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Is Chinese trade policy motivated by environmental concerns?



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ABSTRACT

This paper analyses whether China's export VAT rebates and export taxes are driven by environmental concerns. Since China struggles to enforce environmental regulation, trade policy can be used as a second-best environmental policy. In a general equilibrium model it is possible to show that the second-best export tax increases in a product's pollution intensity. The empirical analysis investigates whether the export tax equivalent of partial VAT rebates and export taxes are higher for products which are more pollution intensive along several dimensions. The results indicate that the VAT rebate rates are set in a way that discourages exports of water pollution intensive, SO₂ intensive and energy intensive products from 2007 on. Moreover, the conservation of natural resources such as minerals, metals, wood products and precious stones seems to be a key determinant of China's export VAT rebate rates. There is little evidence that export taxes are motivated by environmental concerns.

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Introduction

Since 2007, China has introduced export taxes and reduced export value-added tax (VAT) rebates for a range of products. According to China's National Development and Reform Commission, the VAT rebate adjustments aim at controlling “exports of energy-intensive, pollution-intensive and resource-intensive products, so as to formulate an import and export structure favorable to promote a cleaner and optimal energy mix” (NDRC, 2007, p. 31). Statements which link VAT rebates and export taxes to environmental concerns appeared repeatedly in consecutive years (Wang et al., 2010; WTO, 2008).

This paper investigates whether, in practice, Chinese trade policy reflects environmental motives. It is not obvious that the VAT rebate and export tax adjustments are driven by environmental concerns. Other potential motives include an attempt to manipulate the terms of trade in China's favour, a desire to attract downstream producers to China or lobbying pressure by different industries.

The policy relevance of the motivation behind Chinese export restrictions manifests itself in the WTO dispute settlement cases on Chinese export restrictions for raw materials (WTO, 2013a) and rare earths (WTO, 2014). In both cases, China is a leading producer of the goods in question which are used as intermediate inputs into high-tech products. The complainants

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hold that China uses export restrictions to manipulate the world market price and to force intermediate producers to move to China where supply of these crucial inputs is stable. China, however, argues that the export restrictions are necessary to protect China's natural resources and the health of its citizens since the production is highly polluting. Even though China committed to cancelling its export taxes on most products in its Accession Protocol to the WTO, it argues that the export restrictions are justified under Article XX of the GATT. Article XX of the GATT allows an exemption from GATT rules for environmental objectives such as the protection of exhaustible natural resources and health considerations (WTO, 2013b).

The export VAT rebate and export tax reforms have to be assessed against the background of China's environmental agenda. In the last decade, the Chinese government has launched an ambitious attempt to tackle the country's environmental problems. There are several reasons for this increasing focus on environmental policy. Firstly, the Chinese leadership realized that environmental problems might hamper China's growth in the long run. Secondly, public discontent concerning pollution has been growing (Gang, 2009, p. 119). This has become obvious in mass protests in response to environmental degradation and in increasing participation in environmental NGOs. Gang (2009) argues that addressing environmental issues might be crucial for the government to consolidate its rule. Finally, international pressure on China to adopt stricter environmental policies is increasing.

It is well-known that local environmental distortions are best internalized through the use of domestic policy instruments such as pollution taxes (see e.g. Copeland, 2011). Copeland (1994), however, shows that a country which fails to implement optimal pollution regulation can use trade policy as a second-best instrument to reduce pollution. Arguably, the second-best scenario applies to China. The Chinese government's attempts to reduce pollution are reflected in ambitious targets for environmental protection in recent Chinese Five Year Plans. However, corruption and difficulties with the enforcement of environmental regulation limit the Chinese government's ability to use pollution levies in order to reduce domestic pollution. Trade policy instruments like export taxes and partial export VAT rebates can, thus, be used as second-best environmental policy instruments.

The theoretical foundation for our analysis is an extension of Copeland's (1994) model to a large country which sets trade and environmental policy unilaterally. We solve the model for the second-best export tax and find that the second-best export tax increases in a product's pollution intensity. The intuition behind this result is simple: The export tax reduces production and exports of a particular good. As a result, resources are reallocated to sectors which are subject to a lower export tax. If the export tax is largest for the most pollution intensive goods, more resources are allocated to the production of relatively clean goods and the pollution intensity of production declines.

The prediction that the second-best export tax is positively correlated with a product's pollution intensity guides our empirical analysis. We investigate whether the export tax equivalent of partial export VAT rebates, henceforth called VAT tax, or the export tax are higher for products which are more pollution intensive along several dimensions. The analysis considers pollutants for which the Chinese government has specified emission reduction targets in its Five Year Plans. These include waste water, chemical oxygen demand (COD), ammonium nitrogen, soot, SO₂, solid waste and energy use.

The dataset used for this analysis covers the years 2005–2009. Since Chinese officials repeatedly linked trade policy to environmental concerns from 2007 on, we are particularly interested in the relationship between trade policy variables and pollution intensities for the years 2007–2009. The data for the years 2005 and 2006 allow us to test whether there is a stronger link between trade policy variables and pollution intensities as a consequence of the VAT rebate and export tax reforms from 2007 on compared to the situation prior to 2007.

Our empirical results suggest that the VAT tax is larger for industries with a higher water pollution intensity, SO₂ intensity and energy intensity from 2007 on. This pattern is in line with the actions of a regulator who uses partial VAT rebates to reduce exports of water-pollution, SO₂ and energy intensive products. Our analysis also reveals that the VAT tax is significantly higher for resource products, indicating that the VAT tax is used to curb exports of natural resources like wood, mineral and metal products as well as precious stones.

There is little evidence for an environmental motive behind China's export taxes. However, the export tax is significantly higher for primary products. This could create an incentive for downstream producers to relocate to China in order to get access to raw materials at a lower price.

The paper is structured as follows. A review of the related literature is followed by information on the policy background for our study. In the [Environmental policy in China section](#), we argue that environmental problems play a prominent role on the Chinese policy agenda, but that the government struggles to implement and enforce effective domestic pollution taxes. [The policy background section on export value-added tax rebates](#) explains why partial export VAT rebates are similar to export taxes, followed by a section which provides background information on Chinese export taxes.

In the [Second-best export taxes as environmental policy section](#) we derive a formula for a second-best export tax and show that it increases in a product's pollution intensity. This prediction is the foundation for our empirical analysis. We investigate whether the export tax and the VAT tax are higher for more polluting products. The precise empirical strategy is explained in the [Empirical strategy section](#). The paper focuses on the determinants of the VAT tax (defined as VAT–export VAT rebate) but it also investigates whether there is an environmental motive behind China's export tax. Both the VAT tax and the export tax are analysed as a function of the pollution intensities and a set of control variables.

[The dataset section](#) describes the dataset followed by a Summary statistics in [Summary statistics section](#). The regression results with the VAT tax as dependent variable are presented in the [Determinants of VAT taxes section](#). The subsequent Export tax as dependent variable section–briefly discussed of the determinants of the export tax. However, the robustness checks in the Sensitivity analysis section focus on the determinants of the VAT tax. [The last section of this paper concludes.](#)

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