



A Technical Evaluation of the Market for US Wood Windows Within the Japanese Post and Beam Construction Industry

In response to weakened demand for imported wood building materials within the 2x4 segment of the housing industry, a number of US exporters have begun to explore opportunities in the post & beam and prefabricated housing markets. In order to develop a better understanding of the problems and opportunities confronting US wooden windows in the post & beam segment of the Japanese residential construction industry, this project was designed to integrate with the ongoing market development programs being undertaken by Washington State Office of Trade and Economic Development. The objectives of this project were to: 1) describe the factors driving technological change in the Japanese post and beam industry, 2) characterize and describe the major construction technologies used in the post and beam industry, 3) document the technical specifications and construction details required for wooden windows within the post and beam industry, and 4) recommend strategies for increasing the competitiveness of US wooden windows in the Japanese post and beam industry.

This results of this project support the idea that standard US wooden windows can be incorporated into the post and beam construction system used in Japan. However, product design and accessories as well as the range of support services offered by Japanese window manufacturers have a substantial impact on the competitiveness of US windows in Japan. US wooden window manufacturers (including clad wood windows) need to ensure that their windows are properly installed, finished, and maintained in order to ensure that their long-term durability and performance meets Japanese expectations. Significant technical and installation issues exist and US manufacturers must take the initiative to develop training programs and strategies to effectively address these issues so that window performance meets homeowner expectations.

While the fire codes in Japan describe the performance standards that windows must meet, it is interesting to note that the fire codes specify that aluminum is a non-combustible material and therefore exempted from the performance standards. Several people in Japan noted that, although it is difficult for wooden windows to meet the performance standards specified in the fire codes, to date approximately 15 wooden windows have been certified as meeting the fire code criteria. In contrast, they noted that most aluminum windows used in Japan, if exposed to the test criteria described in the fire tests, would melt and fail early on in the test process. It is obvious that the exemption of aluminum as a non-combustible material has played a critical role in providing aluminum window manufacturers with their dominant position in the industry.

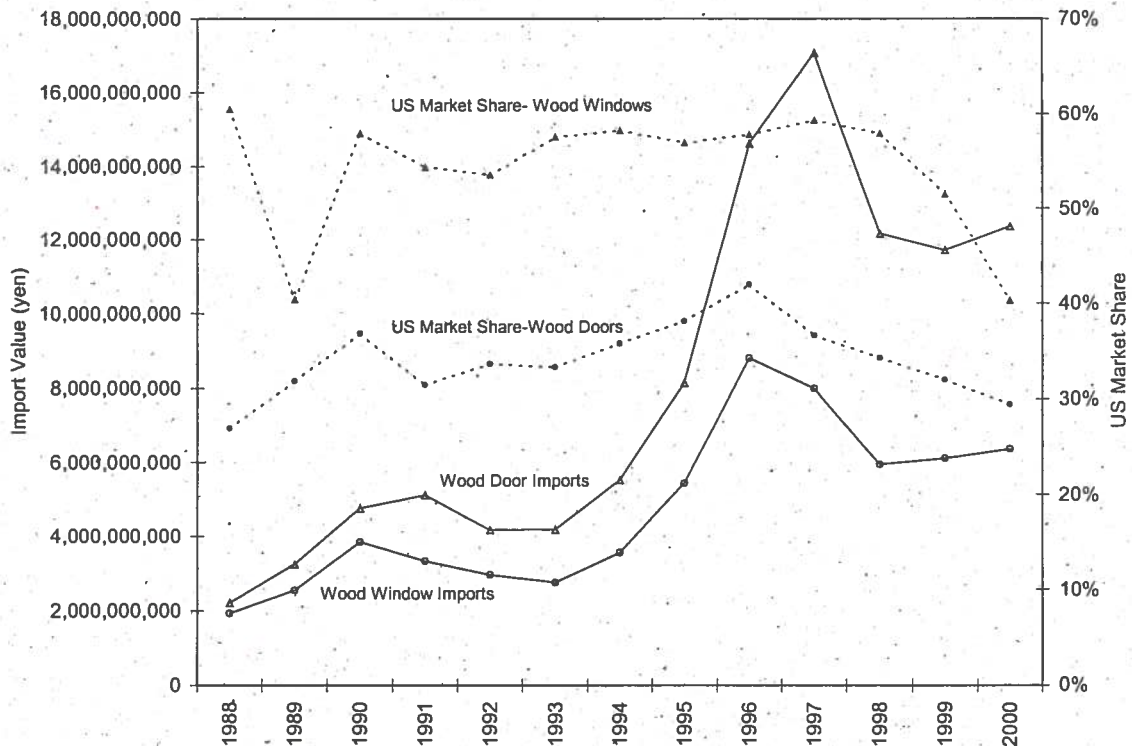
During visits to construction sites in Japan it was noted that the majority of windows had not been sized to fit the rough opening between adjacent posts. Rather, the rough opening for these windows was often framed in between the posts to accommodate the size of each window. Given this practice of in-fill framing for windows, it would be no more difficult for Japanese carpenters to frame in US standard size windows than Japanese metric size windows, a fact that our discussions with Japanese builders and carpenters confirmed. However, the different post sizes used in post and beam construction means that the casing width used to frame out the window in the wall varies based on the size of post being used. To address this complication, Japanese carpenters usually rip the window casing from a wide piece of casing after the window has been installed in the rough opening. So what is limiting the specification and use of US wood windows in Japan? Certainly price is one factor. But beyond this, product design and the range of services offered are equally important factors.

Another factor that impacts the window specification decision relates to the fact that Japanese home builders are usually provided with a range of services by domestic window manufacturers and wholesalers that are often not available from US manufacturers and exporters. These services include extended credit (*tegata*), on-site product delivery, on-site installation crews, and locally available parts and replacement windows. This project found that the following problems could affect the competitiveness of US wood



windows in Japan: 1) the impact of cultural preferences on window design, 2) the metric size of the building module used in post and beam construction, 3) current practices in weatherproofing and flashing, 4) the extensive use of the rainscreen siding system (*dobuchi*), 5) home builder expectations of a broader range of accessories and service from manufacturers and suppliers, 6) the lack of technical support in Japan, 7) the lack of readily available replacement windows and parts, and 8) the lack of window maintenance and upkeep by homeowners.

This research suggests that standard US window sizes can be easily accommodated within the post and beam construction system used in Japan. However, product design and the range of services being offered have a substantial impact on the competitiveness of windows in Japan. US wood window manufacturers should at least consider the following factors to increase the competitiveness of their products in the future: 1) establishing of training and education programs for Japanese builders and carpenters, 2) developing a certification program for Japanese window installers and carpenters, 3) producing and distributing a generic window installation manual in Japanese, and 4) maintaining technical support, parts and product inventory in Japan. This research clearly shows that with a well thought out strategy, US wood window manufacturers could increase their competitiveness in the Japanese post and beam segment of the residential construction industry.



The US market share for wood windows and doors in Japan has been declining since the beginning of the economic hardships in 1997.

A Technical Evaluation of the Market for US Market Wood Windows within the Japanese Post and Beam Construction Industry is available as from CINTRA FOR as Working Paper 84.