, the common presumption driving harmonization and (alternatively) "social-dumping"—countervailing demands, that others with different cross-country intra-industry standards are illegitimately and unfairly reducing their costs, is untenable."

Harmonization of environmental regulations is legitimate only to prevent eco-dumping when countries' utility functions and production functions are identical (see **Table 2**). If countries

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[6] The EU carbon/energy tax proposal also failed to gain the unanimous support of its member states because some Member States (*e.g.*, the UK) opposed an increase in the fiscal authority of the Community and thus opposed the introduction at a European level of a new tax on grounds of fiscal sovereignty (Zhang, 1999).

[7] Indeed, standard environmental regulation theory demonstrates that pollution control should be pursued to the point at which marginal benefits from reduced pollution equal marginal abatement costs (Baumol and Oates, 1988).

***Table 2**. Coordinated versus uncoordinated climate change policies*

		Eco-dumping risk	
		Yes	***No***
Utility Functions	*Identical*	• Diversity illegitimate • Relocation unfair • *Harmonization*	• No diversity • No relocation • No harmonization
and Technologies	*Not Identical*	• Diversity partly legitimate • Relocation partly fair • No harmonization	• Diversity legitimate • Relocation legitimate • No harmonization

choose to eco-dump when SELs of pollution are the same for all countries, then environmental diversity and capital relocation are unfair and inefficient. Harmonization of environmental policies is justified only in this particular case.

However, climate change negotiations and policies in Europe do not correspond to this particular case. The diversity of burdens across European countries accepted in the EU "Burden Sharing Agreement" reveals that the utility of GHG emission reductions differs across EU Member States.[8] In the same way, Member States will probably choose different domestic rules for allocating AAUs in accord with their populations' preferences and the marginal abatement costs in each economic sector. This diversity of allowance allocation rules in Europe would be fair and efficient, even if relocations occur. Such diversity should not be considered an obstacle to implementing an EU trading system.

Many studies have tested the relationship between environmental regulations and plants' location decisions or foreign direct investment (FDI) choices. The conclusions of empirical studies are that environmental regulations do not deter investment to any statistically or economically significant degree (Jaffe *et al*., 1995; Levinson, 1996; Adams, 1997). The primary determinants for location and investment decisions are factors other than environmental compliance costs: political stability, size and growth of the potential market, access to other markets, labor costs, exchange rate fluctuations, ease of repatriation of profits, institutional and legal framework, cultural affinity, quality of life, *etc*.

One might argue that empirical studies have failed to show that environmental regulations influence industrial location because environmental compliance costs for existing regulations have been so small (Cropper and Oates, 1992). The question then becomes whether the costs attributable to the Kyoto Protocol could be high enough to affect firms' investments and locations. Several global general equilibrium models have been used to evaluate the costs of carbon abatement policies and analyze their global and regional effects. In these models, the effects of unilateral emission reduction programs on competitiveness and industry location are

[8] The EU internal allocation of AAUs has been partly based on ability to pay: on average, richer countries are expected to make larger percentage reductions in emissions, and the poorest nations are even given flexibility to increase emissions as they attempt to catch up economically (Jacoby *et al*., 1999).

included in a "leakage" factor.[9] The leakage rate for a no-trading scheme ranges from 5 to 6% for the EPPA-MIT, G-Cubed, and GREEN models to around 18% for the WorldScan, GTEM-ABARE, MS-MRT, and Rutherford's models, to 26% for GEMINI-E3/*GemWTraP* and 28% for MERGE (see **Table 3**).

The divergences can be explained by the models' differing assumptions for:

- substitution among energy-intensive goods and energy products (Oliveira Martins, 1996)
- substitution elasticities between factors and between fuels in the production function (Oliveira Martins, 1996)
- the supply elasticity of coal (Burniaux and Oliveira Martins, 2000)
- the degree of integration of the international coal market (Light *et al*., 1999)
- the degree of international mobility of capital (McKibbin *et al*., 1999)

Model-based analyses show that if unilateral carbon constraint entails a relocation of capital in nonparticipating countries, the magnitude of the adverse leakage effect is difficult to estimate. Leakage rates are relatively low in models that consider traded goods to be non-homogeneous (the Armington hypothesis), include intra-industry trade (which is characteristic of any observed trade), and explicitly represent international capital flows.

A critical question might be whether diverse climate change policies in Europe would be likely to produce more or fewer intra-EU leakage effects and significant trade distortions inside the Community than would be produced by a coordinated scenario. No model-based analysis of this question exists to date. Nevertheless, from existing modeling results, we can expect that policy choices regarding AAU allocation would have a minor impact on intra-EU competitiveness.

***Table 3**. Leakage rate[a] associated with implementation of the Kyoto Protocol in 2010 (%)*

Source	Model	No Trading	Trading
Manne and Richels (2000)	MERGE	28 %	
Bernard and Vielle (2000)	GEMINI-E3/*Gem WTraP*	26 %	
Light *et al*. (1999)	Rutherford's Model	21 %	
Bernstein *et al*. (1999)	MS-MRT	18 %	16 %
Tulpulé *et al*. (1998)	GTEM-ABARE	18 %	6 %
Bollen *et al*. (1999)	WorldScan	15 %	
Babiker and Jacoby (1999)	EPPA-MIT	6 %	
McKibbin *et al*. (1999)	G-Cubed	6 %	7 %
Burniaux and Martins (2000)	GREEN	5 %	2 %

Note: [a] Leakage rate is defined here as the change in non-Annex I countries' emissions as a percentage of emission reductions in Annex I nations.

[9] *Leakage rate* is the increase in emissions in Non-Annex I countries divided by emission reductions in Annex I countries. Carbon leakage can occur when carbon restrictions (1) raise the production costs of energy-intensive goods and encourage firms to relocate, thus increasing emissions in nonparticipating regions, and (2) reduce energy demands within abating regions and induce a significant drop in world energy prices, which in turn could stimulate energy demand in non-abating regions.

4. CONCLUDING REMARKS

By submitting the Green Paper to Member States, the European Commission is showing determination to restore the EU's political leadership and credibility in the climate change debate, as well as a positive shift in attitude toward emissions trading. As pointed out by the Commission, implementation of an EU-wide trading system could help Member States to comply with their respective emission targets by reducing the cost of the burden. Undoubtedly, some degree of harmonization of compliance and enforcement rules would be necessary to maintain the integrity of the EU emissions trading scheme. However, the core *economic* justification for harmonizing of allocation rules is based on misleading rhetoric about fair competition and harmonization, which suggests that fair competition (1) is a precondition for free trade and (2) requires harmonized of environmental regulations. The present paper raises four major objections to this competitiveness argument:

- Even if we assume that the global environment is valued the same by all Member States, if sectoral marginal abatement costs of GHG emissions reduction differ across countries, allocating AAUs differently is no ground for complaints of unfairness.
- If strategic environmental policies (*e.g.*, exemptions, exclusions, and eco-dumping) can be expected in theory, their impact on competitiveness are highly uncertain in practice because of complex macroeconomic effects.
- If, one the one hand, sectoral marginal abatement costs differ across countries, EU-wide harmonization of AAU allocation rules could avoid effects on *absolute* advantage, but generally not protect from non-neutral effects on *comparative* advantage. Some distortions can be expected from an allowance allocation based on historical emissions (grandfathering), equalized emissions reduction, and benchmarking (*e.g.*, tons of CO_2-equivalent per ton of steel or per kWh).
- If, one the other hand, differentiating sectoral burdens across countries would generally affect *absolute* advantage, that could be one way to limit trade distortions. A distortion-free allocation to entities would differentiate sectoral allowances in order to equalize the increase in the unit cost of production across firms in each industry, and across common industries in different regions.

Fundamentally, economic arguments for harmonization are based on increasingly groundless skepticism about whether mutual gains can be realized from trade despite diverse domestic policies, involving taxes or otherwise. The conventional wisdom is that all developed economies compete with one another economically, and that free trade is "predation." Thus, a common fear is that, in the absence of harmonization, unfair competition would occur, and countries burdened with stringent environmental regulations would suffer severe economic damage, such as trade deficits, unemployment, and even economic collapse. This conventional economic view has been shown to be invalid (Bhagwati, 1996; Krugman, 1999): in theory and in practice, diverse domestic policies, institutions, and standards are generally compatible with gainful trade.

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