

Alaska's Timber Industry

By Brian N. Rae

There isn't much good news for Alaska's timber industry. There hasn't been for years. Most of the programs seen as subsidizing the industry today were created to make up for past blows to the industry. There have always been other places that could produce more product less expensively. Aside from a small percentage of very high quality timber, Alaskan timber is not significantly different from that of other areas. A high percentage of Alaskan timber is sold on the world market, particularly to Japan. Shifts in currency exchange rates impact most domestic producers. Alaskan producers live or die by exchange rates.

Still Alaska's timber industry survives. Several factors account for its continued existence. Some are alluded to above and others, through public debates on their merits, are common knowledge to most Alaskans. The industry has seen tremendous change over the past several years. The cumulative impact of all factors dictate the health of the industry, and continuing changes in these factors will affect the industry.

Market Forces in the Alaskan Timber Industry

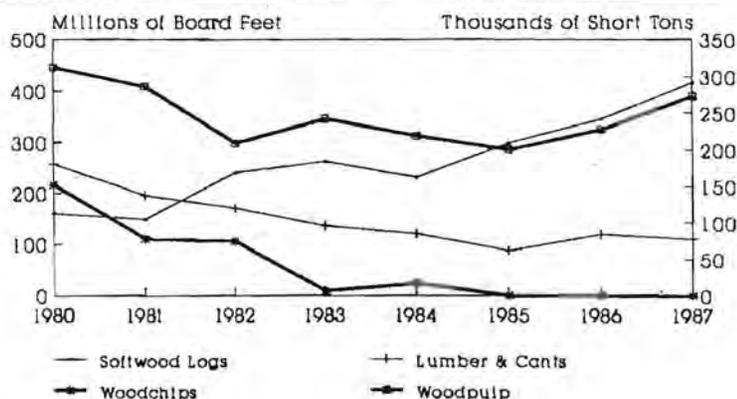
Alaskan timber has a weak position in the world market. While some products are unique and in high demand, most Alaskan timber can be easily replaced by products from other areas. Alaskan producers are last in first out suppliers. This means that when the market is strong and other factors are favorable for Alaskan producers, their product can compete with that of other areas. As the market weakens or production costs increase, Alaskan producers are the first driven out of the market.

Alaska's timber industry must contend with the fluctuations of the world markets. Changes in relative prices among different countries' timber have large impacts on sales. The concept of relative price changes is important. If the price of Canadian timber drops while Alaska's stays the same, then the Alaska product's price has increased relative to the Canadian product. Currency movements are the major cause of relative price changes. Movements between a supplier's and a consumer's currency will affect sales, but currency movements among suppliers often have as much, if not more, effect.

For example, devaluation of the yen hurts the entire industry, since foreign products become more expensive for Japanese consumers. By itself, devaluation of the yen would cause a drop in the Japanese demand for timber. There are, however, few substitutes for wood in Japan, the main consumer of Alaskan timber. The tight grained, old growth spruce is used for

Employment in the timber industry fell sharply from a high in 1980 through 1985, losing one-third of its employment

Figure 1
Forest Product Exports from Alaska
by Product Type-Calendar Years 1980-1987



Source: U.S. Forest Service
Logs, Lumber & Cants in Board Feet
Woodchips and Woodpulp in Short Tons

everything from fine furniture to exposed ceiling beams. It is approaching luxury item status, not solely a construction material but a sign of affluence and a thing of beauty.

For these reasons, demand for prime, old growth timber should not drop sharply. Demand could drop sharply for Alaskan old growth timber if the Canadian dollar devalues in relation to the U.S. dollar. The Canadian product would become relatively less expensive to Japanese consumers, hindering the export of Alaskan timber.

Several other factors can affect the price of Canadian timber in comparison to Alaskan timber. In the early 1980s, with depressed market conditions lowering demand, stumpage fees (the price paid for standing timber) for Canadian producers were lowered. The U.S. government, pressured by U.S. producers claiming unfair competition, threatened to restrict imports of Canadian lumber during the mid 1980s. In 1986, the Canadian government imposed an export tax on lumber shipped to the U.S., raising costs for Canadian producers doing business with the U.S.

Under these conditions, more lumber from British Columbia was available for export to other countries, competing directly with Alaskan

products. The U.S. is the main consumer of Canadian lumber; only a small percentage is exported to Japan. However, the Canadian timber industry dwarfs the Alaskan industry in output. Much of the Canadian product exported directly competes with Alaskan products. A small change in Canadian exports could represent a large change in Alaska's share of premium wood products in the world market.

In December, 1987 the Canadian tax on exports was removed and replaced with increased stumpage fees. This could have two positive effects on Alaska's timber industry. When the export tax was in place, the cost of selling Canadian timber to U.S. firms was more expensive than selling to other foreign firms. Without the export tax, the U.S. is a more attractive trading partner. More Canadian timber should be sold in the U.S. This will remove a portion of the Canadian lumber competing with Alaskan lumber on the world market. Consumption of Canadian lumber might increase in the U.S. if this leads to a price decrease.

The increased stumpage fees also increased production costs for all Canadian timber products, including those destined for locations outside the U.S. All other things being equal, this decreases the relative price for Alaskan timber and strengthens its position in the world market.

Table 1
Tongass National Forest Receipts
and Payments to State (in thousands)
FFY 80 through FFY 87

Federal Fiscal Year	Receipts	Payments
1980	\$26,024	\$6,506
1981	15,008	3,752
1982	21,623	5,406
1983	5,366	1,341
1984	4,063	1,016
1985	209	52
1986	1,967	492
1987	(2,034) ¹	

¹ Negative receipts were reported in 1987 because of retroactive stumpage fee reductions on lease agreements.

Source: U.S. Department of Agriculture, Forest Service, Alaska Region. Timber Supply and Demand 1987, Alaska National Interest Conservation Act Section 706(a) Report Number 7. May 1988.

To compensate Canadian firms for increased stumpage fees, lower shipping rates for timber products might be implemented on the government owned railroad. A potential savings to Alaskan producers could be realized by shipping products to Prince Rupert or Vancouver, with transport by the Canadian railroad to markets in the lower 48. While rail transport will be less expensive than before, additional savings will come from a firm's ability to use foreign hulled vessels, since provisions of the Jones Act will not apply. 1/

Besides the cost of buying the timber and shipping it to market, other

production costs could affect the price of Canadian timber in relation to Alaskan timber. A recent labor settlement in British Columbia could help Alaska's position in the world market. Canadian mill workers recently received, on average, a 16% increase in wages. Alaskan workers several years ago accepted wage

reductions to make Alaskan timber more competitive and to protect their jobs. Comparisons of labor costs are difficult. Changes in currency and worker productivity rates can obscure changes in the real cost of labor. Studies conducted in Canada showed that their timber industry employment decreased at a more rapid rate between 1980 and

Table 2
Volume prepared, offered, sold and harvested in Tongass National Forest
Short term sales program, FFY 1980-1989 (Net sawlog volume)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	Total
New volume prepared	194	148	86	73	195	125	172	54	84	100	1,231
Volume redesigned	0	0	0	12	0	85	110	52	0	5	264
Volume offered-new	176	151	115	184	178	136	84	98	84	100	1,306
Volume sold	173	144	75	69	45	36	174	150	84	105	1,055
Volume lost	0	0	4	37	5	70	12	48	0	0	176
Volume reoffered & sold	0	15	9	2	14	0	90	52	0	0	182
Volume ready to sell	100	104	111	78	223	242	228	84	84	79	1,333
Volume harvested	114	125	132	46	50	32	50	63	125	120	857
Volume uncut under contract	—	—	—	—	—	—	—	438	397	382	—

Source: U.S. Department of Agriculture, Forest Service, Alaska Region
Timber Supply and Demand 1987, Alaska National Interest Conservation Act
Section 706(a) Report Number 7, May 1988.

Table 3
Forest Product Exports from Alaska to All Destinations
1980-1987 Calendar Year 1980-87¹

	1980	1981	1982	1983	1984	1985	1986	(e) 1987
Softwood Logs								
Volume (MMBF)	161	149	241	262	232	299	346	417
Value (\$1,000)	85,489	71,690	115,333	111,587	91,844	115,820	137,580	179,190
Unit Value \$/MBF	533	481	478	426	397	387	398	429
Lumber and Cants								
Volume (MMBF)	257	196	172	137	121	88	120	111
Value (\$1,000)	89,372	59,733	56,692	41,000	34,336	23,083	32,083	30,264
Unit Value \$/MBF	348	305	330	300	284	263	267	273
Woodchips								
Volume (MSTN)	151	78	74	7	17	0.0	0.0	0.0
Value (\$1,000)	11,436	5,716	5,116	230	767	0	0	0
Unit Value \$/STN	76	74	69	35	47	0.00	0.00	0.00
Woodpulp								
Volume (MSTN)	312	286	209	242	219	200	228	274
Value (\$1,000)	153,247	140,494	97,089	117,783	97,345	74,153	89,167	128,239
Unit Value \$/STN	491	491	464	487	445	370	392	469
TOTAL VALUE (\$1,000)	339,544	277,715	275,271	270,600	214,339	213,057	258,830	337,693

¹ Volumes exported are in millions of board feet (MMBF) of thousands of short tons (MSTN). Values are free along ship (FAS) in thousands of nominal dollars. Unit values are dollars per unit.

(e): estimate

Source: U.S. Department of Agriculture, Forest Service, Alaska Region from data provided by the U.S. Department of Commerce 1987.

In 1987 Japan purchased 65% of the export logs and 98% of Alaskan lumber

1985 than did production. Similar results could be expected in Alaska, however care must be taken with these types of comparisons since the product mix is different over these years. In 1987, round logs were a higher percentage of exported timber, and are the least labor intensive product (Figure 1 and Table 3). All other things being equal, wage increases in competing countries help Alaska's position in the world market.

In addition to changes in production costs, an international agreement might affect timber sales. In 1987 Japan purchased 65% of the export logs and 98% of Alaskan lumber. Japan has always been a major importer of Alaskan timber products, but Japan also imports from the Soviet Union, New Zealand, the Pacific Northwest and British Columbia. With Japan's emergence as a world economic power, and their growing balance of trade surplus with the U.S., pressures are mounting for Japan to import more U.S. products. Much of the international trading in Japan is overseen by huge trading companies. These companies are aware of these pressures, and will sustain a loss in one subsidiary company to assure free trade for its other products.

In the not too distant past, Japan had an advantage over the U.S. in labor

costs. Japan preferred to purchase round logs when available, performing any processing work in their country. With rising wages, Japan no longer enjoys an advantage in labor costs, and is purchasing more lumber and finished products. Unfortunately, many lesser developed countries are in a better position to take advantage of this change than Alaska. Alaskan round log exports have, except for a slight drop in 1984, been increasing since 1980. This is mainly due to an increased supply, as demand was down during most of this period. Alaska Native and Village corporations have recently started logging operations, and do not have to perform the primary manufacturing which is required of timber from Forest Service land.

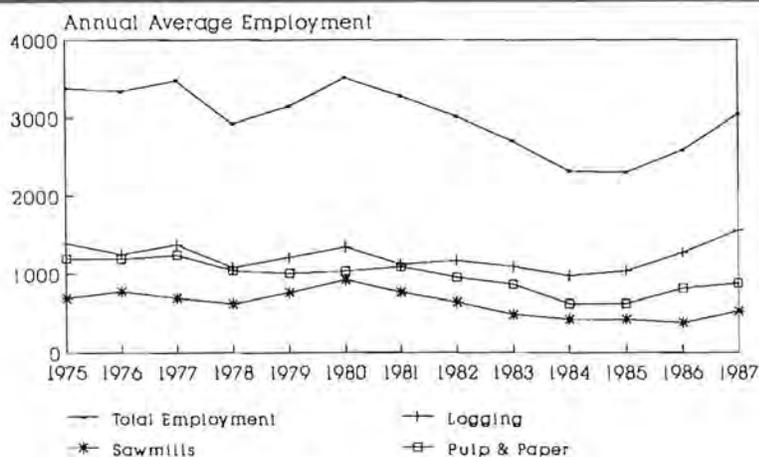
When Southeast Alaska employment was forecast for 1988 and 1989 (April 1988 *Alaska Economic Trends*) it was assumed the U.S. dollar would not reevaluate in comparison to the yen enough to affect timber industry employment. This should hold true unless other factors such as those outlined above contribute to affect the relative price of Alaskan timber to the Japanese.

The Timber Industry and Employment

Some have argued that Alaska's economy, through hard knocks and diversification, is maturing. Still, our economy relies heavily on its natural resources to provide the foundation upon which other sectors can build. This state has always had a resource based economy. Even before its purchase by the United States, Alaska was used as a reservoir of raw materials. Since timber is one of Alaska's most abundant natural resources, the harvesting and processing of Alaska's timber has provided an important source of employment for Alaska's economy for many years.

Employment in the timber industry fell sharply from a high in 1980 through 1985, losing one-third of its employment (Figure 2). The industry

Figure 2
Timber Industry Employment
Calendar Year 1975-1987



Source: AK Department of Labor

fell victim to dwindling demand in the early and mid 1980s, although some factors such as logging of Native lands slowed industry employment losses.

During the good market years of 1986 and 1987, the timber industry posted double digit percentage employment gains. This is strong growth under any circumstances, but especially so considering the poor performance of the economy as a whole. In 1986, seafood processing was the only other industry to register any employment gains. Outside of the manufacturing sector, no other major industry grouping posted employment gains during 1986 or 1987. Without the strength of the manufacturing industry, the state's most recent recession would have been even worse.

While hard to quantify, indirect employment from the timber industry is clearly evident. Certain sectors, such as the Southeast water and air transportation industries, do a substantial share of their business with the timber industry. Federal employment related to the timber industry in Alaska is also important to the economy. Of 18,000 federal employees, 1,000 work for the Forest Service although not all of these workers are hired because of timber activities. Most Southeast Alaskan communities with logging activities benefit from this federal employment. Many of the employees are residents of these communities, and some residents obtain part-time or seasonal employment with the Forest Service. The Forest Service, using an input-output simulation model, estimates that for every three jobs in the timber industry, an additional job is created in Alaska. Others have estimated the ratio higher for the economy as a whole, with three jobs created for each five jobs in an industry.

Like most segments of the economy, the amount of money injected into the economy by the timber industry is small when compared to the oil industry. Total yearly payroll for logging, sawmills and the pulp mills in 1987 was \$108,385,968 or one-fifth that of

oil and gas mining, representing 1.9% of the state's total nonagricultural payroll. The average employee's annual pay in 1987 was almost \$35,500, nearly 30% higher than the all-industry average.

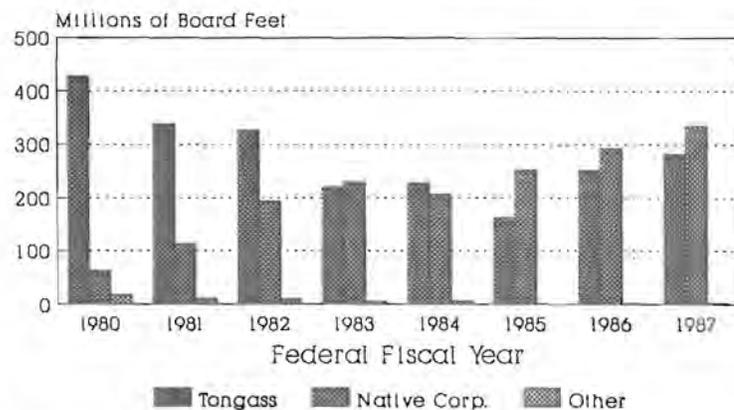
The industry is very important to the state's economic health. Timber products accounted for 20% of the dollar value of all Alaskan exports in 1986. During 1985, employment in the timber industry was 1% of total employment; in 1987 it was 1.4%, due to increasing timber employment and decreasing total employment. Much of this employment is in smaller communities, predominantly in Southeast. Many of these communities rely solely on the timber industry to fuel their economy. Terms of the timber sales in both the Tongass and Chugach forests give the state 25% of all monies received by the federal government for timber sales (Table 1). This money is mainly used to finance schools and build public roads in areas near the forests.

The Tongass Timber Reform

The single most important factor for the long term future of Alaska's timber industry is the outcome of the Tongass timber reform debate. Under provisions of the Alaska National Interest Lands Conservation Act of 1980 (ANILCA),

**Timber products
accounted for 20% of
the dollar value of all
Alaskan exports in 1986**

**Figure 3
Timber Harvest in Southeast Alaska
by Source of Timber-Federal Fiscal Years 1980-1987**



Source: U.S. Forest Service

To help insure employment in the Tongass area, ANILCA required the Forest Service to make available 4.5 billion board feet of timber per decade for harvest, or 450 million board feet per year

the United States Forest Service stated its intention to fund certain timber harvest activities, while at the same time removing large areas of land from future timber harvests.

To help insure employment in the Tongass area, ANILCA required the Forest Service to make available 4.5 billion board feet of timber per decade for harvest, or 450 million board feet (MMBF) per year. The Forest Service realized that to maintain a viable timber industry certain steps would have to be taken. Because the available timber was of lower quality and less accessible, the Tongass Timber Supply fund was created to build roads, implement measures to improve growth rates and quality, and promote advanced logging techniques.

The federal government had taken earlier measures to promote the timber industry in Southeast Alaska. In the 1950s, long term timber contracts were signed with several companies. Two of these contracts are still in force. Ketchikan Pulp Company and Alaska Lumber and Pulp Company were guaranteed access to 13.3 billion board feet of timber over the course of their 50 year contracts.

Smaller sales of Tongass timber continue. During the 1987 federal fiscal year, the U.S. Forest Service offered about 400 MMBF of timber for sale. Approximately one-quarter of this amount was offered to small purchasers (Table 2). Of the total offering, 150 MMBF was purchased, which included 52 MMBF from lands previously offered for sale. The cost of infrastructure development necessary to prepare timber tracts for sale are significant. With such a small percentage of available timber actually being purchased, the U.S. Forest Service is spending more than it collects from sales.

This is not unexpected, considering the poor market of the early 1980's. The neighboring British Columbian government, with a long history of profitable forest management, also lost money during this period. The losses

were increased with the Forest Service's interpretation that it must prepare and supply 450 MMBF each year, and with the required infrastructure development necessary after ANILCA.

Between three and seven years are needed to prepare a site for harvest according to the Forest Service. Recently, the U.S. Office of Management and Budget and the Forest Service have taken the position that only the amount demanded need be prepared for harvest. This seems to be a reasonable approach, if a buffer is maintained to satisfy unforeseen demands for timber.

Provisions were placed on the sale of Tongass timber to increase employment in Southeast Alaska. Before the timber could be exported primary processing would have to occur. At a minimum a log would have to be surface cut on two sides, creating a cant. The state also required primary processing on state forest land's timber until a court decision in 1982 abolished this provision. The intention of these provisions was to promote more extensive processing, but this reduced the demand for the product. Producers are, at present, performing the minimum amount of processing necessary to meet the Tongass requirements.

Alaska Native Regional and Village Corporations

The Native regional and village corporations are big players in Alaska's timber industry. Within Southeast Alaska alone, over 600,000 acres are Native owned. Other areas of the state showing strong timber potential are the Prince William Sound area, the Kenai Peninsula and the Mat-Su boroughs, all with large Native land holdings. Each Alaska Native village corporation has approximately 23,000 acres of land. Sealaska, the Southeast regional corporation, has over 300,000 acres of land and is negotiating the conveyance of nearly 30,000 remaining acres. To date, about 20,000 acres of Sealaska timberland have been harvested with direct employment of nearly 400 persons.

In comparison to the sustainable yield approach taken by the U.S. Forest Service, Native corporations have been very aggressive in their timber harvest plans. This approach has drawn criticism from different sectors, who correctly point out that at present harvest rates marketable timber supplies will be depleted by the early 1990s.

Before criticizing the current harvest plan, one should consider the position in which the Native corporations found themselves. As part of the Alaska Native Claims Settlement Act (ANCSA), the corporations were conveyed certain properties. In Southeast, much of these properties were tracts with marketable timber, seen as capital. An agreement could just as easily have been reached with cash, which was needed to diversify the corporations and make them profitable. Accepting timberland allowed the corporations to sell the timber for cash flow and retain the land.

Many persons would like to see the corporations use the sustained yield approach to harvests. Unfortunately, this is unfeasible for several reasons. The small size of the land holdings of an individual corporation, 23,000 acres for the village corporations, precludes this approach. Using information obtained from Sealaska Corporation, between 55% and 60% of the land conveyed to Sealaska under ANCSA contains marketable timber. If this same proportion holds true for village corporations, the annual allowable sustained yield harvest would be less than 160 acres. After investing the fixed costs for construction of a base camp, log transfer facilities, roads and other infrastructure, harvesting such a small tract would lose the corporation money.

Secondly, much of the lands held by the corporations is fragmented, leaving tracts too small to profitably harvest. If a large operation is active close to a small tract, with infrastructure costs already absorbed by the large operation, then the tract might be harvested. Agreements might also be

worked out where timber surrounding the small tract is traded for other land holdings of the village corporation.

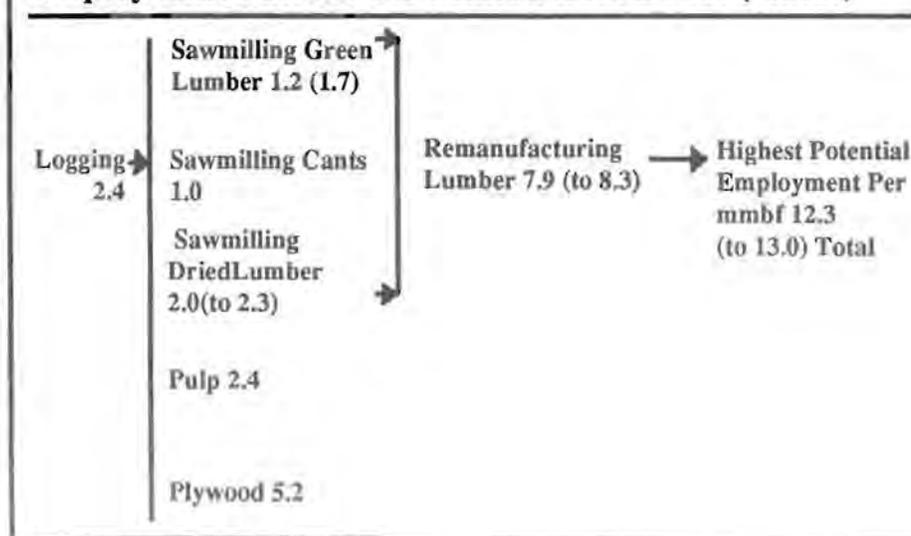
Because of the high start-up costs involved in creating a timber company and the uncertainty of the world market, many corporations contract out their timber harvests. One which took the risk to start its own company was the Klukwan village corporation. In 1981 the corporation created an operating subsidiary for logging and road construction, Klukwan Forest Products.

In the beginning the company performed contract logging, but has recently begun purchasing timber from other corporations. Some of these purchases include 40 to 50 MMBF from the Kootznoowoo corporation in 1985 and from Cape Fox in 1986. In the summer of this year, the company purchased 200 MMBF on the Kenai peninsula from the Nanilchik corporation. The company has not only been turning a profit, but has created a large number of jobs and injected money into local economies. Including employment in stevedoring, Klukwan has over 400 employees with an annual payroll in excess of \$10 million.

Bob Loiselle, president and CEO of Klukwan Forest Products, points out

Although total employment fell during the early 1980s, the fall would have been worse were it not for the increased logging of Native lands

Figure 4
Employment by the Board Foot
Employment Pattern Per Million Board Feet (mmbf)



Alaska is a small supplier on the Pacific Rim market, supplying only five percent of the total timber consumed

that harvesting of Native timber has had a positive and stabilizing effect on Southeast Alaska's economy. During the early 1980s, demand for timber was falling sharply. Employment was declining as companies were forced to reduce or curtail operations. At the same time, the Native lands became open to harvest, employing many who might have otherwise been laid off. Although total employment fell during the early 1980s, the fall would have been worse were it not for the increased logging of Native lands (Figure 3).

The need for cash was a strong incentive to harvest Native lands. The corporations could have made higher profits if they had been able to wait for better market conditions, but this was impossible. In the long run, the decision to harvest worked out well for the corporations. When conveyed to the corporations, the timber was appraised. For accounting purposes, this appraisal became the value of the resource. Since the corporations are able to sell net operating losses (NOLs) to other companies for tax purposes, large "paper" losses were realized. The sales of NOLs helped the corporations' cash flow and supplied the capital necessary to diversify operations.

Many contend that round log exports from Native lands directly compete with Tongass cants, which have the minimum primary processing required of timber from the National Forest. The two products do compete, but the degree is difficult to measure. With decreased demand during the early 1980s, sales of Tongass timber fell sharply. At the same time, exports of Native round logs were rising. This alone does not prove that round logs supplanted cants in the market.

In a depressed international market, sales of Tongass cants would be expected to decline. Those firms working in the Tongass are profit driven. They have to acquire standing timber and be able to sell it for a profit. If the demand for this timber falls, so will the price. Companies are forced to reduce their operations.

The Native corporations, as mentioned above, found themselves in a different situation. At the start of a declining market, they were given access to millions of board feet of timber as part of the ANCSA settlement. The Native corporations had already acquired this timber through the settlement. As long as harvest costs were less than the market prices, harvesting brought in cash needed for diversification. Much Native land was harvested as quickly as possible to generate this cash.

Alaska is a small supplier on the Pacific Rim market, supplying only five percent of the total timber consumed. If all timber competes evenly, if there is no uniqueness among timber from different countries, then the increased supply of Native round logs had very little impact on the demand for cants. Some argue that the harvest of logs from Native lands helped the industry in two ways. First, these sales maintained Alaskan timber's place in the world market. Second, many smaller companies which might have closed during the weak market period were able to survive.

Under a different set of assumptions, the competition between cants and round logs is much greater. If Alaskan timber is unique, with very little competition from timber from other countries, then cants and round logs directly compete. Cants are seen as an inferior product by many buyers, who prefer round logs. With the lower demand of the early 1980s and the higher supply of round logs, round logs had a large competitive advantage.

The degree of displacement of cants by round logs is somewhere between these two extremes.

Changes in the Industry

Several changes have taken place within the industry over the last several years. One of the most important is the entry of larger companies. Several smaller operators in Alaska's timber industry were forced to close when demand declined. Larger companies are better able to maintain operations

during these periods, and should provide additional stability to the industry. These larger companies are also able to invest in larger projects with the potential for long run gains. Some of this increased investment, however, will be for new technologies which could reduce the number of jobs per unit of output.

Some of these employment declines could be countered. Devaluation of the U.S. dollar also makes value added processing more feasible. Most producers have found a stronger market for and higher profit margins with minimally processed timber. If additional processing occurs in state, the number of jobs per unit of timber increases. Either more jobs could be created in the timber industry, resource depletion will occur at a slower rate, or some combination of the two would result. Figure 4, prepared by the U.S. Forest Service, shows the amount of additional employment which could be realized through value added processing. Presently most operations end with logging and sawmilling cuts.

Alaska holds an increasing share of premium quality timber. Few marketable stands of fine grained timber remain in the lower 48. Some believe that products of lesser quality will become more sought after, such as fine grained hemlock. The opportunity arises for more value added processing, and more jobs, as supplies of these products diminish in other areas. Demand for high quality timber is quite high, and consumers would accept a more finished product than has been offered in the past. The Canadian government is moving in this direction, attempting to regain jobs lost to new technologies.

Much of this premium quality timber remains in the Tongass. Most agree that marketable timber from Native lands will be harvested by the middle 1990s. The Forest Service predicts that exports of logs will decrease by 40% within five years. At that time, without continued support for the Tongass timber industry, large employment losses will occur. The

amount of support might not have to be as great as in the past. The product in the Tongass is valuable, and is becoming more so with time. Over time and with adequate management, investment in the Tongass will pay off.

Other sources of Alaskan timber products may become feasible in the near future. Although little progress has been made to date, interest is still high for operating a plywood manufacturing facility in the Mat-Su region. Two companies expressed a desire to locate in the area, but have not yet reach agreement with the state on long term timber sales.

An additional timber resource has recently been used for commercial purposes near Fairbanks. A processing plant was opened last year with a rather unique product line. One area resident referred to the endeavor as the "toothpicks, match sticks and chopsticks" plant. The company uses tamarack, a wood known for its tendency to split evenly. A market was found in China and other Pacific Rim nations, where millions of disposable chopsticks are used daily.

New markets for Alaskan timber may be opening soon. The People's Republic of China has had a volatile trade relationship with the U.S. over the last several years. China's demand for timber exceeds that of Japan's, and should increase if the government continues its program of westernization. South Korea is another potential importer of Alaskan timber. Supplying timber to South Korea is more dependent on the market than it is for either Japan or China. South Korea's small size and subordinate posture to the U.S. in terms of international trade relieve it of most pressures to import American products.

Conclusion

The timber industry in Alaska, though important to the economy, is a very small player in the world market. Because of this, the industry has varying amounts of control over its future. Certain factors such as currency

fluctuations and international trade agreements are outside the scope of the industry's influence. Issues such as the Tongass timber reform debate are important to many groups, many with desires vastly different from those of the industry.

One of the few areas where the industry has some control of its future is in supplying premium quality wood on the world market. Although Alaska is not the only area possessing this highly demanded commodity, the supplies are dwindling. The industry might find that additional value added processing could increase profits, increase employment, and prolong the industry's viability in an uncertain market.

1/ The Jones Act requires that cargo shipped between American ports be carried on vessels built and registered in the United States. Most agree that this increases transportation costs. For more information, see the April 1983 issue of *Alaska Economic Trends*.