Factors affecting the international softwood lumber market, 1987–93

Nontraditional factors largely overshadowed traditional ones in affecting international softwood lumber prices during the last quarter of 1992 and the first quarter of 1993

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Price trends in the international softwood lumber market are currently the subject of much debate. From 1987 through 1993, volatility in this market was unusual, with prices influenced by a variety of factors. From 1987 to 1992, prices were influenced primarily by forces traditional to the softwood lumber market: world economic conditions, seasonal factors, and weather patterns. However, starting with the final quarter of 1992 and ending with the first quarter of 1993, prices responded significantly to the added influence of nontraditional factors, including environmental issues and trade disputes. Paired with these nontraditional factors, economic forecasts during 1992–93 led to speculation within the market that resulted in large increases in price. The aforementioned debate centers around whether the large price increases in 1992–93 were attributable mainly to traditional or to nontraditional events facing the U.S. softwood lumber industry.

Although the effects of nontraditional events began to influence prices only during the last quarter of 1992, rising environmental concerns, including issues surrounding the protection of the northern spotted owl, have placed a strain on the supply of softwood lumber since 1987.[1] During 1991, another nontraditional factor was introduced when the U.S. Department of Commerce began a countervailing duty investigation into the Canadian softwood lumber industry to determine whether Canada was subsidizing its softwood lumber exports to the United States.[2] This investigation resulted in an import duty that added to uncertainty regarding prices in the U.S. softwood lumber market.

In addition, the industry was bolstered by forecasts of an economic recovery for 1993, both at home and abroad, which meant that there would be the potential for a substantial increase in demand for softwood lumber and lumber products. Expectations surrounding this economic recovery set it apart from upswings in previous periods. Supply restrictions, coupled with an expected increase in recovery-driven consumption, stimulated a great deal of uncertainty and speculation in the industry. This speculation spawned frantic buying in the softwood lumber market, which drove prices upward. These nontraditional factors—environmental issues, trade disputes, and the expectations surrounding the 1993 economic recovery—overwhelmed traditional market events and led the softwood lumber industry toward an unprecedented rise in prices from the last quarter of 1992 through the first quarter of 1993.

This article illustrates how the fluctuations in softwood lumber prices that occurred during this period were chiefly a response to industry speculation arising from the influence of nontraditional factors. Prior to examining the rationale behind rising softwood lumber prices, however, it is necessary to present a brief background on the softwood lumber industry.

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Background

Softwood lumber is a product of coniferous trees, that is, trees with needlelike leaves. This type of lumber is known for its strength and durability. Most softwood lumber is sold by grades, based on properties such as strength and appearance, and is used primarily in the housing market and other construction-related activities. By contrast, hardwood lumber is a product of deciduous trees, that is, broad-leaved trees that are prone to lose their leaves.[3] Such lumber is used primarily in the furniture and cabinet industries. The aforementioned price increases and supply restrictions have occurred predominantly in the softwood lumber market and, therefore, will be the focus of the article.

Approximately 80 percent of softwood lumber is used in the construction industry, whose largest component is residential construction.[4] The U.S. market uses between 40 billion and 50 billion board feet of softwood lumber annually, a figure that is largely dependent on the expected level of housing starts for the upcoming season.[5] (See chart 1.) After residential construction, the next largest end-use markets for softwood lumber are home repair and remodeling, which have grown even as the economy has experienced slower rates of growth. Additional outlets for softwood lumber include road construction and nonresidential construction.

Softwood lumber stocks are concentrated in the Pacific Northwest and the Southeast and cover approximately 60 percent of all commercial timberland.[6] Raw log exports from Federal lands in the Pacific Northwest are prohibited; however, privately owned lands in the United States do not face such restrictions and are a major source of softwood log exports. Other countries also face restrictions regarding the exportation of raw logs. These restrictions allow higher prices to prevail, because several countries are willing to pay a premium for this precious raw material. In turn, the United States must import processed softwood lumber to offset shrinking domestic supplies.

About the data

Price developments discussed in this article are based on data from the BLS International Price Program (IPP). The IPP produces import and export price indexes using three different classification systems: Standard International Trade Classification, Harmonized System, and End Use. All of these indexes use a modified Laspeyres formula. Beginning with the data for January 1993, IPP indexes were weighted by the value of trade in 1990. (Formerly, the indexes were weighted by the value of trade in 1985.) Price data are collected for more than 22,000 products and are not seasonally adjusted. Indexes are currently being shifted from a quarterly to a monthly basis. The analysis in this article relies only on quarterly data.

1987–92: influence of traditional factors

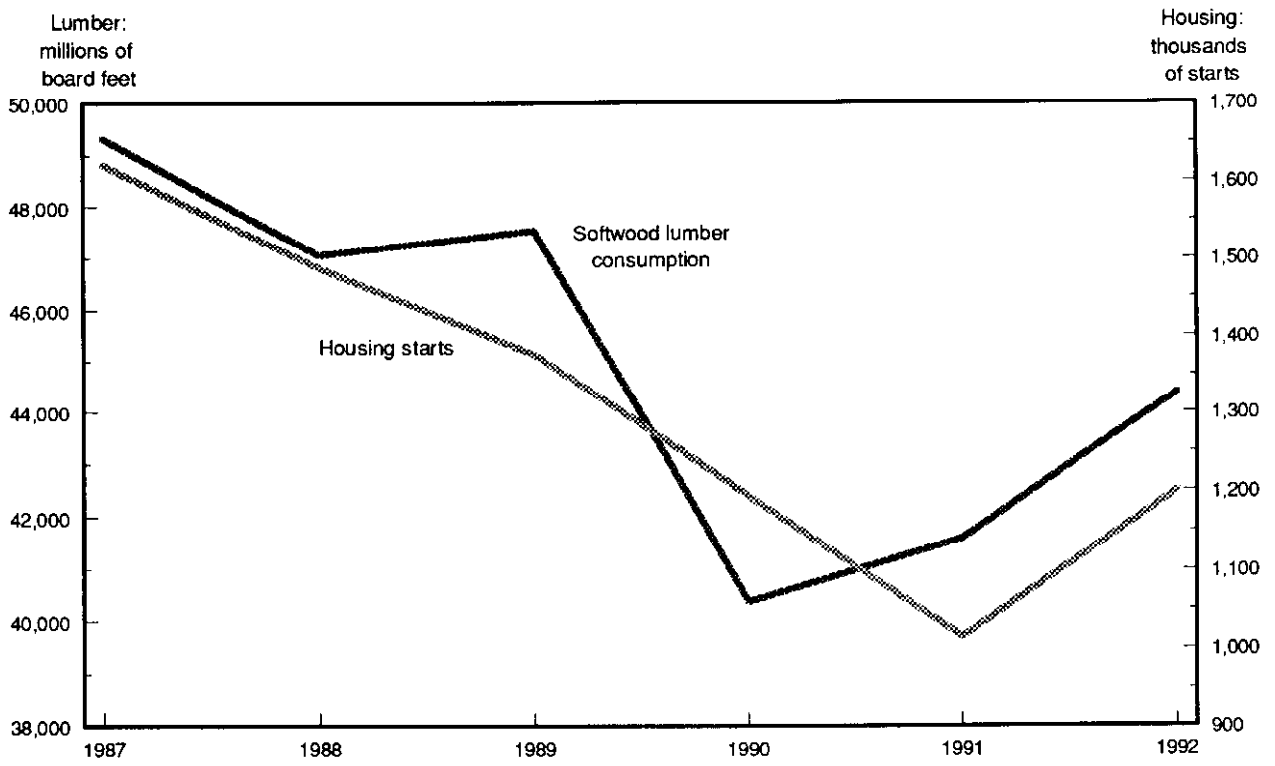
International price levels for softwood lumber rose quite dramatically, on average, from 1987 through the final quarter of 1992. Dividing this period into distinct subperiods provides a useful tool for viewing the unusual price increase in the first quarter of 1993. Starting with the first quarter of 1987 and ending with the final quarter of 1992, import prices for softwood lumber increased 18 percent, while export prices jumped 71 percent.[7] The dynamics of these price changes for imported and exported softwood lumber show how traditional forces affected the market during that time.

While the international market for softwood lumber is subject to a variety of factors, domestic pricing within the United States has a great deal of influence on world lumber prices because the Nation is the leading player in the softwood lumber trade. Thus, U.S. pricing provides a useful starting point from which to analyze the factors affecting price trends for softwood lumber in the international arena.

Domestic prices of softwood lumber have generally mirrored annual trends in the construction industry—most notably, the housing segment. Thus, prices for softwood lumber typically drop during the autumn months of October and November, which usually mark the end of the building season. Prices then begin to rise during the late winter months in anticipation of the upcoming building season. On average, prices climb 6.5 percent at the beginning of each building season.[8] Aberrations do occur, however, with price levels sometimes booming in the summer when construction is stronger than projected. Alternatively, price levels may bust if construction is weaker than expected. Prices in the softwood lumber market, then, tend to be marked by an annual cycle.

This annual trend also becomes apparent when viewing price changes from the initial quarter of 1987 through the final quarter of 1992 for imports and exports of softwood lumber. As with domestic prices, import and export prices of softwood lumber tend to rise during the winter months, which normally mark the beginning of the building season. (See chart 2.) From the first quarter of 1987 through the final quarter of 1992, import and export index values showed fairly significant increases between the final quarter of one year and the first quarter of the succeeding year. Over this period, import prices were up 4.7 percent, on aver-

Chart 1. **U.S. softwood lumber consumption versus housing starts, 1987-92**



SOURCE: U.S. Bureau of the Census.

age, and export prices were even more robust, gaining 5.6 percent, on average.

With this background, the situation facing the softwood lumber market in 1987 provides a good starting point for describing and analyzing recent trends. The U.S. and world economies were particularly strong in 1987, and softwood lumber prices, following cyclical trends in the economy, reflected these conditions. Prices for both imports and exports of softwood lumber reached high levels in 1987 in response to the strong overseas economies and an all-time high in U. S. consumption. As a result, domestic as well as Canadian production increased substantially.

While import prices for softwood lumber generally rose from 1987 to 1992, most of the gains were not realized until 1992. In fact, following the all-time consumption peak of 1987, import prices for softwood lumber fell 8 percent from 1988 through 1990. During this period, housing starts declined nearly 20 percent, dropping from 1,488,000 units to 1,193,000 units.[9] Because 80 percent of softwood lumber is used in construction-related activities, this decline in prices provided further evidence of the correlation between U.S. housing starts and the demand for softwood lumber. From 1991 to 1992, housing starts increased 18.5 percent, from 1,014,000 units to 1,202,000 units.[10] Between the final quarter of 1991 and the final quarter of 1992, prices for imported softwood lumber rose a rather robust 17.8 percent, again reflecting the relationship between U.S. housing starts and the price that U.S. importers must pay for softwood lumber.

The overwhelming majority of U.S. softwood lumber imports come from Canada—especially British Columbia—due to its proximity to the United States. (See chart 3.) During periods of high U.S. demand or inadequate U.S. supply, domestic production is not always sufficient to meet demand. At these times, a greater volume of Canadian softwood lumber is imported to bridge the gap in the U.S. market. During the second quarter of 1991, for example, U.S. construction activity rose unexpectedly, putting a strain on domestic supply, and imports of Canadian softwood lumber increased 42.8 percent in dollar-value terms.[11] As a result of this increased demand, import prices for softwood lumber rose 12.9 percent over their level from the first quarter of 1991. A Canadian supply was on hand to balance this fluctuation, however, and prices fell 5.5 percent by the following quarter. In periods of high U.S. demand, any tightening in the Canadian supply of softwood lumber can send prices upward, which many analysts believe played a part in the price increase for softwood lumber that occurred in 1992.[12]

Export prices for softwood lumber followed a somewhat different path after the 1987 pinnacle in consumption than did their counterparts on the import side. Rather than remaining steady, export prices continued upward from their 1987 highs with few exceptions, until the first quarter of 1990. The major export markets for U.S. softwood lumber are Japan, the European Union,[13] Mexico, and Canada, which together account for more than 85 percent of U.S. foreign shipments.[14] (See chart 3.) From 1987 through the first quarter of 1990, economic conditions facing these countries were quite favorable. The economies of Japan and Germany in particular were very prosperous during this period, and as a result, much expansion was undertaken in those countries. The increased demand caused by the economic expansion of Japan, Germany, and several other European Union countries played a large part in pushing prices for exported softwood lumber up 47.5 percent between the first quarter of 1987 and the first quarter of 1990.

Similarly to the import side, export prices declined for the balance of 1990, but remained relatively stable throughout 1991. From the first quarter of 1990 through the final quarter of 1991, export prices for softwood lumber fell 3.8 percent. Economic conditions facing the major importers of U.S. softwood lumber changed during this period. Japan in particular was stricken by its first significant economic sputtering since the oil shocks of the 1970's.[15] This economic downswing brought about an unprecedented drop in Japan's stock exchange, the Nikkei, while automotive and electronics companies were contemplating scaling back employment.[16] In Europe, integration of the European Union was slowing down because many countries were nervous about unifying their monetary systems and general trade relations. Germany's economy faltered as it was faced with reunification and the daunting task of rebuilding the economy of much of the former East Germany. In addition, Canada, the United Kingdom, and several other European countries were in the midst of recession.

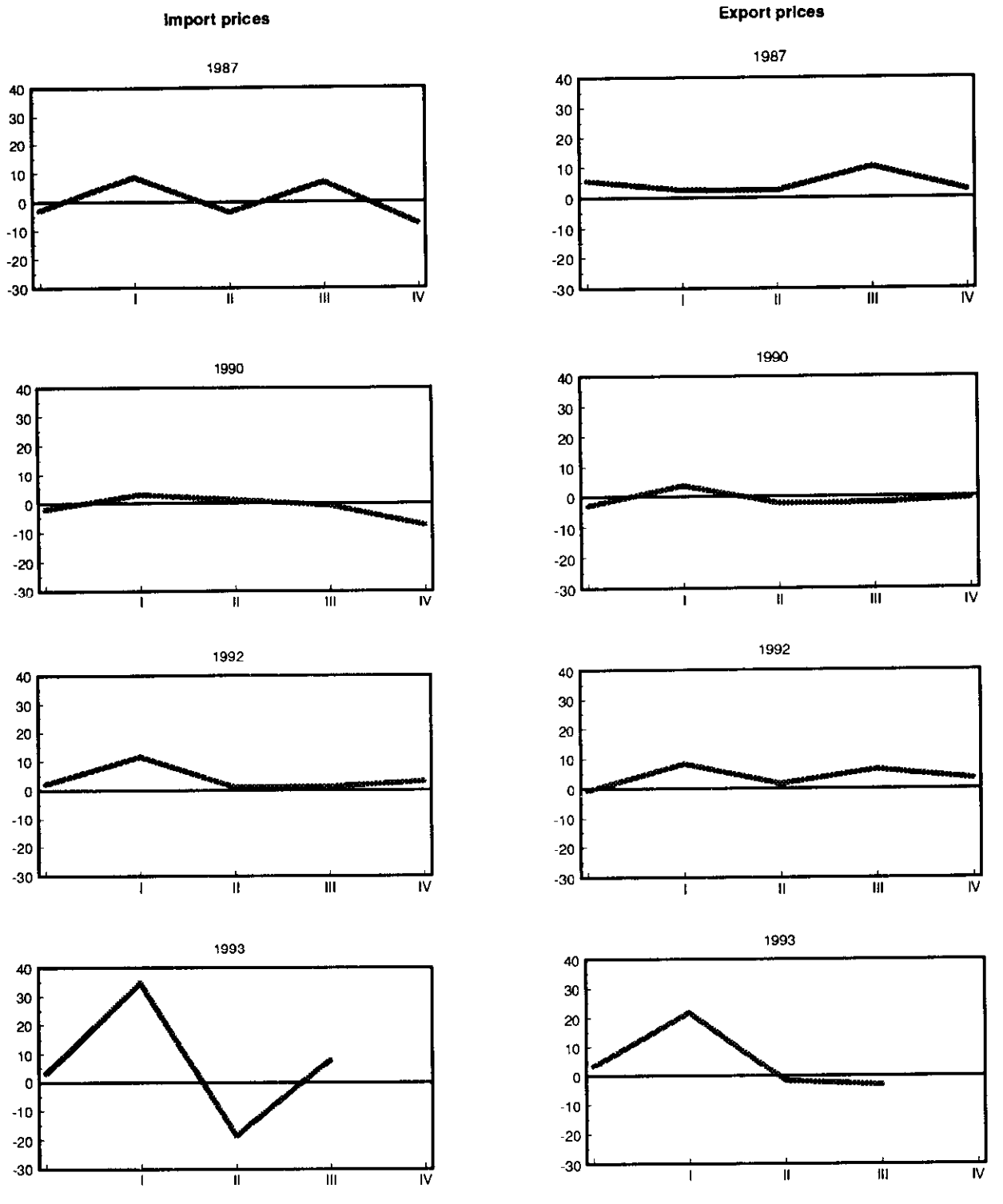
The final quarter of 1991 proved to be a turning point for export prices of U.S. softwood lumber. Starting with that quarter and ending with the final quarter of 1992, export prices rose 20.9 percent. (See chart 4.) Although the Japanese economy was still enduring rough times, Japan was one of the few countries that continued to buy consistent quantities of lumber as prices rose. In 1992, 37 percent of softwood lumber shipments went to Japan to supply construction materials.[17] This purchasing occurred even as Japan's housing sector weathered the worst of the economic storm. Japanese housing starts during 1992 were estimated to be 1.4 million units, a 2.4-percent increase over the 1991 figure.[18] New legislation under the U.S.–Japan Wood Products Trade Agreement, which concerns the percentage of wood allowed in residential buildings, was passed, and as a result, the construction of more wood-framed residential units was permitted. Accordingly, wooden housing starts in Japan rose 7.6 percent in 1992, to more than 671,000 units.[19] Concurrently, rapid economic growth and an expansion in wood-consuming industries in Mexico led to an increase in demand for softwood lumber in that country. Mexico's imports, by dollar value, of U.S. softwood lumber rose from $162.1 million in 1991 to $207.6 million in 1992, an increase of 28.1 percent.[20]

Economic conditions are not the only traditional factors affecting the price of softwood lumber on the international market; inclement weather has also played a part, both internationally and domestically. Weather-induced factors have contributed to both the demand side and the supply side of softwood lumber in affecting prices.

The most recent and most devastating example of the effect inclement weather can have on softwood lumber prices is Hurricane Andrew, which struck Florida on August 24, 1992, and battered not only South Florida, but parts of Louisiana as well. In the aftermath of Andrew, the demand for softwood lumber increased, as roofs needed repair and windows had to be covered. Domestic prices for plywood, which is included in the softwood lumber index, rose 18 percent in the 2 weeks following the horrendous storm.[21] Exacerbating the situation was a speculative run on plywood, as construction companies built up material inventories in anticipation of further price increases.

Domestic prices for softwood lumber were not the only prices affected by the disaster. Export prices for softwood lumber were up 8.1 percent in the third quarter of 1992, from the first quarter of that year, while import prices rose a more moderate 2.4 percent over the same period. Of necessity, the amount of softwood lumber required for the rebuilding effort and the urgency with which it was needed had a larger impact on export prices of softwood lumber than on import prices. The effects of Hurricane Andrew forced foreign buyers of U.S. softwood lumber to compete during this period of increased demand, and prices were bid up in response. Import prices, however, were up less dramatically, as most of the lumber used in the wake of Andrew was from the United States. The situation facing both the international and the domestic softwood lumber market following the hurricane was quite similar to the one that prevailed after Hurricane Hugo in 1989. Domestic prices for softwood lumber reached peak levels following that hurricane, which struck the coast of

Chart 2. **Percentage changes in softwood lumber prices, by quarter, for selected years**



Note; Data are not seasonally adjusted.

South Carolina and surrounding areas. Export prices for softwood lumber jumped 12.6 percent between the first and the third quarters of 1989, while import prices remained relatively stable.

While both Hurricane Hugo and Hurricane Andrew affected demand, other weather conditions can have a direct effect on the supply of softwood lumber. The first few months of 1992 proved to be unusually wet in parts of the United States and Canada, which made logging operations quite difficult. As a result, the supply of softwood lumber for domestic and foreign consumption was less than usual. In the first quarter of 1992, export prices rose 8.3 percent. The timing of the rains coincided with a relatively mild winter that lengthened the construction season in certain sections of the Midwest. With the reduction in domestic supply, the volume of softwood lumber imports necessarily rose. This increase in demand, paired with unfavorable logging conditions in British Columbia, helped push import prices for softwood lumber up 11.7 percent during the first quarter of 1992.

Although the traditional factors affecting the softwood lumber market in late 1992 and early 1993 were important, it does not appear that they were sufficient to drive import and export prices to the highs that were recorded. Instead, other, nontraditional conditions were also influencing the international softwood lumber market during that period.

1992–93: role of nontraditional factors

With regard to prices for softwood lumber, the period beginning with 1992 and continuing into 1993 was markedly different than the period from 1987 to 1992. Prices for both imported and exported softwood lumber were subject to unprecedented increases that began at that time. On the import side, softwood lumber prices were up 11.7 percent during the initial quarter of 1992. The change for that year was a very substantial increase of 17.8 percent. The export market for softwood lumber showed similar results over the same period. Export prices for softwood lumber rose 8.3 percent during the first quarter of 1992. The annual increase for 1992 was a substantial 20.9 percent. Price increases in the international market for softwood lumber continued into early 1993; in the first quarter alone, import prices were up an additional 35 percent, while export prices rose 22 percent.[22] (See chart 4.)

While prices fell following the first quarter of 1993, they did not revert to the levels reached prior to the first-quarter peaks. On the import side, prices dropped 18.6 percent during the second quarter, but then rose 8.0 percent during the third

Chart 3. **Average shares of softwood lumber accounted for by selected trading partners, 1987-93**

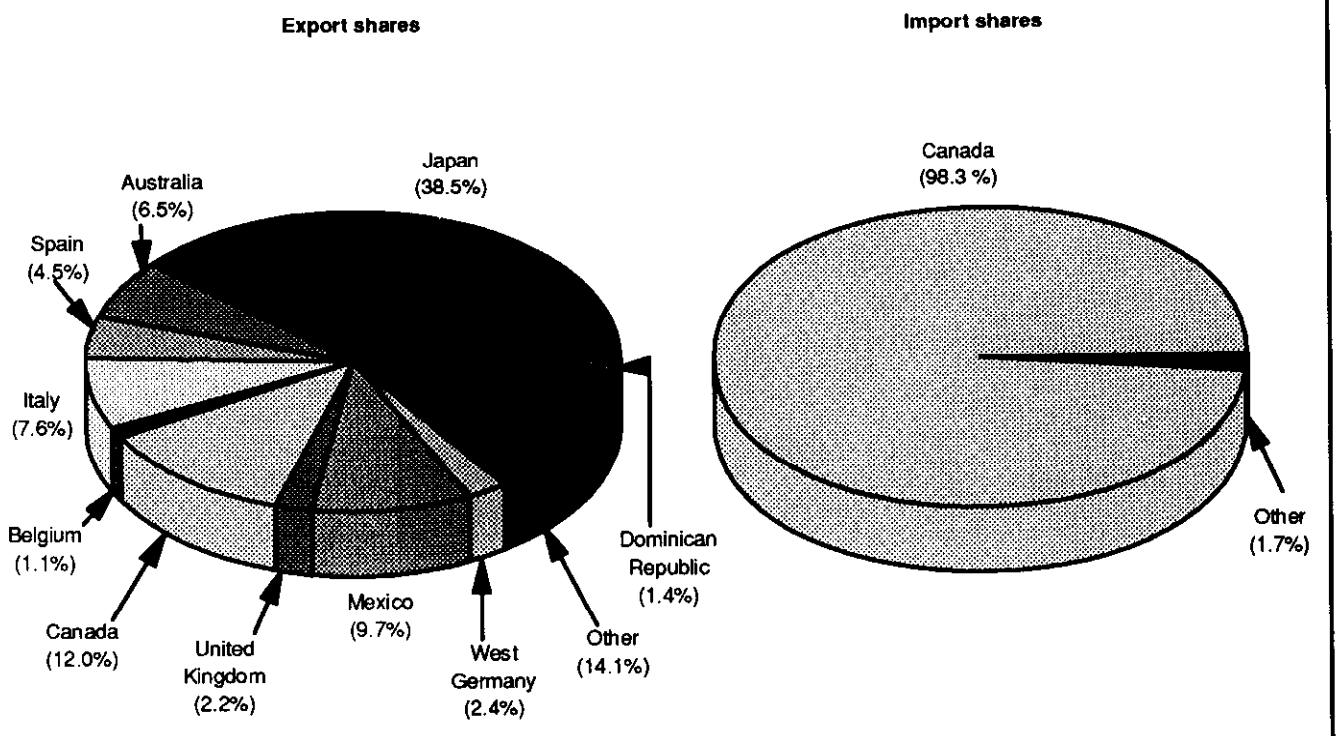
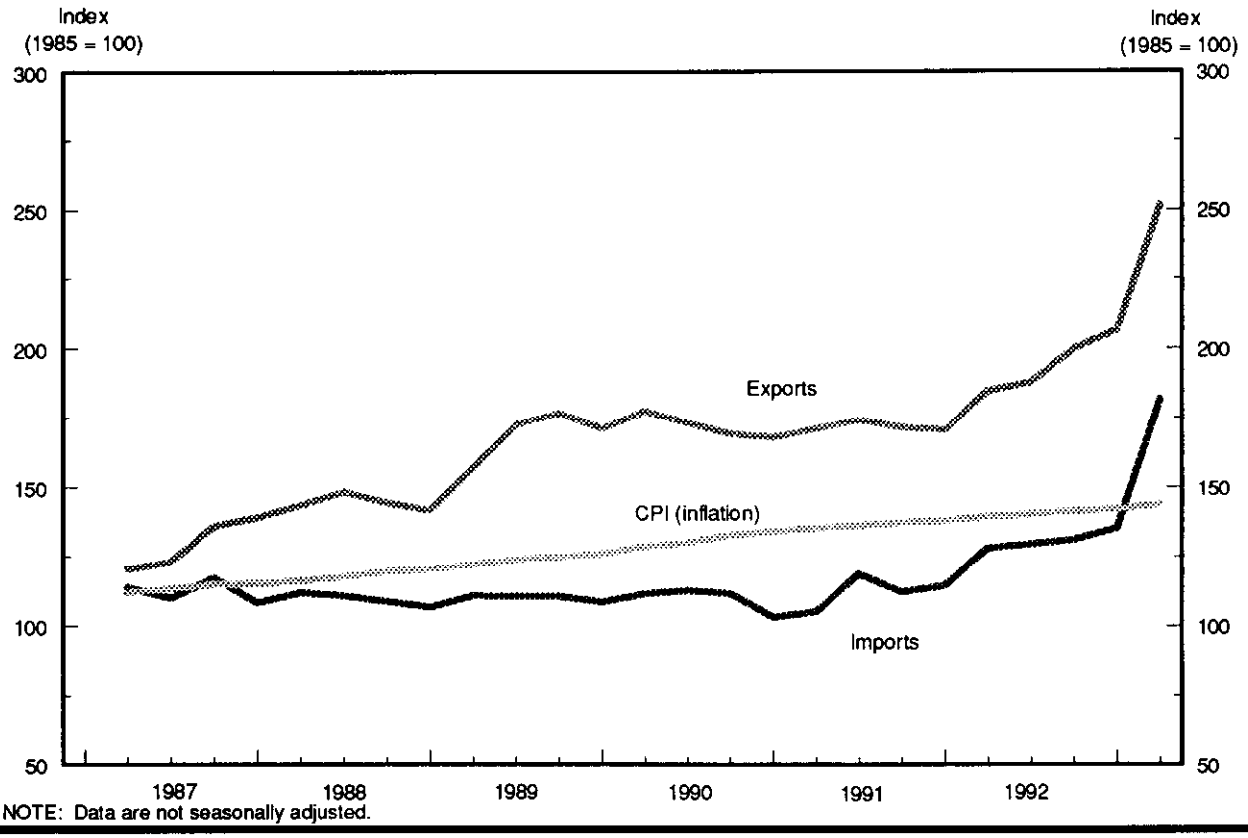


Chart 4. **U.S. softwood lumber prices compared with inflation, 1987-93**



NOTE: Data are not seasonally adjusted.

quarter. Export prices were down during both the second and third quarters, falling 1.7 percent and 3.2 percent, respectively.[23]

The increase in import and export prices during the first quarter of 1993 took hold more quickly and more sharply than did the 1992 surge, as indicated by chart 4. In addition, from December 1992 through March 1993, the Producer Price Index for softwood lumber was up 32.8 percent.[24] The difference between the results reported by the International Price Program and those of the Producer Price Index is due in part to the different market baskets that each index tracks. The large price increases during the first quarter of 1993 appear to be the result of the rising influence of nontraditional factors on the softwood lumber market.

Although several nontraditional factors affected the industry, one event in particular sparked feelings of uncertainty that were subsequently magnified by further developments. This event was the listing of the northern spotted owl as a threatened species on June 26, 1990, under the Endangered Species Act.[25] Because the species' natural habitat is in an area where softwood lumber is logged, the industry was concerned that logging would be restricted. As of 1993, a comprehensive plan for the protection of the owl is still being drafted.[26] Until the plan is finalized, logging activities on Federal forest lands in the area in question have been banned (although private timberlands may still be logged). Since 1992, timber harvesting on Federal lands has been restricted on approximately 5 million acres in the Pacific Northwest as a result of the ruling regarding the northern spotted owl.[27]

Federal forests in the Pacific Northwest contain just about 30 percent of all commercial timberland; however, they hold approximately 70 percent of all U.S. softwood lumber stocks.[28] The concentration of these stocks on federally owned lands has become an increasingly significant issue for the softwood lumber industry, as logging on these lands has declined in the face of rising environmental concerns. Uncertainty regarding the availability of future supplies, which arose from the logging restrictions, prompted consumers of softwood lumber to buy the available supplies at peak prices.[29] While supply restrictions are a valid concern in any industry, speculation apparently caused the consumers to react disproportionately to the potential threat. The timber affected by the logging constraints represents less than 5 percent of the lumber consumed annually in the United States.[30] Therefore, it appears that the large increases in import and export prices that occurred during the first quarter of 1993 cannot be attributed solely to the ruling on the northern spotted owl and environmentally induced supply restric-

tions.[31] Rather, prices of softwood lumber were bid up in response to anticipatory buying fueled by a perceived future threat to supplies.[32]

In addition to the restricted supply of Federal timberland due to constraints on logging activities, sales of timbercutting rights on federally owned lands have declined in recent years because of the environmental restrictions and the forest management policies of the Federal Government.[33] The right to log a specific area of a Federal forest for a determined period of time, called a *timbercutting right*, is sold at auctions. From 1987 to 1992, sales of timbercutting rights in the Pacific Northwest declined approximately 75 percent.[34] This diminution did not immediately affect the supply of softwood lumber, as there is usually a lag between the time of sale of the rights and the time of actual harvest of the trees. Typically, contracts for timbercutting rights in the Pacific Northwest are in place for only 2 to 3 years, whereas Canadian timbercutting contracts can last up to 25 years. Both the short duration and the declining volume of U.S. timbercutting rights have added to the uncertainty concerning future supplies of softwood lumber.

Stepping in to attempt to offset the declining supplies in the Pacific Northwest have been the owners of privately held lands. While the increased volume of softwood lumber logged on these lands has helped bridge the supply–demand gap, current levels of logging are not sustainable. Future resources from private lands will be threatened if the harvest proceeds at its current pace.[35]

Another nontraditional market factor adding to the volatility of prices is illustrated by a trade dispute arising from the dissolution of the 1986 memorandum of understanding between the United States and Canada. This agreement was designed to ensure fair trade in softwood lumber between the two countries. The memorandum required Canada to collect a 15-percent tariff on most softwood lumber exported to the United States or to increase stumpage fees, which are based on the value of the uncut lumber, charged to Canadian loggers. In September 1991, Canada announced its intention to terminate its obligation under the agreement. In response, the U.S. Department of Commerce opened a countervailing duty investigation designed to determine whether the Canadian Government had subsidized its softwood lumber industry, in violation of the agreement. During 1992, the Department announced a ruling in which evidence from its investigation suggested that the Canadian softwood lumber industry had in fact been subsidized by the Government. The ruling called for a 6.51-percent duty on imports of softwood lumber from Canada. Although the duty is currently in effect, the Canadian Government has appealed to a binational arbitration panel made up of members from Canada and the U.S. Departments of Commerce and State. After reexamining the issue, the Department of Commerce recommended that the duty be raised to 11.54 percent.

The current duty adds less than the full 6.51-percent cost to the U.S. price of Canadian imported lumber, since part of the duty is absorbed by Canadian producers.[36] However, the imposed tariff raises the price of U.S. softwood lumber imports. As a result, U.S. demand for Canadian softwood lumber would be expected to fall. Furthermore, since Canadian supplies are also affected by environmental pressures, there is little potential for additional increases in Canadian timber supplies. Hence, any increase in U.S. imports of Canadian lumber would be at the expense of Canadian domestic consumption.

All of these nontraditional factors, coupled with expectations of a more favorable economic environment for the 1993 building season, placed additional pressure on softwood lumber prices. Housing starts were expected to rise considerably,[37] and, as a result, demand increased. Further uncertainty arose in the softwood lumber market because this boost to demand occurred when supplies were perceived to be threatened. Many experts were concerned about the industry's ability to obtain ample supplies, thus fueling an increase in softwood lumber prices.[38]

Several interesting factors are noteworthy as regards the 1992–93 upsurge in softwood lumber prices, compared with other periods of boom in this market. During times of strong consumption, softwood lumber prices normally increase quite substantially and in concert with increases in prices for many other commodities. For example, the 1987 consumption and price boom in the softwood lumber market was paired with a 4.4-percent rate of inflation. However, the recent surge in softwood lumber prices has not been paired with significant general inflation. (See chart 4.) According to the CPI, inflation for 1992 was a relatively modest 2.9 percent. Interestingly, from December 1992 to March 1993, as softwood lumber prices soared, inflation was a mere 1.2 percent. It is also evident that during the consumption boom and price increases of 1987, domestic and Canadian producers were able to step up production. In contrast, the price boom of 1992 and early 1993 was met by a drop in U.S. production and an expansion in Canadian production half as large as the one that took place in 1987. The differing circumstances mentioned above point to the notion that unique factors may have affected the market during 1992–93 and may also be changing the face of the softwood lumber market for years to come.

Conclusion

Prior to the price surge of 1992–93, softwood lumber prices were influenced mainly by traditional market factors. On average, import prices for softwood lumber rose 4.7 percent, and export prices increased 5.6 percent, during the first quarters of 1987 through 1992. These increases followed annual trends marked by the construction season and cyclical trends in the global economy. During the first quarter of 1993, however, prices of U.S. softwood lumber imports increased 35 percent, while export prices rose 22 percent.

Although traditional factors played a role in the price increases of the first quarter of 1993, non-traditional factors boosted softwood lumber prices to unprecedented levels. These factors included the recent 6.51-percent countervailing duty on Canadian lumber, supply restrictions on Federal lands, other environmental concerns, and finally, the increase in demand due to forecasts of a strong economic recovery. Taken together, the nontraditional factors led to industry speculation regarding the existing and future supply of and demand for softwood lumber. This uncertainty caused anticipatory buying that pushed international softwood lumber prices to their unprecedented highs. While prices for softwood lumber have declined since their peaks in the first quarter of 1993, nontraditional factors still appear to have an influence. Prices during 1993 were extremely volatile, yet continued at levels higher than those which existed prior to the first-quarter peaks. □

Footnotes

ACKNOWLEDGMENT: We gratefully acknowledge the help of Robert Blanchfield, Jill Craven, and William Alterman in the preparation of this article. We also thank Daryl Slusher for assisting with the illustrations.

[1] See *A Chronology of Key Actions Associated with the Northern Spotted Owl, Old-Growth Forest Issue*, adapted from testimony presented to the Subcommittee on Forests, Family Farms, and Energy by the Bureau of Land Management, March 1992.

[2] "U.S. Imposed Lumber Duties," *Random Lengths*, October 4, 1991, p. 1.

[3] *Terms of the Trade*, 2nd ed. (Eugene, Oregon, Random Lengths Publications, 1984).

[4] "Wood Products," *1993 U.S. Industrial Outlook* (Department of Commerce, 1993), p. 6–1; and the Irland Group, *Assessment of Pricemaking Forces in the U.S. Softwood Lumber Market*, April 1993, p. 19.

[5] Francis Hunt, *A Look at the Facts: Lumber Prices and Forestlands* (Washington, DC, National Wildlife Federation, 1993).

[6] *An Analysis of the Timber Situation in the United States: 1989–2040* (Department of Agriculture, 1989), p. 49.

[7] *U.S. Import/Export Price Indexes for Selected Categories of Goods* (Bureau of Labor Statistics, 1987–92).

[8] This figure, which is not seasonally adjusted, is taken from the BLS Producer Price Index under the series WPU0811.

[9] See *Statistical Abstract of the United States: 1992*, 112th ed. (Bureau of the Census, 1992), p. 710.

[10] *Ibid.*

[11] Compro, Bureau of the Census online information system.

[12] The Irland Group, *Assessment of Pricemaking Forces*, p. 24.

[13] The 12 member nations of the European Union are Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, and the United Kingdom.

[14] Compro.

[15] American Forest & Paper Association, "A Report on Solid Wood Trade Issues," *International Trade Report*, March 1993, p. 1.

[16] *Ibid.*, p. 3.

[17] Compro.

[18] American Forest & Paper Association, "Trade Issues," p. 3.

[19] *Ibid.*

[20] *Ibid.*, p. 4.

[21] *Random Lengths*, selected issues, 1992.

[22] Bureau of Labor Statistics, International Price Program, unpublished data.

[23] *Ibid.*

[24] This figure, which is not seasonally adjusted, is taken from the BLS Producer Price Index under the series WPU0811.

[25] *Chronology of Key Actions.*

[26] *Economic Analysis of Critical Habitat Designation Effects for the Northern Spotted Owl* (Department of the Interior, Fish and Wildlife Service, 1992).

[27] "Wood Products," p. 6–1.

[28] Robert G. Chambers, "Healthy Demand, Constrained Supply Boost Timber Potential," *Pension World*, June 1989, pp. 21–23; see especially p. 23.

[29] Carrie Dolan, "Commodities: Lumber Prices Sour on Worries about Supply, but Anxiety Grows over Future Industry Effect," *The Wall Street Journal*, February 18, 1993, p. 16(C).

[30] Hunt, *A Look at the Facts.*

[31] Ross Gorte, "Memorandum on Lumber Prices," *Congressional Research Service*, March 1993, p. 3.

[32] The Irland Group, *Pricemaking Forces*, p. 22.

[33] Michael Carliner, "Lumber Crisis," *Housing Economics*, February 1993, p. 7.

[34] Carliner, "Lumber Crisis," p. 7.

[35] *Ibid.*, p. 6.

[36] Gorte, "Memorandum on Lumber Prices," p. 4.

[37] Carliner, "Lumber Crisis," p. 5.

[38] The Irland Group, *Pricemaking Forces*, pp. 16, 24.