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China's Forest Sector: Essays on Production Efficiency, Foreign Investment, and Trade and Illegal Logging

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Executive Summary

This study explores China's forest sector through the lens of three interconnected issues: production efficiency, foreign direct investment, and trade and illegal logging. China's forest sector is now inextricably linked to markets all over the world and this research provides an important contribution to understanding China's participation in the trade and processing of forest-based resources and products.

First, efficiency metrics were calculated to understand how efficiently Chinese wood-processing enterprises operate, given a set of inputs. Using data collected through an enterprise survey, a stochastic frontier production function was estimated and used to measure technical efficiency for Chinese enterprises. The coefficients for the material and labor inputs proved to be significant, and a mean efficiency score of .70 indicated significant room for efficiency improvements among almost all enterprises.

Second, the location choice of foreign investment in Chinese wood-processing enterprises was examined to understand whether or not the same factors that have been shown to motivate foreign investment in manufacturing as a whole within China also apply to the wood-processing subsector, and to assess the effect of roundwood availability on foreign investment in the wood-processing sector. This was done by employing two estimation methods: tobit and negative binomial. Two variables were found to have an impact on investment: the number of specially-designated economic zones and roundwood production.

The last study examined the effects of the removal of illegally logged resources from China's imports originating in five of China's primary source countries for logs on China's domestic production, consumption, and trade flows. This was performed through the use of a spatial equilibrium approach by modifying the CINTRAFOR Global Trade Model (CGTM). This was performed both by applying a graduated tariff and by changing the supply elasticities in China's primary log source countries. China was evaluated using supply elasticities that simulated the current harvest quota system, and a system that becomes more self-sufficient through increased log production. The results demonstrated large losses in producer surplus resulting from the imposition of a tariff as compared to methods that approach adjusting supply by a change in the cost structure.

In an increasingly globalized world, these issues are fundamental to the long-term sustainable management and provision of, as well as trade in natural resources and environmental services. This research provides an important contribution to understanding China's participation in the trade and processing of forest-based resources and products.

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