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Trade liberalization, foreign ownership, and the environment in a small open economy

Chi-Chur Chao [a,b,*], Eden S.H. Yu [c]

[a] Department of Economics, Chinese University of Hong Kong, Shatin, Hong Kong
[b] Department of Economics, Oregon State University, Corvallis, OR 97331, USA
[c] Department of Economics and Finance, City University of Hong Kong, Kowloon, Hong Kong

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Abstract

This paper examines the effects of trade liberalization on firm ownership and the environment for a small open economy. It is found that trade liberalization via tariff reductions can result in a dramatic switch in firm ownership from domestic to foreign, coupled with a lower pollution tax.
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1. Introduction

For the last two decades, inward foreign direct investment (FDI) has contributed to the economic performance of many countries. To attract foreign investment, investment incentives, including low taxes, tax holidays, etc., have been provided.[1] However, many nations have also imposed restrictions on foreign invested firms for a variety of reasons: to ameliorate fear of the monopoly power of multinational enterprises, to protect domestic firms, to tap into economic rents, and to preserve the environment. It is quite common for foreign firms to encounter domestic ownership requirements, environmental regulations and other restrictions.[2]

In recent years, with an increasing number of countries, especially a major trading country such as China, joining the World Trade Organization (WTO), the liberalization of trade and investment has become a global trend. Both tariffs and non-tariff barriers are being reduced or eliminated to pave the way for more trade and foreign investment. For example, the issue of market access was a central theme in the negotiation for China's accession into the WTO. Since joining the

* Corresponding author. Department of Economics, Chinese University of Hong Kong, Shatin, Hong Kong. Tel.: +852 2609 8195; fax: +852 2603 5805.
E-mail address: ccchao@cuhk.edu.hk (C.-C. Chao).

[1] In China, the average corporate income tax rates for domestic and foreign-owned firms are respectively 30% and 11%.

[2] Conkline and Lecraw (1997) provide detailed discussions on the reasons and consequences of restricting foreign ownership in India, Morocco, the Philippines, and South Korea. Also see, for example, the recent survey article by Ching, Wong, and Zhang (2004) on the commonly encountered restrictions for inward FDI in the Asia Pacific region.

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WTO on December 11, 2001, China is allowing increasingly more foreign ownership in various sectors over the next few years.[3] The rise in the ratio of foreign ownership, through its effect on the inflows of FDI, would affect the economic performance and growth of the host country.

On the other hand, liberalization of investment can lead to an increase in pollution especially for developing countries, which generally have less stringent environmental standards. Lax regulations and low pollution taxes in these countries provide an incentive for polluting industries in industrialized countries to move there. This is often referred to as "pollution exporting" or "ecological dumping".[4]

Given that inward FDI plays a key role in promoting production and income and that the subsequent booming activities can lead to more pollution and environmental degradation, a policy issue which has been heatedly debated arises as to how a society can properly balance economic growth versus quality environment. The intricate link between foreign ownership and the environment and the resulting effect on national welfare has hitherto not been scrutinized.[5] The purpose of this paper is to examine why and how trade liberalization affects firm ownership and the environment. Using a general equilibrium framework for a small open economy, we derive the optimal policies regarding domestic versus foreign ownership and the extent of environmental measures. Our main finding is that the optimal policies can be reversed with increasing trade liberalization. In particular, when the tariff exceeds a certain rate, the optimal policy consists of a 100% domestic ownership requirement and a stringent pollution tax. However, when the tariff falls below that critical rate, the optimal policy involves 100% foreign ownership coupled with a lax pollution levy. These results appear to be borne out by casual observations that liberalizing trade via tariff reduction has caused increasing foreign ownership with deteriorations in the environment.

This paper is organized as follows. Section 2 presents a simple general equilibrium model with ownership restrictions and environmental pollution. Section 3 examines the welfare impact of altering ownership restrictions and pollution taxes for the economy. In addition, the individually and jointly optimal policies regarding ownership and pollution are derived, and the consequent implications of trade liberalization on them are deduced. Section 4 provides some concluding remarks.

2. The model

Consider a small open economy that produces two traded goods, X and Y, by using labor and capital. The production technologies for both goods are under constant returns to scale, and the production functions are: $X=X(L_X, K_X)$ and $Y=Y(L_Y, K_Y)$, where L_i and K_i denote, respectively, the amounts of labor and capital used in sector i. The production of good X, however, generates pollution emissions, Z, as a by-product. Since pollution harms the public, a pollution tax, s, is imposed on pollution emissions.

We assume that the home country exports good Y and imports good X. While there are no impediments to the export of good Y, a specific tariff, t, is imposed on the import of good X. Choosing good Y as the numeraire, the domestic price of good X is equal to the foreign price plus the tariff, i.e., $p=p*+t$.

On the demand side, consumers demand good X and Y in the amounts C_X and C_Y. Given the tariff-inclusive price p of good X and the level of pollution Z, the minimum expenditure needed to attain a given utility u is: $E(p, 1, Z, u)=\min\{pC_X+C_Y: u(C_X, C_Y, Z)\geq u\}$, with respect to C_X and C_Y. Here, $E_p=\partial E/\partial p$, being the consumers' compensated demand for good X, and $E_Z=\partial E/\partial Z>0$, expressing the marginal damage caused by pollution to consumers. Note that $E_{pZ}=\partial C_X/\partial Z$, representing the relationship between good X and pollution Z in consumption. For concreteness, they are assumed to be substitutes ($\partial C_X/\partial Z<0$), i.e., consumption of good X declines as the pollution level increases.[6]

[3] According to the agreement, China will permit foreign telecom service suppliers to establish joint venture enterprises with no more than 25% ownership. The foreign ownership will be increased to 35% and 49% after 1 year and 2 years of accession to the WTO.

[4] See Jaffe, Peterson, Portney, and Stavins (1993) for further discussions. Also see Khan (1996) and Neary (1999) for the theoretical work on trade and the environment.

[5] Chao and Yu (1996) examined the welfare effect of domestic equity controls in conjunction with export share requirements. Recently, Chao and Yu (2000a) explore the welfare effect of domestic equity requirements in the presence of alternative types of trade restrictions and varying degrees of capital mobility. Chao and Yu (2000b) studied the individual and joint effects of export share requirements and environmental taxes under quotas and voluntary export restraints. Also see a recent survey in Chao and Yu (2004).

[6] Good X, for example, can be outdoor activities. The case that good X and pollution Z are complements ($\partial C_X/\partial Z>0$) can be analogously considered. See Neary (1999) for discussions.

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