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ABSTRACT

This project presents a strategic analysis for a Western Canadian based lumber manufacturing company. The industry produces a commodity product and firms use cost advantages in fibre or manufacturing to compete. The company has had success because of access to low fibre costs but the future is threatened by fierce industry rivalry and substitute products. In the future the softwood lumber trade agreement will disadvantage the company relative to its competitors in the United States. To make economic rents the company will need to expand market channel flexibility, drive costs out of the supply chain and leverage company core competencies to create new differentiated products.
EXECUTIVE SUMMARY

The topic of the paper is a set of western Canadian lumber mills owned by a multi-national company headquartered in the United States. The strategic analysis reviews the North American competitive environment in which the company operates and recommends a solution which would create positive economic rents for this mill set.

Softwood lumber is considered a commodity product and producers have no pricing power. There are over a thousand sawmills in the United States and Canada and even more customers. The industry has few barriers to entry, is under increasing threat from substitute products and there is high rivalry between competitors. Political actions influence the Canadian sawmills and the new softwood lumber trade agreement with the United States adds complexity. The industry is unattractive now and will continue to be challenged with the anticipated drop in housing demand in the near to mid term.

Industry competition is based on the cost of production and sawmills that have advantages in log fibre cost or manufacturing costs have a competitive advantage over others. Some larger firms have been successful in sorting out higher quality lumber and extracting more revenue on average with this strategy. The firm's Canadian mills have been advantaged with log costs and quality but have slightly higher than average manufacturing costs. These higher manufacturing costs are a result of operating labour and the lack of capital investment to remain competitive. Log quality will remain an advantage until the mountain pine beetle infestation reaches the mills' harvest areas.
Besides log cost and quality, the company’s sawmills are advantaged with their sales and marketing network, corporate research and development, and lumber drying. They have channel flexibility that allows lumber to be shifted into different countries and have the capabilities to differentiate lumber products using research and development capabilities and by bundling with the company’s other wood products.

It is likely that maintaining current strategies would generate slightly below average rents over the next business cycle but a combined cost management and differentiation strategy is recommended to create higher economic rents. Manufacturing costs can be reduced with relatively small capital spending and differentiation in bundled products has excellent potential to remove some lumber from commodity transactions. Flexibility in manufacturing and growing geographic sales flexibility will reduce the effects of the new trade agreement and will help enable future product differentiation strategies.
DEDICATION

For my wife Michelle, whose encouragement and positive attitude were unwavering through the MBA program. You make the world and our home a wonderful place to be. And to Carter, Celeste and Chantelle – may your life be filled with the excitement of learning – and trips to Disneyland.
ACKNOWLEDGEMENTS

I would like to acknowledge my fellow classmates and, in particular, Tony Ryan, Brian Henderson and Darryl Ketter. These individuals, together with my other Kamloops MBA cohorts, contributed greatly to the class and made the last four years enjoyable and enlightening. A debt of gratitude is also owed to Doug Bowersock, who was instrumental in bringing the MBA program to our city and who entertained us through the first half of the program.

To my recently retired mentor, John Robertson, I thank you for the encouragement and support to pursue the program and to my current boss and mentor, Brian Greber, thank you for the opportunity to take what I have learned and apply it in the “real” world. Russel Taylor of Wood Markets Monthly and Don Haid, forest economist, have both done excellent work in defining lumber market issues and I thank them for generously sharing their insights with me. Finally, I would like to thank the professors and teaching staff of SFU who delivered a great MBA program.
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GLOSSARY

**American Lumber Standards (ALS)**
American Lumber Standards Agency is a US regulatory agency that creates and enforces standardized grading rules to ensure the performance of lumber in application.

**Board Foot**
A unit of measure for lumber. One board foot is the equivalent to a 1” x 12” x 12” piece of lumber. The short form for board foot is bf.

**Dealer**
A company whose business is to service home builders with the products and services required to build and maintain homes.

**DIY**
DIY is short for “Do-It-Yourself” customers. These customers consist of both specialized contractors and home owners that do small-scale renovations and projects.

**Engineered Wood Products (EWP)**
Engineered Wood Products are products that have been assembled from smaller wood components and held together with glue. Examples of EWP are wooden I-joists and beams made from wood strands or veneer.

**Grade**
A term used to describe the quality of lumber as it relates to industry standards. The higher the grade, the more valuable the lumber.

**Home Improvement Warehouse (HIW)**
A term used to describe large retail stores which service Do-It-Yourself home renovators. The short form for Home Improvement Warehouse is HIW.

**Lumber**
Sawn or planed wood that is used for building structures.

**North America**
For the purpose of this paper, North America is defined as Canada and the United States. It does not include Mexico.

**Planermill**
The facility which houses lumber manufacturing equipment used to plane, grade and sort lumber. Planermills are typically located nearby sawmills.

**Quota**
A fixed amount of goods that can be brought into a country. In this case, the volume of softwood lumber that can be shipped from Canadian producers into the US market.

**Recovery**
Recovery is the industry term that quantifies the volume of lumber extracted from the log. In Canada, recovery is expressed as board feet of lumber per cubic meter of log.
<table>
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<td>Sawmill</td>
<td>The facility which houses lumber manufacturing equipment used to convert a log into lumber. This facility typically contains numerous pieces of specialized lumber manufacturing and sorting equipment.</td>
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<td>Softwood Lumber</td>
<td>Lumber made from evergreen trees. This lumber constitutes the vast majority of construction lumber used in North America. Softwood lumber is produced in many regions across North America.</td>
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<tr>
<td>SPF</td>
<td>SPF is an acronym for Spruce-Pine-Fir. This is a grouping of several similar species of softwood found throughout the forests of Canada.</td>
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<tr>
<td>SYP</td>
<td>SYP is an acronym for Southern Yellow Pine. This softwood species dominates the Southern and South-East United States.</td>
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<td>Treaters</td>
<td>Treaters refers to a segment of lumber customers who buy lumber and apply chemical treatment to enable the lumber to be used in applications where it will be exposed to weather or insect attack.</td>
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<td>Vendor Managed</td>
<td>Vendor managed inventories are inventories held at a customer location but managed and owned by the supplying company. VMIs offer cash flow and staffing advantages to customers.</td>
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1 INTRODUCTION

The subject of this paper is a set of lumber sawmills in western Canada owned by a multinational forest products company. These sawmills produce softwood lumber primarily for the United States market but they also service Canadian and offshore customers. The mills are influenced by many local and global factors including government policies, trade disputes, beetle infestations, fierce rivalry and substitute products. The objective of this project is to evaluate the competitive environment of these mills and present strategic alternatives for the firm to generate economic rents that align with the parent company’s corporate strategy.

This chapter will present an overview of the parent company and its Western Canadian business unit, the nature of the company’s business and important details of the new softwood lumber trade agreement.

1.1 Company Overview

1.1.1 Company Structure

The parent company is a multinational integrated forest products company. The company’s headquarters are in the United States (US) but it maintains operations in several countries including Canada. The company employs over 49,000 people worldwide of which 7,000 reside in Canada. The company is a member of the Fortune 500 and is publicly traded on the New York Stock Exchange (NYSE). In 2005, sales exceeded $22 billion US and assets were valued at over $28 billion.

The Company has been in operation for over 100 years and over that time its stock has become a common holding for institutional investors. The majority of shares are held by
institutional investors. One firm in particular, Franklin Resources Inc. has acquired over 7.3 percent of shares and has publicly commented that it intends to pressure the company to take measures that will increase the stock price. This American-based global investment management organization manages over $450 billion in assets and operates in over 100 countries around the world. Franklin is a well-funded and powerful force that influences the decisions of the CEO and Board of Directors.

The company makes numerous products and has divided the firm into product-line business units. Figure 1 presents an organization chart of the parent company. The Softwood Lumber Business that includes the Canadian lumber mills is a part of the Wood Products Division.

Figure 1  Company Structure

Source: data taken from Company’s 2005 Annual Report
The Company's Softwood Lumber business is the combination of three geographical businesses. Previously, lumber businesses in the Western United States, Southern United States and Canada operated independently. In 2002, these three businesses were combined into the Softwood Lumber Business directed by a single leadership team located in the Company's US headquarters. At this time, the Vice-President of the Canadian Lumber Business was reassigned and a new structure was put in place with a US-based Vice-President in charge of all lumber operations. The family-type leadership that had existed in the Canadian operations was replaced with a profit-driven business team.

In most geographic regions the company is vertically integrated and diversified with wood fibre flowing from timberlands to several different types of wood manufacturing facilities. This creates some interdependence across business segments as trees from a harvest area may flow to pulp mills, sawmills, oriented strand board (OSB) plants, plywood plants or other wood manufacturing facilities. Decisions on operating postures cannot be made in isolation from other businesses because shutting down or expanding one facility in a region usually has spin-off effects on the other manufacturing facilities in the same region.

In late 2005, the company restructured its wood products business to better serve residential home builders and the dealers that service them. The strategy is to combine the strengths within the organization to create innovative building solutions that differentiate the company from competitors. Product bundling, new products, services, software and marketing are the new focus areas for the company.

1.1.2 Nature of Products

Softwood lumber is lumber that is manufactured from cone-bearing or "conifer" trees. The word "lumber" is generally used to describe all sizes of sawn wood and includes one inch thick boards, two inch dimension, three inch and thicker posts and timbers, and other specialty
wood products. Softwood is typically used for construction and is graded and sorted for its use in application. It can also be used for appearance applications such as siding, furniture and mouldings. By contrast, hardwood lumber is lumber made from leaf-bearing trees and is used in visual applications such as furniture, cabinetry and flooring. Hardwood lumber is rarely used for general construction.

Lumber sized to 2x4s, 2x6s and 2x10s is referred to as dimension lumber. This dimension lumber accounts for the majority of softwood lumber products made in North America. It is manufactured from trees in facilities called sawmills and is planed to a smooth finish in facilities called planermills. Usually, a sawmill and planermill are operated as an integrated unit on the same site. Sometimes the lumber is dried to remove excess water, reducing the risk of mould and keeping the lumber more stable over time. Dimension lumber across North America is made to the same size specifications and is assigned a quality grade based on standardized grading rules published and enforced by the American Lumber Standards Association (ALS). Each piece of lumber used in construction is required to be marked with the mill, quality grade, species, moisture content and the name of the inspecting grading agency. This mark allows building inspectors to verify that the lumber being used at the construction site meets building code requirements.

There are several tree species from which softwood lumber can be made. Some of the common conifer trees used for lumber are Douglas fir, hemlock, cedar, pine, spruce, cypress, larch and redwood. Each tree species has unique characteristics of density, strength, stability, colour and appearance that can be identified readily with the naked eye. Because of this specie uniqueness, it is common for relatively inexperienced lumber buyers to become biased to a species of softwood lumber that appeals to them.
Many lumber consuming regions in the United States and Canada have developed a preference for a species and it is often difficult, sometimes impossible, to switch the region to a different species. This resistance is stronger in some regions than others and is usually because of ingrained historical preference together with the fear of losing business because customers won’t accept a species that looks different. For example, some regions prefer Southern Yellow Pine from the southern USA because the heavy weight and strength create a sense of durability. Other regions prefer the Spruce-Pine-Fir (SPF) species from Canada because it is relatively lightweight and straight and therefore easy to lift and handle on the jobsite. Transportation logistics have also influenced regional preferences over time and it is typical for areas surrounded by a species of softwood to use that species. Two notable exceptions are pockets of Douglas fir consumers in Boston and New York serviced by sawmills on the west coast and SPF lumber from Canada or pine lumber from Europe flowing to the eastern United States.

Some species are fully interchangeable and other species are not. European spruce is indistinguishable from Canadian spruce and these products are considered fully interchangeable. However, the primary North American species of southern yellow pine, Douglas fir, hemlock and SPF are easily distinguished and not considered the same by consumers. A few regions will make species selection based on price alone. Switching costs for buyers are low but switching usually involves managing two or more similar sets of inventory or managing the inventory transition from one species to another.

1.1.3 Commodity versus Differentiated

Softwood lumber is generally considered to be a commodity but it can be differentiated by quality, size or service. Historical market prices for commodity lumber products are available through weekly publications. Private companies survey buyers and sellers and publish average selling prices for the previous week. This information when combined with current supply and
demand market dynamics enables buyers and sellers to establish bid and ask prices for standard lumber sizes and grades. Sizes and grades that are not included in the survey offer opportunity for differentiation.

Lumber quality offers an opportunity for differentiation. Lumber can have many quality attributes and customers may desire a particular attribute and be willing to pay for it. In an attempt to differentiate based on quality some manufacturers exceed ALS grade standards or create specialized grades to target niche markets. Some examples of these high-return niche markets are the Japan home-building market, furniture manufacturers and wood laminating plants. In each case, the customers require lumber that has minimal defects or natural characteristics and they pay considerable premiums to suppliers that can meet their quality expectations. These quality expectations usually set maximum allowances for natural wood characteristics and manufacturing defects. Thus it is the combination of raw material and manufacturing that allow the quality specifications to be met.

Differentiation can also be achieved by sizing lumber to specific customer needs. The North American market is dominated by dimension lumber but there are some customers that will pay premiums for lumber that has been sized for their specific needs. These markets are not very common in North America however because most US and Canadian customers have created their processes around standard lumber sizes. For some overseas markets that use metric sizes there is opportunity to supply lumber that accommodates their metric needs. However, complications arise when customers require both unique sizes and high quality because there is no market for the unique size and low quality lumber that naturally develops. This lumber is usually sold at deep discounts which can make the entire program unviable.

Service is another way to differentiate a softwood lumber offering. Examples of differentiated service include vendor managed inventories (VMIs), next day or same day delivery,
and design or project management services. Vendor managed inventories allow customers to hold vendor-owned lumber at their site until they are ready to use it. The customer pays for the lumber when it is removed from inventory and consumed. VMIs are popular with some customers because it improves their cash flow. While these programs are popular with large customers, suppliers need to ensure these inventories can be turned frequently and premiums for the service more than offset carrying costs. Other services such as next day or same day delivery capture the value the customer places on having quick, reliable supply to the construction site. This type of service is common with small homebuilders who appreciate the convenience. Design or project management services can include developing material lists from construction drawings, re-evaluating designs to deliver lower cost options, and using software and automation to minimize labour and other waste. These types of services are evolving within the home construction industry and there are various levels of sophistication. Typically, the lumber that accompanies the service is not differentiated.

1.1.4 Company Products

The Company is the largest producer of softwood lumber in North America. Production from its thirty-two mills accounted for 8.7 percent of the total North American softwood lumber production in 2005. The three regions in which the company operates produce four species of softwood lumber: Douglas fir, southern yellow pine (SYP), hemlock and spruce-pine-fir (SPF). Most of the company's lumber assets are held in the southern USA but 23 percent of 2005 lumber production was SPF lumber from Canada. The balance of lumber production is located in the western coast of the United States. A chart showing the company's lumber volume distribution is shown in Figure 2.
Figure 2  Company’s lumber species distribution

Company's Lumber Volume by Species

Other 2%
Douglas Fir 22%
SPF 23%
Hemlock 8%
SYP 45%

Source: Internal company market analysis.

The company’s primary focus is producing dimension lumber used in North American home construction. Figure 3 below indicates the percent of each size of lumber that is made by the company and by its Canadian lumber operations.

Figure 3  Company and Canadian lumber by size

Company Lumber by Size

2x12 7%
2x10 14%
2x8 14%
2x6 27%

Canadian Lumber by Size

2x10 9%
2x8 6%
2x6 23%
2x4 62%

Source: Internal company market analysis
The Canadian mills make more narrow width lumber with 85 percent of their lumber production being 2x4 or 2x6 lumber. By contrast the company, with Canadian lumber included, produces 65 percent of their lumber as 2x4 or 2x6. The higher percent of narrow width lumber can be attributed to two factors: the Canadian logs are smaller in diameter and the sawmill equipment is capable of sawing narrow widths from the log.

The company’s lumber manufacturing facilities sort lumber by quality. Quality is generally defined as appearance grades, strength rated grades, common grades and low grades. Appearance grades are sorted based on the absence of displeasing visual characteristics. This lumber appeals to retail stores and some home builders. Strength rated grades refer to lumber that has been non-destructively tested with machines and certified to a particular strength. This type of lumber is commonly used for engineered roof or floor trusses. Common grades refer to all-purpose lumber. This lumber has natural and manufacturing defects but is suitable for general construction. Low grade lumber has significant defects and is typically purchased by industrial customers for cutting and trimming to make small wooden components. Figure 4 below shows the various types of lumber grade made by the company and its Canadian operations. The company’s British Columbia mills yield more stress-rated lumber because of the high quality fibre and the presence of mechanical testing equipment. Two-thirds of the company’s stress-rated lumber is made in Canada. The percent of low-grade lumber, which sells for the lowest price, is slightly higher in the Canadian operations.
1.1.5 Sales & Distribution

With the reorganization of the wood products business, a new sales, marketing and distribution structure were created. Previously, all lumber was sold through three centralized sales offices located in Arkansas, Washington state and British Columbia (BC). All sales and marketing for the western Canadian mills were managed by the office in BC. Customers were required to purchase rail car or truck load volumes.

The reorganization of the wood products business consolidated all previous sales groups into two sales networks: central sales and field sales. The central sales organization is based in three central locations with lumber specialists selling railcar or truck shipments direct from mill to the customer. The field sales organization is a network of sixty regional sales and distribution centres throughout North America that supply customers with out-of-warehouse truck shipments of lumber and other building materials. This sales force consists of sales generalists that understand home construction, building trends and product applications. This sales force does not have the same depth of lumber knowledge as the central sales team.
There are several transportation options available within the company. The most common shipment method is direct from mill to customers using rail or truck. Truck shipments are usually reserved for customers who are within one days’ drive from the supplying mill or for those customers who do not wish to order the larger railcar volume. Truck shipments will range from 30,000 board feet to 52,000 board feet while railcars carry over 100,000 board feet. Rail is cost competitive on shipments greater than 1,000 kilometres and is the primary means of transportation to customers in the United States and eastern Canada. Container shipping on ocean-going vessels is used to service customers in Asia and barges are available to service customers on the west coast of the United States. Besides shipping truck or rail quantities of lumber direct to customers, the field sales distribution centres can provide next day or same day delivery of smaller volumes of lumber to customers within their service geography.

1.1.6 Customers

Ninety two percent of the company’s lumber customers are located in the United States, six percent are based in Canada, and two percent are in Japan. The Canadian lumber mills ship 65 percent of their wood to the United States and divide the remainder between Canada and Japan. Customers range in size from Fortune 100 companies to small independently-owned lumberyards. Because of the size of the company’s lumber business most large lumber dealers and retail outlets have some relationship and business with the company. They are attracted by the range of products and consistent product availability. Likewise the larger customers offer the company a steady and significant demand for lumber products and opportunities for low sales and transaction costs. Figure 5 shows the distribution of lumber customers by categories for the company and for the Canadian lumber business.
For the purpose of this analysis, customers have been grouped into categories. Dealers represent businesses that specialize in selling to home builders but may also sell to the general public. HIW refers to home improvement warehouse companies like The Home Depot and Lowes that specialize in selling to the repair and remodel do-it-yourself customer segment. Truss includes truss, wall panel and housing component manufacturers. Distributors consist of both customers who hold physical inventory at their sites and office wholesalers who facilitate transactions between mills and customers but who don’t own physical inventory. Treaters are companies that apply chemical treatment to lumber to make it suitable for outdoor use. Industrial customers remanufacture the lumber into smaller pieces for pallets, crating or other industrial purposes. The “Other” category captures all other customer channels and, in the case of the Canadian business, includes sales to offshore customers in Japan and Asia.

Both the company and the Canadian lumber operations have a well-balanced customer portfolio. The most lucrative markets are the HIW, dealer, truss and offshore markets but in
many cases, growth is limited by the amount of suitable quality lumber the mills are able to produce. Distributors are often used to liquidate inventory and industrial customers generally purchase low-quality low-priced lumber. Both of these channels are considered necessary but the company recognizes the lower margins from these channels and tries to minimize this business.

1.1.7 Suppliers

The raw material needed to make softwood lumber is trees. While the company owns most of its timberlands in the United States, in Canada it relies heavily on government-issued cutting permits to Crown land. The provincial governments are an important supplier of raw materials to the mills. The provincial government department responsible for managing Crown forests is the Ministry of Forests (MOF). The MOF establishes the price that companies pay for Crown logs and this cost is referred to as “stumpage”. Stumpage is calculated differently in each province and log prices are not usually closely linked to lumber pricing. Companies that operate in provinces with lower stumpage have a log cost advantage. The MOF is also responsible for approving and monitoring all road building, harvesting and re-planting activities on Crown land and they have the authority to assess financial penalties or restrict company access to timberlands. More recently, the MOF has provided direction to lumber companies regarding priority harvest of trees infected with the mountain pine beetle. In British Columbia this policy has created huge increases in harvest volumes in an attempt to control the beetle and receive economic benefit from the diseased trees.

In order to utilize sawmill capacity the company has supplemented tree supply from Crown land with trees purchased from private landowners. In Alberta, the company purchases 22 percent of wood from private landowners; in BC, the amount of private purchase is 38 percent. Logs supplied by private landowners are considered less desirable because they are more expensive than trees from Crown land and it is more difficult to predict the quality of the logs.
Labour required to run the company’s Canadian lumber operations is represented by the Steelworkers Union. The jobs are well-paying but advances in sawmill technology have created the need for highly specialized maintenance trades people at the expense of lower-skill operating labour. Labour relations within the company have been strained as union leadership resists efforts by the company to reform work systems and manage performance issues. Contract labour is used for all other related needs including tree harvesting and transportation.

Other suppliers to the company’s Canadian lumber operations include utility providers, equipment suppliers and other small vendors that provide maintenance or operating supplies.

1.2 Trade Agreement

1.2.1 Trade History

Since 1982, the US and Canada have been involved in an ongoing dispute over exports of softwood lumber from Canada to the United States. The basis for these disputes has been the assertion by certain American interests that softwood lumber manufactured in Canada is subsidized by the government and that this action has injured the US lumber industry. Duties that are levied in response to government subsidization are referred to as countervailing duties (CVD). Additionally, if Canadian lumber is shown to be sold for less than the cost to manufacture, then anti-dumping duties (ADD) can also be applied. Both countervailing duties and anti-dumping duties are determined by the US Department of Commerce (DOC) which requires bonds for each lumber shipment from Canada to a US customer. Since 1982, there have been four specific softwood lumber disputes.
Lumber I was initiated in October 1982 with a US Department of Commerce investigation into stumpage programs in four Canadian provinces. In May 1983, the DOC determined that stumpage was not subject to countervailing duties.

Lumber II began in May 1986 with the US Department of Commerce determining that stumpage programs now met the required criteria for countervailing duties. In October 1986 a 15 percent duty was initiated on Canadian lumber shipments to the US. Two months later, the governments of Canada and the US reached an agreement whereby the 15 percent US duty was replaced with a Canadian government 15 percent export tax. This was viewed to be preferable because it kept the duty money in Canada and ensured the rate would not change in the future.

Lumber III began in October 1991 when Canada terminated the 15 percent export charge. By May of 1992, the DOC initiated a new countervailing duty rate of 6.51 percent. Upon Canadian appeal and after two and a half years the DOC revoked the duty.

The 1996 Softwood Lumber Agreement (SLA) was initiated in an attempt to resolve the ongoing lumber dispute through government negotiation. The five year SLA restricted lumber exports from BC, Alberta, Quebec and Ontario to 14.7 billion board feet per year. Companies operating in Canada were allocated their portion by the federal government based on their previous shipment history. Shipments that exceeded this quota were subject to taxes. This agreement was not without controversy as Canadian manufacturers attempted to create lumber products outside the definition of the agreement and US customs reclassified products to ensure they were included in the restricted volume. This agreement concluded in March 2001.

Lumber IV refers to the latest round of countervailing and anti-dumping duties. In August 2001 the US Department of Commerce determined that Canadian produced lumber was

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1 Referenced from Foreign Affairs and International Trade Canada at http://www.international.gc.ca/eicb/softwood/chrono-en.asp
subsidized and it assigned a CVD rate of 19.31 percent. In August of the same year, the DOC also determined that Canadian manufacturers were selling into the US below their cost and subsequently assigned a 12.58 percent anti-dumping penalty. These rates, reviewed annually by the DOC, have decreased as Canadian companies learn how to manage their product flow to reduce penalties. With the conclusion of Lumber IV, Canadian manufacturers will be reimbursed approximately 80 percent of their deposits. With over five billion dollars of duties on deposit, Canadian lumber operations are expecting to receive a windfall in excess of four billion dollars.

1.2.2 Historical Response to Trade Actions

Canadian lumber manufacturers have used different strategies to survive the 24 years of trade disputes with the United States. Their current product mix and customers are a result of these strategies. There have been two types of trade restrictions for softwood lumber destined for the US market: quota and duties. Understanding how Canadian companies have changed over the last several years to cope with these restrictions can help define a suitable strategy for the new Trade Agreement.

In the previous quota environment of the softwood lumber agreement (1996 – 2001) companies adopted several strategies to manage trade with the United States. Most companies maintained previous levels of production with the rationale that there was no market access for additional lumber. Some companies expanded their markets to include offshore countries. Japan became a target for some western Canadian companies because of its stable market and relatively high lumber prices, and Europe and the Caribbean became small but important geographies for eastern-based manufacturers. Domestic customers in Canada were able to secure lumber at a reduced price from companies that struggled to manage inventory. Quota into the US market was viewed to be precious and priority was given to high value products with the understanding that
financial penalties for exceeding quota allotments could be absorbed by the higher margin products.

In the most recent round of duties, companies managed the penalties by strictly controlling where products were sold and by reducing manufacturing costs. Determining anti-dumping and countervailing duties is a complicated process but it involves the comparison of US sales price to either the “home market” sales price or “cost to manufacture”. Home market sales price is determined as an actual sale of a comparable lumber product within Canada. This creates challenges because only one home market sale is required for comparison and the DOC determines which products are comparable. The cost to manufacture is also determined by the DOC and this is determined through the use of their cost models of Canadian lumber manufacturers. In an attempt to reduce the amount of duties applied, Canadian companies managed home market sales to provide suitable comparisons to US sales and increased capacity utilization to reduce cost to manufacture determinations by the DOC.

1.2.3 New Trade Agreement

In early 2006, the newly elected Canadian federal Conservative government began negotiations with the US to create a long term settlement to the lumber trade dispute. The resulting agreement, signed in August 2006 by the two governments, is designed to restrict Canadian lumber supply into the US when industry lumber prices fall below a certain level. Supply is restricted through a combination of quota limitations and taxes. Although Canadian lumber manufacturers have managed with quota and taxes in the past, the combination and options for participation have created a level of complexity. The taxation scheme is shown in Table 1.
Table 1  Trade Agreement Taxation Scheme

<table>
<thead>
<tr>
<th>Lumber Composite Price per thousand board feet</th>
<th>Option A – Export Charge (%)</th>
<th>Option B – Export Charge plus Volume Restraint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over US$ 355</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>US$ 336 - 355</td>
<td>5%</td>
<td>2.5% + regional share of 34% of US consumption</td>
</tr>
<tr>
<td>US$ 316 - 325</td>
<td>10%</td>
<td>3% + regional share of 32% of US consumption</td>
</tr>
<tr>
<td>US$ 315 or under</td>
<td>15%</td>
<td>5% + regional share of 30% of US Consumption</td>
</tr>
</tbody>
</table>

Source: Article VII of the Canada-U.S. softwood lumber agreement signed September 12, 2006 referenced from Foreign Affairs and International Trade Canada. Note: regional share by province is defined in Table 2

Option A regions also have the additional risk of a surge tax. If shipments from a region exceed 110 percent of the allocated market share, an additional tax equal to 50 percent of the export charge will be levied. For example, if an option A region paying a 10 percent penalty with a lumber composite price of $320 exceeds their monthly allocation of US market share by 11 percent or more, they will be taxed an additional 5 percent. The highest taxation rate for option A regions would therefore be 22.5 percent when surge conditions are met with a 15 percent export charge. The surge tax is determined after the end of the month and applied retroactively to all producers in the region, regardless of their own company’s shipment volume. Even if a company tries to act responsibly by curtailing production when prices are low, the collective actions of all members of the region determine whether that company will have to pay the surge tax.

The Random Lengths framing lumber composite price referenced in the new trade agreement is a broad measure of price behaviour in the U.S. framing lumber market. It is a weighted average of fifteen lumber products produced in Canada and the United States. Canadian products account for approximately one-third of the composite weighting. The
composite number is published weekly by a privately-owned U.S.-based firm which surveys lumber buyers and sellers to determine the previous weeks’ market prices for common industry lumber products.

Market share of US consumption is the basis on which option B quotas and option A surge levels are determined. In the new trade agreement, US consumption is determined using a twelve month rolling average of shipment volumes from lumber mills represented by the Western Wood Products Association (WWPA) and the Southern Forest Products Association (SFPA). These associations represent the majority of lumber manufacturers in the United States. This is not a true measure of consumption but is in fact a measure of US lumber production that can be manipulated and managed by lumber producers in the United States.

For the purpose of the trade agreement, Canada has been divided into lumber producing regions. The regions are defined as BC Coast, BC Interior, Alberta, Saskatchewan, Manitoba, Ontario and Quebec. The Maritime Provinces and Territories are exempt from the trade agreement and are able to ship lumber to the US market without penalty. In every region it is the provincial government, in consultation with industry, which has the final say on option choice. Table 2 identifies each Canadian region, their option choice and the corresponding percent of US market share on which quotas and surge taxes will be determined.
<table>
<thead>
<tr>
<th>Canadian Region</th>
<th>Option Choice</th>
<th>Percent of US Market Share in any month</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC Coastal</td>
<td>B</td>
<td>1.79%</td>
</tr>
<tr>
<td>BC Interior</td>
<td>A</td>
<td>17.43%</td>
</tr>
<tr>
<td>Alberta</td>
<td>A</td>
<td>2.49%</td>
</tr>
<tr>
<td>Saskatchewan</td>
<td>B</td>
<td>0.46%</td>
</tr>
<tr>
<td>Manitoba</td>
<td>B</td>
<td>0.31%</td>
</tr>
<tr>
<td>Ontario</td>
<td>B</td>
<td>3.34%</td>
</tr>
<tr>
<td>Quebec</td>
<td>B</td>
<td>4.86%</td>
</tr>
<tr>
<td>Maritimes</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Source: compiled from Table 1 of Annex 7B and Table 1 of Annex 8 of the Canada-U.S. softwood lumber agreement signed September 12, 2006.

The British Columbia Interior, where the firm operates several sawmills, accounts for approximately half of the Canadian lumber shipped into the US. By contrast, Alberta contributes only about seven percent of Canadian lumber shipments into the US.

1.3 Project Outline

The project is focused on the Canadian lumber operations of a large international company. Chapter one introduced the company, the nature of its business and the relevant history and details of the softwood lumber trade dispute.

Chapter two is an industry analysis that explores the North American softwood lumber industry. An industry overview identifies the structure, product distribution and industry product-customer matrix. A supply chain analysis identifies the three key elements of the supply chain. This is followed by an analysis of North American demand for softwood lumber, the key markets and a demand forecast. Porter’s five force analysis is used to identify the industry attractiveness and the chapter ends by identifying the key success factors required of companies in the industry.
Chapter three is an internal analysis of the company's western Canadian sawmills. The activity analysis identifies the important activities that the company must undertake to manufacture softwood lumber and it offers a comparison of the company's capabilities with the industry average. Similarly, the resource analysis identifies the key resources that benefit or hinder the company's Canadian sawmills. The corporate strategies of the parent company and the business strategies of the western Canadian mills will be defined.

Chapter four is the fulcrum analysis. The purpose of the fulcrum is to identify the environment in which the company operates now and in the future and place the company into this environment. The fulcrum analysis will identify whether the company will expect to make negative, zero, or positive economic rents over the longer term. Key issues are identified and a broad direction of the solution is proposed.

Chapter five is the solution analysis. Solution analysis is driven by the fulcrum but it also ties together the analysis work done in previous chapters. The solutions proposed are specific to the company's western Canadian lumber operations.

The project is summarized in chapter six with conclusions and recommendations.
2 INDUSTRY ANALYSIS

2.1 Industry Overview

For this analysis, the industry is defined as softwood lumber producing facilities located in Canada and the United States.

2.1.1 Industry Structure

The softwood lumber industry consists of many producers serving many customers. The industry approximates a perfectly competitive market structure with homogenous products, low barriers to entry, and multiple producers. Even the largest producer has less than nine percent market share and manufacturers have little or no pricing power. Some small producers have created niche markets for differentiated lumber products but most manufacturers serve the new residential construction or repair and remodel industry with commodity lumber.

In 2005, there were 1,067 softwood lumber sawmills in the United States and Canada which produced a total of 73.5 billion board feet of lumber (Spelter & Alderman, 2005). Most lumber is produced in three key regions of North America: Canada, the Pacific Northwest and the Southern United States. Together these regions account for over 92 percent of softwood lumber production in North America. The industry is dominated by SPF lumber supply from Canada, which accounts for 46 percent of the total lumber manufactured in North America. Lumber from the southern and south-eastern United States accounts for a further 25 percent with the balance supplied by other US states including the west coast. Production from these regions is summarized in Table 3.
Table 3  
2005 North American Lumber Production

<table>
<thead>
<tr>
<th>Producing Region</th>
<th>Production (billion bf)</th>
<th>% of Total</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>34.5</td>
<td>46.90%</td>
<td>Spruce-Pine-Fir (SPF)</td>
</tr>
<tr>
<td>Southern USA</td>
<td>18.9</td>
<td>25.70%</td>
<td>Southern Yellow Pine</td>
</tr>
<tr>
<td>Pacific Northwest USA</td>
<td>14.5</td>
<td>19.70%</td>
<td>Douglas Fir, Hemlock</td>
</tr>
<tr>
<td>Other USA</td>
<td>5.6</td>
<td>7.70%</td>
<td>Mixed species</td>
</tr>
<tr>
<td>Total</td>
<td>73.5</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

Source: Internal company analysis (M&ER, 2005)

The industry is a mix of large multi-national integrated forest products companies, smaller regional companies with multiple mills, and privately-owned companies that operate one or two mills. Examples of each of these business models can be found in each geographic region. Typically, the large multi-national companies operate multiple mills, manufacture two inch dimension lumber and strive to be low-cost producers. The smaller companies or mills may compete against the larger companies with dimension lumber or they may establish themselves in niche markets to remove themselves from fierce low-cost commodity competition.

Sawmills must have access to logs, equipment and people to manufacture lumber. Sawmills are usually located near the forests that supply the logs. This minimizes inbound transportation costs and in some ways ties the lumber manufacturing jobs to the community next to the forest. Sawmills vary in size from 25 million to 600 million board feet of annual production. A new state-of-the-art sawmill facility with an annual production rate of 300 million board feet costs approximately $100 million to build.

2.1.2 Product Distribution

The North American softwood lumber industry produces 86 percent of their softwood lumber as two inch thick lumber commonly used for home construction and renovation. More than half of this two inch dimension lumber is produced as 2x4. Both log size and customer
demand create the industry product distribution. Sawmills are different than most manufacturing industries because they disassemble the raw material to make a finished product. Most industries assemble raw materials to make their finished goods. The lumber size distribution from a sawmill is dependent on the log diameter distribution, sawmill machinery and optimization capabilities. Lumber manufacturers are both supply and demand driven, being faced with the challenge of meeting width, length and quality demands with variable wood fibre as the raw material. Typically, sawmills that strive to be low-cost producers of commodity lumber are more supply driven than demand driven and they produce lumber sizes and lengths that result in the highest production rates—regardless of market demand. Unfortunately, this product distribution often does not match market demand and the lumber must be sold at a discount. Figure 6 shows the industry distribution of lumber products by size.

Figure 6 Industry lumber size distribution

![Industry Lumber by Size]

Source: Internal company analysis (M&ER, 2005)

The principles behind lumber manufacturing have been the same for over one hundred years but in the last few decades companies have become more sophisticated in segmenting customers and sorting lumber to meet these customer needs. To achieve this, mills must sort
lumber in quality gradients based on visual appearance or mechanically-tested strength. The highest quality lumber can be sorted and sold for a premium while the remaining common lumber is sold at prices comparable to common grades of unsorted lumber. The newest and most technically challenging quality specification is mechanically-tested lumber whereby each piece is non-destructively tested at high speed for strength. This is a small but growing niche that is being fuelled by the desire of some customers to build engineered roof or floor structures. Figure 7 shows industry production by lumber quality.

Figure 7  Industry lumber by type

Source: Internal company analysis (M&ER, 2005)

2.1.3  Industry Products and Customers

The industry customer channels shown in Figure 8 have been simplified to be consistent with the company’s customer channels identified previously. Distributors account for 42 percent of sales. This high percentage identifies the industry’s reliance on wholesalers to sell lumber to the next member of the supply chain.
Over the last twenty years there has been an increasing demand for appearance grade lumber. This lumber commands a premium to common lumber because it has square edges and minimal defects. HIW businesses value this lumber because there are fewer rejected boards in the store bins and their customers are willing to pay more for the higher appearance. This trend has not carried over to builders who are generally more concerned about straightness and strength than visual defects. The trend for new houses is more windows, higher walls, vaulted ceilings and longer floor spans. With more light in the house, builders are concerned that walls and roofs will show the irregularities of warped lumber. Many builders replace warped boards prior to drywall and this incurs additional cost. Although lumber straightness is an attribute desired by builders, companies have been unable to identify and sort the boards that will remain straight.

Table 4 indicates the lumber products made by the industry, the customer segment to which the products flow, quality requirements of the lumber, which producing regions make that type of lumber and the application for the lumber.
### Table 4  Industry products and customers

<table>
<thead>
<tr>
<th>Product Grade</th>
<th>Customer Segment</th>
<th>Quality Requirements</th>
<th>Producers</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Home Improvement Warehouse</td>
<td>Four square edges, minimal defects</td>
<td>All North American regions</td>
<td>Do-It-Yourself home projects</td>
</tr>
<tr>
<td>Stress Rated</td>
<td>Truss plants &amp; Builders</td>
<td>Mechanically strength tested with reasonable appearance</td>
<td>Primarily Canadian but growing in US</td>
<td>Roof and floor trusses</td>
</tr>
<tr>
<td>Common</td>
<td>Dealers and Distribution</td>
<td>Fair appearance with inferred strength ratings</td>
<td>All North American regions</td>
<td>General construction</td>
</tr>
<tr>
<td>Low-grade</td>
<td>Industrial plants</td>
<td>Poor appearance with visible defects</td>
<td>All North American regions</td>
<td>Remanufacture to make pallets, crating or other industrial products</td>
</tr>
<tr>
<td>Other</td>
<td>Offshore, treaters and other specialty plants</td>
<td>Sized and graded for custom applications</td>
<td>All North American regions</td>
<td>Outdoor usage, Japan housing market or other unique needs</td>
</tr>
</tbody>
</table>

#### 2.2 Industry Supply Chain Analysis

The supply chain begins with forestlands supplying logs to sawmills and ends with lumber being used by builders, homeowners, contractors or industrial plants. The industry supply chain is shown in Figure 9 with additional information on the company’s activities within the supply chain.
2.2.1 Fibre

The supply chain begins with trees as the raw material. These trees must be cut down, de-limbed, sorted and loaded onto trucks to the mill. The quality of these activities has a direct bearing on the success of the mill. Poor quality or over-sized logs can result in operational downtime at the mill, poor sorting of lumber quality results in lower value lumber, and inability to manage log diameter or species distribution can cause large swings in production volume and lumber size distribution.

Forestlands operations are operated independently of mill operations and communication between forestlands and mills is important to match the fibre mix to the mill capabilities. Forestlands can manage fibre mix by trading logs with other companies or purchasing logs from private landowners. Most companies manage the forestland activities but contract the work to businesses that specialize in harvesting and log hauling.

2.2.2 Manufacturing

Logs are converted into finished lumber in three steps: primary manufacturing, drying and finishing.

Primary manufacturing takes place in the sawmill and it involves the conversion of logs to rough-sawn lumber. Large mobile equipment takes logs from on-site storage and places them
into the sawmill. The typical product flow through the sawmill is shown in Figure 10 and results in finished packages of rough sawn lumber ready to be dried in the kilns.

**Figure 10 Typical sawmill conversion**

<table>
<thead>
<tr>
<th>Remove bark</th>
<th>Cut to 8-20' lengths</th>
<th>Chip and Saw into lumber</th>
<th>Reduce width if required</th>
<th>Trim</th>
<th>Sort by width &amp; length</th>
</tr>
</thead>
</table>

Lumber for the kilns is typically batched by width until there are enough packages accumulated to fill the kiln. Drying takes 30 to 96 hours depending on the species and the drying schedule being used. Once the lumber is dried it is stored until there is enough volume to run that width in the planermill. Most mills will operate with about three to five days of rough dry lumber inventory.

The planermill is where the final manufacturing, grading and sorting takes place. Product flow through the planermill is shown in Figure 11 below. An important note about this industry is that all lumber incurs the same cost to manufacture up until the end of the process at which time it is assigned a grade. The grade determines the sale price of the lumber.

**Figure 11 Typical planermill conversion**

<table>
<thead>
<tr>
<th>Measure Surface with planer</th>
<th>Measure moisture content</th>
<th>Test strength</th>
<th>Grade and trim</th>
<th>Sort by grade, width &amp; length</th>
<th>Package &amp; label</th>
</tr>
</thead>
</table>

**2.2.3 Customers and End-users**

The supply chain in figure 9 identifies the customers that buy lumber directly from the mills and the end-users that use lumber to build or renovate. Lumber manufacturing companies have many customer choices and can choose the channel they want their lumber to flow through to the end user. Some companies choose not to have their own sales force and sell directly to
wholesalers or distributors. Other companies believe there is value in having their own sales
force and use their sales team to flow lumber through higher value channels to end-users.

2.3 Demand Analysis

In 2005, demand for softwood lumber in North America reached 73.5 billion board feet
(Marketing & Economics Research, 2006). Lumber demand is cyclical but demand has been
increasing steadily. The annual average compound growth rate in lumber demand since the mid-
1980s has been 1.34 percent which indicates a very slow long-term growth trend. There can be
high short-term cyclicality in demand and this pattern is expected to continue. Table 5 identifies
the demand growth since 1999 and illustrates the cyclical nature of the industry.

Table 5 North American historical lumber demand

<table>
<thead>
<tr>
<th>Year</th>
<th>Demand billion bf</th>
<th>Year to Year % Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>67.5</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>67.9</td>
<td>0.6%</td>
</tr>
<tr>
<td>2001</td>
<td>65.4</td>
<td>-3.7%</td>
</tr>
<tr>
<td>2002</td>
<td>68.3</td>
<td>4.5%</td>
</tr>
<tr>
<td>2003</td>
<td>69.6</td>
<td>1.9%</td>
</tr>
<tr>
<td>2004</td>
<td>73.0</td>
<td>4.9%</td>
</tr>
</tbody>
</table>

Source: Spelter and Alderman, 2005

Spelter and Alderman (2005, p. 12) identify that the demographics that drive housing
demand are good and while there may be cyclical influences in the short term, housing demand
should remain positive in the long term. Following the decline in housing starts and lumber
demand in the next two to three years, demand should correct to demographically sustainable
levels and maintain the historic growth rate. Assuming a 1.34 percent growth rate, an additional
10 billion board feet of lumber will be required to meet North American demand by the year
2015. This is the equivalent of fifty medium sized sawmills.
Demand for softwood lumber has a significant influence on the lumber manufacturing industry's ability to attract investment or continue operating. Understanding the history, source and future of demand is necessary to determine the attractiveness of the industry and the ability of companies to make rents in the future.

2.3.1 End Market Segments

For this analysis, the North American lumber market has been simplified into four end-use segments: new homes, repair and remodel, industrial and other. The new home construction segment dominates with consumption of 44 percent of all North American lumber. It is followed by the repair and remodel segment at 32 percent, industrial segment at 16 percent and all other users at eight percent. Figure 12 shows lumber demand by end use market.

Figure 12 Lumber demand by end use

![Lumber Demand by End Use](image)

The new home construction segment is made up of single family, multi-family and manufactured homes. Single family homes are the biggest component of demand and account for 85 percent of this segment’s lumber consumption. The repair and remodel segment is made up of retail stores and businesses that service home renovators and small contractors. The repair and remodel segment is driven by home renovations financed at the time of home purchase or through home equity loans. The industrial and “other” market segments remain relatively stable and are tied to the performance of North American based manufacturing industries.

2.3.2 Factors Affecting Demand

Demand for new homes and re-mortgaging to finance repair and remodel projects are closely linked to mortgage rates. In turn, mortgage rates are closely tied to the Federal Reserve prime lending rate. Figure 13 below shows the year over year change in mortgage rates and the corresponding year over year change in new homes sold in the US market. The graph shows that as mortgage rates decrease, new home sales increase.
The prime lending rate set by the Federal Reserve is the primary influence on mortgage rates. During 2006 the Federal Reserve increased the prime lending rate seventeen times in a row in an effort to fight growing inflationary pressure. With a US current account deficit exceeding $800 billion and no meaningful action by government to reduce the budget deficit, it will be more difficult for the US to attract foreign investment without increasing lending rates. Given this outlook, the Federal Reserve is expected to hold or continue to increase the prime rate. Mortgage rates are expected to hold or increase as well.

2.3.3 New Home Construction

The US and Canada have enjoyed tremendous growth in housing starts in response to low interest rates and high consumer confidence. Now, with rising interest rates the housing market has quickly become oversupplied and, arguably, overpriced. As home owners and investors withdraw from the market, the inventory of houses and condominiums for sale has increased.
dramatically. Figure 14 shows the historical trends for inventories of US homes and condominiums.

Figure 14  U.S. inventory of homes and condos for sale

The 1.6 million unit increase from the beginning of 2005 to July 2006 is the equivalent to one year of housing starts. The excess inventory has caused home builders to curtail production to match the reduced demand for new homes.

2.3.4 Demand Outlook

The increase in housing inventory together with higher mortgage rates and decreased savings is expected to reduce housing starts over the next two to three years. The company's economists (M&ER, 2006) predict there will be a sharp correction and new housing starts will
eventually fall below 65 percent of their previous highs before returning to the demographically sustainable 1.3 million start level. This is illustrated in Figure 15 below. The dramatic decrease in home starts forecast for the next sixteen months will drive a similar decrease in demand for the lumber used in new home construction. Demand from the repair and remodel segment should also decrease but by its nature it should not be as severe a correction. The industrial segment is expected to maintain or grow slightly with the weaker American dollar helping the competitive global position of US manufacturers. Beyond the three year term, the housing market is expected to return to the historical trend of 1.34% growth.

Figure 15  US Single-family Housing Starts

Source: M&ER (2006) with reference to data provided by US Census
2.4 Industry Attractiveness

Michael Porter (1979, p. 87) proposes that the structural attractiveness of an industry is shaped by five forces: rivalry, customer power, supplier power, new entrants and substitutes. These five forces are analyzed and political forces in Canada are added to define industry attractiveness.

2.4.1 Rivalry Among Competitors

Rivalry among existing competitors is high and will continue to remain high in the future. Price competition is fierce and, in an oversupplied market, prices can drop below industry cash flow breakeven. There are several factors which make the industry highly competitive including low concentration of competitors, lack of diversity in business within the industry, lack of product differentiation and barriers to exit.

There are many producers of softwood lumber in North America and this contributes to rivalry. The four-firm concentration ratio, known as CR4, for the North American industry is 21.9 percent. This low number means that the largest producers have no control over pricing. Competition is based on price rather than on marketing, advertising and the coordinated actions of rivals.

Diversity, differentiation, excess capacity and exit barriers are also factors in rivalry (Grant, 2002, p.62). Rivalry is increased because competitors have little diversity. Equipment for manufacturing lumber is very similar and this drives similar labour, energy and raw material costs. Major producers compete with low cost strategies and there is little difference in management approaches or strategy among competitors. Most lumber remains an undifferentiated commodity product which means that price is the only basis on which those companies compete. Rivalry is heightened when supply exceeds demand and there are barriers to reduce production or exit completely. As Grant identifies (2002, p. 62) "unused capacity
encourages firms to offer price cuts to attract new business in order to spread fixed costs over a greater sales volume”. With the recent downturn in the housing market, lumber manufacturers have competed aggressively on price in order to manage inventories and keep plants running. Potential loss of staff, community public relations, and company pride are barriers for companies to reduce production volumes to better match demand. Barriers to exit also include the costs to fully depreciate the assets, pay employ severance and decommission of plant equipment. There is also an over-riding mindset that an improving trend will occur in the near future and if the mill can survive it will be able to make rents when that happens.

Most large lumber competitors compete by driving down costs, increasing asset utilization and achieving economies of scale through mergers and acquisitions. The most significant change in the North American lumber industry has been consolidation in Canada through acquisition and mill rationalization. The crippling effect of countervailing and anti-dumping duties has caused Canadian companies to reduce cost structures by improving asset utilization and merging with other companies to achieve economies of scale. The three largest Canadian Lumber producers – Canfor, West Fraser, and Tolko – grew significantly in 2005 with the acquisitions of Slocan Forest Products, Weldwood Forest Products, and Riverside Forest Products respectively. This consolidation has not allowed them to become price setters but it has allowed them to reduce their average sales and administration costs. These and other companies have increased asset utilization by adding additional operating shifts at some mills and closing high-cost mills.

In the four years between 2001 and 2005 the number of mills operated by the largest ten Canadian producers decreased by 18.4 percent from 147 to 120 (M&ER, 2005). During this same period, the total production from these companies increased by 20.9 percent (M&ER, 2005). Most of this change has occurred in Western Canada. The industry has attempted to reduce their
cost structure by making more lumber with fewer assets. Figure 16 represents graphically the magnitude of change in average mill production during this four year period.

**Figure 16  Top ten Canadian producer average mill production**

![Bar chart showing Canadian Top 10 SWL Producers - Average Mill Production mmbf/year](image)

*Source: compiled from public annual reports and internal company documents*

Changes in currency exchange rates and transportation costs influence the competitive environment. In the past four years, the strengthening Canadian dollar has increased the US$ relative cost of sawmills in Canada and has eliminated the currency advantages that Canadian producers experienced in the late 1990s. Transportation to market also disadvantages mills in some regions. For example, western Canadian mills shipping by rail to Chicago pay over $6,500 per railcar in freight charges – approximately 15 percent of the total delivered cost. Changes in transportation rates due to fuel surcharges or rate hikes can advantage one competitor over another.

In summary, there is high rivalry in the industry and the structure of the industry will continue to foster rivalry in the future.
2.4.2 Bargaining Power of Buyers

The bargaining power of buyers poses a low threat to economic rents but this threat should increase slightly over the next several years. Grant (2002, p. 63) argues that “two set of factors are important in determining the strength of buying power: buyers’ price sensitivity and relative bargaining power.” Buyers tend to have high price sensitivity and low bargaining power.

In new home construction lumber is not a large proportion of the total cost of the house but for dealers and wholesalers who service the home builders, lumber can be a significant portion of their transactions and costs. Because of this, most lumber buyers are very sensitive to the amount they pay for lumber. Dimension lumber is not differentiated and this allows buyers to switch easily from supplier to supplier based on lowest quoted price. For the most part, companies have not been able to make their brand important to buyers or builders. Lumber quality does have some appeal to home builders who desire straight walls and roofs but suppliers have maintained industry standard visual and stress-rated grades and have not created products that are graded specifically for straightness.

There are thousands of softwood lumber customers in North America and although some are consolidating and becoming stronger, there are still many choices for lumber manufacturers. There are growth trends within the dealer and retail customer segments but the emerging companies still lack significant buying power. Buyers have the ability to review previous week market pricing and have very good information on manufacturer prices and costs. This gives them excellent pricing knowledge for negotiating. Buyers theoretically could vertically integrate to reduce lumber manufacturer power but this has not occurred yet in the industry and because of the nature of the industry and lack of rents, it is highly doubtful that this will be a trend in the future.
There has been some customer consolidation driven by large-scale homebuilders and large home improvement warehouse companies. In the new home construction industry, large-scale home-builders have emerged through organic growth and strategic acquisition. The dealer segment that buys lumber from mills and that specializes in servicing professional contractors and home-builders has also grown quickly over the last ten years. These “pro dealers” cater to home builders with convenient locations, expert knowledge of construction methods and services and products tailored to home construction. Several dealers have vertically integrated to provide upstream services such as roof truss or wall components fabrication and downstream services such as labour for house construction. Pro dealers have grown rapidly with the top ten boosting sales 49 percent from $11.5 billion in 2003 to $17.1 billion in 2004 while capturing 36.6 percent of dealer market share (Taylor, October 2005, p.2).

Another large customer channel is the repair and remodel segment dominated by two home improvement warehouse (HIW) companies: The Home Depot and Lowes. Both companies have grown aggressively, with Home Depot recording 2005 sales of $81.5 billion (Home Depot, 2005, p. F-1) and Lowes $43.2 billion (Lowes, 2005, p. 46). The two companies combined operate 3,276 stores across North America and are estimated to sell approximately six billion board feet of highly-desired appearance grade lumber annually (M&ER, 2005). This accounts for over for 25 percent of the repair and remodel retail market and over eight percent of all lumber sold in North America. Figure 17 shows the impressive growth of these two HIW companies.
While dealers and HIW customers have been consolidating the industry, industrial customers who purchase low-grade lumber and customers who purchase specialty lumber have not grown or consolidated. Industrial customers have been under pressure as the North American manufacturing businesses that they service with pallets and crating diminishes in favour of low-cost manufacturing from Asia. Both these customer segments remain fragmented and exert little bargaining power over lumber manufacturers.

2.4.3 Bargaining Power of Suppliers

Bargaining power of suppliers pose a low to medium threat to lumber industry rents. In the future, supplier power should remain unchanged.

To make softwood lumber, producers need logs, labour and manufacturing equipment. They also rely on transportation service providers, logging contractors, and maintenance supply companies. The suppliers with any significant bargaining power are the labour unions representing mill production and maintenance employees, and the government and large private landowners that control fibre supply. All the remaining suppliers lack scale or significance.
Labour unions typically represent all production and maintenance labour in contract negotiations with employer agencies. Although it is illegal to strike while a valid contract exists, power can shift to the union when the labour contract expires. Bargaining power between union and company depends on market conditions at the time of negotiations. Considering the forecast for oversupplied lumber markets and low commodity lumber prices, the bargaining power of labour should remain low. However, the history of unionized labour is to demand increased wages and benefits when companies begin to make rents and they exert their right to strike to achieve this goal. In the future if companies were to make rents, unions would exert their power.

Access to competitively priced logs is important for sawmills. Most sawmills supplement Crown or government-regulated log supply with purchases from private landowners. In general, government encourages harvest of forestlands to create jobs and tax revenue but they are vigilant in ensuring the forest is harvested and replanted in a responsible manner and that social and environmental standards are being maintained. Governments can have considerable bargaining power and influence over lumber manufacturing companies through policies that reduce the availability of Crown forests, create additional forest management costs or restrict the ability of companies to rationalize facilities. All of these actions can increase the fibre cost to the manufacturer. However, the industry in Canada is a large source of public revenue and arguably maintains the balance of power with governments. In the US, forestland owners have power over smaller players but have less influence over large lumber companies.

### 2.4.4 Threat of New Entrants

The threat from new entrants in North America is medium to high and will remain high.

There are few barriers to entry into the North American lumber market. New sawmill facilities can be built for $100 million and key technical and operational labour resources can be easily hired from other companies. Equipment is available from a variety of vendors and many
provide ongoing technical assistance through start-up and operation. One barrier to entry is log supply which is often under the control of governments, private landowners, private income trusts and forest products companies. Environmental organizations in North America actively lobby the public and government to reduce logging, increase parkland and protect environmentally sensitive areas. This trend is not expected to change in the future and it is probable that there will be less fibre available to lumber companies than there is now. The scarcity of new or additional government-controlled fibre is a barrier which could deter new entrants but they have the option of competing with established firms for private timberlands. Channels of distribution are available through the wholesale community, recognizing that returns will be less favourable through this channel than through other channels. There is virtually no product differentiation within commodity lumber markets and this provides opportunity for new entrants to enter the market easily.

An emerging barrier to entry in Canada is wood by-product removal. Historically, sawmills have sent wood chips and sawdust by-products to nearby pulp mills. The pulp industry has been rationalizing facilities over the past several years and this has caused some sawmills to shutdown because of a lack of cost-competitive take-away for their by-products. Some new entrants may be unable to enter the market because they lack a nearby customer for their by-products. This barrier will prevent new entrants from building sawmills in certain regions of Canada but areas of North America near viable pulp mills will remain easy to enter. If pulp mills continue to close, this barrier could eventually reduce the threat of new entrants from high to medium.

2.4.5 Threat of Substitutes

The threat of substitutes is medium to high and will likely be high in the future. For walls, roofs and floors in new residential homes there are few close substitutes for softwood
lumber and demand is inelastic with respect to price. In other applications such as decking, fencing, and foundation walls there are substitutes available and demand is more elastic with respect to price. Currently, there are four primary North American-made substitutes for softwood lumber: concrete, steel, plastic/composite and engineered wood. There is also a significant threat of foreign-made softwood lumber being substituted for North American produced lumber. Each product poses a different threat to traditional lumber manufacturers.

With annual hurricane tragedies and property damage in south-eastern USA, home owners and builders are exploring construction techniques that would create houses capable of withstanding hurricane-force winds. Recently, the Florida Department of Financial Services provided $2.3 million to fund four innovative homes designed to resist hurricanes. One of these homes, constructed at the University of Florida's Fort Lauderdale Research and Education Centre, allows visitors to visit and learn about various building techniques including foam insulated, reinforced concrete (Yesilcay, 2000). Although the move to concrete construction in hurricane-prone geographies may not seem a huge threat, the US south, southeast and south-central regions account for 34 percent of US home starts (M&ER, 2005). The concrete industry is being presented with an opportunity to develop new products and services which could be expanded into other regions. The use of concrete to resist hurricane forces threatens the southern yellow pine species manufactured in the southern US.

At the beginning of the decade, the steel industry aggressively marketed their products for use in home construction. Despite this effort, thin-gauge steel studs have seen limited use in homes. They are commonly seen in the interior walls of commercial projects. Switching costs and learning curves remain barriers to entry for the steel industry. Different construction techniques and tools, product handling requirements, and the lack of flexibility for some applications have kept customers using lumber. The current global shortage of steel has increased the price of hot rolled sheet metal from less than $250 per net ton in 2001 to over $700
during periods of 2004 (Stelco, 2005, p. 22). Considering the difficulty in switching, the supply/demand imbalance and the high price of raw material, it is doubtful that steel will make significant inroads.

Plastic and plastic composite lumber are new entries used for non-structural exterior applications such as decks and railings. There is growing acceptance for these products, mainly driven by their maintenance-free qualities, consistent appearance, and resistance to insect attack. Figure 18 indicates the growing desire of homeowners to have a plastic or composite fence but identifies the shift in market share to be mainly at the expense of wire fencing. However, in the same survey (Fell, Brooks & Gaston, 2005, p. iv), one quarter of respondents indicated they would build a plastic wood deck in the future. This will threaten market share of the treated lumber produced primarily in the southern USA.

Figure 18  Current and desired exterior fence

![Figure 18 Current and desired exterior fence](image)


Engineered Wood Products (EWP) have also made significant inroads as substitutes for softwood lumber, more than doubling output in the ten years from 1995 to 2005 (M&ER, 2005). EWP refers to structural members that are made by gluing smaller wood components together. Examples of EWP include wooden I-joists for floors and glued laminated veneered lumber (LVL)
for beams. They offer consistency, strength and size stability but are much more expensive than solid sawn lumber. EWP now accounts for more than eleven percent of the structural frame requirements in new home construction (M&ER, 2005). Although some EWP products like glue-laminated beams have experienced little or no growth others have experienced dramatic market acceptance. Most notable are wooden I-beams for floor joists, which represented over 55 percent of total EWP production in 2005 (M&ER, 2005). As the I-joist market saturates, other EWP products will be challenged to continue the strong growth pace. With high capital costs for manufacturing plants and high technical barriers to entry, EWP is not expected to grow rapidly in the coming years.

Threat to substitution does exist from companies in other countries around the globe that make softwood lumber. Many of these countries have access to inexpensive logs and cheap labour. This global lumber production poses a threat by substituting their lumber products into markets traditionally served by North American softwood lumber manufacturers.

A 2004 Global Benchmarking report produced by R.E.Taylor and Associates, PricewaterhouseCoopers and R.W. Beck, Inc. (R.E. Taylor, January 2006) evaluated softwood timber and sawmilling costs in 24 regions or countries from North America, Europe/ Russia, Southern Hemisphere, and China. Figure 19 shows the average costs and margins of the three global lumber producing regions.
The Southern Hemisphere has the lowest combined log and sawmilling costs of all three continents, followed by North America and Europe/Russia. When competing with a commodity product like lumber, low cost is an advantage. Similar to Canada, most of these countries are disadvantaged into the US market by escalating transportation costs and deteriorating exchange rates relative to the US dollar. Access to US distribution networks can be a barrier to entry but this can be overcome. Currently, the threat from Southern Hemisphere nations is small with volume accounting for about one percent of North American consumption.

Europe and Russia may pose the greatest mid-term threat as substitutes into the North American softwood lumber market. Europeans utilize unique manufacturing processes that allow them to be very market responsive with fibre from their plantation forests. Manufacturing quality is excellent and a well-educated and competent workforce enables proficient use of this technology. Germany’s increase in available timber volume in 2004 and a major storm that felled 85 million cubic meters of logs in Sweden in January 2005 combined to create a surge in European sawmill capacity (Taylor, 2006, p. 3). Even though log costs are higher on average
than North or South America, manufacturing costs are lower than all other regions. Producers from Germany and Sweden have been aggressively entering the North American market and have grown this business from 9.6 million board feet in 1995 to 2.1 billion feet in 2005 (M&ER, 2005). While this accounts for only 2.9 percent of total North American consumption, the lumber is a direct substitute for the SPF species produced in Canada.

A long-term potential threat to North American lumber producers is China. Over the last decade, China has become a global manufacturing powerhouse with significant advantages in labour cost. At this point in time however, China imports most of its logs and China enjoys neither log cost nor manufacturing cost advantages. Existing mills in China are small and inefficient and make them one of the highest cost producers on the globe (Taylor, January 2006, p.5). In the longer-term, plantation forests – which now account for 40 percent of global supply – are being planted in Asia (Taylor, January 2006, p. 1) and have the potential to provide fast-growing, low-cost fibre to future Chinese sawmill operations. The longer-term risk is to have low cost plantation logs flowing into China where new modern sawmills and low-cost labour could establish an unbeatable cost structure.

2.4.6 Political Forces

The threat to the rents of the North American lumber industry from political forces is medium and will be medium to high in the future. The political forces influencing Canadian lumber manufacturers include the imposition of the negotiated trade agreement, the policies of provincial governments regarding harvesting of beetle-killed logs and the ongoing efforts of governments to reallocate Crown land to protect forests in some areas and encourage job growth in other areas.

The new trade agreement negotiated by federal politicians creates an imbalance between Canadian producers and their American counterparts because quota and taxes are only applied to
Canadian producers. These measures effectively increase the cost of Canadian lumber manufacturers at the cyclical trough of the market. Factors such as species switching, industry willingness to operate with negative profit or cash flow, and surge tax management have yet to be experienced in the new trade environment. It is clear that Canadian mills will be disadvantaged to their US counterparts in an oversupplied market.

Political decisions regarding priority harvest of beetle-killed trees in British Columbia will have an impact on the economic viability of lumber mills in the region. The mountain pine beetle epidemic has devastated some forests in the interior of BC and shows no signs of slowing down. The small insect burrows through the bark and into the sapwood of the tree, spreading a fungus that quickly kills the tree. The BC government (Government of British Columbia, 2005) has stated that “significant reductions to (these) allowable annual cuts are inevitable as timber supplies decline and the epidemic finished running its course.” With almost half the lumber produced in Canada coming from BC interior mills, the pine beetle epidemic could have a significant effect on North American lumber supply. To combat the beetle, the government has allowed substantial harvest increases in certain regions of BC. Mills that process beetle-killed wood extract lower average value from the trees because of the lower overall lumber quality of the dead trees. But government policy, not market dynamics, dictates the volume to be harvested and the price to the Crown. In the next several years, there will be an abundance of beetle-killed wood available but companies will be squeezed by trade agreement taxes and lower average returns due to lumber quality. Following the epidemic, BC’s lumber production will drop dramatically.

Governments act as custodians of the natural resources and must be responsive to public interests when managing these resources. At the urging of environmental organizations, lobby groups and the voting public, governments often set aside Crown land for recreation or parks. This act typically reduces the overall supply of trees available to the lumber industry. A well-
known example of this type of government action was the Clinton Administration’s 1994 Northwest Forest Plan which protected millions of acres of old growth timber habitat that was native to the Northern Spotted Owl. This type of government intervention can happen with little warning and can severely impact the lumber industry.

Government may change policies or harvest rights in an attempt to encourage job growth with value-added manufacturers. Governments may reallocate fibre from lumber companies to these manufacturers to give them power to trade logs for competitively-priced lumber or to make some profit from the sale of the logs to other parties. Government policy has rarely provided new cost advantages to lumber manufacturers and it is reasonable to expect that this trend will continue.

2.5 Key Success Factors

The commodity lumber business in which most North American lumber manufacturers participate requires cost advantages in order to generate economic rents. Because wood fibre accounts for fifty to seventy percent of the cost of the lumber, access to low cost trees is critical for success. Other cost variables that can create a competitive advantage are favourable currency exchange rates, low labour costs, favourable prices for by-products, low-cost energy, proximity to market, and technical and operating skills. For the few companies that attempt a differentiation strategy, ability to create a non-commodity product is a key success factor.

The cost of the fibre in the finished lumber product is a result of both log costs and the ability of the mill to convert fibre into lumber. Fibre costs include government stumpage, road building and maintenance, taxes and levies, re-forestation and transportation. The manufacturers’ ability to convert the logs into lumber with the least fibre waste can be a significant competitive advantage. Usually, as mills increase the amount of lumber from a log, they create more low-
grade lumber from the outside of the log which has less value. Sawmills must manage the balance between fibre recovery and lumber value to remain viable in the industry.

Other cost variables can be significant factors to success. Dramatic changes in the exchange rate have had an impact on competitiveness of Canadian firms in the US market. Energy, which accounts for 10 to 20 percent of manufacturing costs, has soared recently and is now a significant component of the mill manufacturing costs. Sawmill operations that are inefficient with energy are disadvantaged to those who have access to low-cost power and heat. Costs for operating, maintenance and supervisory labour can vary from mill to mill depending on equipment, skill levels and operating shift postures. Having a sawmill close to the market can be a significant savings in transportation relative to distant competitors. The technical and operating skills of employees could be considered a key success factor to remove cost and waste from the system.

To execute a successful lumber differentiation strategy, the key success factor is creating a product or service that is unique and valued by the target customer segment to the point where they would not consider switching to commodity lumber. As discussed previously, differentiation is typically created through size, quality or service. Manufacturers may require unique equipment, means of determining special characteristics of the wood that match the customer needs, or service or distribution capabilities that competitors find difficult to copy. Most successful wood products differentiators are small operations with independent machine stations or processes that can be operated in different sequences to customize products to end-user requirements. These operations also convert off-grade materials into complementary products to minimize waste. Their advantage is to create specialized wood products and deliver them for a cost that is less than converting commodity lumber to a similar product.
2.6 Industry Summary

Overall attractiveness of the softwood lumber industry is low for the next two to three years but it should improve to average in the longer term. Demand is expected to weaken in the near future as mortgage rates continue to rise. This will create a supply-demand imbalance and reduce commodity prices to levels that will force mill closures. The taxation and quota restrictions imposed with the recent trade agreement will disadvantage Canadian producers during the low of the market. Beyond three years, the industry should return to historical trend consumption and growth.

The industry is characterized by high rivalry and participants will be threatened by new entrants and substitute products if rents appear. European softwood lumber poses the most threat to Canada because the species are fully interchangeable. Substitute products such as plastic composites and concrete are emerging in regions of the southern USA and will threaten the SYP lumber producers in that geography. HIW and pro-dealer customers will continue to grow but their bargaining power will be limited.
3 INTERNAL ANALYSIS

The company participates in several activities in the value chain from forestlands management through to sales and distribution. The internal analysis will focus on the activities of the western Canadian lumber operations.

3.1 Activity Analysis

3.1.1 Forestlands Management

In Canada the company manages Crown forestlands and this creates an issue for forestlands management. If the company could expect to reap the rewards from their management of Crown land, it would be in their best interest to intensively manage forestlands to create high value second and third growth crops. However, because of the history of government policy changes and harvest reassignments, the company has no guarantee that the forestlands they manage today will not be offered to competitors for harvest in the future. Because of this, the company and others in the Canadian industry do not attempt to exceed government standards for forestlands management. Over multiple decades this will disadvantage Canadian mills relative to US lumber producers, but there is no immediate risk.

3.1.2 Rough Lumber Manufacturing

Sawmill technology is supplied by various vendors throughout Canada, the United States and Europe. Because state-of-the-art machinery can be purchased by any lumber company, there are no competitive advantages or disadvantages in technology. However, several competitors in Canada have made significant investments in technology and these companies have lower manufacturing costs because of reduced manpower, higher throughput and lumber recovery. The
industry typically invests in projects with a maximum two year payback so investments are quickly paid off. Over the last several years, the company has chosen to pursue acquisitions and mega-projects and this strategy has left the Canadian lumber operations trailing competitors in sawmill technology.

3.1.3 Drying

Most lumber sold into the North American market is dried to a moisture content below 19 percent to prevent mould and warp. Lumber drying is done in large buildings called kilns where products are subject to carefully controlled heat, air circulation and humidity. Drying has become recognized as a significant activity because of the ability to create straight lumber and improve the grade quality yields. Drying lumber well means higher average quality while drying lumber poorly can mean significant volume and quality loss. The company has invested in kilns in Canada and has assigned highly-skilled people to become experts at drying. The company's proprietary drying schedules, processes and modelling capabilities are difficult for competitors to copy.

Drying is a competitive advantage for the company's sawmills because it creates a cost advantage and higher average revenue. Cost advantages are achieved by reducing trim waste due to drying defects and by optimizing the amount of energy used in the kiln. Quality drying also improves the overall quality and average revenue of the finished lumber. The exact control of moisture content in the lumber could allow the company to create a new type of quality-differentiated product targeted at customers who desire straightness.

3.1.4 Finishing & Sorting

After lumber is dried it is surfaced to exact tolerances, graded for quality, trimmed and sorted. These activities occur in the planermill. As with sawmills, all technology is available to all competitors. The company has not invested in technology to upgrade their Canadian
planermills. The current planermills are slow and labour-intensive and have become the production bottleneck at most sites. The industry has not had a particular focus on planermills either, but the few company mills that have invested in automatic grading machines, additional sort capacity and new planer machines have been able to improve consistency and quality yields while reducing labour costs. The company is beginning to invest in planermill technology but currently they are disadvantaged to most competitors.

3.2 Resource Analysis

3.2.1 Fibre

The company’s wood fibre from Crown forests is a source of competitive advantage in both cost and revenue. The provincial government determines the cost of these Crown logs through stumpage pricing and does not attempt to extract additional rents when lumber prices are high. This allows companies to retain rents. By comparison, private forestland owners in the United States will increase log prices with lumber prices and extract the additional rents. Both BC and Alberta mills enjoy fibre cost advantages but the Alberta mills have very low costs because of lower stumpage, high lumber recovery and the close proximity of forests and mills.

The company’s Crown forestlands are better than average quality. The forests in both BC and Alberta yield excellent quality lumber both for strength and visual appearance. The fibre in BC achieves excellent yields for stress rated lumber. Some of the company’s BC forests have been infected with mountain pine beetle but not to the same extent as BC competitors. The Alberta fibre is excellent quality and has not been impacted by the mountain pine beetle. This fibre results in higher quality lumber and better average revenues for the company versus its competitors.
3.2.2 Labour

The labour force can be divided into three categories: operational, maintenance and supervisory / management. Before high-technology came to the industry, skilled operating labour was critical for sawmills. Operators would use their judgement to make decisions on each log or board and the success of the sawmill was tied closely to the capabilities and training of operators. With the introduction of automated manufacturing, the role of operators has changed from decision maker to observer. Operators that used to be valued because of their ability to make good cutting decisions are now challenged to monitor automated sawmill systems from centralized control rooms. However, sawmilling skills are helpful when troubleshooting equipment and the company has retained many long-term operating employees. The company’s unionized operating labour is expensive compared to the North American industry average. The benefits associated with skilled operators do not outweigh these cost disadvantages.

This technology shift has created a need for highly-skilled maintenance personnel that can adjust optimization systems, troubleshoot automated equipment and increase equipment utilization using preventative maintenance techniques. In western Canada, these skilled technicians are being lured into lucrative jobs in the oil and gas industry in Alberta. Although this has created a shortage of capable sawmill maintenance people in western Canada, the company has been able to retain most of its maintenance employees. The company has a slight competitive advantage with this scarce resource.

The third category of labour force is the supervisory or management personnel. Management has a tremendous role in the success or failure of sawmill operations because they control critical resources such as labour and capital. Although Canadian lumber manufacturers have a good international reputation, the company does not have strong management skills in Canada. This situation has come about because of inadequate training and hiring philosophies. During the period from 1993 to 2004, placement of Canadian managers was based almost entirely
on human resource skills. This practice has resulted in a lack of strong technical and business leaders. These company’s management employees are above average cost compared to the industry. The Canadian lumber operations are slightly disadvantaged in management resources.

Overall, the company’s western Canadian lumber operations are neither competitively advantaged nor disadvantaged with their labour. Labour costs are above industry average, there are few barriers to prevent employees from leaving the company, and operating and management skills do not translate into a competitive advantage. The company has been successful in retaining scarce maintenance resources and this critical strength balances the disadvantages.

3.2.3 Parent Company

The parent company is a large multi-national organization and offers some advantages and disadvantages to its Canadian sawmills. The company is well-funded and is able to respond to mill needs for capital or emergency situations but it has not made investment in Canada a priority. This has created frustration among Canadian mills because their single source of capital is reluctant to invest. The parent company has become a disadvantage to the Canadian mills in this regard.

The parent company also has a significant research and development (R&D) department with capabilities in wood science and engineered wood products. This R&D resource is without parallel in the industry and intellectual property is closely protected with patents and non-disclosure agreements. However, this investment in R&D has not translated into new commercially-viable lumber products. R&D competencies in lumber drying have helped mills perform better and there is a desire within the company to make better use of the creativity and knowledge within this organization. While this resource could be an advantage if channelled in the right direction, at this point in time, the R&D group brings allocated cost but little benefit to the Canadian mills. The R&D group is a disadvantage to the Canadian mills now because of the
extra cost burden but may be an advantage in the future if new lumber products from R&D can be commercialized.

The company has expertise in marketing, sales and distribution. These competencies have created excellent brand recognition and a reputation for quality. The sales network manages most products direct to customers, bypassing the wholesalers and distributors that many other companies are forced to use. This channel to market strategy provides better than average margins and has led to successful management of inventory even when there is excess supply in the market. Competitors could copy this strategy however, making this an unsustainable advantage.

3.3 Corporate Strategy

3.3.1 Vertical Integration & Diversification

The company is vertically integrated from forestlands through manufacturing to sales distribution. It is diversified through complementary wood manufacturing facilities. Lumber and pulp mills are examples of related diversification with chips created as a by-product in the sawmilling process flowing to pulp mills as the raw material for pulp and paper. Both vertical integration and related diversification offer the company a competitive advantage through economies of scope. Company sawmills and pulp mills are located close together and the short distance for hauling chips lowers transportation costs. In some cases, site services can be shared and sawmills may benefit from low-cost steam or energy produced by the pulp mill. The company can manage fibre flow with fewer people and minimize costs by coordinating the internal supply chain participants. In order to capitalize on this supply chain opportunity, the company is embarking on ambitious enterprise resource planning and sales and operations planning projects.
The company is converting to common enterprise resource planning (ERP) in a bid to standardize processes, reduce software costs, minimize waste and improve revenue. Although the cost of implementation is estimated at $300 million the benefits are expected to be much greater. After safety, implementation of the ERP software is the next highest priority in the company. The company, acting on the advice of consultants, has assigned some of the most capable individuals in the organization to design, blueprint and enable the new software. The company’s wood products operations have not been impacted with the ERP project yet but by 2008 all manufacturing facilities will be required to standardize their production schedules and manage to centrally controlled plans. When the ERP project was introduced, senior leaders of the company identified that the industry implementation failure rate was 85 percent.

Sales and operations planning (S&OP) is another initiative that the company has pursued to manage its supply chain. S&OP requires integrated management of fibre supply through to end products and is focused on identifying customer demand and providing this information to the manufacturing organizations. This planning process allows manufacturing to plan production based on customer demand. It also facilitates better management of fibre flow to the manufacturing units to provide the necessary material to make the desired lumber. S&OP culminates in a monthly meeting of senior managers who review demand projections, operating forecasts and projected financial results. Armed with this information the leadership team makes strategic decisions regarding investment, divestiture, operating rates and product pricing.

3.3.2 Acquisitions and Divestitures

The parent company is a well-funded international forest products company and has the ability to opportunistically enter and exit businesses. In recent years, the company has expanded in some geographic regions and exited others. It has acquired competitors and sold off other assets that it considered as non-strategic. Shifting assets is a way for the company to enter or
expand into more profitable markets and exit less profitable ones. This is an option that is available to a company of considerable size and breadth and is a strategy that smaller companies do not have the ability to imitate.

The company considers US forestlands as its core business because it extracts economic rents as a resource owner. As the owner of private forestlands that supply fibre to both company-owned and competitor mills, the company is able to extract rents by coordinating log prices with fluctuating lumber prices. When lumber prices increase, most of the rents are captured by the forestlands business, not the sawmills. Some institutional shareholders, including Franklin Resources, are pressuring the company to sell or spin-off these forestlands in order to prevent subsidization between forestlands and sawmills and increase overall shareholder value. The company is strongly resisting this because it threatens its primary source of economic rents.

The company has adopted a “fix, sell, or close” strategy to address underperforming assets. This strategy suggests that there are only three choices for any operation: invest in the asset to move it to top quartile performance, sell it to competitors or close it completely. This strategy has resulted in the sale or closure of eight sawmills and three pulp and paper mills in Canada as well as other wood products businesses in the US, Canada and overseas. The theory of the strategy is to prune the low-performing assets and invest in the others to increase the overall health of the business. Money received from the sale of assets is reinvested in the company or used to pay down debt. The company’s downsizing in Canada is an example of shifting assets in an attempt to improve business performance. The company has made commitments to invest in Alberta sawmills but BC mills have received no indication as to their “fix, sell or close” status.
3.4 Business Strategy

3.4.1 Product & Customer Positioning

The company’s Canadian sawmills stratify lumber into quality grades and then direct those grades to customer segments that value the quality characteristics. The product customer positioning for the Canadian mills is shown in Table 6.

Table 6 Company product & customer positioning

<table>
<thead>
<tr>
<th>Grade Pull priority</th>
<th>Product</th>
<th>Customer Segment</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Japan Appearance grade</td>
<td>Japanese 2x4 style home builders</td>
<td>Avoids US duties and taxation. Highest overall return.</td>
</tr>
<tr>
<td>2</td>
<td>Stress-rated</td>
<td>Truss plants</td>
<td>Excellent fit with fibre. Second highest returns.</td>
</tr>
<tr>
<td>3</td>
<td>Appearance grade</td>
<td>HIW retail stores and some dealers</td>
<td>Provides improved margins. Third highest returns.</td>
</tr>
<tr>
<td>4</td>
<td>Common</td>
<td>Dealers and distributors</td>
<td>Natural product from logs.</td>
</tr>
<tr>
<td>5</td>
<td>Low-grade</td>
<td>Industrial</td>
<td>Natural product from logs. Keep in Canada to avoid taxation.</td>
</tr>
</tbody>
</table>

The two main differences between the company’s consumer-positioning and the industry is stress-rated lumber and Japanese appearance grade lumber. The Canadian mills produce 16 percent of their product as stress-rated lumber and 10 percent as Japanese appearance grade lumber. This compares to the industry at three percent stress-rated and less than one percent export grade.
The Canadian operations have made Japanese appearance grade the first priority in their mills because it is a high-value market with no trade restrictions. Western Canadian producers have the ability to ship competitively into the region and Japanese customers enjoy the bright white appearance of the SPF species. The premiums from this market are consistently higher than in North American. The company has fibre that is well suited to the high Japanese quality standards and has an established sales team in the country. This established market channel has proved lucrative for the company’s Canadian sawmills.

High-strength fibre combined with early adoption of stress-rating technology has created a leadership position for the company’s SPF lumber with truss manufacturers. While not as lucrative as the Japanese market, truss manufacturers have paid premium prices for lumber that has engineered properties. This incremental revenue has benefited the company relative to its competitors.

The Canadian mill and industry product customer positioning is similar but, where many competitors can extract a few products at any given mill, the company’s Canadian sawmills have been able to extract all products at all mills. Most competitors focus on one or two premium products but it is common for the company’s mills to extract every quality grade from production. At the low end of the value spectrum, the mills have been able to sort the low-grade lumber in a way that returns a higher overall value.

3.4.2 Channel Flexibility

Lumber from the company’s Canadian mills is sold into the United States, Canada and Japan. Since the early 1990s, lumber sold into these markets has been managed to optimize returns. The company uses market flexibility to increase or decrease lumber into countries in order to capture local premiums or manage within the boundaries of trade disputes. Many competitors who lack this flexibility are negatively affected when access to their primary market
is limited by trade restrictions or when increases in transportation costs make them uncompetitive.

The company also has the ability to move lumber into and out of North American regions based on logistic advantages. The company maintains a presence in several geographic regions but enjoys transportation cost advantages into certain regions of the United States and Canada. This allows the company to shift lumber into regions that are logistically competitive when transportation rates change. Because rail transportation is a significant component of cost, the company’s geographic flexibility can create an advantage over industry competitors who may be restricted by a focused geographic strategy.

3.4.3 Low Cost Manufacturing

The Canadian manufacturing organization has adopted a low-cost strategy for lumber manufacturing. This motivation for a low cost structure was reinforced by the method in which anti-dumping duties were calculated. To reduce the cost per unit, lumber mills have increased equipment utilization, driven down log costs, and used a variety of methods to improve lumber throughput per hour. It could be argued that the company’s Canadian mills have not been very successful in creating a cost leadership position, but this is still the strategy that they have been attempting to execute.

There are some negative consequences of this strategy. The most notable is the trade-off made between volume throughput and value. To reduce cost per unit of lumber, mills have adopted a strategy of making long and wide lumber. This has allowed them to increase volume but it delivers a product mix that is not satisfactory for the majority of customers who typically need short, narrow lumber.
The mills have done very little to reduce energy costs. Although there have been minor efforts to improve electricity consumptions, the mills are still large consumers of both electricity and natural gas. Unlike some competitors, the company has no on-site wood-burning facilities to convert waste into power or heat.

3.4.4 Shift to Differentiation

The company has embarked on an aggressive strategy to develop differentiated products and services for new residential home builders and dealers. Historically, the company has competed as a low-cost producer of commodity wood products but has struggled to return their cost of capital. The infrastructure and overhead that the company carries is a barrier to being a low-cost produce but the company does possess competencies in research and development and sales and marketing that it can leverage into differentiated products and services.

The company has an advantage over competitors because its diversity with lumber, EWP and wood panels is unique in the industry. By combining products, the company can create differentiated building systems that are difficult for competitors to copy. These bundled solutions would combine lumber with other wood products to create engineered solutions. There is internal discussion about how products and services can be differentiated but there are few examples of these new products and services.

3.5 Financial Results

The company’s Canadian mills have achieved a 22.3 percent Return on Net Assets (RONA) over the past 11 years. This performance shows the company’s success in managing manufacturing and log costs and creating value through market segmentation strategies. The Canadian mills’ performance is higher than the company’s cost of capital and has returned superior economic rents. The RONA performance of the Canadian mills is shown in Figure 20. The data also indicates the cyclical nature of the industry.
Figure 20  Return on Net Assets for firm’s Canadian mills

Historical Canadian RONA

Source: Internal company financial statements

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4 FULCRUM ANALYSIS

4.1 Summary of Current Environment

The current environment does not offer a typical company the opportunity to make economic rents and is therefore unattractive.

The North American softwood lumber industry has enjoyed twelve years of strong growth fuelled by new home construction and a healthy repair and remodel segment. In the last six months, the Federal Reserve’s prime lending rate has increased dramatically, driving up mortgage rates and cooling off new home construction as house inventory builds. Lumber continues to dominate as the material of choice for house structures and the recent pullback in housing starts has taken lumber prices to near historic lows.

Substitute products such as composites, concrete and foreign-produced softwood lumber pose a threat to lumber manufacturers in North America. There is high rivalry within the industry and very few barriers for new entrants into the market. The industry is quite fragmented and approaches a perfectly competitive environment. Even though there is some consolidation of buyers, they remain small compared to the total industry and have little purchasing power. Through trade agreements, forestry policies and ownership of Crown land, governments have influenced fibre costs and revenue. These forces combine to create a structurally unattractive environment.

The imbalance between lumber supply and demand is already occurring and lumber prices are generating negative cash flow for most sawmills in the US and Canada. In order for prices to correct to a level that allows the industry to generate profit, supply has to correct to meet
demand. On a positive note, the threat of entry from other countries has all but disappeared at current price levels.

Despite some small variances in quality between manufacturers, softwood lumber is a commodity product. Prices rise and fall with changes in supply and demand and the two inch dimension market resembles perfect competition. Differentiated products are relegated to niche markets serviced by small independent manufacturers with manufacturing flexibility. All other lumber manufacturers compete by being low cost. Standardized grade rules and building code requirements are barriers to differentiation.

Canadian producers have had unique challenges over the last four years with the combination of countervailing and anti-dumping duties and the improving exchange rate between the Canadian and US currencies. The 42 percent increase in the value of the Canadian dollar from $0.63 to $0.90 has created a corresponding increase in Canadian cost structure relative to US competitors. This together with the new trade agreement has reduced the potential for Canadian manufacturers to make economic rents.

With the recent implementation of the new trade agreement between Canada and the US there is confusion regarding the inter-relation of species pricing and the competitive position of option A and option B regions. Canadian producers will be receiving a $4 billion windfall in returned duties and there is speculation as to how this money will be spent. It provides companies the opportunity to reinvest in their lumber business, return some to shareholders, or diversify into other businesses. Although there is some speculation that Canadian companies could use the money to out-last American competitors in a market downturn, this is likely not realistic given that shareholders expect companies to act responsibly and use the money to increase shareholder value.

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British Columbia is the source for half the softwood lumber produced in Canada and is challenged with the effects of the mountain pine beetle. Government efforts to contain the pine beetle through aggressive harvesting have been unsuccessful and it has created a surge of softwood lumber from the province. The government continues to grapple with the short-term need to get economic value from the dead trees and the longer-term issue of potential devastation of the forest products industry in the province.

4.2 Expected Future Environment

Over the next seven year business cycle North American lumber manufacturers will be influenced by demand trends, internal rivalry, customer power, substitute products and government actions. Most of these competitive forces will reduce the ability of companies to make economic rents. It is likely that the future environment will be even more unattractive than the current environment. A dramatic change in government policy is the only external force that may create an opportunity for rents.

Over the next two to three years the environment for lumber manufacturers will be extremely difficult as interest rates increase and housing starts drop dramatically. This will force commodity lumber prices down and take sawmill capacity out of North America. After this period of adjustment, housing starts should return to demographically sustainable levels and re-establish the 1.34 percent historical demand growth rate for lumber. New home construction is not expected to surge strongly in the three to seven year time frame and therefore the projected demand for lumber does not create the imbalance with supply that would allow lumber producers to extract economic rents.

Rivalry within the lumber producing industry will continue to be fierce, reducing the potential for companies to earn economic rents. Large multi-national companies will continue to dominate the industry and attempt to lower their cost structure. These cost initiatives will include
mergers and acquisitions, mill rationalization, and increased utilization of remaining assets. Mergers and acquisitions will continue to be used by companies to realize synergies and opportunities of scale. Large companies will continue to focus on asset utilization at selected mills through the addition of shifts and capital expenditures that lower manufacturing costs. These competitive forces will lead to the closure of high cost producers. Canadian companies will likely invest money returned from the CVD and ADD settlement and will upgrade existing facilities and acquire competitors. Companies with significant assets in British Columbia will invest in other regions to reduce their exposure to the mountain pine beetle infestation.

Customers, especially large dealers and HIW retailers, will continue to grow and consolidate but their power will remain weak. The trend to consolidate has not occurred in other segments but it is reasonable to expect other customer segments will evolve through consolidation and begin exerting their increased power on lumber manufacturers. Customer power will not pose a threat to the future rents of lumber manufacturers.

Substitute products will pose a significant threat to North American lumber producers in the future. Demand for softwood lumber in North America will be threatened by new substitute products that offer consistency, strength or outdoor durability. Plastic composites and concrete will continue to displace US-produced southern yellow pine lumber. Softwood lumber made overseas and brought into North America will erode the potential for North American lumber producers to make economic rents at the next market upturn.

The softwood lumber trade agreement between the United States and Canada will disadvantage Canadian lumber manufacturers to their American counterparts. The supply-demand imbalance expected over the next two years will drive commodity lumber prices to very low levels. The bottom-end tax and quota restrictions applied to Canadian lumber manufacturers will virtually eliminate the potential for these producers to make economic rents during this period. Companies in the option A regions will be paying more tax than their option B
competitors plus they will be at risk of paying the 50 percent surge tax. In an option A environment, if every producer were to act in their collective interest they would all reduce production equally to avoid the surge tax. Instead, the Nash equilibrium (Nobel, 1994, p. 4) suggests that all producers act in their own self-interest and maintain the lowest cost per unit of lumber by increasing production. This leads to a collectively worse outcome for producers in the region. With the upcoming market downturn, the BC mills will likely be burdened with taxes plus surge penalties which will disadvantage them against the rest of the industry. In Alberta, the additional taxes will be offset by the low log costs and this will leave the Alberta mills neither advantaged nor disadvantaged.

If the Canadian dollar continues to strengthen against the US dollar, the selling price of SPF lumber in US dollars should increase. If all species were fully interchangeable, SPF lumber would quickly be displaced by lower-cost US-produced species. However, species are not fully interchangeable so the market price of SPF lumber will be determined by the balance of Canadian and European lumber supply to North American SPF demand and not by historic price relationships to other species. As long as there is not a large variation from current exchange rates, the effect on Canadian sawmills will be minimal. A very strong Canadian exchange rate will reduce or eliminate potential for rents but a weak Canadian dollar will create potential for economic rents.

Government policy will continue to focus on extracting rents from the industry and managing the political environment to ensure public stakeholders are satisfied. Although governments have recently restrained themselves from retracting lumber from industry, it is likely that over the longer term, they will continue to reduce available forestlands. The harvesting increases that have been granted in BC to combat the mountain pine beetle epidemic will continue but these harvest levels are not sustainable in the longer term and there must be a significant correction in the future. On a positive note, unexpected government intervention to
address an environmental or wildlife issue could remove lumber capacity from North America and create the opportunity for remaining companies to make rents.

4.3 Firm’s Current Competitive Position

The company’s Canadian operations competitive position in the industry is slightly above average. It enjoys advantages in fibre quality, fibre cost and drying capabilities and has been able to execute its product segmentation and channel flexibility strategies well. However, this is partially offset by disadvantages in manufacturing costs, and taxes and duties from trade disputes. The company has a history of earning more than the cost of capital and has been able to generate economic rents over the business cycle.

In a competitive commodity environment, the low cost producers have an advantage over other competitors. The company enjoys a competitive advantage with log costs in Alberta and has a slight advantage in log costs in British Columbia. Manufacturing costs are above average due to high labour costs, the strengthening Canadian dollar, and the lack of capital investment. Transportation costs are about average for the company compared to other Canadian competitors but there are some regions in which the company enjoys a cost advantage.

The company’s western Canadian lumber operations have been able to improve margins by segmenting products and selling these into higher value markets. Participation in the Japanese export market and North American truss and appearance markets has created channel flexibility and allowed the sales organization to shift products from one segment to another to improve revenue. This has helped to minimize the impacts of the US trade dispute and has returned higher overall value to the company compared to competitors.
4.4 Firm’s Future Competitive Position

The strategies that the business has pursued to create flexibility in customer channels and a low cost structure will allow the business to cope in the future environment but it will not lead to above industry-average economic rents. The parent company’s strategic initiatives create some hope for improved rents but if these strategies are not executed extremely well, they will only burden the Canadian mills with extra cost.

The company’s sawmills have been advantaged with lower-than-average log costs from Crown forests. It is likely that government will continue to extract as much revenue from Crown forestlands as possible but they will be wary of damaging the integrity of the industry with overzealous cost increases. Assuming governments in other areas of the US and Canada act in a similar manner, the company’s mills should retain their log cost advantages. The return of CVD and ADD penalties will not provide an advantage for the firm’s Canadian operations because the money has been allocated to other company projects and debt repayment. The company will become further disadvantaged to Canadian competitors who will invest returned CVD and ADD money into their business to upgrade facilities, purchase rivals, and lower their manufacturing costs. The mills will be operating under the option B trade restrictions and will be subject to higher taxes than competitors in other Canadian regions. These taxes will also disadvantage the mills to their American counterparts.

The company has a revenue advantage over competitors with its market flexibility. The ability to move lumber into alternative high value markets like Japan will enable the company to reduce their exposure to the new trade tax. Balancing this is the knowledge that the company will be harvesting a higher percentage of mountain pine beetle-attacked wood over time. The firm’s BC mills have an advantage over other mills now but the speed and devastation of the pine beetle infestation will determine how long this advantage lasts. The Alberta mills will continue to remain advantaged and the BC mills will, over time, become slightly disadvantaged in revenue.
Supply chain management and improved planning have the potential to eliminate cost from the system. The company’s enterprise resource planning (ERP) and sales and operations planning (S&OP) initiatives may be successful in eliminating waste. As the projects are implemented over the next three years there will be distractions, complications and added cost. Once these initiatives are fully developed there will be a cost savings to the business but in the meantime these projects will disadvantage the firm to its competitors.

In summary, if the Canadian mills maintain their current strategies they will be able to survive the next business cycle but will not be able to earn above industry-average economic rents. The business strategy to develop market channel flexibility will allow them to manage some of the impacts of the trade agreement. They will retain an advantage with log costs but become disadvantaged to competitors on manufacturing costs. Corporate initiatives will add cost in the near term and it is uncertain the extent to which they will increase revenue or reduce cost after implementation.

4.5 Key Issues

There are a few key issues that must be resolved in order for the firm to succeed. These key issues are: creating cost advantages in fibre or manufacturing, increasing net revenue relative to Canadian competitors and defending against substitute products.

With a commodity product like lumber, cost advantages are required to extract rents. The firm has significant fibre cost advantages in Alberta and slight fibre cost advantages in BC. Lack of capital investment has prevented the operations from reducing manufacturing costs to top quartile and both regions are slightly disadvantaged in manufacturing costs.

Increasing net revenue relative to competitors will create economic rents for the mills. This strategy includes product differentiation, product segmentation, channel management and
the minimization of border taxes. The beetle infestation has the potential to reduce returns in the BC operations because of the resulting lower quality lumber.

Softwood lumber from foreign countries poses a significant long-term threat to the company's economic rents. If these products remain close substitutes for Canadian SPF with no barriers to entry into the US market, the company will not be able to earn economic rents.

4.6 Direction of Solution

With the current strategy, the Canadian operations should deliver average to slightly below average financial performance over the next business cycle. Some strategies to explore for improved economic rents are low-cost commodity, blended differentiation-cost strategies, and exit through complete divestiture. Although divestiture may seem attractive given the potential impacts of the pine beetle and trade agreement, the most appropriate strategy for the company is a blended differentiation-cost strategy.

The company has an excellent opportunity to divest its Canadian lumber assets now that competitors have received their CVD and ADD settlements. These competitors are eager to pursue their strategies to consolidate and realize economies of scale and have the cash available to purchase the company's mills. This could be an attractive option given concerns about the mountain pine beetle and other competitive forces that threaten rents.

Divesting the mills would make it difficult for the company to execute its differentiation strategy targeted at new home construction. The fibre, strength and size of lumber from the BC mills are ideal for roof trusses and SPF lumber has become a popular product for many builders because of its straightness and ability to hold a nail. Builders need lumber to build houses and many prefer SPF lumber. Exiting SPF lumber would leave the company at a significant disadvantage trying to service customers with their new differentiated solutions. The Canadian
mills have a solid earnings history and with some strategy modifications they will continue to earn better rents than other investment options.

The company's Canadian sawmills will not be successful in executing a low-cost commodity strategy. The parent company's allocation of corporate overhead makes this strategy very difficult. Taxes from the new trade agreement, government regulation of Crown forests, labour cost structure and lack of investment in new technology are additional barriers for the company to become a low-cost producer. The company should consider investments and strategies that lower their overall costs but this alone will not create economic rents.

The most appropriate direction for the company is a combination of strategies that build on the existing capabilities in channel flexibility and low-cost manufacturing but that create some product and bundled solutions that align with the company's differentiation strategy.

The ability to manage product flow to multiple geographies has been an excellent strategy and the company needs to maintain and strengthen this flexibility. The strategy allows the company to tactically manoeuvre lumber into markets that provide the best revenue return. This will be a competitive advantage for minimizing trade taxes in the future. During periods of taxation, the company will return higher revenues than competitors by redirecting lumber into Canadian and Japanese markets. To enable this strategy, structural changes within the sales organization are required to ensure effective coordination with Canadian customers. Market expansion will be through a skimming strategy.

Manufacturing and forestlands must continue to drive unnecessary cost out of the organization in order to position the company to compete in commodity lumber markets. While some of the lumber can be redirected into differentiated products and bundled solutions, there will continue to be a significant percentage of commodity lumber from the company's mills. Capital investment needs to be focused on both reducing manufacturing costs and increasing
capacity or flexibility to enable differentiated products. Investments that reduce energy costs have the potential to improve cost competitiveness. Capital investment will be necessary to execute any of these strategies.

Differentiation will be created through two initiatives: bundling and lumber quality differentiation. Bundling lumber with other wood products for roof, floor or wall applications has high potential because all products are currently available. Custom home builders can be targeted with branded, bundled structural frame solutions that offer lower cost and guaranteed quality. Other bundled products will be mass-produced for large builders or universal applications. Lumber quality differentiation will require the integration of core competencies in research and development, drying and marketing. The first differentiated products will meet builder needs for straightness. Subsequent differentiated lumber products need to reduce builder cost or create added value that results in a premium from the builder’s customer. Sorting these products out, branding them and marketing them as a premium product will create product differentiation that competitors will struggle to copy.

Penetration strategies should be used whenever possible for market entry of new products. In the past, the company has attempted market entry by slowly converting mill capacity and pushing new products to buyers. This strategy has resulted in low incremental value and quick replication by competitors. Rapid penetration is preferred because it will deliver higher premiums, create brand equity and catch competitors unaware. Marketing activities must be directed at builders and homeowners. This will create demand with the end-user and reduce pricing power of intermediaries in the channel.
5 SOLUTION ANALYSIS

The solutions analysis presents detailed options that follow the broad direction of solution described in the fulcrum.

5.1 Strategic Options

Strategic options present different ways that the Canadian mills could achieve the general solution described in chapter four. These options have been categorized under channel flexibility, cost management, capital spending, differentiation and market entry.

5.1.1 Channel Flexibility

The central sales team manages all sales from the Canadian sawmills and directs this lumber to over three hundred customers scattered throughout the United States, Canada and Japan. This flexibility has been used effectively to reduce border taxes and to move lumber into regions that provide better revenue opportunities. The level of flexibility can be expanded through regional distribution centres, the field sales organization and product mix management.

The Canadian based regional distribution centres offer another channel into Canadian markets. These distribution centres provide a higher level of service to customers by shipping partial or mixed trucks direct to dealers and by providing other specialized products and services. Regional distribution centres typically service small customers so there is little overlap with customers serviced by the railcar volumes coordinated by central sales. These centres purchase commodity lumber from a variety of manufacturers including the company and its competitors. There is opportunity to increase overall returns to the company by redirecting volume from US markets into this Canadian channel.
A complementary option to distribution centres is to utilize field sales in Canada to capture new Canadian customers interested in receiving railcar or full truck service. Field sales would maintain the primary relationship but avoid warehouse and inventory costs by shipping direct to the customer from the mill. Field sales associates need to be trained to sell lumber but this could be facilitated by the central sales team. This strategy takes advantage of the entire sales force to pull Canadian business from competitors.

This channel strategy must be approached cautiously. Central and field sales retain unique cultures and reporting structures and this creates conflict in the current environment. Changing the reporting structure to have all Canadian sales associates report to a single individual would allow better control of channels and create a better team environment. Some customers request quotes from both central sales and field sales and cause them to unwittingly bid against each other. Standardized pricing based on current market data will help resolve this issue but the company needs to clearly define the appropriate sales associate for each customer based on their need for rail, full truck or partial truck shipments. The lowest cost channel that meets customer expectations should be used for commodity lumber shipments.

Changes to product mix from mills can facilitate the movement of lumber into regions that are financially attractive. Unfortunately, the sawmills are already extracting as much Japanese appearance grade lumber as they can but they could blend this lumber with slightly lower quality lumber to increase the total volume available to Japan. Although this has the potential to damage the company’s quality reputation in Japan, it can be done at one or two mills and targeted to less demanding customers in Japan. This approach would minimize reputation risk, remove lumber from the US and take advantage of the higher premiums in Japan.

Product mix can also be aggressively managed on a tactical level. Mills are reluctant to frequently change quality sort priorities because it is confusing and difficult for the employees
managing the process. However, new automated grading equipment allows mills to make quality sort changes quickly and easily. This enables the mill to increase or decrease lengths or lumber quality based on price relationships and market demand. With this equipment mills can quickly respond to price opportunities to improve revenue. The automatic grading equipment exists in only one of the Canadian mills.

5.1.2 Cost Management

The company's Canadian mills must continue to drive cost out of the system. Cost reduction can occur in log fibre, manufacturing, sales, and corporate overhead. Most obvious cost opportunities in fibre and manufacturing have been addressed and realized. Because government regulations and policies govern Crown land it is not possible to achieve large cost reductions in fibre cost. Manufacturing costs are slightly higher than the industry average but cost reductions have been limited by capital. Capital spending can reduce those manufacturing costs.

Each link of the supply chain could reduce cost within the portion of the business that they control. The risk with this approach is that small cost savings in one part of the supply chain can create cost increases in other areas. An example would be forestlands purchasing low-quality logs in an effort to reduce log costs. Although log costs would reduce, the logs would increase unit costs to manufacture and reduce sales revenue. Savings in one part of the supply chain does not necessarily mean higher rents for the company.

Sales and operations planning and enterprise resource planning are processes that can take cost out of the supply chain. The company could establish a cross-functional team to evaluate supply-chain cost opportunities. Members of this team would consist of forestlands, manufacturing, transportation and sales representatives. Internal cost benchmarking of all company sawmills would surface potential savings. Financial reporting could consolidate all
costs within the company’s supply chain and this would be the measure against which all participants are evaluated. This would create cohesive and aligned cost management.

Sales, distribution and corporate overhead add allocated costs to the company’s Canadian lumber operations. The company’s Canadian sawmills do not directly control these operations and have limited influence on them. It is possible for the mills to lobby corporate leadership to reduce these costs or cost allocations but this approach has not been successful in the past. Given the company’s differentiation initiative, the mills should be challenging the sales, marketing and research and development organizations to create value that exceeds their cost.

5.1.3 Capital Spending

Capital spending should be focused on improving the company’s manufacturing costs or enabling the differentiation strategy. Manufacturing costs for sawmills are composed of labour, energy and supplies. Operating labour and energy costs have the highest potential for cost savings. Differentiation requires capital investment to create mill flexibility and new proprietary products.

There are two approaches to reducing labour costs through capital investment. One strategy would invest capital to replace specific operating jobs with automated machinery. The other approach would invest capital in machinery or upgrades that would allow the mill to make the same amount of lumber with fewer operating shifts. For the former strategy, there is one significant opportunity remaining to reduce operating costs in the Canadian mills: automated grading systems. This equipment not only enables channel flexibility as discussed previously, it also reduces total operating labour costs by eight to ten percent. There are no other opportunities of this scale. The second strategy is more difficult to execute because it requires differential investment in each mill and labour savings cannot be realized until the system performance improves to a desired level. While capital spending may help resolve certain bottlenecks, this
strategy is better achieved through continuous improvement in machine uptime and operating reliability.

Capital spending is also required for the company to execute its differentiation strategy. Again, automatic grading systems offer the flexibility to grade and sort new products consistently. The company has invested in drying technology and is well positioned to take advantage of this competency. Capital investment in drying is not required. The company’s research and development group have prototype equipment to create and measure lumber quality in new ways and capital will be required to develop these prototypes into operational equipment and install them in mills. In some instances, additional sorting capacity will be required to separate out the new differentiated products. The mills would also need to invest in equipment to brand the differentiated products.

5.1.4 Differentiation

The Canadian lumber operations have the option to pursue differentiated products, bundled solutions or differentiated service solutions. The company needs to consider customer demand, margin potential and the company’s ability to market, brand and produce the new differentiated solution.

Builders have a willingness to pay for straight lumber because they incur costs and damage their reputation when they use lumber that does not stay straight. This provides an opportunity for the company to use their core competencies in drying and R&D technology to identify the boards that will remain straight. It will require automated grading equipment and other proprietary equipment to manufacture. The company still needs to prove the concept in production and there is considerable risk of delay of market release because of this. Once the product is proven, a marketing campaign must be developed to create builder knowledge and demand for this new branded product.
Bundled solutions focused on roofs, floors and walls offer an alternative differentiation strategy. These solutions must incorporate various products from within the company and combine them in a way that is unique and difficult for competitors to copy. There are two primary customers for these products: production builders and smaller custom home builders. Production builders often develop tracts of land using less than a dozen house plans. Bundled solutions for this customer segment would consist of standardized pre-assembled factory-made components. Solutions could include standardized shear wall panels for garages and large windows, pre-assembled door or window wall sections and stair sections. These applications are either complicated because of building code requirements or are labour intensive to assemble at the job site. Production builders will be willing to pay more for this solution because it reduces job-site labour costs.

Many custom home builders attempt to differentiate themselves from production builders by offering customization and above-average quality. While home-buyers can determine the quality of components like flooring, plumbing fixtures and lighting, most are unable to identify the quality of the house structure. With aggressive brand marketing, the company could become the first wood products company to be identified with home quality and structural integrity. Design software used for engineered wood products can be expanded to enable distribution centres or qualified dealers to design engineered house structures consisting of company wood products. The bundled solution would be the branded structural frame of the custom home. As an engineered design, the structural frame would cost less but its quality assurance and brand would command a premium price with home-buyers.

5.1.5 Market Entry
Marketing has a critical role in any differentiation strategy. Skimming or penetration strategies can be employed to introduce products or services into the market. New lumber
products are usually introduced using a slow skimming strategy. This occurs because mills are converted one-at-a-time and the company wants an immediate payback on the investment in each mill. Marketing efforts are typically geared to large dealers or HIW customers. New lumber products are priced relative to commodity lumber and a small premium is negotiated with the customer’s buying agent. Unfortunately, this marketing approach targets the wrong decision maker and allows other lumber manufacturers the time to develop a competitive response. Usually the premium is quickly eroded by buyer power or competitor actions.

The company’s differentiated lumber products could be introduced to the market with a skimming strategy but a more appropriate strategy is rapid penetration. This would require the company to build capacity for differentiated lumber at several mills before initiating the advertising campaign. The advertising campaign should be targeted to builders and home-buyers with a message of quality and structural integrity. Advertising directly to the end user in this manner would reduce the bargaining strength of intermediaries in the supply chain. For the strategy to be successful the lumber must be identified with a brand and be very recognizable on the job site as a non-commodity lumber product. Brand identification such as painting, stencilling or labelling can create this effect. Competitors would be caught unaware and the market could be converted quickly.

Differentiated lumber and bundled solution pricing should be based on the value that is provided to the end customer. Quantifying this value will require market research and cost studies prior to implementation. It is common for new lumber products to be priced at a premium to commodity lumber rather than at a fixed price. If differentiated lumber were set at a fixed price, at times it would be below commodity lumber and at other times it would be a significant premium. A better strategy is to establish quarterly fixed pricing for differentiated lumber. This removes price fluctuation risk from the builder during the project, demonstrates clearly that the product is not a commodity, and allows for regular adjustments to maintain the premium.
6 RECOMMENDATIONS AND CONCLUSION

6.1 Recommendations

The company’s western Canadian lumber operations need to adopt and execute strategies of channel flexibility, cost management, and differentiation. These strategies must be prioritized, funded with capital, and supported by marketing.

The first priority for the sawmills is to install automated grading equipment at all of the mills. At a cost of four million dollars per mill, this equipment is not expensive when measured against the CVD and ADD returns and project financial payback. It will lower operating labour costs by eight to ten percent, improve revenue through more consistent grading and enable the company’s differentiation strategy. Mills should be challenged to manage product mix to be responsive to customer and market demand. This will create capabilities to manage the product mix of differentiated products to meet customer demand in the future.

R&D and marketing groups should focus on straight lumber and branded structural frames for custom homes. Straight lumber is valued by builders and the company could uniquely create this product using competencies in drying and R&D. Bundling and branding the structural frame of the house is a more ambitious long-term strategy but one that offers great potential. The bundling strategy capitalizes on the company’s multiple product lines and technical competencies to create a lower-cost, engineered structural house frame. Competitors don’t have the same breadth of product line or technical skills and it will be difficult for them to replicate this strategy. For both differentiated lumber and bundled solutions, marketing must proactively create a brand identity and demand with builders. Manufacturing capacity should be created in advance to
enable rapid market penetration. Pricing of differentiated products should be fixed on a quarterly basis instead of as a premium to commodity lumber.

The sales group should expand their flexibility by developing new market channels and attracting new customers in Canada through the field sales organization. This strategy will reduce exposure to the US trade tax and provide higher overall returns to the business. Changing the Canadian sales team reporting structure and clearly identifying customer contacts will minimize current confusion and competition between field and central sales.

Cost must continue to be a focus for the organization and should be one of the main objectives for supply chain management teams. These teams need to have representatives from forestlands, manufacturing and sales to ensure cost reductions in one area do not reduce the ability of the company to make economic rents. Production should be planned to meet specific customer demand and all activities that do not support the combined low-cost and differentiation strategies should be challenged and eliminated if possible. Power generation and energy conservation investments offer a longer term cost opportunity.

6.2 Conclusion

The company’s western Canadian lumber mills have extracted higher than average economic rents over the last decade by manufacturing commodity lumber out of low-cost fibre. The North American industry is not attractive now and will be less attractive in the future as substitute products and intense rivalry erode the potential for rents. In order to extract superior economic rents in the future, the company needs to maintain and develop market channel flexibility, drive cost out of the supply chain and fund and market new differentiated products.
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Company Documents
