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Chinese Wood Products Industry Targets Domestic Market for Growth

By: Jeff Cao, Mihyun Seol and Dr. Ivan Eastin, Center for International Trade in Forest Products, School of Forest Resources, University of Washington

The global economic crisis has caused profound impacts within the Chinese export-oriented wood products industry and frozen its appetite for raw materials imports. According to trade statistics, China's imports of wood products, primarily logs, fell by 9.6% in 2009 to US$7.3 billion from US$8 billion in 2008, this compares to average annual growth of 13% between 2005 and 2008. China's wood products exports (excluding wood furniture) plunged in 2009 to US$7.7 billion from the previous year's US$9.3 billion, down by 17% (Global Trade Atlas 2010). Chinese wood furniture exports also declined substantially during the first half of 2009, but quickly bounced back following the government's decision to reinstate the 15% export tax rebate in June 2009. By the end of 2009, Chinese wood furniture exports registered 11% growth over the previous year, growing from US$6.8 billion in 2008 to US$7.6 billion in 2009. The economic crisis also led to high inventories and significant price drops for wood based commodities, which put over 50% of wood-based panel companies (approximately 3,000 enterprises) in severe financial trouble, ending with forced plant closures or stopped production. Since 2008, wood fiber prices have dropped by 15-25% in the market. High inventory levels within the wood-based panel and flooring industry exceeded 6 million cubic meters. Forest products companies located in 6 counties within the provinces of Zhejiang, Shandong, Jiangsu and Hebei have reportedly laid off a total 3 million workers, according to official sources (State Forestry Administration, 2009).

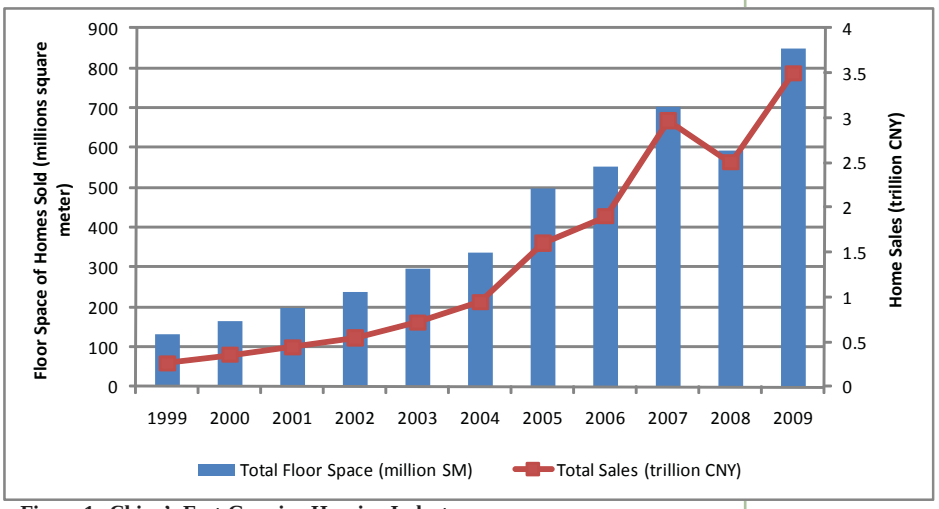

Figure 1. China's Fast-Growing Housing Industry
(Source: China Statistics Bureau 2010; China Index Research Institute 2010)

However, China still maintained its position as the world's largest manufacturer and consumer of wood-based panels, furniture, flooring and wooden door products. With GDP growth exceeding 8 percent between in 2009, Chinese domestic demand has become an important growth engine, supported by massive urbanization and continued growth by the housing industry. Planned reforms of pensions, healthcare and education should also support expansion of domestic consumption and broad-based growth in the long run. Strong domestic stimulus spending on infrastructure, renewable energy and other technology innovations has also been a boost to China's economy, as the Chinese government is aiming to make the transition to a low-carbon economy and thereby enhance long-term competitiveness through energy-efficient technologies, including high-speed rail and green building technologies. The Chinese government has shown a growing interest in green building products and technologies and China is already the largest manufacturer of solar panels and wind turbines. To expand demand within the domestic market, the government provides generous subsidies to households that install solar panels and energy efficient water heaters. According to industry sources, the Chinese Ministry of Housing signed off on a memorandum of mutual understanding with government in British Columbia on March 29, 2010, which includes a provision to build a six floor wood-frame apartment building utilizing materials and technologies provided by forest products companies in British Columbia. This program will allow Chinese gov-

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University of Washington
School of Forest Resources
Box 352100
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98195-2100
Phone: 206-543-8684
Fax: 206-685-0790
www.cintrafor.org

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Located in the Pacific Northwest, CINTRAFOR is administered through the School of Forest Resources at the University of Washington under the guidance of an Executive Board representing both large and small companies, agencies, and academics. It is supported by state, federal, and private grants. The Center's interdisciplinary research is carried out by university faculty and graduate students, internal staff, and through cooperative arrangements with professional groups and individuals.

A number of programs designed to improve the durability, environmental performance and energy efficiency of homes have recently been adopted in Japan. These programs include the Japanese green building program (CASBEE-Sumai), the Long-Term Superior Housing Program (often referred to as the 200 Year House program) and the Eco-Points program. While these programs have the potential to increase the demand for US value-added wood products, they also contain provisions that place imported materials at a competitive disadvantage in Japan.

The Long-Term Superior Housing System provides a variety of incentives and tax breaks designed to encourage homebuyers and homebuilders to favor materials and designs that enhance the durability of the house, improve its seismic performance, and simplify the maintenance, repair, renovation or retrofitting of a house; all of which improve the overall lifespan of a house, which is currently estimated to be about 35 years in Japan.. While it is unrealistic to expect that the lifespan of these home will reach 200 years as the name implies, it is hoped that the program can at least double the average lifespan of homes in Japan. This will be largely achieved by a combination of higher quality building materials and a program of regularly scheduled maintenance inspections of the house by the homebuilder designed to identify and fix maintenance problems early.

Another new program is called the Eco Point program. Originally implemented in July 2009, the Eco Point system was targeted towards consumer electronics and designed to: (1) reduce CO2 emissions, (2) provide a stimulus for the economy and (3) encourage the adoption of ground-wave digital television. In December 2009, the Japanese government expanded the eco-point program to the housing sector by including green building materials used in new and remodeled homes. The new program began on March 8th, 2010 and applies to all construction projects begun after January 1st, 2010 and completed by December 31st, 2010. The program provides an additional ¥100 billion in funding for the residential housing sector. The intent of this new program is to help stimulate the economy and to encourage home owners to recognize the need to reduce greenhouse gas emissions by choosing environmentally friendly building materials and construction technologies.

The new eco-points program applies to new construction and three type of renovation projects, including the installation of energy efficient double-panes windows, the installation of insulation in exterior walls, ceilings or floors, and the installation of barrier free architectural features in conjunction with either of the two previous energy efficiency improvements. The maximum number of eco-points awarded per house or condo is 300,000. Unlike the appliance component of the eco-point program, improvements require third-party verification before they can be certified to receive the eco-points. The program is expected to have a bigger impact on the remodeling sector, since home owners are likely to delay building a new home during the current economic slump in favor of undertaking remodel projects that improve the energy efficiency of existing homes and reduce household heating and cooling costs. Both the 200 Year House and the eco-points programs should provide strong market opportunities for primary and secondary wooden building materials. For example, the demand for energy efficient wood windows should increase as will the demand for lumber produced from naturally durable timber species such as yellow cedar and western red cedar.

The third program, the green building program called CASBEE-Sumai, is designed to reduce the environmental footprint of new houses built in Japan. However, CASBEE-Sumai, which is modeled on the LEED green building program, includes a variety of components that have no scientific basis but are specifically designed to provide domestic wood with a competitive advantage over imported wood. For example, the CASBEE-Sumai program arbitrarily places imported wood at a competitive disadvantage by specifying that all Japanese forests are de-facto defined as being sustainably managed, a status not accorded to imported wood. Similarly, under a section titled "Utilizing Regional Resources and Inheriting the Regional Housing Culture", CASBEE-Sumai excludes imported wood from being awarded points when used in structural applications within a house or in non-structural applications in either interior or exterior applications. In contrast, locally produced wood products can be awarded up to 2 points if used in both structural and non-structural applications.

While both the 200 Year House and the eco-point programs appear to support the expanded use of wood building materials (both domestic and imported), CASBEE-Sumai undermines the environmental benefits of using wood building materials in general by promoting an agenda designed to increase the demand for domestic wood relative to imported wood. In doing so, it ignores the environmental superiority of wood relative to non-wood building materials as clearly demonstrated by a life cycle analysis. In effect, CASBEE-Sumai pits domestic wood against imported wood in a battle for market share within a fixed market segment. In contrast, the goal of the wood industries in both countries should be to expand the demand for all wooden building materials by emphasizing the environmental superiority of wood relative to steel and concrete based on the results of a comprehensive life-cycle analysis such as the CORRIM project. This approach would effectively grow the total market for wood products to the benefit of both domestic and foreign suppliers of wooden building materials.

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ernment officials and local industry to experience the energy and carbon savings, seismic safety, speed of construction and cost comparability of multi-story, multi-family wood frame construction.

The housing industry has become the main driver of wood products consumption in China. After a setback in 2008, home sales in 2009 again jumped by over 43% to reach 850 million square meters with total sales of ¥3.5 trillion, 40% up from the ¥2.5 trillion recorded in 2008 (Figure 1). According to government statistics, the total floor space of new construction in 2009 (including both residential and non-residential projects) increased by 16.6% to reach 3.2 billion square meters, with total investment hitting ¥9 trillion, up 36.6% from 2008 (Figure 2). However, it should be pointed out that despite the rapid growth in home sales, 2009 was characterized by less home construction than homes sold because of the high levels of unsold inventory remaining from 2007 and 2008. According to a report by the China Index Research Institute (2010), between January and October of 2009, floor space for new residential building starts increased by just 0.4%, which was lower than 2008's 1.4%. Both are far below the average annual growth rate of 19.8% which was recorded between 2000-2007 (China Index Research Institute 2009).

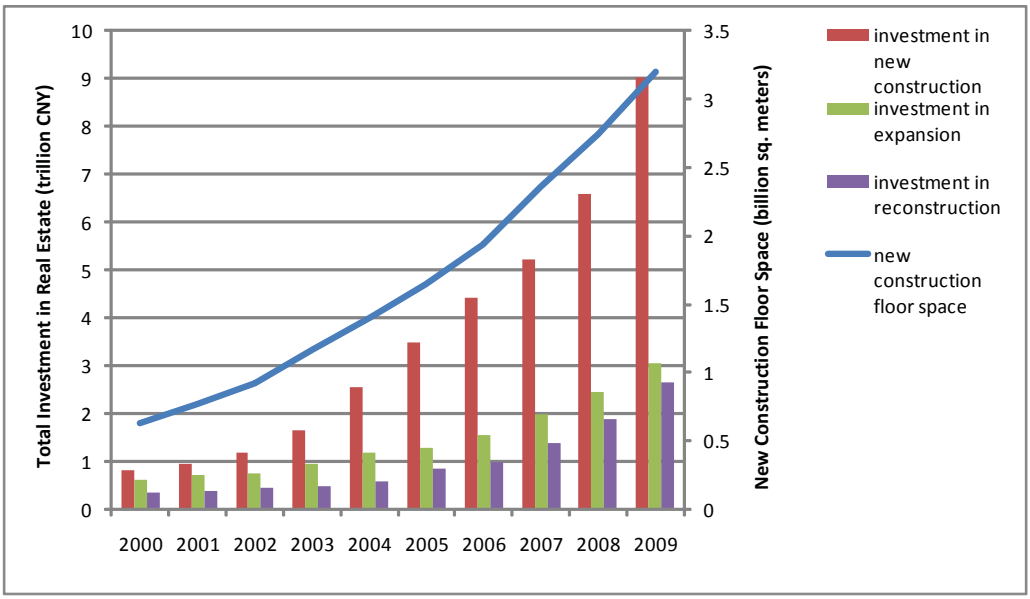

Figure 2. China's Investment in Real Eastate Development 2000-2009
(Source: China Statistics Bureau, 2010)

Currently, about 30% (or 12.4 billion square meters) of these residential buildings are located in the urban area. Due to poor construction quality, industry experts estimate that at least half of the existing urban residential buildings will have to be torn down and rebuilt over the next 15-20 years. According to industry insiders, another 30 billion square meters of new residential buildings will be constructed over the next decade, in addition to the current inventory of 42 billion square meters (as of 2008). Therefore, on-going new home construction, combined with remodeling and expansion projects, will open up tremendous markets for wooden building and home furnishing products. The domestic wooden door industry is probably the largest beneficiary of this domestic market growth. In 2009, the Chinese wooden door industry recorded a staggering 30% growth rate, to reach over ¥60 billion in total output value, and it is expected to exceed ¥70 billion by the end of 2010. Industry experts estimate that the domestic Chinese market will consume over 56 million wooden doors annually.

The wood products industry in China has experienced significant structural changes since 2007. The global financial crisis has cooled off the Chinese wood industry's overheated export growth and its zest for capacity expansion. However, it has also provided an opportunity for many companies to readjust strategies and to target the domestic market for new growth opportunities. With the government's new policy stimulus, many Chinese companies have begun to shift their focus from the export market to the domestic market, particularly in smaller third- and fourth-tier cities, as well as rural markets. In addition, a new round of industry consolidation is occurring across all major industry sectors. Companies are vying to build factory-owned brands, develop new products and establish market channels to reach Chinese consumers more directly and efficiently. Leading companies are becoming bigger through M&A with funds from private equity firms and international investment banks.

Looking towards the future, the Chinese government is likely to play a key role in further restructuring and guiding the Chinese forest products industry onto the track of recovery. According to a recently released government strategy entitled "Forest Products Industry Revitalization Plan", that is supported by 5 key government agencies led by the State Forestry Administration, between 2010-2012, the Chinese government has set ambitious goals to maintain the industry's position as the world's largest producer and exporter of furniture, wood-based panels, wood flooring, and wood doors. The goal of the plan is to grow the industry at a rate of 12% annually, reach ¥2.25 trillion in total output by the end of 2012, compared to ¥1.44 trillion in 2008. The government will also sup-

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port the top 100 state-owned forest enterprises in becoming vertically integrated and help establish 10 specialized industry clusters to encourage increased production and marketing efficiencies. Meanwhile, in response to the growing demand for legal and sustainable timber products in international markets (which is widely perceived as a "green trade barrier" or "trade protectionism" by Chinese manufacturers and exporters), the Chinese government is actively preparing and promoting a Chinese national forest certification standard (CFCC), which is very likely to be endorsed by PEFC in the near future. This new domestic certification program should help Chinese wood products maintain and increase access in international markets.

By 2012, employment within the wood products industry is expected to increase by 27% (from 2008's level) to reach 57 million jobs and become a major employer of rural workers. Besides assisting the manufacturing sector, promoting eco-tourism and related services is another focus of the Chinese government during the 2010-2012 period, and this sector is expected to provide an additional 16 million jobs. The currency exchange policy remains largely an unclear issue at this time. A successful shift to consumption-led growth should allow Chinese policymakers to adopt a more flexible exchange rate policy since currency appreciation is an efficient substitute for monetary tightening. In addition, this should help correct global economic imbalances and reduce the risk of trade wars and protectionism. A stronger Chinese currency would also draw liquidity from the domestic economy and ease imported inflationary pressures, boosting household purchasing power and consumption. This boost should help domestic demand become a stronger driver of growth and begin to wean the Chinese economy away from excessive dependence on low value-added exports. However, a stronger currency will undoubtedly hurt forest products exporters and slow the industry's recovery. Therefore, it remains to be seen whether or not China's wood industry will be able to maintain strong export growth, although it is safe to say that China will continue to be a major importer of wood products during its transition to a consumption-led economy.

School of Forest Resources Adds a New Peace Corps Masters International Program in Natural Resource Management

The University of Washington is the largest source of regular Peace Corps volunteers in the US and is the second largest source of volunteers into the Peace Corps Master's International program. The Peace Corps Master's International Program represents an extraordinary opportunity for graduate students to use their technical and analytical skills to benefit local communities in developing countries around the world. PCMI students undertake an extremely challenging program that combines 27 months of PC service with four quarters of intense coursework and the completion of a professional paper related to a project completed during their PC assignment. Recent funding increases for the US Peace Corps program requires that Peace Corps increase the number of volunteers from the current level of approximately 8,000 to 12,000 within three year. Both the US Peace Corps program and developing country governments recognize the extraordinary quality of PCMI students in terms of their maturity, dedication and motivation. As a result, the demand for PCMI volunteers will increase substantially in the future.

The Peace Corps Master's International Program in International Forestry was established in the School of Forest Resources at UW in early 2005. To date, the program has had three students complete their Peace Corps MI Service: Erik Peterson (PC service in Tanzania 2005 – 2007), Michelle Gerdes (Tanzania 2006 – 2008) and Brian Bragg (Cameroon 2007 – 2009). We currently have two students serving overseas as Peace Corps volunteers: Grover Yip has been working in Cameroon since mid-2008 while Jake Grossman has been serving in Paraguay since mid-2009. There are currently two PCMI students in SFR who are completing their coursework and are slated to depart for their PC assignments later this summer: Peter Gill has been placed into an assignment in Senegal while Seth Kammer has been placed in Ethiopia. Finally, we have just accepted two new students into the PCMI-International Forestry program for next year. The PCMI in International Forestry has been very successful in helping SFR recruit high quality graduate students and to broaden the exposure of all SFR students to forestry issues in developing countries. SFR and Peace Corps have just signed a Memorandum of Understanding to expand the PCMI program at SFR to include a new option in Natural Resource Management. The NRM option allows students the opportunity to study in any of the research interest groups within SFR, including Forest Ecology, Forest Soils, Forest Systems and Bioenergy, Restoration Ecology and Environmental Horticulture, Social Sciences, Sustainable Resource Management and Wildlife Science. The new PCMI in Natural Resource Management will provide an opportunity to increase the number of graduate students in the program while helping Peace Corps meet their ambitious recruitment goal.

A Real Options Approach Suggests Higher Forest Valuation from Carbon Sequestration

By: Stanislav Petrasek, Center for International Trade in Forest Products, School of Forest Resources, University of Washington

The forests of the Pacific Northwest are capable of sequestering large quantities of carbon, and their owners could be in a position to increase their revenue by becoming suppliers of emission credits on carbon exchanges. For commercially managed forest stands, the ability to reduce atmospheric carbon levels goes beyond the carbon sequestered in the forest carbon pool, that is, composed of carbon contained in the biomass and soils of a standing forest. Further emission reductions beyond the forest carbon pool can be achieved by storing carbon in the long-term product pool. The long-term product pool consists of durable wood-based products, and its volume is increased, for example, by using structural timber in housing construction. Additional reduction in carbon emissions is accounted for in the substitution pool and achieved through the substitution effect, as wood-based products displace competing fossil-fuel intensive products in the markets.

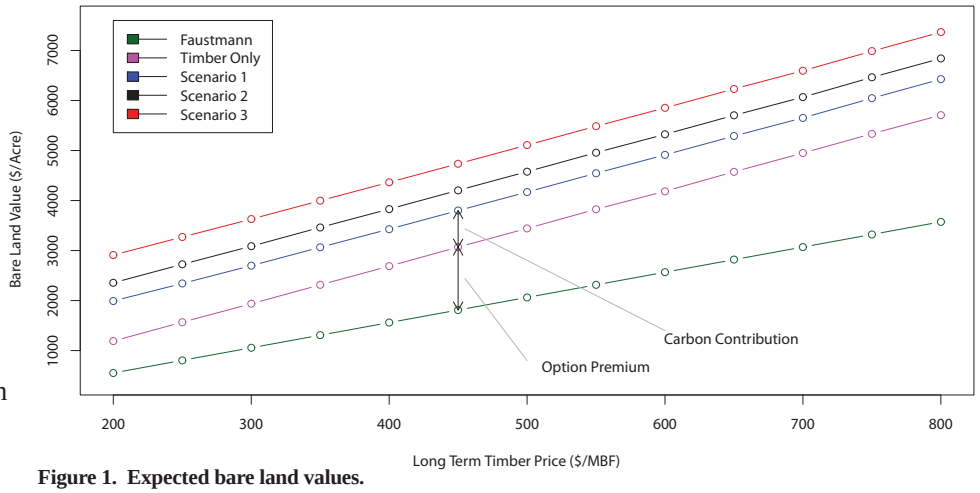

Figure 1. Expected bare land values.

Of critical importance to optimal forest management in a carbon constrained world, and to the viability of carbon sequestration in commercial forest stands, is the amount of credit forest owners receive for the volume of carbon sequestered in each of the three pools. Government policy that credits forest owners with the carbon stored in long-term product and substitution pools, in particular, offers considerable promise for sequestration profitability. However, the markets in carbon emission permits are highly volatile, and their unpredictable behavior poses a challenge to forest owners interested in participating in carbon emission trading. Traditional net present value methods commonly used in forest management and valuation are not well suited to scenarios that are characterized by the presence of multiple sources of risk. An alternative to discounted cashflow methods is provided by real options methodology. This approach fully incorporates the value of the opportunities created by dynamic markets, and it is well suited to the analysis of the viability of carbon sequestration as an additional revenue source for forest owners.

In order to determine the commercial viability of carbon sequestration in the forest stands of the Pacific Northwest, real options methodology was employed to calculate expected bare land values for a Douglas fir stand located in western Washington State. Three distinct carbon credit scenarios were analyzed under the assumption of stochastic carbon and timber prices. Under all three scenarios, forest owners who decided not to harvest their stands in a given year received annual payments whose value was calculated as the product of incremental volume of sequestered carbon and its current market price. The scenarios differed in the amount of credit awarded to forest owners for sequestering carbon in the product and substitution pools at harvest time. Under one scenario, stand harvest was treated as a carbon sink with a corresponding increase in harvest costs. In the other two scenarios, credit for carbon sequestered in the product and substitution pools resulted in moderate and high sequestration revenues at harvest time.

The results for the three carbon sequestration scenarios were compared to expected bare land values from a scenario with stochastic timber prices but no carbon sequestration credit, and to bare land values obtained with the traditional net present value approach. The results of these calculations are shown in Figure 1 and indicate that carbon sequestration has potential as an additional revenue source, because the expected bare land values that include carbon contribution exceed those calculated without carbon revenue. However, the significance of this revenue is highly sensitive to the magnitude of carbon credit forest owners receive for contributions to the product and substitution pools. Also of note in Figure 1 is the

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magnitude of the option premium. The option premium represents the value of managerial flexibility and is not captured by the valuation calculations and decisions made with the aid of the Faustmann formula. The option premium of Figure 1 is realized in practice by replacing the fixed rotation length of the Faustmann formula with a flexible harvest timing rule that determines harvest time as a function of stand age and prevailing market prices. In a forest management scenario characterized by stochastic prices of timber and carbon, the decision rule is formulated by two sets of boundaries. Figure 2 illustrates a shape and location of thirty optimal harvest boundaries that determine the optimal harvest carbon price for a given value of timber price for a particular stand age. Another result of explicit treatment of price risk is variation of optimal harvest ages. Figure 3 illustrates the shape and location of the frequency distribution of harvest ages for various values of long-term carbon price level. On average, high values of long-term carbon price increase the optimal harvest age.

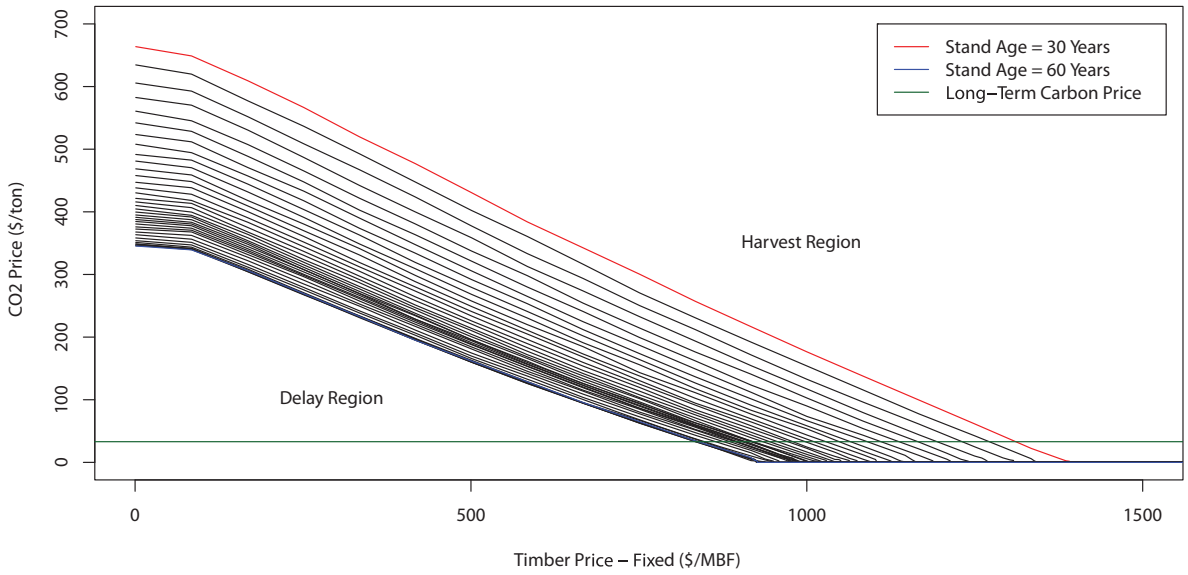

Figure 2. Optimal harvest boundaries.

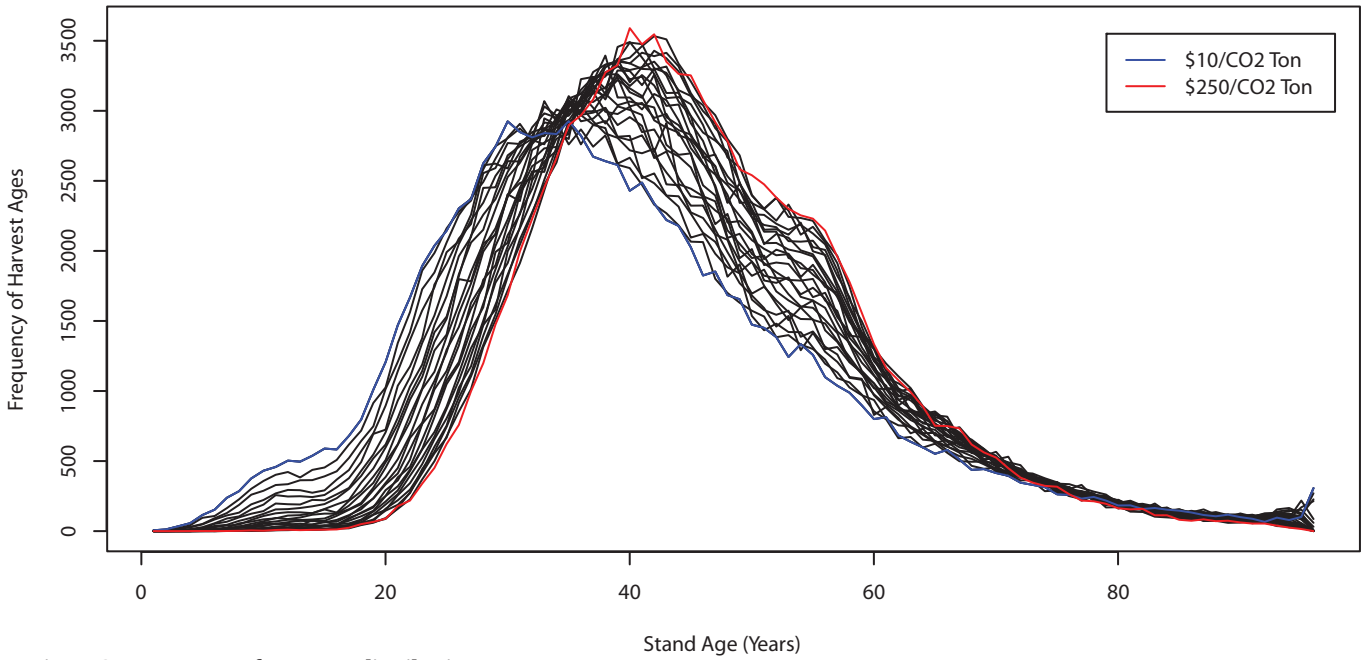

Figure 3. Harvest age frequency distributions.

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