



Forest endowment, logging restrictions, and China's wood products trade

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ABSTRACT

This paper uses the gravity model to investigate determinants of China's wood products trade from 1995 to 2004. The results suggest that trade partners' forest resource endowment and China's own logging restrictions policy affect its wood products imports and exports. China's exported wood products are shown to be inferior goods while China's imported wood products are labor intensive for the exporting countries. Due to rises in Chinese currency against other major currency, transportation costs, and foreign trade actions, China's wood products exports and imports may slow down. The results may have implications on trade and global forest resource conservation.

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1. Introduction

Sparked by an open door policy and economic reform, China's wood products imports and exports have grown rapidly in the last three decades. The real value of China's wood products imports, although starting low, increased nearly 13 times from 1981 to 2004 with annual growth rate of 12.1% while that of wood products exports increased at an even faster annual growth rate of 23.0% (Zhang, 2006). While Zhang, Liu, Granskog and Gan (1998), Sun, Katsigris and White (2004), and Zhang (2006) look into the trend, interpretation, and implication of China wood products trade in the past decades, no study has been found to quantify the magnitude of various economic, policy and locational variables on China's wood products trade. What has fueled China's wood products imports and exports? What are the implications on global forest conservation and forest industry development?

In this paper, we investigate determinants of China's wood products import demand and export supply by country from 1995 when China fully adopted the global Harmonized Tariff Code to 2004.² In particular we are interested in the role of resource endowment of its trade partners and the effect of China's own logging restriction policy implemented since 1998 on its wood products trade. We hypothesize that China would import wood products from resource rich countries and then utilize its cheap labor forces to produce labor intensive wood products that would be exported to resource poor countries and that its own logging restrictions policy might speed up this process. We also investigate whether China's entrance to WTO has any sector specific effects on its wood product trade. The results of this study may have implications on trade policy, resource-based economic development, and global forest resource conservation.

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² In this study, wood products are defined as wood, articles of wood, wood charcoal, cork, and articles of cork covered in Chapter 44 and 45 of China Custom Yearbooks.

Table 1

China's forest resources in comparison with the world in 2000

	Forest cover (%)	Forest area/capita (ha)	Total volume (m ³ /ha)	Per-capita volume (m ³)
China	17.5	0.13	52	6.6
World	29.6	0.65	100	64.6
% of world	59.1	19.74	52.0	10.2

Source: FAO (2001).

Known as a 'workhorse' for empirical studies in international economics, the gravity model has performed remarkably well in explaining bilateral trade flows (Eichengreen & Irwin, 1998). Pioneered by Tinbergen (1962) and Pöyhönen (1963), the gravity model in its most rudimentary form states that bilateral trade increases with economic mass and decreases with commercial distance. Some other explanatory variables such as population, per capita income, adjacency, common language, trade blocs, and the exchange rate have been added gradually to improve performance of the model. This study applies an augmented gravity model to examine China's wood products trade trend using panel data.

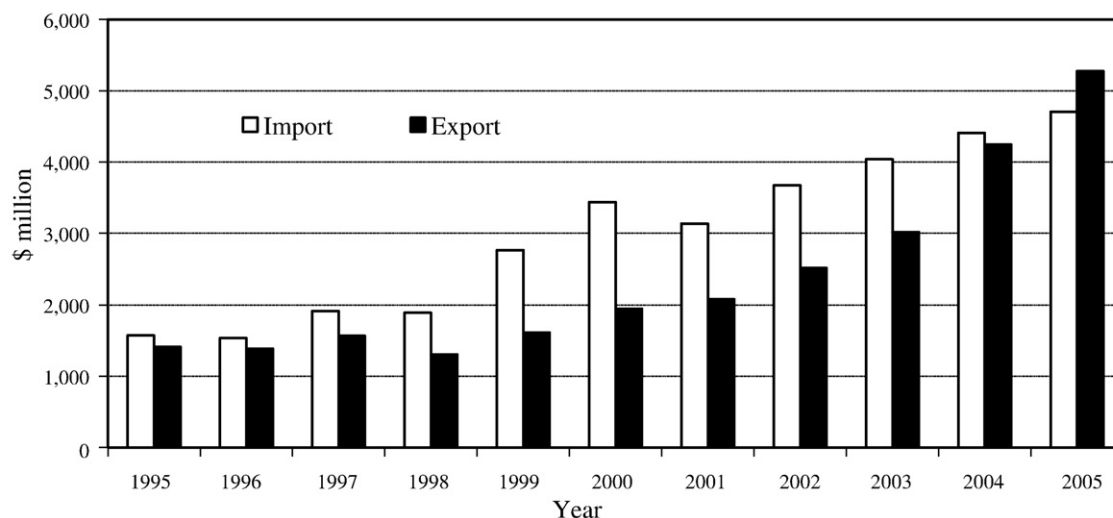
The next section presents China's forest resource endowments, logging restriction policy and recent trends in wood products imports and exports. Section 3 presents a review of the literature on the gravity model in international trade analysis. Section 4 provides model specification and data. Section 5 presents the results. The final section concludes with some discussion.

2. Forest resource endowment, logging restrictions, and trends in China's wood products trade

China lacks forest resources. According to FAO (2001), China's forest cover and per-hectare forest inventory are only 59% and 52% of the respective global average, and its per-capita forest area and per-capita forest inventory are only 20% and 10% of the world average (Table 1). Therefore, we expect that, as China develops, it needs to import wood products from countries with relatively more abundant forest resources. The rapid development of China also puts serious pressure on China's own forest resources and leads to environmental damages in extreme climatic events. In fact, it was the major flooding in two major Chinese river basins in 1998 that led to the implementation of a natural forest conservation program. In essence, the program severely restricts logging from natural forests in the upper and middle reaches of major rivers. This may in turn intensify China's wood products imports. The emergence of fast growing forest plantations in China helps alleviate some pressure on its own natural forests and demand for wood products imports.

On the other hand, wood products exports from China are driven by foreign demand of low cost wood products. Most wood products such as cabinet, furniture, plywood and veneer, and specialty wood products are labor intensive. As labor costs in China are relatively low, it is possible for China to use its own fast growing species and imported raw materials to manufacture further processed wood products and to exports.

Fig. 1 shows the value of China's wood products imports and exports from 1995 to 2005. Wood products imports grew from US \$1.5 billion in 1995 to US\$4.6 billion in 2005 (in 1995 constant dollars). The average annual growth rate was 12%. This high growth was attributed to growing domestic demand, low per capita forest endowment, and policy constraints to domestic production (Zhang, 2006), and by international demand for China's low cost finished wood products such as furniture (Sun et al., 2004). In terms of share in total forest products imports, wood products imports remained around 34% of total during the whole study period. The rest are pulp and paper products imports.

**Fig. 1.** Value of China's wood products imports and exports (in real 1995 US\$).

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