INTERNATIONAL TRADE AND POLICY CO-ORDINATION

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Summary

Trade and environment are linked for a number of reasons: i) some environmental problems are international, and countries may wish to use trade policies to reduce their exposure to foreign pollution; ii) trade liberalisation may have adverse effects on the environment; iii) trade liberalisation may increase competitive pressures on countries and affect the way they set environmental policies. This article explores how environmental economists have addressed these questions in recent years. It begins by considering recent economic analysis of the links between trade and the environment assuming competitive markets and imperfectly competitive markets which provides scope for strategic environmental policy. This analysis considers both local and international environmental problems. The article then surveys the empirical studies conducted by economists on how trade policy affects the environment and on how

environmental policy affects trade and capital movements. Finally, the article discusses the policy implications of these findings and relates this to current discussions on reform of international governance of trade and environment.

1. Introduction

The protests that accompanied the World Trade Organisation (WTO) meeting in Seattle in November 1999 by groups who feared that further steps to liberalise trade pose a major threat to the environment, illustrated vividly that the links between trade and the environment remain a controversial topic. There are a number of concerns voiced in the debate over trade and the environment. There is the simple fear that trade liberalisation will lead to expansion of production and consumption and this will inevitably be accompanied by increased pollution and depletion of natural resources. A more subtle concern is that a more globalized economy will lead governments to be increasingly concerned about the competitiveness of their economies, and so be reluctant to impose sufficiently tough policies to protect the environment. This is sometimes referred to as 'environmental dumping'. At its extreme, it is feared that governments will engage in a 'race-to-the-bottom' in environmental standards (similar fears are expressed about labor standards). One reason why countries are worried about competitiveness is felt to derive from the need to prevent 'delocation' of capital to countries with weaker environmental standards (so called 'pollution havens'). a threat often associated with transnational companies (TNC's). To prevent a 'race-to-the bottom' it is argued that international institutions should seek to harmonize environmental policies across countries, or at least set minimum environmental standards. If this is not achieved, then it is sometimes argued that countries which want to set tough environmental policies should be allowed to protect themselves from 'environmental dumping' by imposing trade restrictions on imports from countries with weaker standards. All these concerns are heightened when the environmental problems being addressed are themselves international, involving either transboundary pollution or global environmental problems such as climate change.

On the other hand many countries, particularly developing countries, are alarmed by some of these policy proposals. They argue that there can be quite legitimate differences in environmental policies between countries, and that moves to deny access to markets on environmental grounds are a form of covert protectionism. Overlaying these substantive trade and environment issues are concerns about the differential access to power in supra-national agencies like WTO—developing countries fear that developed countries have too much say; environmental NGOs fear that TNCs have too much influence.

This article surveys the work of environmental economists to provide theoretical, empirical and policy analysis to address these issues. It begins with traditional economic models based on the assumption of competitive markets and shows that a number of the above concerns may be unfounded. Section 3 then surveys more recent developments in strategic environmental policy which provides a more coherent framework for analysing the concerns. The particular problems of transboundary or global environmental problems are addressed in section 4. The empirical evidence on how environmental policy affects trade and how trade affects the environment is

reviewed in section 5. The policy implications of this analysis are presented in section 6 and the paper concludes with suggestions for new work.

2. Trade and Environmental Policies with Competitive Markets

This section surveys traditional models of links between international trade and the environment based on the assumption of competitive markets, that is that in all markets there are large numbers of individual suppliers and customers none of whom is large enough to exert any influence on market prices. In this section it will also be assumed that any environmental impact caused by either production or consumption of goods is *local*, that is it affects only the country in which the production or consumption takes place. Section 4 will address the important issue of transboundary and global environmental problems, while some of the policy discussion in section 6 will address whether this distinction is relevant for policy analysis.

2.1. The Small Country Case

The analysis begins with what is referred to as the *small country* case, i.e. not only are individual suppliers or consumers too small to influence market prices, but no one country has a sufficient concentration of producers or consumers that they could collectively influence the price of any good.

It is a standard result in economic analysis that, provided there are no uncorrected forms of market failure, an efficient allocation of resources can be achieved by allowing resources to be allocated in competitive markets. In particular, where resources are traded across national boundaries, efficiency requires that there be no interference with the operation of competitive markets. This is the standard argument for free trade. Of course when production or consumption affects the environment, then the caveat becomes important, because such environmental effects constitute a classical form of market failure known as *externalities* i.e. some of the costs associated with production or consumption are not being borne by the producers or consumers who generate these effects, and so market prices do not play their role of signalling the appropriate allocation of resources (see *Externalities, Efficiency and Equity* for further discussion of externalities). A good whose production generates pollution will be sold at a price which reflects only the *private* costs of producing the good (i.e. the costs borne directly by the producer) rather than at a price which reflects the *social* costs of producing the good, which would include the cost of any damage to the environment. But there are standard policy measures for dealing with these environmental externalities, such as emission standards, emission taxes, or tradable permits (see *Designing Instruments for Resource and Environmental Policy* for further analysis of policy instruments). Environmental economists have been much concerned with the *efficiency* of different environmental policy instruments, where efficiency means that policy instruments are set so that, at the margin, the cost of any damage to the environment just matches the cost of preventing the damage. This is referred to as *first-best* environmental policy or *full internalisation* of environmental costs. The basic economic result can then be re-stated as saying that an efficient (or *first-best*) allocation of resources can be achieved by a combination of free trade and first-best environmental policies.

There are a number of important points which emerge from this basic result.

(i) With competitive markets, there is no inherent conflict between trade liberalisation and the environment. *Provided environmental externalities are fully internalized*, all countries can be made better off by removing distortions to trade.

(ii) Another way of stating the basic result is to use the economists' concept of *policy targeting*. If there are various distortions in the allocation of resources, then it is important that appropriate policies are used to address the distortions: if there are environmental distortions these should be addressed through appropriate (first-best) environmental policies; if there are distortions to trade these should be addressed through appropriate trade policies (free trade).

(iii) In general, an efficient allocation of resources, including environmental resources, is quite consistent with different countries having different environmental policies and different environmental standards because there may be genuine differences between countries which are reflected in different environmental damage costs or prevention costs. These could reflect differences in the endowment of environmental assets of countries, differences in geographical distribution of population, differences in preferences for the environment, or differences in the endowment of resources for preventing environmental damage. These differences will be part of the comparative advantage that different countries enjoy and which underlie international trade. In other words there is no presumption that an efficient allocation of resources requires that environmental policies or environmental standards be harmonized across countries. (This conclusion depends importantly on the assumption that pollution is local, and not transboundary.)

(iv) With the assumptions of purely local environmental problems and small countries, it is in the *individual interest* of each country to pursue first-best environmental policies and free trade. Suppose a country decides to subsidize one of its exports to encourage local producers to produce and export more of that good. This must make the country worse off. For the costs of producing the extra exports must exceed the revenue the country earns from the extra exports (which is given by the world price), and so the country must make a loss producing these extra goods for export. This must be the case because otherwise profit-maximizing producers would have chosen to produce the extra exports without the need for any subsidy. Thus intervening in trade is not in the country's interests. By a similar argument, no country gains by setting too lax an environmental policy to encourage its local producers to export more of a good whose production damages the environment, because any extra profit earned by the exporters is more than outweighed by the cost of the extra local environmental damage. So there is no presumption that countries will systematically engage in 'environmental dumping'.

(v) The move from some initial allocation of resources corresponding to a situation with some barriers to trade and perhaps not first-best environmental policies in all countries to an allocation corresponding to free trade and first-best environmental policies in all countries will involve a complex global reallocation of resources. There can be no general presumption that such a move necessarily entails a deterioration in the

environment either globally or in any individual country. What happens to the environment in any one country will depend on what happens to the overall level of output in the economy (the *scale* effect), the mix of goods the country produces and consumes (the *composition* effect) and the methods of producing those goods (the *technique* effect). The concern of environmentalists about the effects of trade liberalisation on the environment focuses simply on the scale effect. But, if trade liberalisation is accompanied by appropriate internalization of externalities, there are the other effects to be taken into account. There will be three aspects to the composition and technique effects. First, with full internalization of environmental costs, production and consumption patterns will be switched in the direction of less environmentally damaging goods and less environmentally damaging means of producing the goods. Second, the location of production and consumption of the more polluting goods will be switched to countries where pollution is less harmful (for example, faster flowing rivers may better disperse pollutants); this is an environmental form of comparative advantage. Third, trade liberalisation will remove some trade barriers that damage the environment (e.g. subsidies to agriculture which encouraged intensive and environmentally damaging methods of production). More generally trade liberalisation, by encouraging more efficient methods of production and allowing better dissemination of information about such techniques, will encourage less resource-intensive methods of production. However, none of this is designed to make the opposite extreme claim that trade liberalisation accompanied by first-best environmental policies is always necessarily good for the environment. All that be claimed from the basic result is that the combination of free trade and first-best environmental policies can always be implemented in such a way that all countries are made better off. In some countries there may be an increase in environmental damages, but the costs of these must be outweighed by the other gains from trade.

(vi) By the same token, the complex reallocation of resources means that there can be no simple presumption that a country which imposes tough environmental policies necessarily loses in terms of competitiveness. The first obvious point is that a country which imposes tough environmental policies on the *consumption* of a good is likely to see a reduction in imports of that good, *ceteris paribus*. Where a country imposes tough environmental policies which affect the production of a good, a simple *partial* equilibrium analysis would suggest a reduction in that country's supply of the good, and hence any exports of the good, *ceteris paribus.* However, in a *general* equilibrium framework there could be reductions in some factor prices which offset the impact of the environmental policy and lead to an expansion of production and exports despite the tougher environmental policy. For example, consider a country which produces both goods which are traded internationally and those which are not. Production of both types of good involve pollution, but suppose the non-traded good sector is relatively more pollution-intensive than the traded good sector. Finally suppose that country has a relatively more sensitive environment, and so imposes a relatively tougher environmental policy than some of its trading partners. Because that environmental policy will bear more heavily on the non-traded goods sector, productive resources will get switched out of the non-traded good sector and into the traded good sector. So that country could expand its trade despite having a tougher environmental policy than other countries.

(vii) The basic result says that trade liberalisation combined with first-best environmental policies makes all countries better off. It follows that if trade is simply liberalised without imposing first-best environmental policies then there can be no guarantee that countries will be made better off, and this is the scenario that environmentalists are more concerned with. However it does not follow that trade liberalisation without first-best environmental policies is *necessarily* harmful to all countries. It is certainly more likely that trade liberalisation will be damaging to the environment, but gains to trade could still outweigh this damage. But there is a more important point. The reason why trade liberalisation may not be accompanied by the appropriate internalization of environmental policies is not a lack of incentives to impose such policies (the argument in (iv) shows that countries have such incentives), but rather that some countries, particularly developing countries, may not have the capacity to impose appropriate first-best environmental policies. They may have to use what economists call *second-best* environmental policies. But it is unlikely that such policies will take the form of trade restrictions. For example, suppose the production of some exported good in a particular country involves emissions of SO_2 which causes local air pollution. The first-best environmental policy would be a tax on emissions of SO_2 which leads producers to switch to production techniques which emit less SO_2. There will also be some increase in production costs and reduction in overall production, which in turn will entail lower exports of the good. However, the country may not have the capacity to measure and hence tax SO_2 emissions. A second-best policy would be a tax on production of the good. This would be less efficient than the SO_2 tax, because it would not encourage any change in production techniques, but it would reduce overall production and hence have some impact on SO_2 emissions. An even less efficient policy would be a tax only on the exports of the good, for this would do nothing to reduce that part of production which is sold domestically. Of course if the good was produced almost entirely for export then a production tax and an export tax would be almost equivalent, but in general this need not be the case. The general point is that even if trade liberalisation cannot be accompanied by first-best environmental policies it will not be efficient to use trade policies as surrogate environmental policies.

2.2. Large Country Case

Suppose that while there remains a large number of consumers and producers of a good, none of whom can individually influence price, they happen to be so located that one country has a sufficient concentration on one side of the market that a change in the aggregate supply or demand of that country could affect the price. It remains the case that a globally efficient allocation of resources would best be supported by all countries adopting free-trade and first-best environmental policies. But it is no longer in the interest of a large country, from the perspective of its own welfare, to adopt such policies. A large country which exported a good whose price it could influence would want to impose an export tariff to drive up the price which foreign consumers paid for the good. If it imported the good it would impose an import tariff to drive down domestic demand and hence reduce the price which it had to pay foreign suppliers. These are referred to as “the optimal tariff”. If the optimal tariff could be imposed, then there would be no need to set environmental policies at other than their first-best level.

This is just another example of the principle of policy targeting—set trade policy to achieve trade objectives (maximizing revenues earned from foreigners or minimizing revenues paid to foreigners) and environmental policy to achieve environmental objectives.

However if moves for trade liberalisation prevent the large country setting the optimal tariff, then the government would have incentives to set environmental policy as a substitute for trade policy using different rules from the first-best. If the country was a net exporter of a good whose production was polluting it would set the relevant environmental policies *tougher* than required by the first-best; this would restrict domestic production and hence the supply of exports, and this would drive up the price paid by foreign consumers. If it is a net importer of such a good it would set environmental policy which was *weaker* than first-best because that would expand domestic supply, reduce demand for imports, and hence reduce the price paid to foreign suppliers. These policies are surrogates for the optimal tariff.

2.3. Summary

What this section has shown is that if environmental problems are local and markets are competitive then a number of the fears expressed in the debate on trade and the environment cannot be supported: provided appropriate (first-best) environmental policies are implemented, the usual arguments about the welfare benefits of free trade continue to apply. Moreover in the small country case it is in the individual interest of each country to set such policies—there is no general incentive to set weak environmental policies. Even in the large country case where countries set environmental policies different from first-best as a surrogate for trade policies, there is no presumption that all countries would set too weak environmental policies. Nor is there any general presumption that trade liberalisation must damage the environment—it is an empirical matter to what extent trade liberalisation might affect the environment. There is no reason to believe that all countries ought to set the same environmental policies or aim for the same environmental standards.

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Biographical Sketch

Alistair Ulph has been Professor of Economics at the University of Southampton since 1985, and has been visiting professor at University of British Columbia, Australian National University and University of California Santa Barbara. His current research interests are trade and environment, international environmental agreements, and the analysis of uncertainty, learning and irreversibility and environmental policy. He has published extensively (6 books and over 100 refereed articles), has been principal investigator on a number of research projects, and acted as consultant on a wide range of projects for the EU, UK government departments and private sector companies. He was elected President of the European Association of Environmental and Resource Economists January 2000-December 2001, and has been appointed Associate Editor of Environmental and Resource Economics.