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## INDEX

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESEARCH</td>
<td>3</td>
</tr>
<tr>
<td>Cost Factors</td>
<td>3</td>
</tr>
<tr>
<td>Log Prices</td>
<td>3</td>
</tr>
<tr>
<td>Labor</td>
<td>4</td>
</tr>
<tr>
<td>Demand</td>
<td>4</td>
</tr>
<tr>
<td>Housing Starts and Building Permits</td>
<td>5</td>
</tr>
<tr>
<td>Vacancy Rate</td>
<td>5</td>
</tr>
<tr>
<td>Mobile Home Start</td>
<td>5</td>
</tr>
<tr>
<td>Jobber and Mill Inventories</td>
<td>6</td>
</tr>
<tr>
<td>Lumber Prices/Plywood Prices Comparison</td>
<td>6</td>
</tr>
<tr>
<td>Special Report No. 65</td>
<td>7</td>
</tr>
<tr>
<td>CONCLUSION</td>
<td>8</td>
</tr>
<tr>
<td>BIBLIOGRAPHY</td>
<td>10</td>
</tr>
<tr>
<td>APPENDIX</td>
<td></td>
</tr>
<tr>
<td>Graph I Comparison - Production - Capacity</td>
<td>11</td>
</tr>
<tr>
<td>Graph II Log Prices</td>
<td>12</td>
</tr>
<tr>
<td>Graph III Net Sales Realization</td>
<td>13</td>
</tr>
<tr>
<td>Graph IV Production and Orders. Unsanded Plywood</td>
<td>14</td>
</tr>
<tr>
<td>Graph V Comparison Order/Production 1951-61 vs. 1968 and Comparison Increase Orders/Production Capacity</td>
<td>15</td>
</tr>
<tr>
<td>Graph VI Housing Starts and Permits Compared to Orders</td>
<td>16</td>
</tr>
<tr>
<td>Graph VII Jobber and Mill Inventories</td>
<td>17</td>
</tr>
<tr>
<td>Graph VIII Plywood vs. Lumber Price</td>
<td>18</td>
</tr>
</tbody>
</table>
A STUDY OF THE PLYWOOD MARKET

At the time of the inception of this study in September 1968, the plywood market appeared to be taking a strong reversal of its general trend over the last 20 odd years. This prompted the author to decide to study the plywood market and its pricing structure to see if any significant price indications could be developed.

During the fifties the average price of plywood dropped by more than 50%\(^1\). In the sixties this fall in plywood pricing continued, but at a slower rate, and seemed to have bottomed out in late 1966, and in 1968 the prices rose rapidly until they regained the ground lost over the last 20 years. The author, who has worked in plywood wholesale operations the last six years, felt the trend was a real and permanent one. It is felt that part of the reason for the fall in plywood prices was the rapid growth of mill facilities whose productive capacity increased nine times during the period 1950 to 1961\(^3\). Production expanded ahead of demand so that mills had to keep dropping prices in an effort to maintain their mills' order files at appropriate levels. During 1967 and 1968 this expansion slowed to almost a standstill (see graph I). Production in 1967 was generally less than 80% of

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\(^3\)Simpson, Robert S. et al. p. 73, 95.
capacity and the volume of advance orders fell by approximately two to three weeks of production. In 1968, however, order files expanded from 250% of weekly capacity to a high of almost 450%. Production increased to more than 90% of total capacity and beyond normal operating capacity without a corresponding industry expansion. It appears then, that at least for the 1968 year that the industry had lost its ability to respond (see graph I).

During the period of the study the prices of plywood continued to rise until by mid-December 1/4 AD plywood had risen to $118 as compared to a previous high of $97 per MSF, ⁴ and 1/2 CD had risen to $124 per MSF, almost double what it was a year ago but still 10% under its peak of 1950 of $136 per MSF.

The National Home Builders Association has called for Federal intervention. On December 9, Georgia Pacific Corporation announced it would hold its sanded plywood mill pricing at $110/MSF and on December 11, Weyerhaeuser Corporation announced it would follow their lead. Neither company made statements in regard to the sheathing market which comprises the major portion of their plywood production and which is primarily required in the construction business. Although this announcement was published in the major newspapers and the industry periodicals, very little material was actually sold at these prices as the market continued to rise until at the time of this report, 1/4 AD has risen to $124/MSF. Georgia Pacific and Weyerhaeuser

⁴MSF industry abbreviation for Thousand Square Feet Surface Measure.
have announced since, to the news, media that they were going back to current market price and could not hold the promised $110/MSF level.

RESEARCH

Cost Factors

Log Prices

Log prices by grade are not published in Forest Service Log Scale Reports, and since the stumpage prices they do report are affected by a number of variables such as log mix and road construction costs, they could not be used. This same difficulty was encountered by Simpson in his thesis work (see Bibliography). This is unfortunate since Federal timber provides one of the largest sources of logs on the wholesale log market.

The log prices used in this study were those published by the Extension Department of Oregon State University in its FARM FOREST PRODUCTS MARKET REPORT (2). Number 2 and 3 sawlogs were charted with number 3 peelers to indicate the general log market. The other peeler grades moved comparably. As is apparent from study of graph II, the log market during the period was relatively constant and did not show much inflation until August and September, and then only about a $7 rise, before it again leveled off. Plywood pricing as illustrated in graph III had a steady rise during the entire period and has risen before, during and after the log price change. The author was not able to find any direct relationship of plywood prices to log prices.
Labor

Labor rates for the mill workers is negotiated in three year contracts and continued to rise in accordance with their 1966 contract. Labor rates as reported by the Department of Employment, State of Oregon, in its publication LABOR FORCE TRENDS, Volumes X#6 to XI#2 confirm that during this period average hourly rates rose from $3.17 per hour to $3.44 per hour. Part of the rise was in overtime. Simpson (op. cit.) contended that increases in labor costs induced added efficiencies and resulted in lower prices. In 1968 plywood prices rose almost 100% from January to December and almost 30% during the April to September period reported herein. No positive relationship could be found between the rise in labor costs and the reaction of plywood prices.

Demand

There is a direct relationship between the demand and plywood pricing. Unfortunately the reaction appears to occur almost simultaneously and does not allow enough time for anticipation of the market. The relationship does not appear to be a straight line relationship but appears to move geometrically. Note in graph III, prices rose almost 30% while in graph IV, orders scheduled for the same period rose on the average less than 10%. If complete data were available at this time to show the period from September to December it would show a weakening of the order file but a continued rise in the plywood pricing of almost 40%. The key appears to be the continued high level
of orders versus operating capacity rather than a direct order increase price increase ratio. Since the order file or demand is the major factor, it deserves further study.

Housing Starts and Building Permits

Graph VI compares housing starts, building permit issuance and the order file. Note there was a drop in housing starts and permits which occurred during a rise in orders. Note further that the orders increased before the number of housing starts increased. It would appear that the housing starts followed the order increase instead of being a forecaster.

Vacancy Rate

Published data on vacancies by the United States Department of Commerce in its CONSTRUCTION REVIEW (6) were constant for the first three periods of 1968. Since they were constant they could not reveal any indication of increased construction demand.

Mobile Home Start

Mobile home starts for 1968, as reported by the United States Department of Commerce (6), were 36% above the average for 1967. The increased production occurred in the first quarter of 1968 and then remained constant for the last three quarters. While this increase must have resulted in an increased demand for plywood as used in flooring, starts which were even for the last three quarters could not
be used to forecast demand.

Jobber and Mill Inventories

Graph VII illustrates changes in jobber and mill inventories during 1968. Note mill inventories went down at first as demand increased and then rose as production started to catch up. Jobber inventories did not change significantly during this period as reported by the United States Chamber of Commerce (7). Simpson (op. cit.) contended that wholesale inventories fall off ahead of price increases and rose again when prices went down. His hypothesis does not appear to hold here as inventories both fell and rose during a period of drastic price increases.

Lumber Prices/Plywood Prices Comparison

Finally a comparison was made of the lumber and plywood pricing for 1968, to see if some relationship did exist. Graph VIII shows the relationship of 1/2 CD plywood to the RANDOM LENGTHS lumber index. Note that during the period in question plywood prices started to rise before lumber prices, then during June, July and August lumber moved up at about the same speed as plywood. In September, October and November the two moved independently with lumber going down while plywood rose in price. Once again the author could not find any positive indicator of a change in plywood pricing.
In October 1963, Robert Simpson submitted a thesis to Oregon State University, entitled AN ECONOMETRIC ANALYSIS OF DEMAND AND SUPPLY IN THE DOUGLAS FIR PLYWOOD INDUSTRY (4). In it he presented a formula for predicting plywood pricing. His formula for forecasting prices of unsanded plywood is:

$$P_t = 6.13 - .0000483N_t - .136I_{wt} + .752(P_{wt-1} - P_{wt-2}) + .0122^SC_{t-1} + .352^SP_t$$

The abbreviations are as follows:

- $P_t$: Index of quarterly average price
- $N_t$: Quarterly total of new orders in thousand square feet
- $I_{wt}$: Average value of plywood inventories by quarter
- $P_{wt}$: Index of wholesale plywood prices
- $^SC_t$: Total quarterly value of new construction

Note in his formula an increase in pricing would be favored by: a reduction in orders, a reduction in inventories, a lagged change in wholesale prices upward and an increase in construction for the last quarter and an increase in the lagged mill price of plywood. Contrast this with the third quarter of 1968. Prices rose sharply, yet orders rose by over 30% in the second quarter as contrasted to the first, jobber inventories were constant, and housing starts fell during the second quarter. These actions according to Simpson's formula have a tendency to reduce price. In addition the plywood prices for the second quarter hardly rose and could not have offset the other factors.
in the equation enough to forecast the large jump in plywood prices. Actual dollar values of wholesale inventories were not available so the formula could not be tested mathematically. The author believes the reason the formula would not work is that the market has changed significantly. Notice in graph V how production profiles have changed from one of rapid growth to a fairly flat production capacity. Simpson was studying the market when the industry was growing by leaps and bounds but the industry has halted its expansion in Douglas-fir plywood capacity for the last two years.

CONCLUSION

No positive indicators of pricing or market change could be drawn at this time. The author feels that the actions of the market during the last half of the year was an uncontrollable price spiral and different from any previous reaction because the nature of the market has changed. For the first time in most plywood salesmen's memory the order file and production schedule consistently remained above capacity. The author believes the mills initially reacted with slight price increases, but as the relationship continued they became bolder and raised the prices substantially, even though total demand began to level off or slightly drop. They could do this because the demand still remained well above capacity. On the other hand, the buyer was faced with continued price raises and in turn responded by accepting price hikes more readily as he was fearful they would rise even further. This results in a continued price
spiral out of proportion to any factor of demand, almost acting on its own as it were. As mentioned in the introduction, efforts to slow the spiral artificially have failed and it continues. The question now arises as to how long it will be before the industry reacts with expanded production. As it stands no one is willing to even hazard a guess as to when prices will normalize.
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3P #3 Dealer

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GRAPH II
NET SALES REALIZATION (APA MONTHLY REPORT)
1968
Graph V
Comparison order/production 1951-61 vs 1968 and comparison increase orders/production capacity
Graph II
Housing Starts* & Permits*
Compared to Orders.
1968

*Seasonally Adjusted Annual Rate
Dept. of Commerce Bureau of Census
Diagram III: Jobber & Mill Inventories 1968