



Distortion effects of export quota policy: an analysis of the *China-Raw Materials* dispute[☆]



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ABSTRACT

The *China-Raw Materials* dispute recently arbitrated by the WTO opposed China as defendant to the US, the EU and Mexico as the claimants on the somewhat unusual issue of export restrictions on natural resources. For the claimants, Chinese export restrictions on various raw materials, of which the country is a major producer, create shortages in foreign markets increasing the prices of these goods. China defends export limitations by presenting them as a natural resource conserving policy. This paper offers a theoretical analysis of the dispute with the help of a model of a monopoly extracting a non-renewable resource and selling it on both the domestic and foreign markets. The theoretical results focus on the effects of imposing an export quota on quantities, prices and price distortion. Given the crucial importance of demand elasticities in this theoretical understanding of the conflict, the empirical part of the paper provides estimates of import demand elasticity of the parties for each product concerned in the case. The model and the empirical results challenge the ideas that an export quota always favors conservation of natural resource, that a higher foreign price necessarily follows this policy and that it inherently increases price distortion and therefore discrimination.

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1. Introduction

The *China-Measures Related to the Exportation of Various Raw Materials* (*China-Raw Materials*) dispute recently arbitrated by the WTO, opposed China as defendant to the US, the EU and Mexico — hereafter the claimants — on a new but raising issue: export restrictions.¹

This dispute, involving major trade countries, was over four types of export restrictions — export duties, export quota, export licensing and minimum export prices — on various raw materials of which China is a major producer.²

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¹ This case went before the *China-Rare Earth* dispute in which the EU, US and Japan claimed about Chinese export restrictions on rare earths, tungsten and molybdenum, and on which the Dispute Settlement Body has, on 26 March 2014, released its report in favor of claimants. Focusing on equally sensitive materials — strategic inputs for high-tech industries — for which China has a quasi-monopoly position, this more recent dispute is really close to the one this paper deals with both regarding the claimants' arguments (unfair advantage to Chinese companies) and the defender argument (the conservation of exhaustible natural resources). The dispute is still underway since China has, on 25 April 2014, notified the Dispute Settlement Body of its decision to appeal.

² Twenty-four raw materials under the category of Bauxite, Coke, Fluorspar, Magnesium, Manganese, Silicone Carbide, Silicone Metal, Yellow Phosphorus, and Zinc were considered.

The dispute occurred while China started becoming an undisputed dominant country in world trade dynamics and while higher tensions in natural resource trade grew. The expansion of China's export has become a central concern both in politics and in economics. The economic literature pointed out the consequences of the changes in China's export and import compositions (Amiti & Freund, 2010; Roberts & Rush, 2012; Rodrik, 2006), the role of the Chinese government in promoting its industries (Rodrik, 2010), its increasing role in world trade more and more mediatized by trade disputes and resorts to the WTO dispute settlement body (Bown, 2009; Bown & McCulloch, 2009). The importance of resource abundance on Chinese economic growth has also been recently explored (see Fan, Fang, and Park (2012)). In this context the *China-Raw Materials* involving export restrictions exemplifies increasing dominant position of China, current pressures in strategic raw material markets, as well as increasing “stock of measures restricting the export of raw materials” (Fliess & Mård, 2012). Tensions in natural resource trade stemmed from an increase in demand facing a limited supply — raising environmental and regulation questions as well as shortage issues — but also from the strategic nature of some specific resources regarding high technology production (Collier & Venables, 2010; Massari & Ruberti, 2013; Ruta & Venables, 2012; WTO, 2010) — raising competition issues. Kim (2010) showed that the number of countries applying export restrictions has increased since 2000. Most restrictions apply to raw materials and basic agricultural products. The motives of this trade policy are various and include the protection of the environment (pollution from the mining industry and energy consumption), the conservation of natural resources for future use, the protection of downstream processing industries, the objectives of fiscal receipts and the control of inflationary pressures.³ As a result, export restrictions are a fairly common trade policy in natural resource sectors, while tariff protection is less developed than in other sectors as shown by Latina, Piermartini, and Ruta (2011). Korinek and Kim (2011), studying the presence and impacts of export restrictions on raw materials, question the idea that export restrictions are the most effective tool to achieve environmental goals showing that, in many cases, these restrictions do not lead to a consistent reduction in production. Raw materials as well as rare earths will continue to feed trade disputes given the characteristic of exhaustibility of these resources and their key contribution in high technology production.⁴

In the *China-Raw Materials* the claimants considered that China's export restrictions on raw materials create shortages in foreign markets, which pushes up prices, while this scarcity is not present in the Chinese market. A higher foreign market price gives a cost advantage to the Chinese industries using these raw materials. The claimants challenged the export restrictions under Article XI of the GATT 1994 prohibiting quantitative restrictions.⁵ China defended the export limitations using in particular Article XX of the GATT 1994 highlighting out possible exceptions to the prohibition of quantitative restrictions, for environmental reasons such as the conservation of exhaustible natural resources (Article XX(g)) and the protection of human health (Article XX(b)). These types of exceptions are not without limits, however. For example, if discrimination is proved, resorting to exceptions of Article XX is not sustainable.

The Panel ruled that China's export restrictions were inconsistent with Article XI of the GATT 1994. It then found that the general exceptions in Article XX of the GATT 1994 could not be used to justify the constraining measures because the Chinese export restrictions were deemed discriminatory. Restrictions on export allowed by the Article XX(g) must be doubled by corresponding restrictions on domestic consumption to be accepted and not recognized as discrimination. To this respect, the Panel stated that the lack of symmetry in policy with respect to markets leads to discrimination. Finally the Panel considered that China has failed to establish the link between export restrictions and health and environmental protection under Article XX(b).

In essence, the dispute raises important issues: the use of export restrictions as a strategic trade policy, the possibility to use environmental concerns in order to justify restrictions of the export of exhaustible natural resources, and the way the WTO standard of non-discrimination applies to this kind of quantitative restriction. Studying the *China-Raw Materials* dispute with the help of economics allows identifying the conditions under which these issues prevail.⁶

In this perspective, this paper offers a theoretical analysis of the *China-Raw Materials* dispute along with an estimation of the import demand elasticity of the claimants as well as China. Focusing on the export quota instrument,⁷ we model a monopoly extracting a non-renewable resource and selling it on both the domestic and foreign markets using Fischer and Laxminarayan (2004)'s framework. This theoretical analysis allows discussion of the economic rationales of the arguments of the parties in the dispute. The effects of export restrictions on prices and natural resource extraction are investigated with the aim of characterizing the context in which the parties' arguments are corroborated. The theoretical analysis provides a context for discussing discrimination from a different point of view to the Panel one. In the dispute, discrimination was recognized based on the asymmetric treatment of domestic and foreign raw material markets by China's trade policy. In the theoretical analysis, we deal with discrimination focusing on price distortion relative to the benchmark of the social planner. Interestingly, one of the results of the model is to show that the differential treatment of domestic and foreign markets implied by export restrictions increases monopoly price discrimination only under certain circumstances. In other words, the legal definition of discrimination does not necessarily square with economic efficiency when (1) there is domestic market power by the resource extracting entity, and (2) markets are segmented.

We show that the effect of export restrictions on price distortion depends on the comparison of the price elasticities of domestic and foreign demands. Because of the crucial importance of demand elasticities, the empirical part of the paper provides estimates of the import demand elasticity of the claimants — the US, the EU27 and Mexico, as well as of China, for each product concerned in the case defined at the 6 digit International Trade Classification level. The estimates are based on the methodology in Hauk (2008) using

³ According to Chen and Feng (2001), the trade policy in China is mainly driven by industrial policy objectives favoring high-tech industries.

⁴ Raw materials are involved in numerous high-technology components of production. For instance, silicon, used for the production of solar panels, is a main raw material in the photovoltaic industry.

⁵ The Chinese export restrictions were also challenged pursuant to Articles VIII and X of the GATT 1994.

⁶ The dispute is analyzed from a legal point of view in Gu (2012), Karapinar (2012), Liu and Maughan (2012).

⁷ For simplicity, we do not distinguish the various forms of export restrictions at stake in the *China-Raw Materials* dispute, considering the export quota only.

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