

# Market Integration of Domestic Wood and Imported Wood in Japan: Implications for Policy Implementation

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## Executive Summary

Japan has been one of the largest importers of wood products in the world. However, a large area of domestic plantation forests has matured, and the Japanese government has adopted several policy measures aimed at increasing the supply of, and demand for, domestic wood. The Forest and Forestry Revitalization Plan aims to increase the domestic wood supply and increase Japan's wood self-sufficiency rate to 50% by 2020. The potential effect of the Revitalization Plan on the Japanese wood market, should be understood based on the competitive situation and substitutability of domestic and imported wood.

This study examined the existence of a cointegration relationship between domestic and imported wood using sawlog and lumber price data. If both woods compete in a single Japanese market, then the law of one price, the necessary condition for substitution between imported and domestic wood to occur, must hold. Markets are said to be integrated if, at equilibrium, the law of one price (LOP) holds and no arbitrage opportunity exists as a necessary condition for price efficiency. If the LOP is upheld then trade models that assume price equilibrium among homogenous products can be used to study the effects that the Revitalization Plan would have on the volume of domestic and imported wood consumed in Japan. On the other hand, if the LOP does not hold to be true, then the assumption of these trade models is violated, and any results yielded by those trade models may not be correct.

Using Johansen's multivariate cointegration tests, it was revealed that the domestic wood market and the imported wood market had no cointegrating relationships. It was concluded that the market for domestic wood and that of imported wood are not closely connected through price arbitrage and that a price change for one wood product would not necessarily affect the prices of other wood products directly. Thus, the Revitalization Plan might not have a direct effect on the demand for imported wood products. However, in the case where the demand for wood remains constant or declining (as is the case in Japan), it is likely that a substantial increase in the demand for domestic wood would necessarily result in a corresponding decrease in the demand for imported wood.

Perhaps more importantly, the combined impact of the subsidy programs targeted towards the forestry and wood products sectors in Japan will likely adversely impact the demand for imported wood. In this regard, several issues have to be pointed out. First, Japanese housing starts have been decreasing and they are not expected to dramatically increase given that the Japanese population is aging and shrinking. Since lumber demand is highly dependent on the housing industry, the declining trend of housing starts will reduce the total demand for wood in Japan. Given the emphasis of the Revitalization Plan on doubling the supply of domestic wood by 2020, this will inevitably lead to a reduced demand for imported wood.

Second, as log imports decline, domestic sawmills and plywood mills have been switching from imported to domestic logs. This trend is strengthened by the government subsidy programs that support the expansion and modernization of domestic sawmills and plywood mills to replace older processing equipment with newer, more efficient processing technology that can utilize smaller diameter domestic logs. Thus, the share of imported logs used in domestic sawmills and plywood mills is likely to decline.

Third, Japanese macroeconomic policy affects wood imports. Recent monetary-easing measures have impacted the exchange rate by depreciating the value of the yen by almost 50% since Prime Minister Abe's

election in December 2012. The depreciation of the yen as a result of Japan's change in monetary policy is likely to lead to a decline in total wood imports into Japan.

Finally, and potentially most importantly, other government subsidy programs targeted to expand the use of domestic wood may distort the market relationships found in this study. In early 2013, MAFF announced a plan to introduce the "Wood Use Points Program (WUPP)" which provides a substantial subsidy to homebuilders who use domestic wood in place of imported wood in the homes they build. If this program is successful, then the huge subsidies provided by the program would effectively expand the demand for domestic wood and the adverse impact of the WUPP Program on the demand for imported wood could be tremendous.

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