A RECENT HISTORICAL PERSPECTIVE OF INCREASING TRADE RESTRICTION IN WOOD PRODUCTS

Case Study of the United States, Europe and Japan

By

NOBUYUKI MUTO

Bachelor of Agricultural Science, Nagoya University, Japan, 1994
Master of Agricultural Science, Nagoya University, Japan, 1996

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE

in

THE FACULTY OF GRADUATE STUDIES
THE FACULTY OF FORESTRY
Department of Wood Science

We accept this thesis as conforming
to the required standard

THE UNIVERSITY OF BRITISH COLUMBIA

April 2002

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Department of Wood Science

The University of British Columbia
Vancouver, Canada

Date April 25, 2002

DE-6 (2/88)

ABSTRACT

Despite efforts to liberalize trade by reducing tariffs, there has been an increased use of Non-Tariff Measures (NTMs) to protect domestic industries circumventing efforts for liberalized international trade. This study explores the use of NTMs to uncover a mechanism that underlies the implementation of NTMs as a global trend.

The case study method was used to accomplish this purpose and three regions, the United States (US) and the European Union (EU) and Japan were selected as study cases. The US and EU have implemented NTMs while Japan has not. These cases provide important information to not only understand the role of NTMs but also uncover a framework for their implementation. This framework shows that the protectionist movement is triggered by economic recession. It is then amplified by process and product innovation. The cases are restricted to the softwood lumber sector but the framework may be applicable in a larger context.

In the US and EU, the economic recession of the late eighties led to oversupply of product and the adoption of process innovation to improve productivity and profitability during low prices. This exacerbated oversupply and led to sawmill closures and increased unemployment while the sawmills that increased capacity remained. These conditions contributed to a strong protectionist movement and the implementation of protectionist policies in both regions.

While new production created oversupply, newly innovated products, such as Engineered Wood Products (EWPs), captured an increasing share of conventional softwood lumber markets. This substitution contributed to the oversupply of lumber in the market by effectively shrinking the market.

Since international agreements prohibited the implementation of tariffs, NTMs, which were less regulated by international trade rules, were adopted to protect and/or promote the domestic industry. Japan has not adopted innovative process technology despite the reduction in sawmills

and the reoccurrence of recessions. This may be the reason that Japan has not explored NTMs but is considering safeguard measures under WTO guidelines

Key Words: technology, Non-Tariff Measures, process innovation, product innovation, Canada-US softwood lumber agreement, pinewood nematode, safeguard, oversupply.

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1 INTRODUCTION

The global trend has been towards increased free trade and a removal of trade restrictions to increase the global economy and assist developing countries by providing a market for their developing industries. There have been many efforts to liberalize trade, using both bilateral (e.g. the North American Free Trade Agreement) and multilateral negotiations (e.g. the World Trade Organization). However, some sectors are still trying to implement trade restrictions (e.g. primary wood product producers and the steel industry in the US, magazine publishers in Canada). This is especially true for Non-Tariff Measures (NTMs) that can be implemented without directly contravening many trade agreements. Use of NTMs to restrict trade has been increasing in the wood products industry since the 1980s (New Zealand Forest Research Institute 1999).

Initially, this thesis was to explore the impact of a specific NTM, the Softwood Lumber Agreement (SLA) on one of the targeted regions (British Columbia and Alberta, Canada). It would explore the impact of the SLA on product mix, markets and shifts in decision making between head office and each sawmill site. A survey was designed (see Appendix 2) to collect data from both sawmills and head offices in BC and Alberta to compare product mix before and after the SLA. Additional information was to be collected on the destination of products for firms that were allocated quota under the SLA. A questionnaire was designed, tested, approved by the appropriate UBC ethics panels and was then faxed to both corporate head offices and the sawmill sites in Western Canada. The response rate was very low due to the extreme politicizations of ongoing negotiations between the US and Canada. Most firms would not provide any information before there was a final agreement between the US and Canada. As a result, with the support of the supervisory committee, the author shifted to a case study analysis of NTMs using three case studies from the wood products industry. The case studies are the SLA. The other two were the ban on green softwood lumber into Europe prompted by the

pinewood nematode, and current initiatives in Japan to restrict the import of lumber using WTO approved safeguard measures.

The thesis is organized in the following manner. First, the concept of technological development and impacts of technological change are explained using agriculture as an example in Chapter 2, Section 1. Lessons from a development process in agriculture indicated that technological adoption and increasing protectionism are linked. Once the theory is presented, the development of intense protectionism in agriculture is discussed. Increased agricultural productivity, which was accomplished with technological developments, led to oversupply in world markets. This oversupply pushed product prices downward and providing intensive competition. As a result, protectionism occurred in agriculture in all developed countries.

Chapter 2, Section 2 discusses some aspects of technology and protectionism, especially NTMs, in the wood products industry. Section 2.1 discusses what kinds of technologies were developed, and how they impacted the wood products industry and market. This is followed by Chapter 2, Section 2.2, which discusses NTMs; their classification and role in the industry.

The cycle from technology developments to protectionism in agriculture can be applied to manufacturing including the wood products industry (Grübler 1998). Based on previous discussions, a theoretical framework is established to show how protectionism is tied with technology developments in Chapter 2, Section 3.

Three regions, the US, the European Union (EU) and Japan, were selected to examine the relationship between technology and protectionism, especially NTMs. A case study method was adopted to complete the research. The specific research and analysis technique is explained in Chapter 3. Each case is described including economical background, trade, the structure of the sawmill sector, and the level of technology adoption. The case regarding the US is presented in Chapter 4, the EU is in Chapter 5, and Japan is in Chapter 6.

The theoretical framework (**Figure 2-3**), which graphically illustrates the path towards protectionism using NTMs, is supported by a series of discussions for each case for each case with a focus on the relationship between technology stage and the implementation of NTMs is addressed for each study case in Chapter 7. Finally, concluding remarks regarding the relationship between technological stages of manufacturing lumber in the country instigating NTMs are provided in Chapter 8.

1.1 RESEARCH OBJECTIVES

While NTMs are getting more consideration in free trade negotiations, a mechanism to control NTMs and encourage free trade is still unclear because of their broadness and complexity. The research objective is to explore the global trend towards protectionism using NTMs in the softwood lumber sector in the wood products industry, especially in developed countries.

Specifically, three questions arise:

1. What factors contribute to create protectionist movements in the wood products industry, particularly for softwood lumber?

2. Do technological changes influence this protectionist movement?

3. Why are NTMs preferred compared to tariff measures?

In short, this study uncovered some of factors which contribute to the creation of protectionist movements around the world. The trends towards protectionism in terms of industrial development, including technological adoption in the wood products industry, are traced and compared between regions. The methodology to achieve the objective, a case study approach, is discussed in the next chapter.

2 LITERATURE REVIEW

Technological developments improve the quality of a product, manufacturing productivity, and/or the amount of product that can be produced. These lead to better value and lower prices of products for consumers.

Improvements in technology result in the same amount of product being produced from a smaller workforce, partly due to improved labour efficiencies. This reduction in employment may lead to a climate that promotes protectionism to "save" jobs. In agriculture, intensive farming methods, improved herbicides and pest control, and biotechnology have increased yields and overall production, and decreased the cost of production per unit. This has led to oversupply, which in turn led to excessive price reduction, and governments had to protect the industry from revenue reduction with subsidies. This cycle has occurred in all developed countries, including the EU, the US and Canada (Drucker 2001).

According to Grübler (1998), during the twentieth century, this cycle occurred in the primary sector (resource-intensive activities such as agriculture and mining), and economic activity and employment were transferred to the secondary sector (industry, especially manufacturing). Grübler (1998) indicated that this cycle is being repeated today with increasing productivity and declining prices in manufacturing, as economic activity and employment are being transferred to the tertiary sector (services). This same pattern of technology development is leading to oversupply and lower prices, causing increased protection for national industries. Currently, this trend is underway in the wood products industry with the protectionist movement using both tariff and Non-Tariff Measures (NTMs).

The purpose of this chapter is to explore the relationship between technology and protectionism, first using agriculture as an example. This is followed by a discussion of protectionism and technological aspects in the wood products industry. Finally, the relationship between technology and protectionism is summarized as a research framework.

2.1 TECHNOLOGY

2.1.1 Definitions

Technology is defined as aggregation of both hardware (machinery or a manufacturing plant) and software (including the knowledge required to produce and use technological hardware) (Grübler 1998: 19-20).

According to Grübler (1998: 23), technology develops through three different phases: invention, innovation, and diffusion. *Invention* is the first demonstration of the principal and the physical feasibility of a proposed new solution, which is usually related to some empirical or scientific discovery. An invention is frequently measured through patent applications and statistics. *Innovation* is defined as the point when a "newly discovered material or a newly developed technique is being put into regular production for the first time, or when an organized market for the new product is first created (Mensch 1979: 123)." There are two types of Innovation: one is product innovation; the other is a process innovation (Hill and Utterback 1979: 42). Product innovation creates a new or modified product with direct usage of technological hardware. Process innovation refers to new methods of production. According to Hill and Utterback (1979), the dynamics of product and process innovation follow a certain process. During "product innovation", one or more products originate due to perceived market demand. Once the products are accepted in the market, increasing demand for both volume and diversification of the products lead to the need for innovations in the production process. Thus, with second stage, "process innovation" becomes more important. When markets and products mature, "process technologies" focus on reducing production costs and improving product quality, which can require both product and process innovation. The third phase, *diffusion,* is "the wide spread replication of a technology and its assimilation in a socio-economic setting" (Grübler 1998: 24).

2.1.2 Technological Changes in Agriculture

The process of agricultural development provides a case study for technology driven evolution. In this section, the recent history of agriculture is traced in terms of the impacts of technological change, particularly on protectionism.

Agriculture, which dominated human society for 10,000 years, declined rapidly in the 20th century. Although agricultural products accounted for 70% of world trade in value in 1913, it now accounts for only 17%. In the early years of the 20th century, agriculture in most developed countries was the largest single contributor to GDP; now in developed countries the contribution of agriculture to GDP is the lowest among all industries (Drucker 2001). For the past 40 years, the agricultural population (i.e. the number of people deriving their living from agricultural activities) has been decreasing in developed countries (**Figure 2-1**). This decrease is particularly pronounced for subsistence farms or small family operations in developed countries (Anonymous 2000). However, agricultural production is not decreasing despite the decline in the agricultural population. For example, wheat farms are most efficient when they farm thousands of hectares

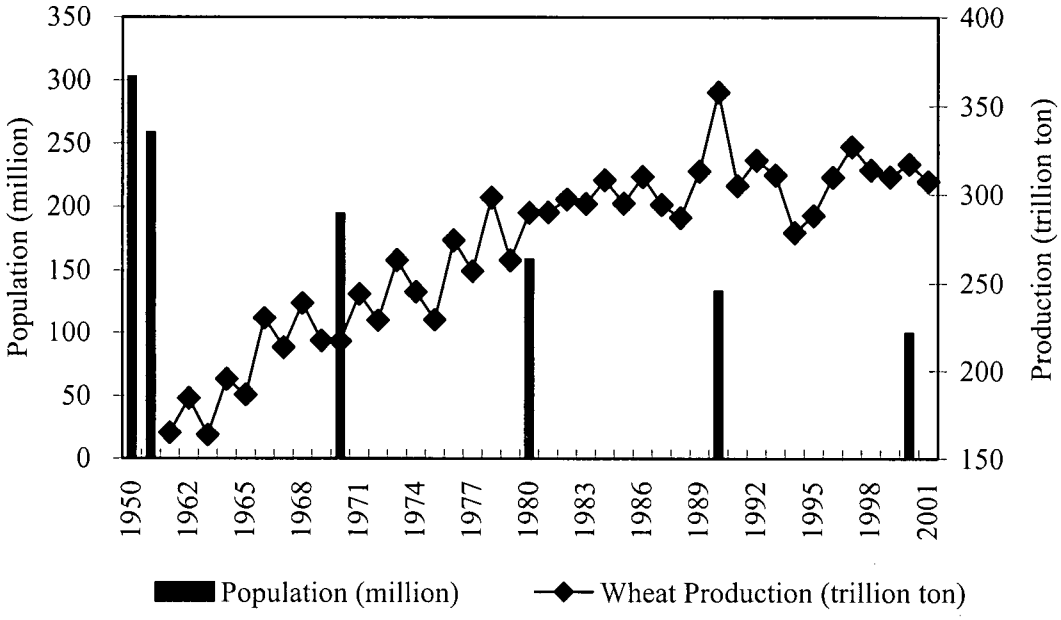

Figure 2-1: Agricultural Population and Wheat Production in Developed Countries from 1950 to 2001. (Source: FAO 2001a)

that can be worked by a combination of people and sophisticated machines (Anonymous 2000). As the overall agricultural population needed to produce has declined, wheat production has increased, particularly in developed countries (**Figure 2-1**).

After the 1930s, agriculture was transformed from a resource-based to a technology-based industry. This industrialization has three characteristics of development: biological innovations, new low cost factor inputs such as fertilizers, pesticides, and mechanization typified by the farm tractor (Grübler 1998: 143-144). These technological developments have contributed to dramatically increased production in the 20th century. Well-developed countries, such as the US, Canada, and some of the Western European countries, may produce surpluses that are not needed by their own populations (Drucker 2001).

Increasing productivity has led to increasing supplies and declining prices of products. However, it was not always beneficial to the farmers because the speed of increasing production costs to adopt new technologies has grown faster than that of increasing farm income. Once increasing supplies cause lower prices, farmers have to compensate by increasing production due to increasing productivity (Anonymous 2000). In the US, this vicious cycle led to agricultural product oversupply and low prices in the mid-20th century.

The US government responded by establishing policies to improve this condition. The government authorized payments to farms if they reduced the production of a certain product by the Agricultural Act of 1956, and provided payments to shift from soil-depleting crops to soil-conserving plants. During the 1960s, controlling overproduction became a primary goal of farm policy (Anonymous 2000). This pattern of farm subsidies was being repeated in most developed countries in North America and Europe.

2.1.3 Impacts of Technological Changes

The process through which many governments worked to control production through subsidies and restrictions on imports is graphically depicted in **Figure 2-2**.

Technological changes impact in several ways. Grübler (1998) categorized four impacts of technology changes: 1) technological changes that augment resources, 2) those that diversify products and production, 3) those that enlarge markets (output), and 4) those that enhance productivity.

Technological changes that augment resources include technologies that promote the discovery of new resource deposits and/or improve the accessibility and recoverability of existing resources, and those that substitute for existing materials and fuel inputs. Diversifying products is one of the results of technological change. While product and process innovation push product diversification, the application of technology increases standardization in manufacturing (Grübler 1998: 47). Productivity improvements are one of major consequences of technological

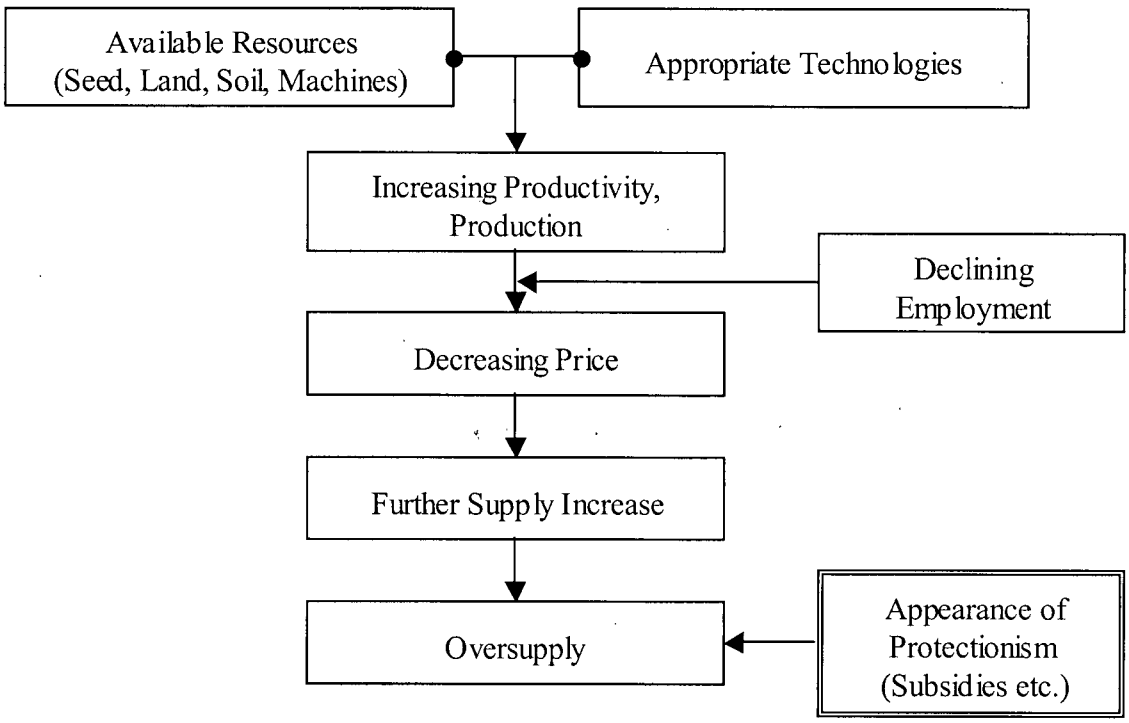

Figure 2-2: The Relationship Between Technology and Agricultural Development.

changes. "Doing more with less" is a main objective of technology applied to the factors of production: land, labour, energy, and raw material. Technological changes directly contribute to enlarging markets by improving productivity (Grübler 1998: 48-49). Increasing production caused by improved productivity reduces production costs, and is often reflected in decreasing prices. Lower prices attract more customers and expand the market. In addition, technological changes, such as the successive evolution of transportation system in the 20th century (from canals to steam railways to large transport ships of 19th century to the road vehicles and aircraft) enlarge markets spatially (Grübler 1998: 48).

These technological impacts also have some negative impacts. One consequence is oversupply, which can lead to a declining standard of living for those producing the products, which in turn can lead to government protectionism in the producing countries.

2.2 PROTECTIONISM

Technological change leads to differential productivity increases across sectors, with particularly high increases in manufacturing (Grübler 1998: 8). This increasing productivity shifts over time from the primary sector (resource-intensive activities like agriculture and mining) to secondary sector (industry, especially manufacturing), and currently to the tertiary sector (services) (Grübler 1998: 9). The wood products industry is currently following the development process previously discussed for agriculture. In the next section, technology and protectionism in the wood products industry is summarized.

2.2.1 Technologies and The Wood products Industry

Current technologies in forestry and the wood products industry, such as biotechnology and technologies to produce Engineered Wood Products (EWPs), are changing the structure of the industry and affecting trade. One trend is that technology continues to contribute to a change in the source for industrial wood from natural forests to plantations. The other is that increasing

availability of lower quality material creates competition between solid wood products and both composite wood products and non-wood products.

2.2.1.1 Technology Improvement in Timber Growth

Plantation forests accounted for only 5% of the global forest cover, but they supplied 35% of global roundwood in 2000. This figure is anticipated to increase to 44% by 2020 (FAO 2001b: 28). In fact, the development of single species plantation has started impacting global wood production in many ways. Extensive areas of radiata pine plantations in New Zealand and Chile not only enabled these countries to supply all their domestic wood needs, but also to support large and growing export industries (FAO 2001a: 8).

Technologies of both tree breeding and silviculture have improved growth rates (FAO 2001b: 32). For example, a consequence of aggregation of studies in breeding and silvicultural studies was the discovery that radiata pine (*Pinus radiata*), which originally grew in only a small area on the coast of California, has the ability to grow quickly under certain management regimes with a shorter rotation length (Sutton 1997). The mean annual increment (MAI) is between 12 and 35 m^3/ha/year and it takes about 40 years to reach maximum MAI (FAO 2001b: 31, 32). New Zealand introduced radiata pine as a plantation species, and currently radiata pine dominates with over 90% of their forest plantations as radiata pine stands (Sutton 1997).

The increasing use of genetics and biotechnology as well as the application of many agricultural techniques will continue to increase the productivity of forest plantations (FAO 2001a: 7). Although genetic modification using recombinant DNA techniques has been studied for virus resistance, insect resistance, lignin content and herbicide tolerance, transgenic forest trees are not currently produced commercially (FAO 2001a: 7).

2.2.1.2 Technology Improvement in Timber Processing and Production

Increasing limits and restrictions on harvesting natural forests that produce large-diameter logs is changing the sizes and quality of wood. This reduction of large-diameter logs from natural

forests is balanced by an increasing supply from fast grown plantations often with much shorter rotations and higher productivity than natural forests. (FAO 2001a: xii). While the quality (i.e. portion of juvenile wood, number of knots) is usually inferior to logs from old-growth (UN-ECE 2000: 135), the increasing use of plantation wood to the market, along with the decline in large-diameter logs from natural forests, gives impetus to the production of EWPs such as laminated veneer lumber (LVL), glue-laminated lumber. (FAO 2001a: 21-22).

Technology development has improved flaking machines, press technology and drying systems to enable the conversion of lower quality raw materials into EWPs with superior performance properties (UN-ECE 2000: 135). In addition, EWPs dramatically improve final product yield. While average final product yield from a typical log in sawmilling is 40%, yields for LVL (one of the family of EWPs) are 52%; Parallam™ approximately 65%; and Timberstrand™ approximately 75% (UN-ECE 2000: 135). As a result, there has been a great increase in substitution for solid wood products by both EWPs and other materials and products in many regions (FAO 2001a: 15). For example, oriented strand board (OSB) is capturing market share from plywood and particleboard in Europe and the US (FAO 2001a: 8).

2.2.1.3 Product and the Process

Technology levels and product mixes often indicate the state of the industry and/or market conditions. The development or innovation of new technology and the products produced occur as an interaction of factors, such as economic and/or market conditions (Globerman et al. 1999).

There are two incentives for a firm to adopt new technologies and/or change their product mix. One is based on a firm's business strategy. For example, the adoption of innovative technology is positively related to a firm's profitability. Cohen et al. (1990) found that a higher level of adoption of new processing technologies was related to higher profit. According to unstructured interviews conducted by Vertinsky et al. (1987), executives in the wood products industry recognized that a constant flow of investments for renewing production machinery and

expanding capacity was required for cost leadership, which is a low overall cost position in the industry. The other incentive is that market conditions push technology development. Lee et al. (1999) found that the market focus of softwood lumber mills influenced the reasons for both upgrading technology and the choice of technology.

In this perspective, changing product mixes and the technologies to produce wood products are standard strategies for coping with global competition and/or some difficulties of global trade, such as NTMs (Marchak 1995: 100). For example, changes in product quality assurance standards in Japan demand an increasing level of quality for many building materials (Cohen and Gaston 2001). To achieve this, firms may upgrade a facility by investing in production technology and/or product development (Cohen and Gaston 2001). Globerman et al. (1999) mentioned the necessity of technology improvement for increasing production efficiencies and product quality to survive under competitive trade measures and NTMs. Hill et al. (1979) stated that specialization in different countries or areas of technology could help avoid a return to protectionist foreign economic policies. Hence, products and technologies seemed to be intrinsically linked to global trade and NTMs.

2.2.2 Non-Tariff Measures (NTMs)

The increased production in the wood products industry resulting from new technology can lead to protectionism.

There are two methods of achieving trade protection: tariffs and Non-Tariff Measures (NTMs). Tariffs are the most direct and visible measure for restricting trade. Under the General Agreement on Tariffs and Trade (GATT) Uruguay Round (UR), the free trade negotiation that concluded in 1994, the global movement towards free trade has been progressing. Tariffs for wood products, especially in developed countries, were reduced. Average tariffs for logs were reduced by 31%, from 9.4% before the UR to the current level of 6.5% (Bourke et al 1998). Tariffs on wood-based panels were reduced more than 50%, from 0.9% before the UR to 0.4% in

2001, and semi-manufactured goods were reduced by 67%, from 4.7% before to the current 1.6% (Bourke et al 1998). However, despite efforts for tariff reduction, the use of NTMs has continuously risen since 1980 (New Zealand Forest Research Institute 1999).

2.2.2.1 Classification of NTMs

NTMs are defined as any government laws, regulations, policies and/or practices, which either protect domestically produced products from the full weight of foreign competition or artificially stimulate exports of particular domestic products. NTMs include both formal institutional measures designed to restrict or distort trade patterns and other restrictions which act as impediments with the same result (New Zealand Forest Research Institute 1999). NTMs are classified into three categories: Social/Political measures, Health and Safety measures, and Environmental NTMs.

Social/Political measures are initially used for domestic purposes and can include surcharges, import and export taxes, license requirements, and quantity control, such as quota setting or log export bans. The objective is to maintain or increase the size of the domestic industry, to add value to existing resources, to protect domestic employment and processing, to increase the local raw material supply (e.g. logs), to provide the basis for a new or expanded industry, and/or to increase exports. The Canada-US Softwood Lumber Agreement (SLA) is an example of this kind of measure (Chapter 4).

Health and Safety measures are used to protect the economy and people from the risks posed by introduced pests and diseases or by danger caused by inappropriate uses of materials. Phytosanitary and plant health codes and standards are included in this category. While the original intent may be to provide health protection, at times health and safety measures are but a tool to protect a domestic industry from foreign competition. The EU ban on unseasoned softwood lumber imports (Chapter 5) may be considered as an example of this kind of measure.

Environmental NTMs are any measures that are used for improving or protecting the environment. These can include environmental certification and labelling requirements and/or restricted access to countries that do not meet minimum environmental standards. Environmental NTMs are becoming increasingly popular as a tool of Environmental Non-Governmental Organizations (ENGO's) (New Zealand Forest Research Institute 1999). These also can become tools to protect domestic industries from global competition.

2.2.2.2 The Increasing Importance of NTMs in the Wood products Industry

Among the diverse range of NTMs, the one most commonly applied to the wood products trade have been quantitative restrictions and/or quality controls that have targeted specific products, wood species and even individual exporters (Barbier 1996). Some of these influence regional industries directly. For example, Indonesia implemented a log export ban to build up value-added wood products processing, namely plywood, from 1980 to 1985. As a result, Indonesian plywood production and exports increased rapidly, and Indonesia became the world's major supplier of tropical hardwood plywood (New Zealand Forest Research Institute 1999). This indicates that NTMs can influence regional industries in terms of technology, products, markets and the production process.

2.3 THEORETICAL FRAMEWORK

Technological change enabled increases in agricultural production, which led to oversupply and nationalistic protectionist movements. In the same way, technology is increasing industrial forest resources and the development of more efficient processes and more products to create an oversupply of industrial wood products. These technological adaptations have increased the quantity of wood as well as the ability to meet increasing needs with smaller fibre requirements. This has led to increased competition in the global market resulting in growing demand but depressed prices due to an even greater increase in supply.

Oversupply led by these technological adaptations has triggered increased protectionism for solid wood products using NTMs. In fact, the softwood lumber sector in the wood products industries in Europe, the US and Japan have moved towards NTMs to protect their domestic markets for their domestic industry. This includes Europe's ban on green lumber using phytosanitary restrictions; the US efforts to restrict the volume or place a tax on softwood lumber imported from Canada and recent Japanese examinations of a safeguard actions on wood products according to WTO regulations.

Often protectionism in certain industries occurs a result of nostalgia and the political movements (Drucker 2001). This may be the case for wood products. The increasing market share of lower cost Canadian softwood lumber in the US market triggered US protectionism, represented by the Softwood Lumber Agreement (Apsey et al. 1997). While some US sawmills are upgrading their facilities to retain their market share and adopt new technologies in order to compete, they also seek NTMs to ensure adequate prices to recover their investment costs (McKenna 2001). The EU unseasoned softwood lumber import ban practically shut out softwood lumber from non-EU countries, particularly Canada. Recently, Japan has been trying to implement a safeguard action in response to the increasing share of imported wood products to provide time for domestic mills to become competitive.

Give this history of protectionism, some questions arose:

- What factors contribute to create protectionist movements in the wood products industry, particularly for softwood lumber?
- Does technological changes influence this protectionist movement? and
- Why are NTMs preferred compared to tariff measures?

The purpose of this study is to explore the global trend towards protectionism using NTMs in the softwood lumber sector in the wood products industry, especially in developed countries. To achieve this, the research framework shown in **Figure 2-3** was adopted to test study cases.

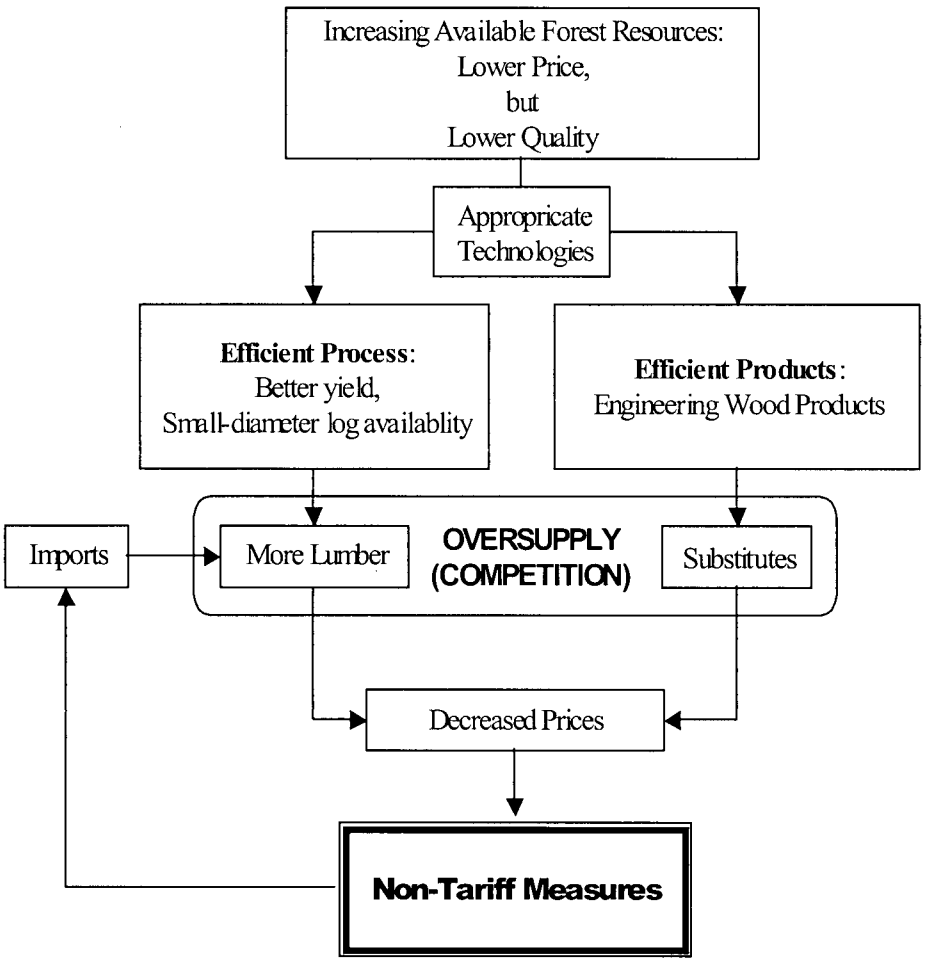

Figure 2-3: Theoretical Framework for NTM Implementation.

Technological developments contribute two different ways. One is to provide an efficient producing process. This will increase production. The other is to produce newly innovated products, which enable to produce fewer raw materials. On the other hand, these technological development increases availability of forest resources. Increased production of lumber and newly innovated products is supported by this increasing availability of forest resources due to technological developments. In the market, competition between domestic lumber, imported lumber and substitutes of lumber such as EWPs will become serious. Excessive competition pushes product prices downward. As a result, protectionist movements are encouraged to moderate domestic competition.

3 METHODS

To better understand the relationship between protectionism and technology, a case study approach was adopted. Yin (1984) explained a case study as "an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and multiple sources of evidence are used." To establish a research method for this study, these ideas (Yin 1984) are combined with an exploratory research method. This chapter presents research methods and procedures for data collection. This consists of four topics: 1) adoption of case study method, 2) case selection, 3) data collection procedures and 4) limitations.

3.1 CASE STUDY METHOD

Case studies are used for examining contemporary events when the relevant behaviours cannot be manipulated (Yin 1984: 19). The method is adopted to answer "why" or "how" research questions (Yin 1984).

This study is based on a theoretical flow presented in Chapter 2. To test the theory, a multiple-case study method[1] is used. In some case studies, at least two sets of case are examined. A first set works to develop rationales, and a second set is used for comparative consideration with the first set (Yin 1984: 47). This technique is used to find a similar result or theory from different cases under varying conditions (Yin 1984: 48).

3.2 CASE SELECTION

The multiple-case study method is used to find similar conditions by comparing different NTM cases. Three cases, the softwood lumber agreement (SLA) by the US, the unseasoned softwood lumber import ban by the EU, and the safeguard movement by Japan, were selected to examine

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[1] In general, when a case represents a critical case in testing a well-formulated theory, an extreme or unique case, and/or a revelatory case, a single-case study, in which only one case is used, is adopted (Yin 1984: 42-43).

how protectionist movements were implemented and how protectionist movements are related with stages of technical development. The regions related to these three NTMs were mainly the United States (US), Canada, the European Union (EU), and Japan. Since they are all major wood exporting and/or importing regions, their trade policies are very influential in the international trade of wood products.

3.3 DATA COLLECTION PROCEDURE

The case study includes both historical observation and direct observation such as systematic interviewing (Yin 1984: 19). Six different sources of evidence are generally used: documentation, archival records, interviews, direct observation, participant-observation, and physical artefacts (Yin 1984: 79). In this study, documentation, which includes letters, memoranda, agendas, announcements, administrative documents, formal studies, and news clippings etc., as well as archival records were used. Interviews and direct observation techniques were not carried out because of time and budget limitations.

3.4 LIMITATIONS

Limitations to be in case studies involve the number of cases used and the source of data. There are essentially two limitations that come from using a small number of samples. First, it is very difficult to generalize a phenomenon from a few cases (Yin 1984: 21; Zikmund 1994: 134). For example, a situation being studied may be atypical in some cases. Second, this method easily allows equivocal evidences or biased views to influence the direction of the findings and conclusions (Yin 1984: 21). The researcher carefully checked the wording and structure of the study to reduce these biases.

The data and information predominantly came from secondary data sources. Four limitations should be considered here: the data may include (1) outdated information; (2) variation in definitions of terms; (3) different units of measurement; and (4) the lack of information to verify

the data's accuracy (Zikmund 1994: 164). The researcher made every effort to avoid including inappropriate data by carefully checking the source of information.

Despite these limitations, the results provide useful information regarding the connection between technology and protectionism in the softwood lumber sector.

4 THE SLA APPLICATION BY THE UNITED STATES

The Canada-US Softwood Lumber Agreement (SLA) is one example of a social/political measure in NTMs for wood products. The SLA practically worked to limit Canadian softwood lumber exports to the US. Why did the US have to limit Canadian softwood lumber export? The purposes of this chapter are to identify conditions under which the US tried to protect the market, how these market conditions were reached, and how technology was related to these conditions. This chapter first explains how the SLA worked as well as the impacts to both the US and Canada. This is followed by a review of the history of softwood lumber disputes between the US and Canada and finally by a review of the most recent market conditions for softwood lumber in the US.

4.1 HISTORY OF THE SLA

The first lumber trade friction between Canada and the US occurred over 100 years ago when Ontario started exporting lumber to the US. This was the first tariff on Canadian lumber imposed by the US (Drushka 1999). Since then, the softwood lumber dispute between the two countries has flared up several times. The most recent series of disputes started in 1982, and the most recent settlement occurred with the signing the Softwood Lumber Agreement (SLA) in 1996.

During this time period (1982 – 1996), the US industry petitioned for a countervailing duty three times. The history of the recent series of softwood lumber disputes is summarized in this section and draws upon the research of Cashore (1997), Bernstein et al. (1999), and Fukuda (2001).

4.1.1 Process of Countervailing Duty

Before reviewing the recent history, the process of a countervailing duty petition in the US will be summarized. The most important issue in recent Canada-US softwood lumber disputes has been the subsidy of Canadian lumber products. The US law allows the imposition of a countervailing duty on subsidized goods under specific conditions. The countervailing duty was

originally designed to "neutralize" foreign government payments to assist domestic exports in the 19th century. The US government must follow a legal and regulated process to determine whether to levy a countervailing duty.

The amended Tariff Act of 1930 currently governs US countervailing duties and subsidies' cases. Two US government agencies, the International Trade Commission (ITC), an independent commission, and the International Trade Administration (ITA), a branch of the Department of Commerce, are specified as official agencies in this legislation. Following a request by industry, both agencies begin an investigation. The ITC rules whether a subsidized good imported into the US injures US industries. The ITA investigates whether a foreign government is directly or indirectly providing countervailable subsidy to the industry that exports the products to the US. A countervailing duty that is equal to the amount of the subsidy can be imposed on the subsidized good only when both conditions are met.

4.1.2 Prior to the First Countervailing Case: - 1982

The housing market is the primary driver of softwood lumber demand in the US (Lynn 2001). In 1979, the US economy entered an economic recession and the US government reduced both taxes

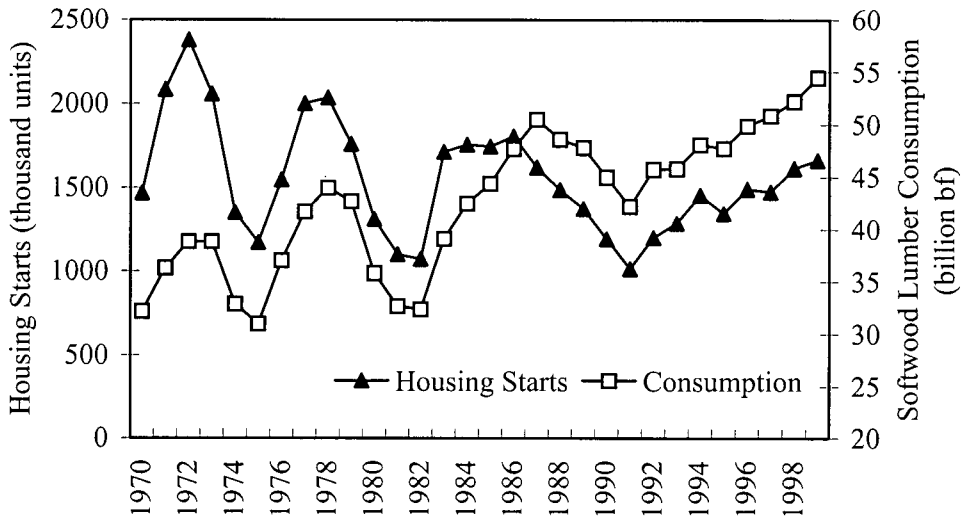

Figure 4-1: U.S. Softwood Lumber Consumption and Housing Starts.
(Source: Fukuda 2001)

and government expenditures to revitalize the economy. The theory behind this policy was that if the tax rate was lowered, then, taxpayers could keep more of their earnings which would, in turn, be either spent or invested, thus simulating economic growth and increasing tax revenues by a sufficient amount to compensate for the lower tax rates. However, the tax revenue did not increase as expected, and the government deficit increased which, in turn, contributed to higher interest rates (Fukuda 2001: 7). As a result, the decline in housing starts due to the recession continued. This decline led to a corresponding decline in lumber demand from 1978 to 1982 (**Figure 4-1**).

During this time period, US currency became stronger relative to Canadian currency. This provided opportunities for Canadian softwood lumber producers to penetrate the US market and increase their market share within a market in recession (**Figure 4-2;** Fukuda 2001: 7). The US lumber producers were unhappy with the increased competition from a lower priced Canadian product during a recessionary time (Cashore 1997).

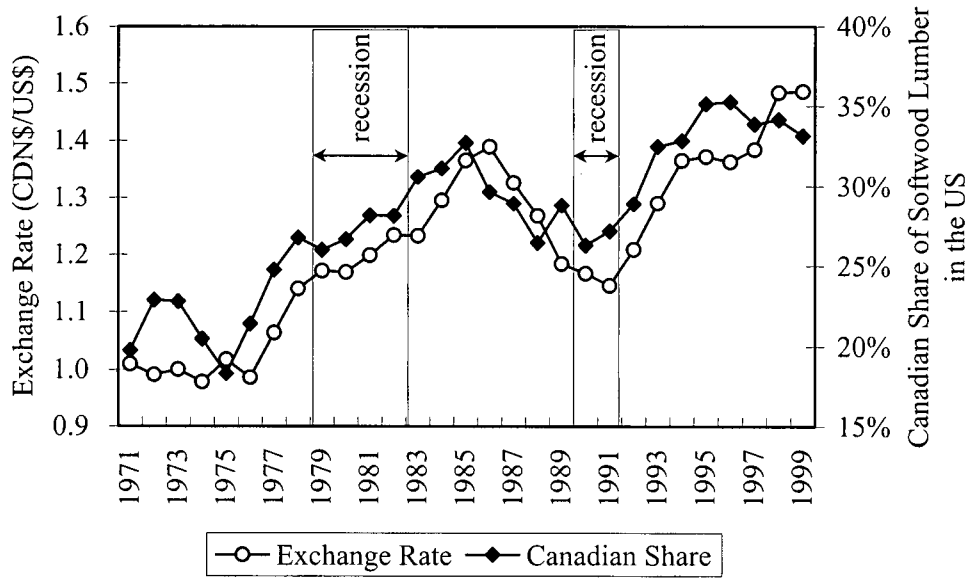

Figure 4-2: The Relationship between Exchange Rates and the Canadian Share of Softwood Lumber in the US. (Source: Fukuda 2001)

4.1.3 The First NTM: 1982 - 1983

In January 1982, the International Trade Commission (ITC) started an investigation due to a complaint by the Northwest Independent Forest Manufacturers (NIFM), a coalition of US Pacific Northwest sawmill companies. The argument put forward by the NIFM was that Canadian provinces subsidized their wood industry by charging below market prices for stumpage. This subsidy resulted in increased market share for Canadian lumber and was a major cause of increased unemployment in the US wood industry (Apsey et al. 1997; Bernstein et al. 1999; Cashore 1997).

Because approximately 70% of the forest in Canada is provincially owned (Natural Resource Canada 2000), industrial logs are mostly harvested from provincial forestlands. When a private firm harvests timber from a provincial forest, it pays a stumpage fee to the provincial government. The stumpage fee is a cost for sawmill operations, as the fee influences the breakeven price for lumber. The owner of the forests sets the stumpage fee; in Canadian forests, this is the provincial government. Stumpage rates in BC and other provinces had been mostly based on the appraisal system. The appraisal system is called the comparative value timber pricing system in BC. The comparative value timber pricing system is a politically driven system (Haley 2000). Under the current system in BC, the government sets a "target revenue" based on the expected harvest volume. Then the target revenue is divided by the expected volume of harvests to obtain a value called the "basic rate (BR)". The stumpage rate is based on the BR adjusted by some market factors, such as lumber or chip price in the market place and the sawmill's operation costs. Under this system, it is possible for the government to control stumpage rates for sawmills (Bernstein et al. 1999). Each province has a different stumpage system, but they are all set by the provincial governments and open to criticism in that they are not purely market based. The US industry argued that Canadian lumber was "unfairly" priced because of a non-market based stumpage system, and regarded stumpage rates under the system as a subsidy.

To impose a countervailing duty for a subsidized product, the ITC has to prove that a subsidized good injures US industries, and the ITA has to show that a foreign government is providing countervailable subsidy to the industry. A countervailing duty can be imposed on the subsidized good only when both conditions are met. In April 1982, however, the ITC reported that it did not recognize any injury to US manufacturers although the costs of Canadian producers were less than those of US producers. Following the decision, the NIFM tried to expand its support outside of the Pacific Northwest to include Southern and Northeastern sawmills. As a result, the Coalition of Fair Canadian Lumber Imports (CFCLI) was formed by the West, South and Northeast manufacturers (Apsey et al. 1997). Although it filed a countervailing duty petition in October, 1982, the ITA ruled that Canada did not significantly subsidize a "specific" industry in May, 1983. Although the US industry failed to establish a NTM to protect the domestic industry despite two-year efforts, it did not give up. The US industry thought that one cause of this failure was a lack of political strategy (Cashore 1997: 11).

4.1.4 Second NTM Attempt: 1986 – 1990

Since President Reagan supported free trade, the US administration had a neutral stance on this lumber dispute while the US government negotiated with the Canadian government to settle this issue. However, in April, 1986, the US administration changed their stance due to political pressures by CFLI lobbyists and claimed that the Canadian government was unfairly subsidizing the lumber industry.

The Coalition for Fair Lumber Imports (CFLI), which was a newly formed organization[2], launched a countervailing duty petition against the subsidies represented by the Canadian stumpage system in May 1986. On June 27, 1986, the ITC ruled that the US industry had been injured by Canadian imports. The ITA preliminarily ruled that Canada was subsidizing its

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[2] Though the CFLI was officially a new organization, most of members overlapped with the old CFCLI (Cashore 1997).

industry, and proposed that the US impose a 15% interim duty on Canadian softwood lumber. The difference for both the ITC's and the ITA's rulings from the previous countervailing case in 1982-3 was due to a 1984 amendment to the Tariff Act of 1930 that expanded the definition of a "specific[3]" industry and the extent of countervailable subsidies to support protectionists (Cashore 1997).

The final decision on a countervailing duty was scheduled to be announced on December 30 1986. Both governments accelerated efforts to settle the issue without the imposition of the duty. As a result, they reached an agreement before a final ruling on the duty was issued by the ITA. On December 30, 1986, a Memorandum of Understanding (MOU)[4], that was a voluntary export restraint (VER)[5], was signed by the two countries. The pact required Canada to impose a 15% export tax on softwood lumber to the US. In exchange, the US agreed to cancel the interim duty and to return all bonds and deposits collected. The CFLI approved of this agreement and withdrew its petition. The pact took effect on January 8, 1987.

The pact also included a clause stipulating that the Canadian export tax could be reduced or eliminated if stumpage rates increased in Canada. This provision coincided with the desire by some provincial governments, especially BC, to increase revenues from the wood industries (Cashore 1997). Some provinces started to make efforts to replace the 15% export tax with a higher stumpage rate. Although the BC government had applied the appraisal system, known as the Rothery Method, it changed to a new system called the Comparative Value Timber Pricing System in order to reduce the export tax in 1987 (Haley 2000). As a result, the export tax on

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[3] The granting authority, or the legislation pursuant to which the granting authority operates, has to determine whether a subsidy is "specific" to an enterprise or industry or group of enterprises or industries within the jurisdiction of the granting authority.

[4] See Appendix 1: Memorandum of Understanding (MOU).

[5] See Appendix 1: Voluntary Export Restraint (VER).

softwood lumber was eliminated for BC. Quebec also changed stumpage prices, and the export tax was reduced to 6.2% in 1990.

4.1.5 Agreement for a NTM: 1990 – 1996

Based on changes to provincial stumpage systems, Canada judged that stumpage prices had increased sufficiently to compensate for the export tax, and in October, 1991 declared the termination of MOU due to pressure by both wood industry officials and the BC government (Cashore 1997). Canada expected the US to accept its decision. However, even if the US would not accept its decision, Canada considered that dispute solution process in the Canada-United States Free Trade Agreement (FTA), signed in 1988 and ratified in 1989, would provide a mechanism to settle this case to Canada's advantage (Cashore 1997). Canada considered that the previous countervailing case was unduly influenced by US political pressures and expected that dispute resolution process in the FTA would proceed with minimal political intervention (Cashore 1997).

Before discussing the events that took place after October 1991, the function of the FTA is explained. The following is a summary of chapter nineteen in the FTA legal document entitled "Bilateral dispute settlement in antidumping and countervailing cases." The purpose of the FTA was to gradually eliminate tariffs and non-tariff trade barriers on goods (Agriculture and Agri-food Canada 2000). The FTA had a trade dispute settlement function for antidumping and countervailing duties' disputes. When bi-lateral negotiation of these issues failed to settle a dispute, each country could request that a bi-national panel be established, consisting of five members. Each country selected two members and the fifth member was selected cooperatively. The work panel was to replace judicial review by domestic courts of final antidumping or countervailing duty determinations by national agencies. Following the recommendations of the panel, both countries were to start consultations to seek better solutions to issues. Though the FTA did not have an appeal mechanism against the panel's findings (Winham 1999), it could invoke the establishment of the Extraordinary Challenge Committee (ECC) when:

- "a member of the panel was guilty of gross misconduct, bias, or a serious conflict of interest, or otherwise materially violated the rules of conduct";
- "the panel seriously departed from a fundamental rule of procedure"; or
- "the panel manifestly exceeded its powers, authority or jurisdiction."

If these conditions were not found by the ECC, then the bi-national panel decision was final. If the ECC found these conditions to be true, a new bi-national panel would be established and the decision would be finalized.

Once Canada cancelled the MOU, the US government immediately "self-initiated" the third countervailing action on October 31, 1991. However, this self-initiation process contained a problem for the US because most provinces had changed their stumpage prices. Therefore, the US required additional evidence to prove subsidies (Cashore 1997). This case included the log export ban in addition to the stumpage issue (Cashore 1997). In December 1991, the ITC again recognized evidence that the US industry had been injured by Canadian imports. In addition, in March 1992, the ITA preliminarily ruled that Canada subsidized its softwood lumber industry by measures of unfairly lower stumpage prices and BC's log export ban. The amount was equal to 14.48% (stumpage: 6.25%, log export ban: 8.23%). In June 1992, the ITA concluded that Canadian subsidy was 6.51% (stumpage: 2.91%, log export ban: 3.60%), and imposed a 6.51% countervailing duty on Canadian softwood lumber.

Canada appealed these countervailable rulings to a bi-national panel for dispute settlement under the terms of the FTA. Two bi-national panels were established to investigate the ITA's subsidy determination and the ITC's injury ruling. The bi-national panels remanded the ITA's and the ITC's decision because of insufficient evidence to justify their findings that Canada was subsidizing its industry and that the US industry was injured by softwood lumber imports. The two agencies, the ITA and the ITC, re-examined in accordance with the bi-national panels, and

reaffirmed their earlier findings. However, the panel remanded the ITA's and the ITC's decisions again.

In April 1994, the US formally requested that an Extraordinary Challenge Committee (ECC), under the terms of the FTA, consider the fairness of a bi-national panel's ruling on the subsidy issue. However, the ECC rejected an appeal in August 1994. In accordance with the rejection, the US returned all collected deposits plus interest to Canada. However, a complaint regarding Canadian imports by the US industry still remained and pressure to impose another countervailing duty was smouldering inside the CFLI. In response to the ECC decision, the US government introduced the "Statement on Administrative Action" (SAA). In the SAA, the US indicated that despite the FTA decision, they would introduce another countervailing duty case. This action threatened the Canadian government and the industry with continuous conflict and the two countries launched a "consultative mechanism" to discuss mutual concerns concerning their wood industries.

4.2 THE SOFTWOOD LUMBER AGREEMENT (SLA)

The SLA is classified as a social/political measure among NTMs. This section explains the SLA system, how it worked, and what impacts the SLA had on the US market and Canadian industry. Information about the SLA is based on the official documentation of the agreement (DFAIT 1996).

4.2.1 System of the SLA

After consultation, Canada agreed to sign the "Softwood lumber agreement between the government of Canada and the government of the United States of America," a voluntary agreement called the SLA, on May 29, 1996. The SLA was valid for five years, from April 1, 1996 to March 31, 2001. Under the SLA, Canada had to collect a fee on softwood lumber exported from British Columbia, Alberta, Ontario and Quebec to the US on annual volumes

exceeding 14.7 billion board feet (bf)[6]. Other regions of Canada, including the Maritimes (New Brunswick, Newfoundland, Nova Scotia, and Prince Edward), the Prairies (Manitoba, and Saskatchewan), and the Territories (Northwest, Nunavut, and Yukon), were excluded from the agreement. The agreement was signed to halt additional actions by the US industry and government against Canadian softwood lumber due to the US contention that there existed a subsidized stumpage system for publicly owned forestland in Canada. Since much of the forests in the Maritimes are privately owned and timber is traded under the market-based system, it was recognized that industries in Maritimes were not subsidized. The amount of lumber exported from the Prairies and three Territories was very small, and, as such, they were excluded from the agreement.

The fee was based on volume and increased with an increase in export volume over certain limits and was determined as follows:

- If the annual exports were less than or equal to 14.7 billion bf (Established Base levels - EB), no fee was collected.
- If the annual exports were between 14.7 billion bf and 15.35 billion bf (Lower Fee Base levels - LFB), then a fee of $US 50 per thousand bf was collected.
- If the annual exports exceeded 15.35 billion bf (Upper Fee Base level - UFB), $US 100 per thousand bf was charged.

However, if the average price of Spruce-Pine-Fir, Eastern, Kiln-dried, 2x4 random length, Standard & Better, Great Lakes delivered, was equal to or exceeded $US 405 per thousand bf in any calendar quarter until March 31, 1998 or $US 410 per thousand bf after April 1, 1998, an additional 92 million bf was allowed free from the fee.

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[6] One board foot is the volume of a one-foot length of a "standard board" twelve inches wide by one inch thick. 1,000 board feet = 2.36 cubic metres

An exporter who adopted one of following conditions was exempt from export fee payments:

- Their production was less than 10 million bf in the previous calendar year, or
- Their production during the preceding calendar quarter was substantially disrupted[7] due to a worker strike, a mill fire, forest fire or other major force.

4.2.2 Impacts of the SLA

Although NTMs have a function to protect domestically produced products from global competition (New Zealand Forest Research Institute 1999), they provide negative effects to other parts of society, both regionally and globally.

Using a macro economic model, the New Zealand Forest Research Institute (1999) indicated that the SLA as NTMs would be beneficial for the US industry. Their calculations showed that, if the SLA were removed, the US lumber industry would suffer. However, the Gross Domestic Product (GDP) in other countries (such as Canada) would increase. That is, once exposed to global competition, the US lumber industry would lose some of its share in the US market. However, the SLA resulted in a recovered lumber share for US domestic producers and increased lumber prices, providing direct benefits to the US industry.

Although the US industry benefited from the SLA, the American Consumers for Affordable Homes (ACAH) insisted that, ultimately, American consumers paid for these benefits through increased lumber prices. According to a letter to President George Bush written by ACAH lobbyists on March 8, 2001, "the SLA adds approximately $US 1,000 onto the price of a new home (Nickles et al. 2001)."

Some studies (Anonymous 2001a; Fukuda 2001 etc.) indicate direct and/or indirect impacts by the SLA on softwood lumber markets. The SLA de facto restricted the volume of softwood

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[7] "Disrupted" means at least 25% decrease of production compared to the production in the same quarter of the previous year.

lumber exports from certain Canadian provinces to the US market (Fukuda 2001 etc.). The annual volume of softwood lumber exports from British Columbia, Alberta, Ontario and Quebec (the provinces directly targeted in the SLA) into the US was stable at 16 million bf (**Figure 4-3**), while US consumption increased from 1996 to 1999 (Taylor 1999: 114). In contrast, exports

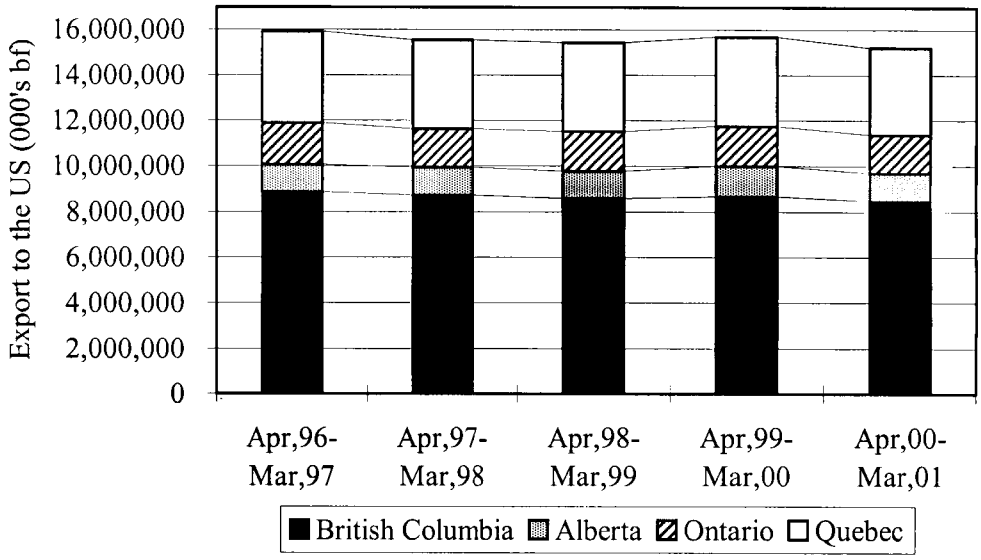

Figure 4-3: Softwood Lumber Exports to the US under the SLA by Province.
(Source: DFAIT 2001a)

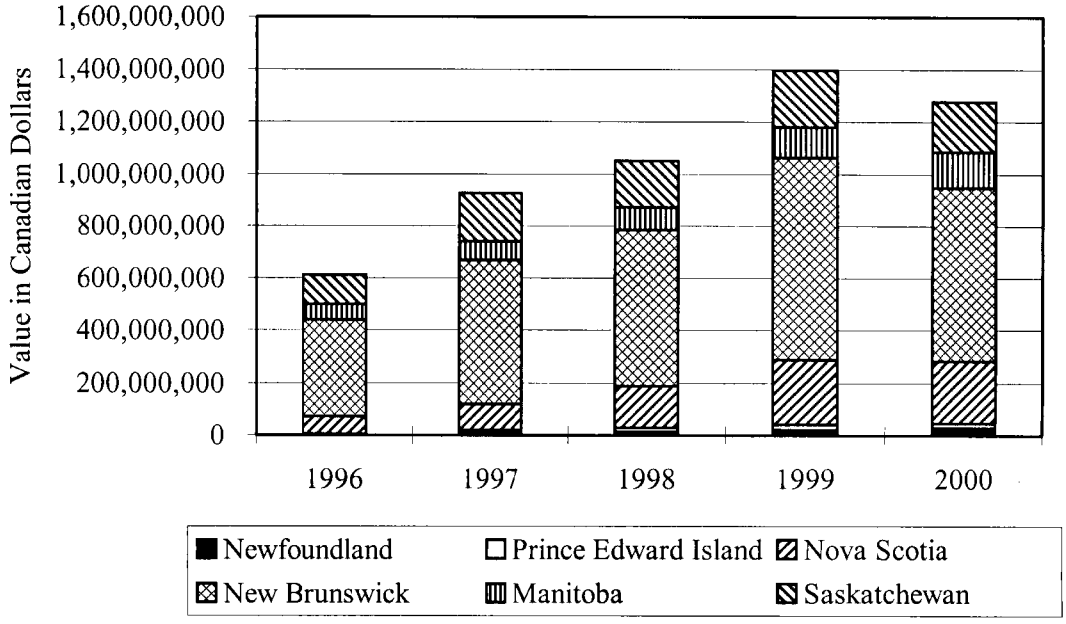

Figure 4-4: Value of Canadian Softwood Lumber (HS440710) Export to the US.
(Source: Industry Canada 2001)

from the SLA-exempt Canadian provinces, such as New Brunswick, Nova Scotia, Saskatchewan, and Manitoba, to the US increased substantially (**Figure4-4;** Fukuda 2001).

In an effort to evade the export permit requirement, some Canadian producers modified their lumber products producing materials such as pre-drilled studs and rougher-headed lumber[8] (**Figure 4-5;** Fukuda 2001). According to estimation by Wood Markets (Anonymous 2001c), between 1.0 - 1.5 billion bf of Canadian lumber (mainly as studs) were exported to the US market without being classified as quota-bearing or dutiable lumber during the SLA period.

Substitution of lumber with both wood and non-wood products not subject to NTMs may have been encouraged increased price and price volatility attributable to the SLA in the US (Fukuda 2001). Zhang (2001) statistically analyzed the price volatility in the US softwood lumber market, and concluded that the SLA contributed to increased price volatility relative to price during the 1980s. In addition, a price difference for softwood lumber between Canada and the US still existed (Fukuda 2001).

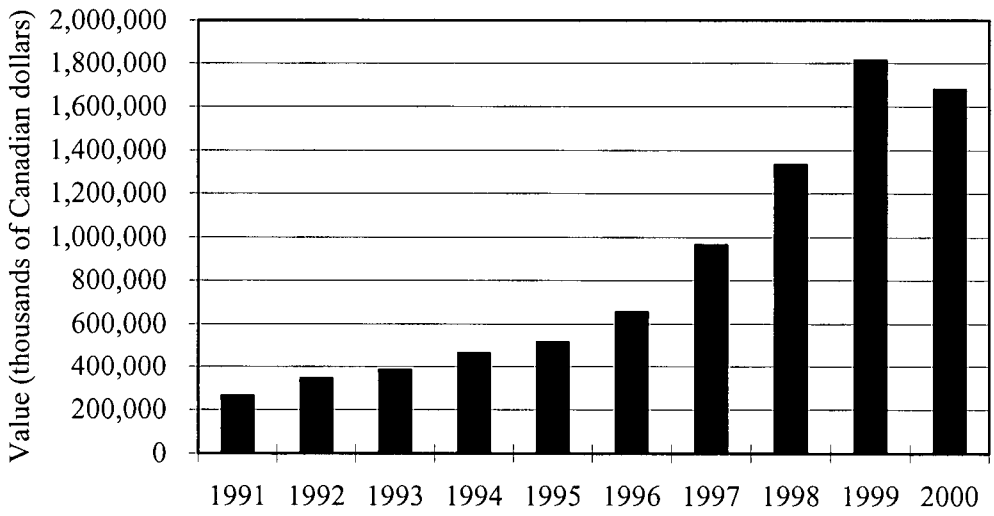

Figure 4-5: Value of Exports of HS4418 (Notched studs and drilled studs etc.) to the US. (Source: Industry Canada 2001)

[8] Lumber that is roughened on one side to appear rough-sawn or rustic.

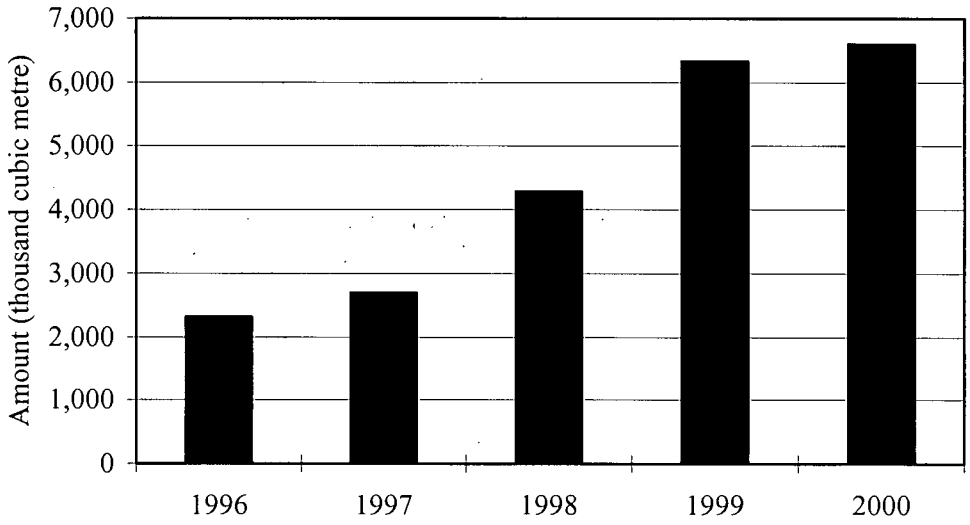

Figure 4-6: The US Log Import from Canada.
(Source: US International Trade Commission)

Fukuda (2001) indicated that the quality of softwood lumber as well as the volume of value-added products' exported from the four major provinces in Canada directly impacted by the SLA to the US may have increased. Johnson (1997) reported that lower grade lumber for US remanufacturers and other users was in a short supply because Canada was exporting mainly high-grade product across the border. Canadian producers may have been maximizing the value of the tariff free export volume to compensate for the NTMs. Under the SLA, the interest and enthusiasm for remanufacturing was renewed in Canada and large wood products companies seemed to invest in remanufacturing technology and capabilities (Johnson 1997).

During the period of the SLA, softwood logs exported from Canada to the US increased (**Figure 4-6;** Fukuda 2001). These logs were mostly harvested from private forestland on Vancouver Island in British Columbia (Anonymous 2001b). Johnson (1997) also reported that Canadian producers were even more proactive in seeking markets in other parts of the world, including the Pacific Rim, and their efforts were yielding positive results.

4.3 STRUCTURAL CHANGE IN THE US INDUSTRY AND OVERSUPPLY

This section examines some of the drivers led to oversupply of softwood lumber in the US market, which might influence to protectionist movement discussed in 2.1.2. This section focuses on five factors: technical changes during the 1980s, the environmental movement in the US West, timber supply from private forests, technologies, and Engineered Wood Products.

4.3.1 Increasing Productivity during the 1980s

During the 1980s, the production volume per US sawmill significantly increased, while the total number of sawmill decreased (**Figure 4-7**). The volume per sawmill in 1987 increased by 65%, compared to that in 1982. This trend is explained by the closure of small and/or inefficient sawmills and continuous investments for upgrading the remaining sawmills during this period.

Between 1977 and 1982, more than 1,500 sawmills and planer mills closed in the US. The mills closed were often outmoded and less efficient than mills with larger capacities which remained operating (Random Length 1985a; 1985b).

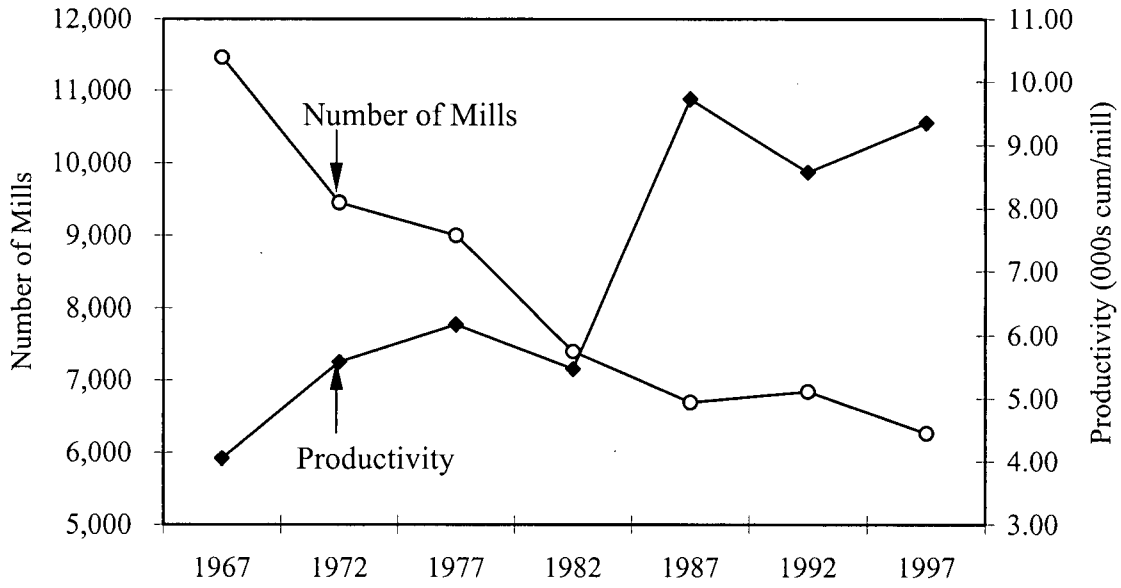

Figure 4-7: Number of Sawmills and Planner Mills and the Productivity: 1967 – 1997.
(Source: Howard 1999; USDOC 1984; 1995; 2000)

The trend to upgrade existing sawmills and to establish new, more efficient sawmills started in the early 1970s (Random Length 1984). This was the result of most lumber producers' focus on reducing production costs and increasing recovery in the mature and competitive markets (Random Length 1986b). The modernization of many operations had significantly increased their output and productivity (Random Length 1986a). According to Random Length (1985b), it took 4.5 workers to produce a million board feet of lumber in the Northwest in 1979; by 1984 this had declined to 3.43 workers. As a result, new technology added 20-30% in effective capacity at some operations (Random Length 1984).

There were two types of sawmills with respect to technology adoption; one was an innovator who upgraded the mill using the newest and most innovative technologies, the other improved using existing technologies (Random Lengths 1985c). Instead of gaining the highest efficiency, an innovator lost flexibility in their product lines and was burdened by higher debt load since improved productivity often came with automation that restricted manufacturing options (Random Lengths 1985c). The other type of technology adoption focused on improvement of sawing accuracy and increased recovery using current technology (Random Lengths 1985c).

Ironically this technology of recovery contributed to the industry's overproduction problem by increasing output per man-hour, in addition to increasing the recovery of lumber from each log (Random Lengths 1985c). This observation supports the theory that technology adoption contributes to oversupply (see Chapter 2, Section 1.3).

4.3.2 The Environmental Movement in the West[9]

In the early 1990s, growing environmental concerns, exemplified by the protection of spotted owls with the Endangered Species Act, pushed the government to reduce the harvest of old-growth timber in federal forests in the Pacific Northwest (PNW) (Lynn 2001). This government

decision triggered a series of responses that contributed to oversupply of softwood lumber in the US (**Figure 4-8**).

With the government reduction in timber sales particularly in the PNW, there was a consensus that there could be a lumber shortage in the West. In fact, the production in the West had already been decreasing (**Figure 4-9**). The reduction of federal timber sales was particularly acute for both sawmills and structural panel mills that were relying on the large-diameter logs harvested in federal old-growth forests (Random Lengths 1993). This raw material shortage accelerated mill closures in the PNW with 317 operations closing between 1980 and the early nineties: Approximately 43% or 135 operations were closed between 1990 and 1993 (Random Lengths 1993).

Producers in other region saw the reduction of lumber production in the West as an opportunity to expand their market share. The Southern US[10] producers continuously increased their

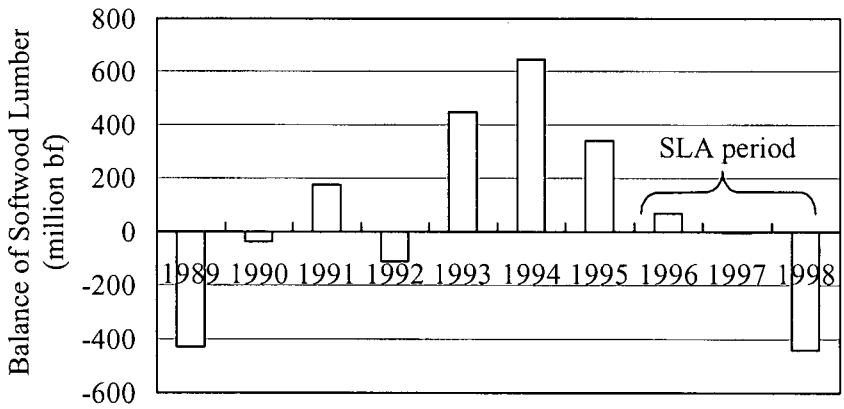

Figure 4-8: Surplus of Softwood Lumber Supply between 1989 and 1998.
(Source: Taylor 1999)
Note: Supply is calculated with (Domestic Supply) - (Export) + (Import). Demand indicates US domestic softwood lumber demand. Surplus is: (Supply) – (Demand).

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[9] The West includes 12 states: Oregon, Washington, California, Idaho, Montana, Wyoming, Nevada, Utah, Colorado, Arizona, New Mexico, and South Dakota.

[10] The South includes 13 states: Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia.

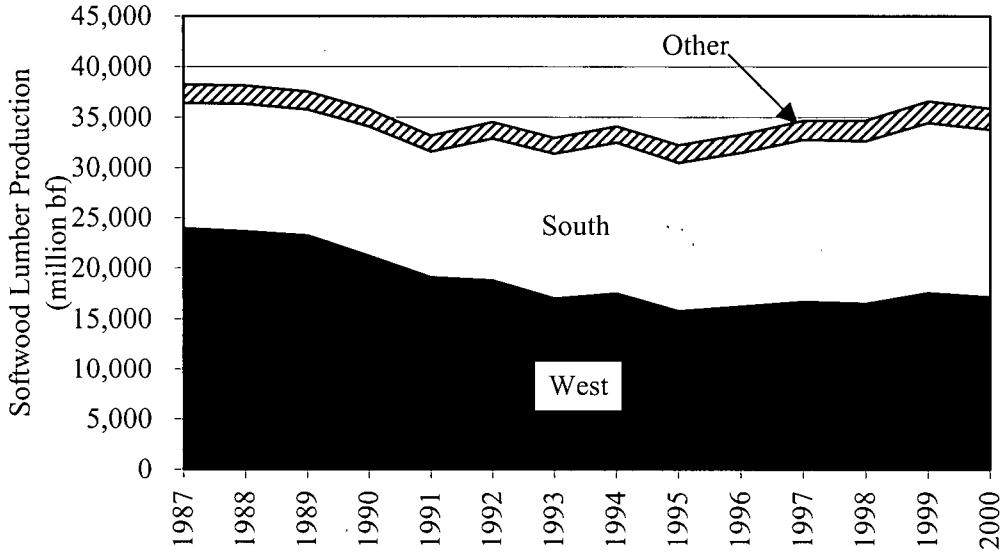

Figure 4-9: Softwood Lumber Production in the US – 1987-2000. (Source: Lynn 2001)

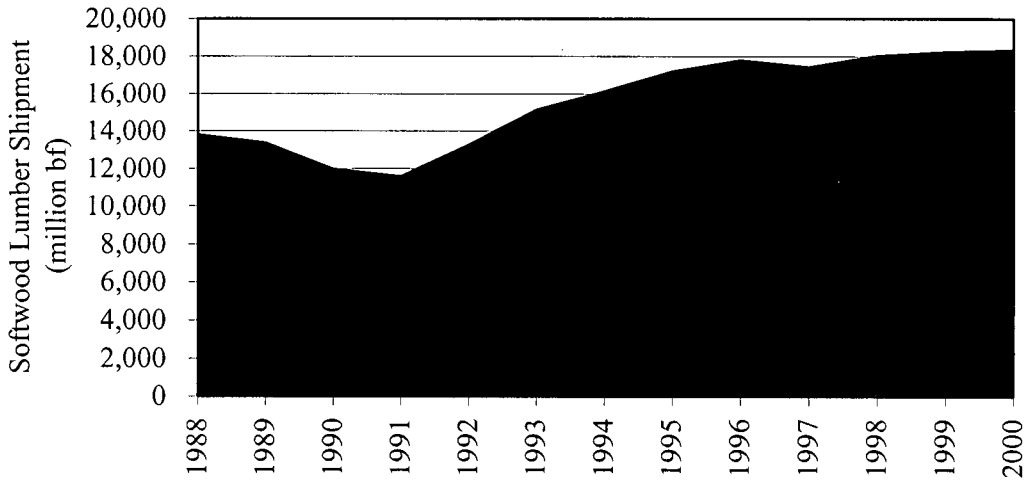

Figure 4-10: Canadian Softwood Lumber Shipment to the US. (Source: Lynn 2001)

softwood lumber production (**Figure 4-9**) . At the same time, Canadians regarded the decrease in timber production from the US federal forests as an opportunity for the US market to absorb more Canadian lumber (**Figure 4-10**; Lynn 2001: 125). However, increasing production and exports to the US exceeded the reduction of lumber created by federal timber cutbacks. One reason for this oversupply was that the decrease in lumber production in the West was less than expected since logs previously exported became available for western sawmills due to bans on

log exports from state land, and increased timber supply from private forests (Random Lengths 1992; Lynn 2001: 125). As a result, the total softwood lumber supply in the US from both Canada and the US increased in 1992.

4.3.3 Increase Availability of Timber from Private Forests

During the 1990s, timber production from private forests was increasing. Until 1990, sawmills in the PNW relied on timber from federal forests for more than 40% of their log requirements. (See **Figure 4-11**.) With the dramatic reduction in timber availability from federal lands, the proportion of total lumber production that came from harvests on federal forests decreased to less than 10% by 1999. Sawmills partially replaced this reduction in volume of timber from federal forests by increasing timber harvests from private forests. Although the share of private timber was about 50% of the total softwood lumber production in 1990, it grew to 80% in 1999.

Since timber used for wide-dimension lumber mainly had been produced from the federal old-growth forests, a timber shortage, especially for wide-dimension lumber, occurred in the PNW, and it pushed timber price upward from 1991 (Lynn 2001: 39, 42). This trend of increasing prices for timber from the PNW led to increased prices and incentives for Southern timber

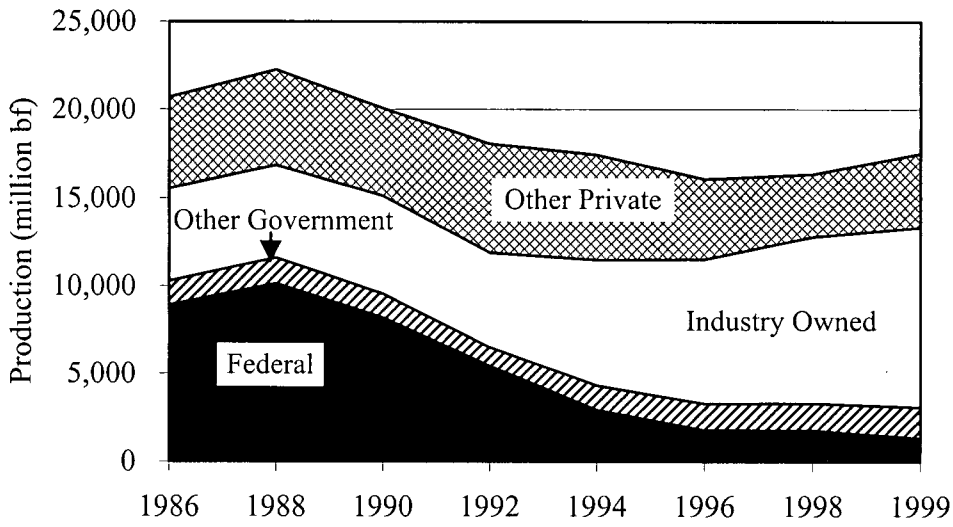

Figure 4-11: Lumber Production by Timber Source. (Source: Lynn 2001)

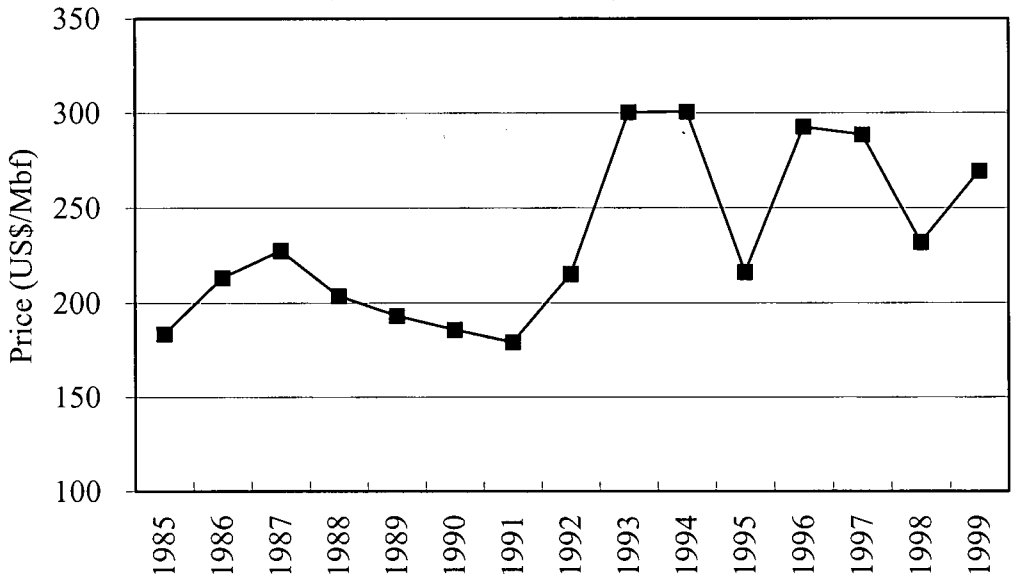

Figure 4-12: Softwood Lumber Price (SPF base Western 2x4 KD Std&Btr R/L FOB)
(Source: Taylor 1999)
Note: Price in 1990 is set as standard price and these are adjusted using consumer price index.

production (**Figure 4-12**; Lynn 2001: 42). This price increase after 1990 was an incentive for private landowners to harvest more timber (Lynn 2001: 42).

Not only did market and economic forces encourage increased production of timber products, but technological advances also contributed to oversupply. Technological developments to saw smaller-diameter logs enabled sawmills to be more efficient. The smaller-diameter logs that used to be consumed at pulp mills were now low cost commercial logs for lumber and contributed to provide additional timber supply to sawmills without increasing harvests (Lynn 2001: 42). This is a good example of technology impacts, where in technology promotes the recoverability of existing resource, as discussed in 2.1.3. In addition, the high timber price enabled utilization of small-diameter private timber that had generally been considered non-commercial prior to the price escalation (Lynn 2001: 64).

The emergence of the oriented strand board (OSB) industry throughout North America indirectly contributed to increasing timber supply for sawmills. The success of OSB resulted in the closure

of plywood plants, and logs that used to be turned into plywood were delivered to sawmills increasing this raw material supply without having to increase harvest rates (Lynn 2001: 37).

4.3.4 Technologies to Capture the Market

The adoption of technological advances also contributed to increased softwood lumber production in the US. Southern yellow pine species, like loblolly pine, slash pine, and long-leaf pine, are the dominant species in the South (Lynn 2001: 37). With approximately 90% of forestlands being privately owned, there was no federal environmental restriction on the supply of southern yellow pine from southern forests (Wear 1995; Lynn 2001: 38).

The development of efficient kiln-drying technologies made southern yellow pine in the South more competitive, and most southern yellow pine is processed to become kiln-dried dimension lumber (Lynn 2001: 40). Green southern yellow pine lumber has not been accepted in the housing market because it tends to twist if it is air-dried (Lynn 2001: 40). The adoption of kiln-drying technologies made the lumber competitive with green construction lumber from Canada (Lynn 2001: 40).

4.3.5 Growth in Engineering Wood Products

Engineered Wood Products (EWPs) were a rapidly growing segment of the wood products sector in the US during the 1990s (**Figure 4-13**; Taylor 1999: 156). These products substitute for softwood lumber in both the US and Canadian markets. EWPs have some distinct advantages over conventional solid wood products, which is driving increased substitution.

EWPs have two major advantages. One superior technical property is the uniformity of physical strength, which enables enhanced design values (UN-ECE 2000: 146). The other is that final product yield from the tree is significantly improved compared to lumber recoveries, resulting in equal or improved performance from less (and lower quality) wood supplies (UN-ECE 2000: 146). As a result, EWPs have rapidly captured market share (UN-ECE 2000: 144). For example, I-beams have more than 40% market share of raised wood floors for new construction, doubling

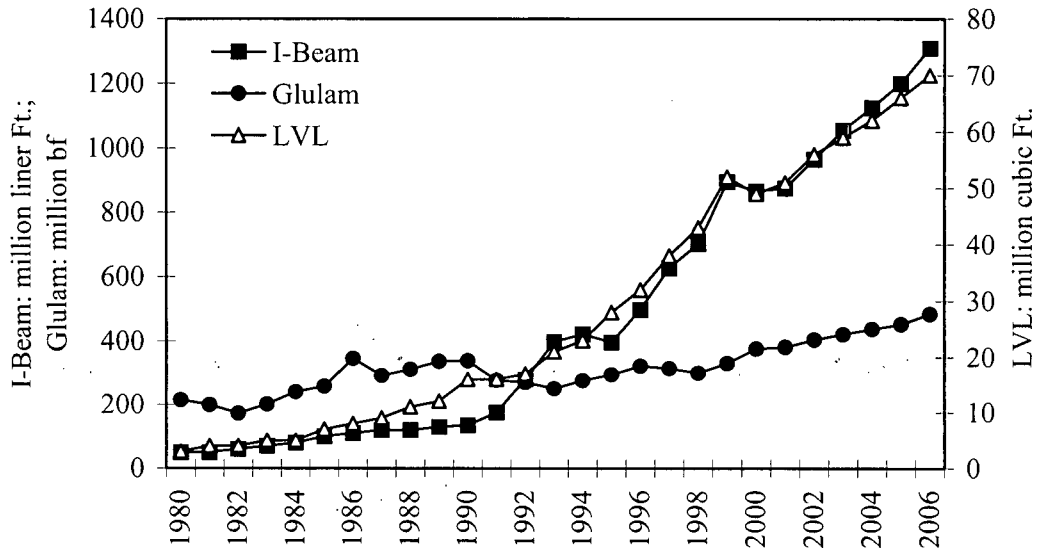

Figure 4-13: Production of EWPs in the US and Canada.
Note: Production from 2001 to 2006 is estimations.
(Source: Adair 2001)

in only four years, from 20% in 1995 (UN-ECE 1999: 144).

In contrast, conventional wood products such as softwood lumber are meeting consumer resistance and market difficulties (Taylor 1999: 156). There are a several reasons that lumber is losing appeal. The major reason is the scarce availability of knot free, tight-grained old-growth timber. The shift to smaller dimension, second growth timber has led to decreasing quality and performance of much available lumber because of its small diameter and abundance of juvenile wood (UN-ECE 2000: 144). In addition, increasing timber prices and more stringent environmental regulations add more costs for lumber production (UN-ECE 2000: 144).

In summary, three waves generated oversupply of lumber in the US; one came during the 1980s, and others came the 1990s. The first wave, during the 1980s, resulted from increased product recovery and output due to technology adoption. Although the number of sawmills decreased during the period, increasing production from the upgraded sawmills resulted in a net volume gain. The second and third waves were in the 1990s. Environmental restrictions in the US triggered oversupply trends. Harvest from the federal forest decreased due to environmental

reasons in the PNW. The prediction that lumber supplies would decrease in the PNW caused Canada and the US South to increase lumber production. However, more timber was supplied from private forests in the PNW, and timber which used to be exported was domestically consumed, resulting in a smaller than expected decline. The overall result was that lumber supply increased at a faster pace than lumber demand creating an oversupply saturation. Finally, the substitution of EWPs and KD lumber for conventional softwood lumber is shrinking the lumber market, this combined with increased lumber production has led to oversupply. Timber from private forests usually has lower quality, which is a major impetus to produce EWPs.

4.4 FRICTION UNDER OVERSUPPLY

Canada's increasing focus on increasing exports to the US during the 1990s (**Figure 4-10**) exacerbated the conflict between the US and Canada (Lynn 2001: 68). Two groups in the South, forestland owners and sawmillers, have been concerned about Canadian lumber exports to the US market. Both of them believe that the lower relative price of Canadian softwood lumber contributed to price reductions in the US, and that declining lumber prices have financially damaged them.

Forestland owners are very sensitive to market trends, especially lumber prices, since timber from private forestlands is sold in the open market either through timber sale auctions or long-term contracts with wood products firms (Wear 1995). If lumber price increases, then timber price increases (Hamilton 2001). Forestland owners try to sell more timber to maximize their profit when lumber price is high. Thus higher lumber prices are required to keep the private timber supply constant (Lynn 2001: 68). Southern private landowners think that lumber prices and land values would rise if there were fewer low priced Canadian wood products available in the US market (Hamilton 2001).

Sawmillers think that lower lumber prices damage their profitability (McKenna 2001). For example, according to McKenna (2001), Wood, an owner of Tolleson Lumber Co. Inc. and a

chairman of the CFLI, borrowed money from a bank and invested $US 17 million to upgrade and computerize his two mills in 1999-2000. As a result, production increased by about 15% or approximately 200 million bf of lumber a year due to improved yields and efficiency. However, he is worried that he will not be able to pay off his debt if lumber prices decrease.

4.5 SUMMARY

This chapter explored some of the factors that led to the US industry encouraging the use of NTMs, and how technology adoption has contributed to the NTM application.

The SLA successfully worked for the US industry as a NTM because it limited Canadian softwood lumber access to the US. In addition, the SLA contributed to increasing log exports from Canada to the US, helping fill the log shortage in the PNW.

The issue was originally triggered by the US industry's reaction against the increasing share of Canadian lumber in the US market. The history of the twenty-year softwood lumber disputes showed that the timing of the first and third NTM cases coincided with economic recessions. That is, the US industry tried to exclude Canadian lumber to protect their market under decreasing softwood lumber demand.

During the third NTM case, oversupply became a more serious problem. Although log production from the federal forests in the PNW decreased, lumber production from the US South and imports from Canada more than compensated for declines in the PNW. This increasing supply was supported by the adoption of new processing technologies. After the sales cutback from the federal forests, production from the private forests increased. However, timber from these forests is from plantations, and the quality (such as size of diameter, number of knots, and proportion of juvenile wood) is relatively low compared to old-growth timber. Technology enabled the processing of this lower quality timber to make commercial products. In addition, product and process technology allowed the development of EWPs that enabled better end use properties from lower quality timber, which made the substitution of lumber by EWPs' increase.

As a result, there was an oversupply of lumber or lumber substitutes, which caused economic fluctuations and lumber prices reduction in the US. The low lumber price made the US industry nervous. The NTM was used as a solution to redress the oversupply of softwood lumber and to maintain higher lumber prices in the US.

5 PHYTOSANITARY MEASURES BY THE EUROPEAN UNION

The European Union (EU)[11] has banned unseasoned softwood lumber import from certain countries outside of the EU since 1990. This regulation has been considered a non-tariff measure (NTM) by exporting countries that are targeted by the ban since it works as an obstacle to softwood lumber exports to the EU countries.

This chapter discusses how the EU ban was introduced. Some arguments that indicate that this measure could be considered a NTM are summarized, and the impacts of the ban for both EU and non-EU exporters are discussed.

5.1 THE SYSTEM OF THE EC BAN ON THE IMPORT OF SOME UNSEASONED SOFTWOOD

In 1983, Finland announced that the pinewood nematode had been discovered in wood chips from North America (TED 1993). The pinewood nematode (*Bursaphelenchus xylophilus*) is a microscopic roundworm that is vectored from tree to tree by pine sawyer beetles (Anonymous 1993). Once the nematode infects pine trees, the tree loses its vitality and wilts (Anonymous 1993). The pinewood nematode is endemic in the United States, Canada, Mexico, Japan, China, Taiwan, and Korea (Anonymous 1993).

Two factors made the European Community (EC), driven by Finland, sensitive to an invasion of the nematode and prompted them to initiate measures to protect European forests (TED 1993). First, European countries had very difficult experiences fighting Dutch elm disease, which is a specific fungus that wilts and eventually kills elm trees. Second, there were reports in the 1970s that the pinewood nematode from North America had destroyed Japanese pine forests (TED 1993).

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[11] The 15 countries participating in the EU at this time were: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, The Netherlands, Portugal, Spain, Sweden, and United Kingdom.

In 1990, the EC announced that a ban on green softwood lumber (except for western red cedar) imports from the US, Canada, China and Japan would be implemented in 1993 (Eastin and Fukuda 2001; Hicks 2001 etc.). Before the ban came in full force into 1993, the regulation during an interim period (1990 - 1993) required that one of following treatments was required as a precaution against transporting the pinewood nematode to Europe (Eastin and Fukuda 2001; Hicks 2001 etc.). Softwood lumber had to meet one of the following criteria:

- to be kiln-dried to a moisture content below 20%; or
- to be heat treated to a core temperature of 56°C for at least thirty minutes; or
- to be accompanied by a "Certificate of Debarking and Grub Hole Control".

After implementation of the ban in October 1993, all lumber from the United States, Canada, Mexico, Japan, China, Taiwan, and Korea was required to be heat treated or kiln-dried and accompanied by a phytosanitary certificate issued by a government agency (Eastin and Fukuda 2001).

5.2 ARGUMENT OF THE NEMATODE CASE

The complexity and severity of the requirements of health and safety measures in NTMs, and the manner in which they were enforced had a substantial effect on trade. As a result, they are regarded as NTMs by exporting countries. The primary complaint against such NTMs is that the regulations and their administration are excessively restrictive, and go beyond the level necessary to ensure adequate protection (Bouke et al. 1998).

The Canadian government regarded the EU ban on imports of unseasoned lumber from certain countries as a NTM designed to reduce competition for European softwood lumber producers (USDA Forest Service 2001). Exporting countries made several arguments to identify why the EU ban should be seen as a NTM. They were classified into three different points; an argument based on trade costs; one based on scientific conflicts; and the one from the industry's

skepticism. This section focuses on Canadian arguments since Canada is the largest exporter to the EU.

5.2.1 Trade Costs

The additional costs of exports and the expenses involved in destroying the pinewood nematode are two primary arguments put forth by the Canadian government that this measure used phytosanitary reasons to impose a NTM (Bouke et al. 1998). First, the argument is that the EC regulation simply deprived competitiveness from certain countries' exporters to the EC because the regulation added extra costs for heat-treatment or kiln-drying and the certification required to export lumber to the EC. Second, the EC mandated method for heat-treatment and/or kiln-drying were inappropriate because of expensive costs (DFAIT 2001). According to the Canadian government, the EC mandated kiln-drying methods could increase costs by between 16% and 40%. Canada proposed another less costly, but equally effective, heat treatment method. Production costs using this method increased by only 8% to 15% (TED 1993). However, the EC has not yet accepted this Canadian proposal as of yet (DFAIT 2001).

5.2.2 Scientific Conflicts

Other arguments are based on a scientific evidence. The argument is that all softwood lumber should not be impacted by a ban based on removing the possibility of a nematode infestation in the EC. The EC's ban affects all softwood timber except western red cedar, Canada argued that the pinewood nematode is a danger only to pine and some related species (TED 1993), and other species should be exempt. Also the pinewood nematode infects through the sawyer beetle as a vector from tree to tree. However, Canada pointed out that the sawyer beetle does not exist in Europe[12] (Random Lengths 1990)

5.2.3 Industry's Skepticism

Industrial observers have made arguments, while lacking sufficient scientific evidence that should not be ignored because they are part of drivers that create public sentiment and opinion. Drucker (2001) indicated that sentiment can impact trade legislation and the increased use of NTMs. Two arguments are introduced in this section. First, despite the supposed threat of pinewood nematode, the United Kingdom (U.K.) exempted larger dimension western hemlock and Douglas fir timber from these regulations (Random Lengths 1993). Industrial observers considered that the U.K. was trying to protect the large dimension structural lumber market since it was difficult to obtain large dimension lumber from other suppliers such as the Scandinavians (Random Lengths 1993). Clearly the nematode does not differentiate between different sizes of lumber and the exemption of Canadian species based on size and market conditions tends to weaken the purely phytosanitary argument, and lend credence to the suggestion that this plant health issue was a NTM designed to protect European markets for European producers.

Second, Finnish unseasoned lumber sawn from Russian logs was exempted, despite the fact that Russia shares a large land border with China where the pinewood nematode is endemic (Eastin and Fukuda 2001). This indicates that plant health was not the only factor promoting the pinewood nematode phytosanitary measures.

In 1998, Canada asked for a consultation with the EU focusing on the nature of the risk and the costs involved in treatment methods through the World Trade Organization (WTO) (NRET 2000). No mutually acceptable solution has yet been found (NRET 2000).

5.3 BENEFITS TO EUROPEAN EXPORTERS

The EU softwood lumber import ban removed Canadian competition from what had been one of Canada's important export markets (i.e. the U.K.). The removal of softwood lumber from non-

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[12] Currently it is recognized that the sawyer beetle inhabits Portugal.

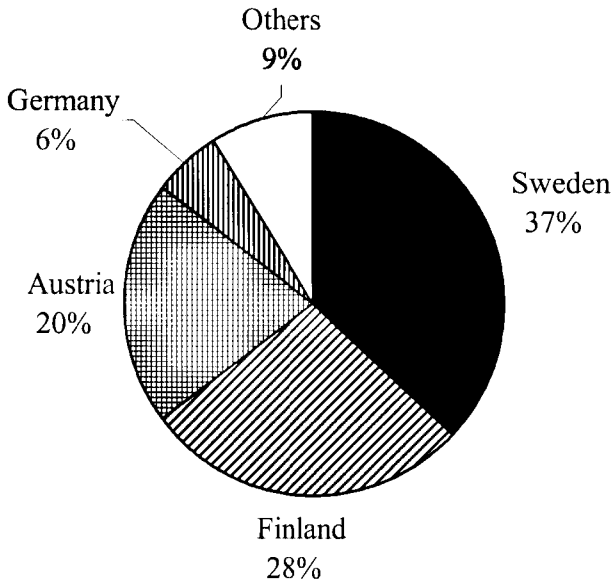

Figure 5-1: Softwood Lumber Export (Volume) from the EU Countries in 2000.
(Source: FAO 2001a)

EU countries due to this ban most likely benefited softwood lumber producers in the EU. For instance, Sweden, Europe's largest softwood lumber exporter which exports more than half of their total softwood lumber production to European countries, very likely benefited from the ban (**Figure 5-1**; FAO 2001a). In this section, the conditions of the Swedish sawmill industry are summarized to provide background and evaluate some of the impacts of the NTM.

5.3.1 Industrial Structure

Sweden has a population of 8.9 million (USCIA 2001). It has 27 million hectors of forestland or 66% of total land coverage (FAO 2001d). Approximately half of the forests are private, 20% of the forests are owned by wood industries, and most of the remaining 30% are public forests (FAO 2001d). Since the growing stock of the forest exceeds the volume of harvest, the available forest resource is increasing based on Annual Allowable Cut calculations (FAO 2001d). Coniferous species constitute more than 80% of the growing stock volume (FAO 2001d).

The Swedish wood products industry plays a major role in the national economy. The forest related sector, which includes pulp and paper, forestry and wood processing, was responsible for

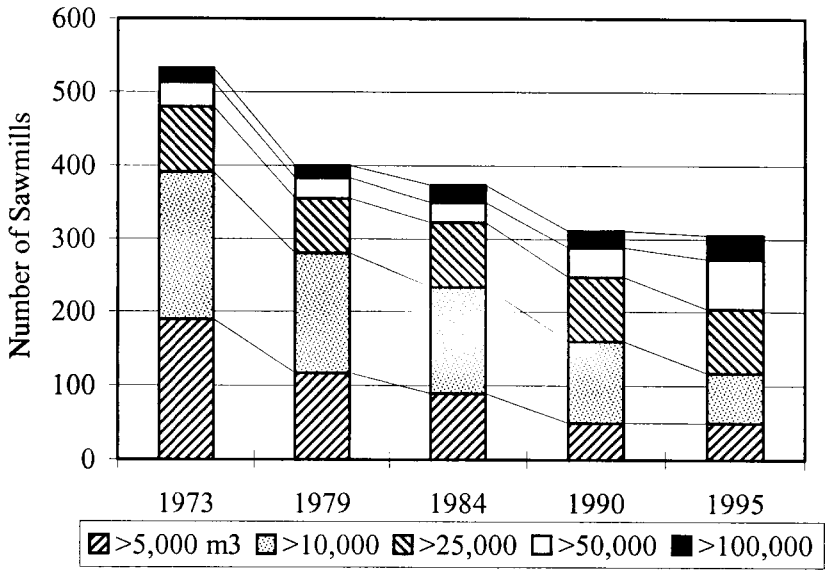

Figure 5-2: The Number of Sawmills by Production Size. (Nylinder et al. 1997)

3.7% of the Gross Domestic Products (GDP) in 1998, and 13% of the export value in 2000 (Swedish Institute 2001).

Europe is the most important market for Sweden. In 2000, 75% or 11.2 million cubic meters of Swedish softwood lumber was exported, with the majority going to Europe (FAO 2001a; Taylor 2000).

Although more than two thousand sawmills were operating in Sweden in 2000, most of them were small operations (Skogsindustrierna 2001). According to a survey conducted among sawmills that produced over 5,000 cubic meters (cum) per year by Nylinder et al. (1997), the number of sawmills has been decreasing for a few decades. (See **Figure 5-2**.) The largest reduction was in small sawmills that produced less than 25,000 cum annually. Between 1990 and 1995, the total number of sawmills slightly decreased, but the number of sawmills that produced between 50 and 100 thousand cum increased. This was due to the rapid restructuring and sizable capital spending during the 1990s (Swedish Institute 2001). As a result, the twenty largest companies account for 65% of total production in 2000 (Skogsindustrierna 2001).

While the number of sawmills has decreased, production per sawmill has increased. (See **Figure**

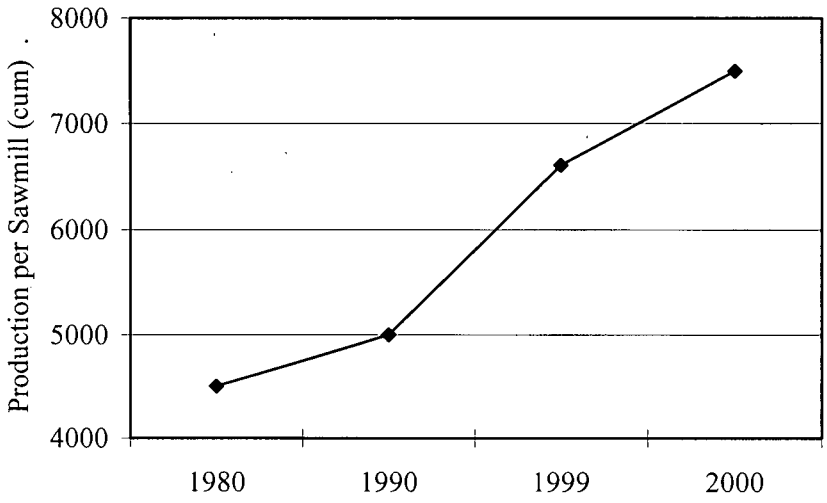

Figure 5-3: Average Productivity of Sawmills. (Source: Skogsindustrierna 2001)

5-3.) The increase in average production is explained by the increase in larger sawmills and the decline in small sawmills. In addition, the annual production of lumber per worker has doubled in the past twenty years to approximately 1,100 cubic meters in 1995 (Nylinder 1997). This is the result of continuous effort for modernization through automation between 1990 and 1995 (Nylinder 1997). As a result, the average production per sawmill increased. Much of this increased production was a direct result of the adoption of processing technologies. For example, the adoption of new sawmilling technology allowed for the inclusion of small diameter logs with a top end diameter less than 14 cm, to be used as saw logs. This additional volume now accounts for 8% of the total volume of logs consumed in sawmills (Nylinder 1997).

Improvements in the productivity of Swedish sawmills contributed to this increase in production. Since the initial implementation of the pinewood nematode ban in 1990, Swedish production of softwood lumber has increased from 11.8 million cubic meters (mcum) in 1990 to 14.8 mcum in 2000, representing an increase of 26% (**Figure 5-4;** FAO 2001a). New markets were available to absorb some of this increased production due to the exclusion of competing imported lumber as a direct result of the pinewood nematode restrictions.

Once markets and products have matured, the industry seeks more efficient processing by

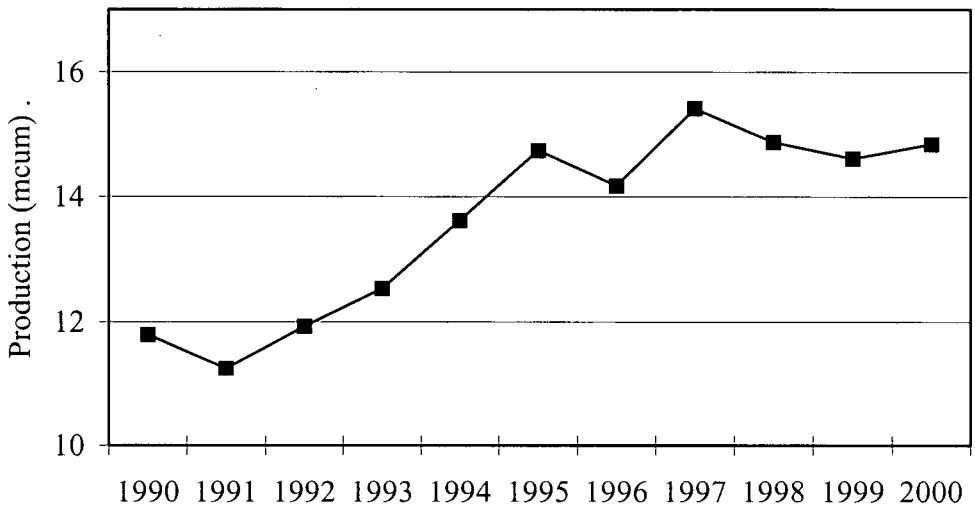

Figure 5-4: Softwood Lumber Production in Sweden. (Source: FAO 2001a)

adopting technologies to lower costs or reduce the work force. (See 2.1.1.) This is the "process innovation" stage in technology development. As previously discussed, Swedish sawmills improved productivity and increased production by adopting technologies during the 1990s. This suggests that the Swedish softwood lumber sector was reacting to the maturing market for softwood lumber.

5.3.2 Competition in the U.K. Market

The U.K. is the largest softwood lumber importer among the EU countries (Taylor 2000). This section examines the impacts of the unseasoned softwood lumber import ban in the U.K. market for both Sweden and Canada.

The restrictions on the export of unseasoned softwood lumber to the EC and the requirement of heat treatment or kiln drying as well as a phytosanitary certification created substantial additional costs for softwood lumber exporters. The regulation was implemented when the U.K. economy was slowing down (**Figure 5-5**).

Canadian exporters regarded these regulations as a NTM to reduce competition for European softwood lumber producers (Olstad and Zerbe 2001). In fact, the effect was clear. Canadian

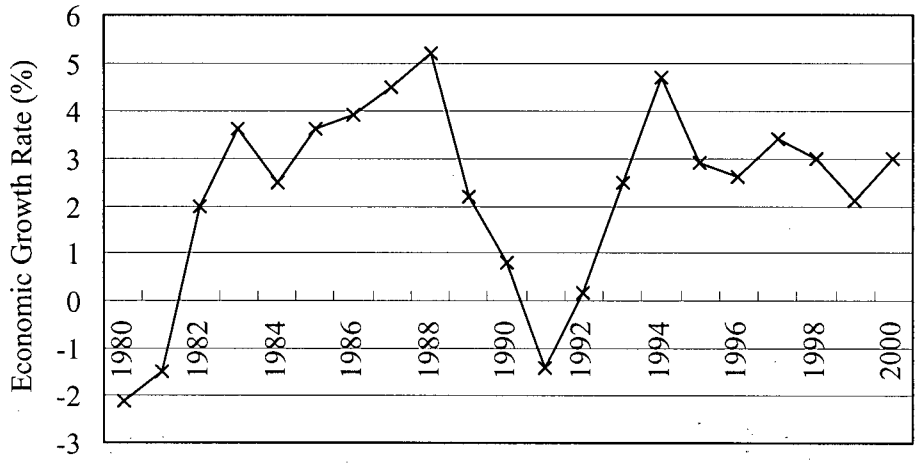

Figure 5-5: U.K. Economic Growth Rate: 1980-2000.
(Source: National Statistics 2002)

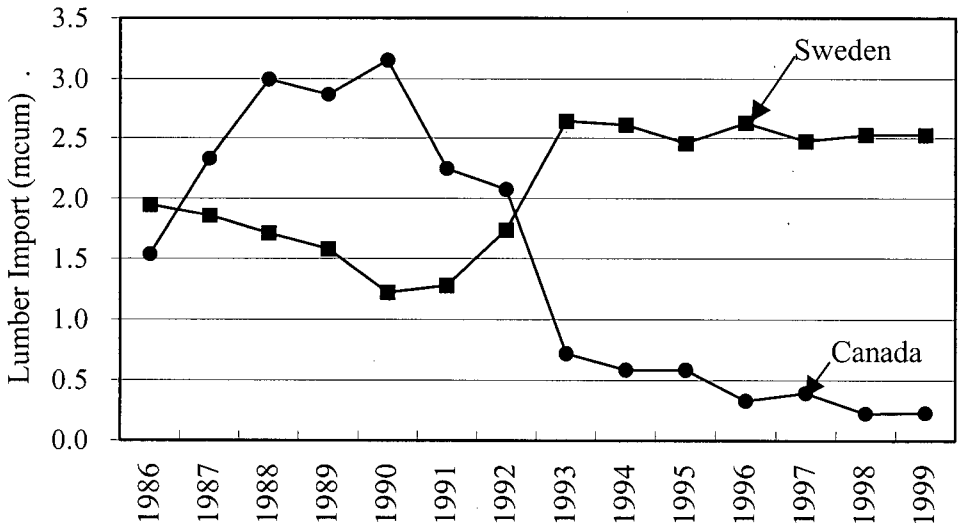

Figure 5-6: US and Canada Softwood Lumber Export to Europe. (Taylor 2000)

softwood lumber exports to the U.K. had been increasing since 1986. From 1986 to 1990, the volume of exports from Canada to the U.K. more than doubled from 1.537 million cubic meters (mcum) to 3.151 mcum. After the ban in 1990, the volume of softwood lumber export from Canada significantly decreased to less than 0.7 mcum cubic meters in 1993 (**Figure 5-6**).

Swedish exports to the U.K. had been decreasing from 1986 until 1990 when the ban was announced. Since that time Sweden has not only regained the market share lost to Canada but the U.K. became an increasingly important market for Swedish softwood lumber exports. As a result, the U.K. became the largest importer of Swedish softwood lumber and by 1999, 24% of all Swedish softwood lumber was shipped to the U.K. (Taylor 2000). Since the ban the share of Canadian softwood lumber has been extremely low compared to 1990 and the share for Sweden has remained strong.

5.4 SUMMARY

With the increasing size of European sawmills, the average productivity of European sawmills increased over the decades. Improved productivity enabled more production. However, since demand in the EU was stable, it was necessary to capture other suppliers' share in the European market and to develop new export markets such as Japan. The timing of the implementation of the softwood ban due to the pinewood nematode coincided with increasing production of softwood lumber in Sweden. The unseasoned softwood lumber export ban contributed to decreasing imports of Canadian softwood lumber, which was one of competitors of Swedish lumber in the EU. The ban levied extra costs for kiln-facilities and for phytosanitary certification to exporters. The ban dramatically reduced the softwood lumber market share for Canadian lumber in the U.K. market, which was then captured by Swedish softwood lumber producers.

6 JAPANESE SAFEGUARDS

In 2000, the Japanese Ministry of Agriculture, Forestry and Fisheries (MAFF) requested that both the Ministry of Finance (MOF) and the Ministry of Economy, Trade and Industry (METI), which are responsible for international trade issues, investigate the possibility of general safeguards[13] for lumber and laminated lumber by assessing the impact on domestic lumber prices of a "surge in lumber imports".

Why is Japan exploring a safeguard action? Drucker (2001) argued that the decline of manufacturing would inevitably bring about protectionism, using NTMs to comply with international trade agreements. Japan was not a wood importing country until the 1960's. Today, however, the amount of domestic wood production falls far short of domestic demand. In 1999, 97.81 million cubic meters (mcum) were required for industrial purposes, and only 18.76 mcum was produced from the domestic forests (Forestry Agency 2001). The gap between domestic wood demand and domestic wood supply has been filled by imported wood. More than 79 mcum, or 80% of industrial wood requirements, was imported from the United States (US), Canada, Malaysia, Indonesia, Russia, New Zealand, Chile and other countries in 1999. During the past few decades, wood imports have increased, and the number of sawmills has declined in Japan (Sato 2000). As a result, Japan is currently the third largest wood importing country in the world, following China and the US, and has become very influential in global wood trade (FAO 2001).

This chapter explains the decline in the number of Japanese sawmills, provides an understanding of the drivers of the proposed safeguard action on wood products, and discusses whether the safeguard action is warranted.

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[13] The emergency measures are based on the safeguard agreement in Article 19 of the GATT, and allow for tariff increases or import restrictions when a domestic industry is seriously damaged by a surge of imports.

The process of Japanese safeguard action is summarized in section 6.1. Next a history of the decline in sawmills in Japan from the post-war recovery period to the current period of low economic growth is mentioned. This is followed by an examination of general business trends in Japan during the nineties and how these have impacted the sawmill sector. Included are a discussion of market factors and the structure of the domestic wood products sector. In section 6.5, based on facts mentioned in previous sections, the reasons for Japan examining safeguards are discussed.

6.1 CONDITIONS FOR JAPANESE SAFEGUARD ACTION

There are two steps necessary to implement safeguards for the Japanese softwood lumber sector. First, the government needs to recognize that the political packages outlined in the Forest and Forestry Basic Plan are not successful and that a serious restructuring of the industry is required to become competitive in the domestic market. Second, it must be proven that "increasing imports" are seriously injuring the Japanese sawmill industry.

6.1.1 Domestic Policy

The Forestry Agency, which is a part of MAFF, established a new strategic plan for forestry and the forest industry, which was called the "Forest and Forestry Basic Plan" (Forestry Agency 2001). This plan provided a political package to vitalize the uncompetitive and shrinking Japanese softwood lumber sector. The major policies include:

- increasing the average sawmill size by closing small sawmills and expanding more efficient large facilities;
- investing in sawmilling facilities to expand kiln-drying of lumber and/or laminating of lumber, as well as to enhance quality control;
- promoting technology adoption in order to produce new products; and
- establishing a more efficient distribution systems to reduce costs for logs.

According to the plan, trade restrictions under the WTO guidelines would be applied if and when these politicies do not work effectively because of increasing imports.

6.1.2 WTO Requirement

The WTO allows a member country takes safeguard actions if its domestic industry is injured or threatened with injury by a surge in imports. The measures for restricting imports of a product include quantitative restrictions such as a quota allocations or a tariff increases. While safeguard measures were always available under GATT (Article 19), when the injury is serious, the WTO agreement sets out requirements for safeguard investigations by national authorities to prevent the abuse of these protectionist measures. Due to the WTO agreement, the Japanese government, represented by the Ministry of Finance (MOF), the Ministry of Economy, Trade and Industry (METI) and MAFF, set out three conditions. MAFF must investigate all three conditions, and prove that the current situation is meeting these conditions before invoking a general safeguard under the WTO. The three conditions are as follows:

1. The import of a certain product increases as a result of a drop in the price of that product in a foreign country or other unforeseen changes in circumstances;

2. The increased imports cause or threaten serious injury to domestic producers. (The causal relation must be demonstrated by objective proof.);

3. Safeguard actions are urgently required from the point of view of the national economy.

6.2 BACKGROUND HISTORY OF SAWMILLS

A number of sawmills were established during the post-war recovery period (1946 – 1954). In the 1950s, there were about 38,000 sawmills, which was twice the number that existed before the World War Second (WWII) (Forestry Agency 1960). Most of these were small with production power of less than 20 horsepower, although a few sawmills had output of more than 30 to 40

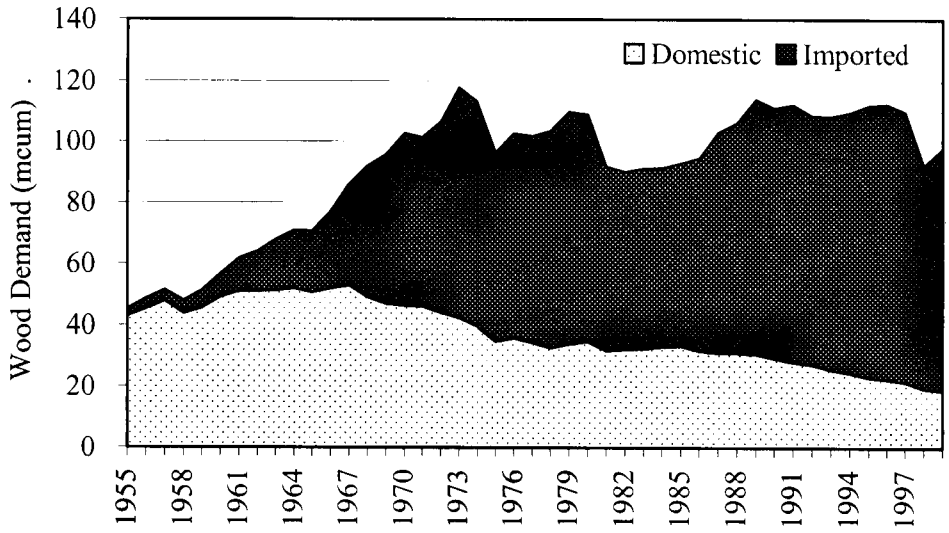

Figure 6-1: Wood Demand. (Source: Forestry Agency 2001)

horsepower[14], which was regarded as large at the time (Forestry Agency 1960). In addition, some of the new sawmills were financially weak, compared to sawmills that had already existed before the economic boom during the 1950s (Forestry Agency 1960).

Increasing wood demand during the 1960s led to a shortage of wood. The government promoted importing logs and upgrading sawmills to supply more lumber. For example, the "Wood Import Promotion Plan" in 1961 included measures to encourage Japanese sawmills to mill imported logs (Suzuki 1984; Iwai 1999). In addition to the promotion of wood imports, the "Small and Medium Enterprise Basic Law" and the "Small and Medium Enterprise Modernization Promotion Law" in 1963 worked to reduce the number of small and medium-sized enterprises, which were under excessive competition and frequently unprofitable, and to encourage mills of larger scale to enhance productivity (Suzuki 1984; Fukushima 2000; Murashima 1987; Ogi 1994; Iwai 1999). As a result, the industrial structure of the Japanese sawmill sector changed with many small

[14] One horsepower is equal to approximately 745.6999 watts.

Table 6-1: GDP and Housing Starts.

FISCAL YEAR	CHANGE OF GDP (%)	TOTAL	WOODEN HOUSE	POST & BEAM	PREFAB	2X4
1955	10.8*	279,241	-	-	-	-
1960	12.5*	452,889	-	-	-	-
1965	5.7*	845,108	646,536*	-	-	-
1970	7.6*	1,490,872	1,035,500*	-	-	-
1975	3.7*	1,427,719	907,389*	-	-	-
1980	4.1	1,213,859	711,724	-	-	-
1985	4.2	1,250,994	590,206	-	-	-
1989	4.9	1,672,783	722,382	641,482	32,594	48,306
1990	5.5	1,665,367	706,767	621,614	34,758	50,395
1991	2.5	1,342,977	628,554	549,065	33,428	46,061
1992	0.4	1,419,752	673,818	582,364	37,448	54,006
1993	0.4	1,509,787	702,749	607,914	38,186	56,649
1994	1.1	1,560,620	719,945	615,604	37,798	66,543
1995	2.5	1,484,652	675,065	557,183	38,674	79,208
1996	3.4	1,630,378	746,680	613,687	40,318	92,675
1997	0.2	1,341,347	584,872	475,933	33,154	75,785
1998	-0.8	1,179,536	548,239	449,160	30,650	68,429
1999	1.9	1,226,207	565,458	456,892	31,256	77,310
2000	1.7	1,318,478	548,329	440,146	29,415	78,768

*s indicate total of annual year.
(Source: Ministry of Land, Infrastructure and Transport 2001; Statistics Bureau 2001)

sawmills[15] closing, while importing sawmills[16] grew in number during the high economic growth period (1955 – 1973) (Suzuki 1984; Murashima 1987; Ogi 1994; Iwai 1999).

Although the increasing number of importing sawmills was politically led by the government, some advantages of importing sawmills also contributed the increase. For example, the importing sawmills were able to supply lumber at a lower cost than domestic mills due to

[15] A "small" sawmill is a mill whose output power is under 37.5 kW.

[16] An importing sawmill mills only imported logs.

production efficiencies (Iwai 1999); lumber sawn from imported logs was of higher quality their domestic lumber, particularly regarding dimensional precision and finishing (Iwai 1999). As a result, more lumber from importing sawmills was accepted in the market, and wood imports started increasing. (See **Figure6-1**.)

During the low economic growth period (1974 – 1989), lumber demand declined due to a decreasing number of wooden housing starts (**Table 6-1**). With this economic decline, there was a corresponding reduction in both the number of domestic[17] and importing sawmills (Iwai 1999).

6.3 RECENT CONDITIONS SURROUNDING JAPANESE SAWMILLS

The number of sawmills has been in continuous decline for the past few decades in Japan. There were 24,018 sawmills in 1973, which declined by almost 50% so that, by 1999, there were only 12,289. (see **Figure 6-2**.) There was an especially dramatic decline in the number of small sawmills (those that had less than 37.5 kW production power[18]) that had been established during

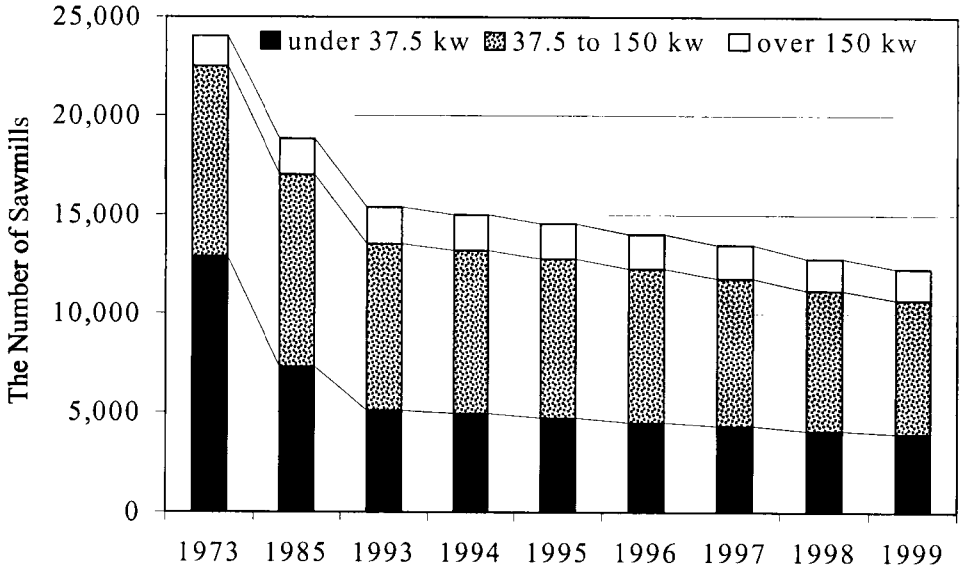

Figure 6-2: The Number of Sawmills. (Source: Sato 2000)

[17] A domestic sawmill means a sawmill sawing only domestic logs.

[18] Average lumber production per kW between 1994 and 1998 was 19.3 cum/kW/year (MAFF 2000).

Table 6-2: The number of sawmills by using materials

	TOTAL	ONLY DOMESTIC	DOMESTIC & IMPORTED	ONLY IMPORTED
1993	15,360	6,088	6,884	2,388
1994	14,967	6,107	6,557	2,303
1995	14,554	6,049	6,292	2,213
1996	13,978	5,892	5,966	2,210
1997	13,427	5,789	5,643	1,995
1998	12,744	5,647	5,266	1,831

(Source: Forestry Agency 2000)

the post-war recovery period.

Since the end of the 1980s, the Japanese wood industry has faced dramatic changes in the economy, markets and trade. As a result, the number of sawmills has continued to decline. According to Sato (2000), while all types of sawmills are declining in number, the importing and mixed sawmills[19] are closing in greater number than those that saw only domestic logs (**Table 6-2**). From 1994 to 1998, the number of import and mixed sawmills decreased by 20%, while sawmills that sawed only domestic logs decreased by only 8%. In the next section, general aspects of the Japanese economy since the end of the 1980s are described. This is followed by a discussion of changing trade patterns and market trends.

6.3.1 The Economic Bubble Period followed by the Continuing Economic Crisis

Based on the Plaza Accord in 1985, the Japanese government established the "Financial Relaxation Policy", which was actually a low-interest policy. This policy produced excessive money supply that sought a home in both the domestic and international real estate and stock markets. It was the start of the bubble economy in Japan (Honjo 2001). This investment in the real estate market led to dramatic growth in the housing market and new housing starts rose to

[19] A mixed sawmill means a sawmill sawing a mix of imported and domestic logs.

almost 1.7 million units by 1996. (See **Table 6-1**.) This increase in housing starts drove increased wood demand.

In the early 1990s, global environmental issues influenced both lumber and wood prices (Shinrin Keikaku Kenkyukai 1997). The protection of spotted owls in the US Pacific Northwest in the early nineties created anxiety regarding a stable log supply, and wood prices in the US increased rapidly. At the same time in Japan, wood demand decreased in 1992, which put downward pressure on domestic prices. However, the strengthening yen relative to the US dollar enabled Japanese buyers to pay slightly lower prices in yen, while foreign sellers received higher prices in US dollars (**Figure 6-3**). This enabled higher prices for the suppliers and lower prices for the buyers. This situation depressed the price of domestic logs, which continued to have a currency disadvantages throughout most of the nineties.

During the era of the bubble economy and rapidly escalating land prices, the accumulated bad debts of the Japanese financial organizations were hidden until the burst of the bubble economy was acknowledged in the last half of the 1990s. In 1998, some of major financial companies collapsed, and the public recognized the seriousness of the Japanese economic situation (Japan

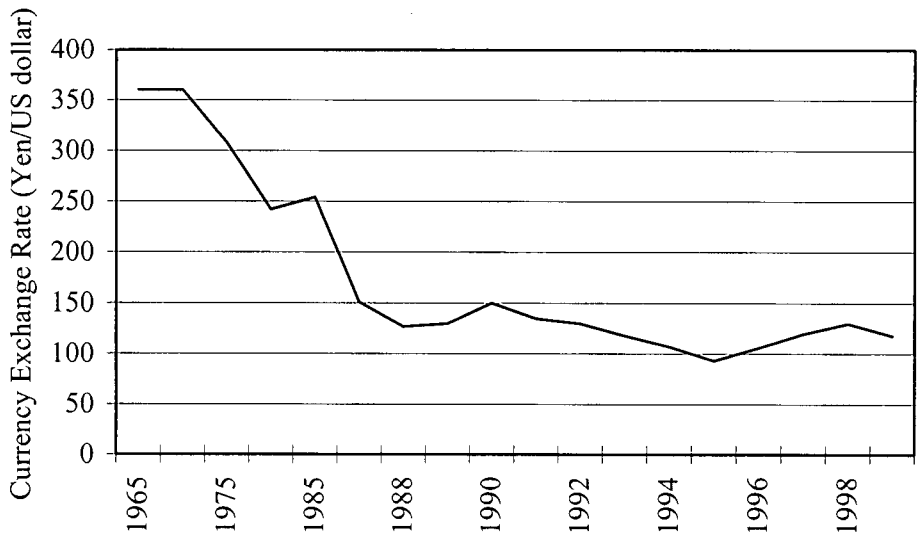

Figure 6-3: Fluctuation of Currency Exchange Rate.
(Source: Statistics Bureau & Statistics Center 2002)

Lumber Journal 1999). An increasing number of bankruptcies of enterprises and increased unemployment followed (Japan Lumber Journal 1999). These economic events, combined with the Asian financial crisis of 1997-98, led Japan into the worst depression since WWII (Japan Lumber Journal 1999).

The declining economy in Japan caused the number of annual housing starts to decrease (**Table 6-1**). Despite a gradual decline in lumber demand over the past 10 years, the amount of lumber imports increased until 1997, and then stabilized at a level of 80 thousand cum (**Figure 6-1**). While the volume of imported lumber remained the same, the source and type of wood changed substantially.

6.3.2 Changes in Trade Pattern

One of the significant changes in trade that occurred during the past 10 years was an increase in the proportion of lumber imports and a decline in the proportion of logs. A second change was the expansion and diversification of countries exporting to Japan.

6.3.2.1 From Log Import to Lumber Import

The number of importing sawmills grew or remained stable until the late 1980s, when it began to decline (**Table 6-2**; Sato 2000). The replacement of domestically milled imported logs with imported lumber caused the number of import mills to decline (**Figure 6-4**). There were two reasons for this trend. The first was an increase in log export restrictions in the US and Canada for the stated purpose of resource conservation and protection of the domestic industry. These log export restrictions could be considered NTMs and classified as Social/Political quality controls and/or bans. The second reason was an increase in the number of sawmills outside of Japan that produced lumber according to Japanese standards, such as Japanese Agricultural Standards (JAS) (Shinrin Keikaku Kenkyukai 1997). Imported lumber certified according to JAS was often favoured over lumber produced in importing sawmills due to lower prices and better quality, particularly in terms of drying (Iwai 1999). To compete with this imported lumber,

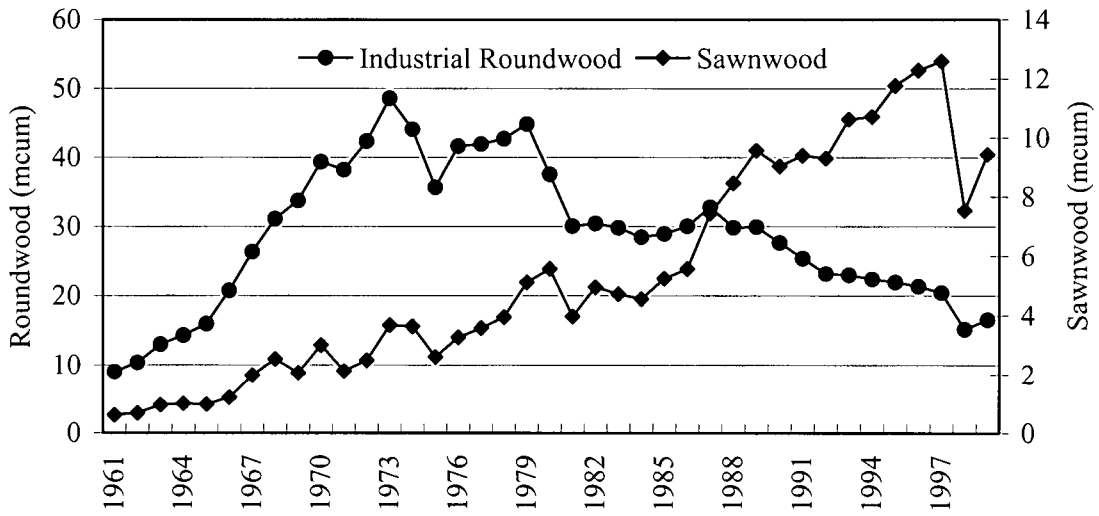

Figure 6-4: Import of Sawnwood. (Source: FAO 2001)

importing sawmills tried to differentiate their lumber products by introducing secondary processing, and cutting lumber to detailed customer specifications (Iwai 1999).

6.3.2.2 New and Lower Cost Sources of Supply Outside of Japan

During the past ten years, the source of wood imports has also changed (**Table 6-3**). Log imports from North America (the US and Canada) and the Southseas (Malaysia, Indonesia and others) decreased dramatically. The share of log imports to Japan coming from North America decreased from 37% in 1990 to 29% in 1999, and those from the Southseas declined from 39% in 1990 to 21% in 1999. This lost market share was captured by logs from Russia and New Zealand regions that increased their share as overall log imports to Japan declined. Russian logs increased in share from 17% in 1990 to 37% in 1999, and the share of New Zealand logs grew from 5% in 1990 to 10% in 1999. Recently, the US has started to prohibit the export of logs for environmental reasons and Russia is becoming an important log supplier to many countries.

Although the total amount of log imports was decreasing, lumber imports continued to increase until 1997. The source of these lumber imports also changed. While both the amount and share of lumber imported from North America and the Southseas decreased, imports from European

Table 6-3: Wood Imports by Source.

		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Log	Subtotal	28,999	26,427	25,877	23,438	22,386	21,944	21,336	20,407	15,190	16,551
	N.America	10,851	9,571	9,290	8,189	7,649	7,268	7,036	5,756	4,719	4,799
	Southseas	11,199	10,168	9,960	7,455	6,771	6,001	5,588	5,321	3,291	3,411
	Russia	4,865	4,304	4,185	4,973	4,806	5,413	5,422	6,137	4,720	6,061
	NZ	1,343	1,609	1,861	1,722	1,862	1,866	2,135	1,983	1,870	1,609
	Chile	413	462	226	223	135	123	146	183	118	108
	Europe	9	8	9	101	298	517	203	155	95	17
	Africa	126	96	100	507	671	525	664	662	186	206
	China	66	93	108	101	74	84	69	59	34	26
	Others	127	116	140	168	120	147	74	151	157	313
Lumber	Subtotal	8,889	9,114	8,797	10,242	10,372	11,356	11,529	12,187	7,539	9,434
	N.America	6,461	6,831	6,742	7,642	7,492	7,772	7,844	7,144	4,585	5,321
	Southseas	1,140	1,011	988	1,091	1,037	1,041	885	930	582	693
	Russia	267	247	227	288	352	425	407	523	310	459
	NZ	208	257	248	234	251	289	282	335	244	267
	Chile	415	402	261	392	299	544	410	612	379	436
	Europe	4	4	8	254	576	846	1,203	2,079	1,102	1,861
	Africa	3	4	3	8	3	5	5	7	4	4
	China	40	52	73	96	115	167	198	255	136	174
	Others	351	308	247	237	247	268	295	302	197	218

(Unit: thousand cum; Source: Ministry of Finance)

countries such as Austria, Finland, and Sweden, dramatically increased. In 1990, the European share of the Japanese import market was so low that records were not kept. In 1999, imports had grown to capture a 20% share of all imported lumber. European lumber substituted for North

American lumber since currency and market conditions caused lumber prices in the US to increase (Shinrin Keikaku Kenkyukai 1997). In addition, changes in how lumber was used increased substitution of laminated lumber for solid lumber (Forestry Agency 2000). European lumber that is kiln-dried is more suitable, in terms of the precision required to create laminated lumber in Japan, than green lumber imported from North America.

6.3.3 Change in Market Trends

Recent changes in the domestic market also contributed to the decline of Japanese sawmills. These changes led to a decline in the demand for traditional Japanese lumber, and an increase in the costs of production. Three factors that impacted Japanese sawmills are explained in this section. These are the diversification of building systems, increased preference for more stable lumber and additional acceptance by the public of visual defects.

6.3.3.1 The Diversification of Building Systems

The share of wood housing starts for traditional post and beam construction is approximately 80% but declining (**Table 6-1**). The share of 2x4 house and prefabricated house has been growing (Japan Lumber Journal 1999). These building systems create increasing demand for more standardized materials, such as imported lumber or laminated wood instead of domestic wood that is used for traditional Japanese-style construction (Iwai 1999).

6.3.3.2 Preference for More Stable Lumber

As a natural material, lumber has instabilities caused by twist, cracks and decomposition by fungi. Recently, homebuilders have come to prefer a more stable lumber material such as that produced when green lumber is kiln-dried or laminated. There are two reasons for this changing preference for improved performance. The first is that builders want to prevent claims for their products. Many builders believe that many of claims are caused by the instability of structural lumber and are trying to minimize claims by using a more stable building material such as kiln-dried or laminated lumber.

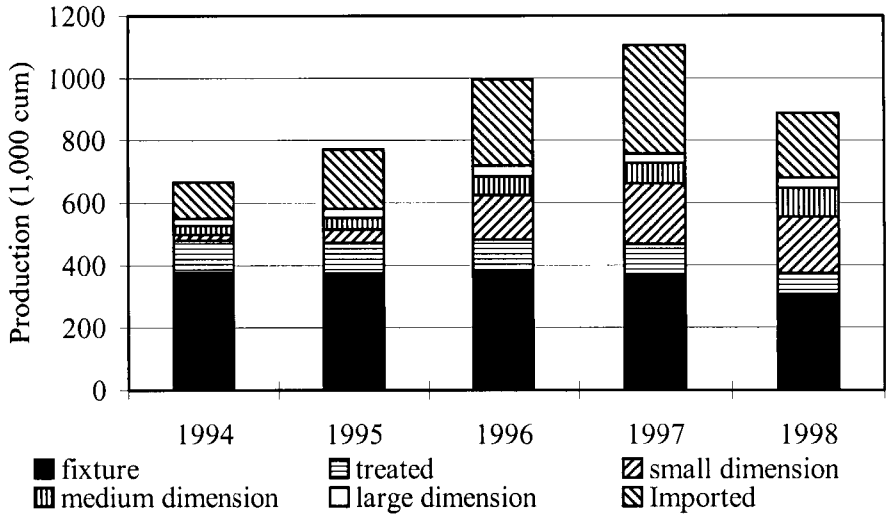

Figure 6-5: Laminated Lumber Production. (Source: Forestry Agency 2000)

The second reason is that the precut system[20] is becoming popular for traditional post and beam construction (Murao 2000). Since precut facilities usually prefer stable materials such as dried solid lumber or laminated lumber, the demand for laminated lumber has increased while the demand for green lumber has decreased (**Figure 6-5**).

6.3.3.3 Acceptance of Visual Defects

While the number of wooden house starts declined during the bubble economy, the demand for wood was maintained due to increasing interest in nature and good health (Japan Lumber Journal 1999). People in Japan now seem to find value in lumber with natural characteristics such as knots and consider that "knots are beautiful as design" or that "knots prove the lumber is natural" (Murao 2000). This has led to a declining interest in defect-free, high-cost wood and increased interest in lower cost lumber with small knots and other defects.

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[20] In traditional post and beam construction, the lumber for posts or beams are cut to size and notched on the building site by carpenters. In the precut system, lumber is cut and notched in a factory setting by automated and often computer controlled machines. These posts and beams are then stored until taken to the building site for assembly. If the wood is not stable, then the posts and beams will not fit together once taken to the site.

6.4 INEFFICIENCIES IN JAPANESE WOOD INDUSTRY

There are some inefficient factors in the Japanese wood industry that inhibit its ability to compete with imported products. For example, the Japanese wood industry continues to have a high number of very small enterprises despite efforts by the government to encourage consolidation and increase mill size and productivity. This is particularly true compared to sawmills in exporting countries such as Canada, the US, Sweden, Finland and Austria. This section discusses the Japanese log distribution systems for both domestic and imported wood. The productivity in Japan and British Columbia, Canada are compared to highlight the inefficiencies of Japanese sawmills.

6.4.1 Multi-stage Distribution Systems

A multi-stage log distribution system for wood products creates inefficiencies in the softwood lumber sector. Additional costs due to a number of stages in domestic log distribution deprive competitiveness from the domestic products.

Compared to imported log distribution, the domestic log distribution system is complicated with four main routes (**Figure 6-6**). The first route is that a forest owner sells their logs directly to a sawmill. The second route is that a forest owner sells logs to a log harvesting company, who harvests the logs and sells them directly to a sawmill company. The third route is that a forest owner sells logs to a log harvesting company who in turn sells those logs to a sawmill company through a log auction market. The last route is that a forest owner sells logs to a sawmill company through a log auction market.

On the other hand, the imported log distribution system is quite simple, with two main routes (**Figure 6-7**). The first route is where an import company ships directly to a sawmill. The other route is where shipment to the mill is through one or two log wholesalers (Iwai 1999). This simpler distribution system enables imported logs for lower distribution costs compared to those for domestic logs.

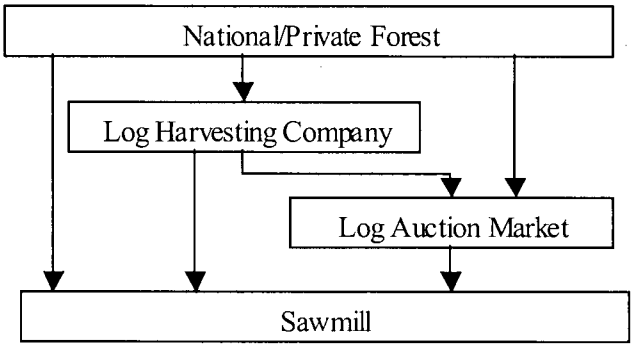

Figure 6-6: Domestic Log Distribution. (Source: Rinsan Gyosei Kenkyu-kai 2000)

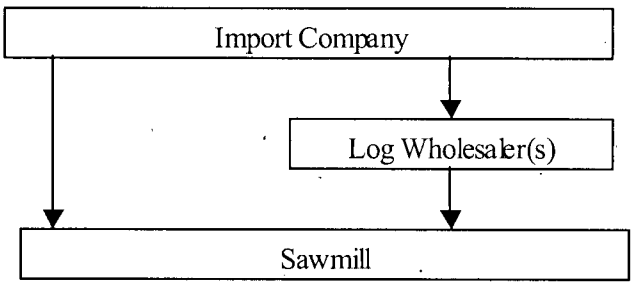

Figure 6-7: Imported Log Distribution. (Source: Rinsan Gyosei Kenkyu-kai 2000)

6.4.2 Productivity of Sawmills

The Japanese government has put forward several programs to encourage sawmills to increase their size and productivity. One result has been a dramatic decrease in the number of small sawmills with a decline of 69% in the total number of small sawmills from 1973 to 1999. On the other hand, the number of large[21] sawmills has been quite stable, increasing by only 4% from 1973 to 1999. However, their productivity is still lower than mills in countries that export lumber to Japan. For example, British Columbia, one of the biggest wood supplying regions for Japan, has 7 times more production per employee than Japan (**Table 6-4**). This labour intensity contributes to the inability of domestic mills to compete with lower-cost imported lumber.

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[21] A "large" sawmill is a mill that has over 150 kW output power.

Table 6-4: Comparison between Japanese Sawmill's Productivity and BC's

	Japan (1998)	BC (1999)
Lumber Production (thousand m^3)	18,625	31,809
employment	84,038	20,300
Production (m^3)/employee	221.6	1,566.9

(Source: Forestry Agency 2000; MoF 2000)

6.5 JAPAN AND SAFEGUARD ACTION UNDER THE WTO

The previous sections discussed the decline in the number of Japanese sawmills, and why Japan is exploring protectionism to help reinvigorate the sawmill sector. In this section, factors that have contributed Japanese sawmill reduction are summarized, and the possibility of Japan implementing safeguards is discussed.

6.5.1 Summary of Factors that Contributed to the Downsizing of Sawmills

As previously discussed, it is not only trade but also a wide variety of other factors are driving the reduction in sawmill capacity in Japan. Three different arenas of competition have contributed to this reduction: 1) competition between domestic and imported sawmills within Japan, 2) competition between domestically sawn lumber and imported lumber, and 3) competition caused by changes in the housing market in Japan.

6.5.1.1 Domestic Sawmills vs. Import Sawmills

As previously discussed, there are two types of sawmills in Japan: a domestic sawmill, and an import sawmill. Some of the competitive advantages for an import sawmill compared to a domestic mill contributed to the decline of domestic sawmills in Japan.

Most domestic sawmills are small in operation size, and were established during the post-war recovery period. They obtained domestic logs through a complicated and often costly distribution system. In contrast, import sawmills use imported logs that are larger in size and have a simple and often less costly distribution system. In fact, the distribution system was one factor that contributed to lower log prices for imported logs compared to domestic saw logs. In

addition, the quality of lumber from import sawmills is often superior to that of domestic sawmills.

6.5.1.2 Domestically Sawn Lumber vs. Imported Lumber

Changes in trade patterns also impacted imported sawmills. There was a decline in the volumes of log imports, which led to a raw material shortage for importing sawmills. This shortage was offset by an increase in lumber imports, which captured market share from both domestic and importing sawmills.

6.5.1.3 Competition with Market Factors

Changes in market trends also contributed to the declining share of Japanese lumber in construction. These changes include the following;

- The increasing popularity of the imported 2x4 building system expanded the share of the North American standard lumber as the expense of domestic sizes.
- A shift to a preference for more stable lumber in traditional post and beam construction required additional supplies of imported kiln-dried or laminated lumber. Insufficient domestic kiln capacity and a lack of capital to invest in these facilities prohibited much increase in domestic supply of kiln-dried lumber.
- In addition, there was an increased consumer acceptance of visual defects that contributed to the collapse of some successful domestic sawmill's marketing strategy, which had created a brand image with high quality lumber (discussed in 6.3.3.3).

6.5.2 Possibility for Japanese Safeguard Implementation

Japanese sawmill capacity has decreased with increasing log imports after the 1960s and lumber imports after the 1990s. This condition enhanced the mood of protectionism. With decreasing sawmill capacity, the Forestry Agency declared its intent to implement safeguard action to revitalize the sawmill industry in 2001. However, the arguments used by the Forestry Agency to

justify a safeguard application do not meet the conditions necessary for safeguard action based on the WTO ruling.

Japanese sawmills' productivity levels are still low compared to lumber exporting counties. (See 6.4.2.) The Japanese government established policy packages, called the "Forest and Forestry Basic Plan", to vitalize the wood products sector due to upgrading sawmill facilities and enlargement of sawmills. (See 6.1.1.) The government designed the political packages to increase domestic lumber production, and to expand the domestic market share.

The Forest and Forestry Basic Plan indicates that the Forestry Agency applies safeguards when political packages do not work well. The condition that "the packages do not work well" includes domestic products not being able to gain market share despite the domestic industry increasing production.

One scenario towards a safeguard action can be assumed. Once lumber production increases, sawmills have to seek additional markets to sell their products. However, most of the market is currently dominated by imported products. Therefore, Japanese domestic lumber has to compete with imported lumber. However, imported products used to be superior in quality and lower in costs, and domestic products may have difficulties competing with them. One possibility is that a protectionist movement is created when sawmills seek markets to sell their increased products in the market and cannot capture the market share from imported products. Thus, the Forestry Agency regards this condition as that "the packages do not work well", and has incentives to implement safeguards to reduce competition with imported products, and to expand the share of domestic products.

This scenario indicates that a major incentive for safeguard action by the Forestry Agency originates from increasing domestic production, but not increasing imports. Before implementing safeguards under the WTO, the Japanese government has to prove that imports seriously damage the domestic industry. That is, safeguards can be implemented only when

increasing imports of a product, not increasing domestic production, seriously injures the domestic industry. As a result, the condition that the Forestry Agency set in the "Forest and Forestry Basic Plan" does not meet the condition under the WTO. After all, the probability of Japan taking safeguard action is low because a major reason for implementation is to create room for increased domestic products.

6.6 SUMMARY

This review of establishment and structure of the Japanese softwood lumber sector and trends of Japanese market has prompted a better understanding of the growing protectionism in the Japanese softwood lumber sector.

Japanese sawmills were classified into two categories: domestic sawmills and importing sawmills. A large number of domestic sawmills were established during the post-war recovery period. Their operation is small and inefficient. Importing sawmills were established during the high economic growth period. They are more efficient than domestic sawmills, and the quality of their product is superior to domestic products. As a result, the share of lumber milled from imported logs captured increasing market share, and domestic sawmills moved towards protectionism.

During the 1990s, increasing lumber imports and decreasing log imports contributed to a declining market share for lumber from both domestic and importing mills. This change of trade pattern enhanced importing sawmills' protectionist movement.

Inefficiencies included in the Japanese softwood lumber sector caused domestically produced products to lose market share. Productivity per sawmill is still far below that in lumber exporting countries.

Changes in market trend also contributed to a loss of share by domestic sawmills. The domestic sawmill's strategy of focusing on high quality decorative lumber does not fit any more under diversification of the building systems with a preference for more stable lumber.

With these factors for domestic and importing sawmills, a Japanese protectionist movement has arisen. However, the probability of safeguard implementation is currently low. There are three reasons:

- Although lumber imports increased during the 1990s, the import level in 1998 and 1999 decreased to the same level as 1990.
- Since several factors other than imports have contributed to decrease the number of sawmills, it is difficult to estimate how much imports have damaged the industry.
- The guideline for safeguard implementation shown by the Forest Agency does not fit the WTO guideline.

7 DISCUSSION

This chapter first summarizes the cases presented in the thesis. This is followed by a discussion on how protectionism occurs in terms of technology development and adoption. Once the current technological phase of the wood products industry is identified in section 7.1, then section 7.2 summarizes the importance of a number of factors that influence increasing protectionism. The relationship between oversupply and the protectionist movement are chronologically traced in section 7.3, followed by a discussion of the reasons why different countries and regions use NTMs and how technological phases are related with the implementation of NTMs (section 7.4). Finally, section 7.5 describes a model for the process, which leads to the implementation of NTMs for softwood lumber based on the previous discussions.

Previous chapters explored what could be considered tariff and NTMs in three cases: the US, the EU and Japan. Two of the three types of measures are represented by these three examples. The US implemented the SLA as a social/political measure between 1996 and 2001. The US is a lumber producing country that traditionally has sold most of its production to domestic markets but does not produce enough lumber to be fully self-sufficient. The gap between supply and demand has been filled by imports, and Canada has, and continues to be, the largest exporter to the US. The SLA was a political measure to protect the US industry from trade competition from their major foreign supplier of softwood lumber, Canada.

Since 1990, the EU has banned unseasoned softwood lumber imports, which could be classified as a health and safety NTM. The final ban has been in effect since 1993. Sweden was selected for analysis to investigate the impact of this measure on "domestic" industries since it was the largest softwood lumber producing and exporting country in the EU. Most (75%) of Sweden's softwood lumber was exported to other countries within the EU (its home market). It was losing market share, particularly in the U.K., the largest lumber-importing region in the EU, until this

measure was implemented. After implementation, they not only regained market share but also increased it due to the dramatic drop in the importation of green lumber.

The Japanese case is different from both the US and the EU because Japan is not examining the implementation of a NTM, but started an investigation to apply for quantity controls or direct tariffs by exploring implementing a safeguard under the WTO. Japan is a softwood lumber-importing county that currently obtains approximately 64% of its demand from imports in 1998. The other 36% of its lumber requirements are produced from domestic sawmills.

7.1 TECHNOLOGICAL PHASE IN THE WOOD PRODUCTS INDUSTRY

Technology development incorporates three phases, invention, innovation, and diffusion (Chapter 2). In addition, technological changes can impact manufacturing operations in four different ways: 1) those that augment resources, 2) those that diversify products and production, 3) those that enlarge markets (output), and 4) those that enhance productivity. This section discusses the technological phase of softwood lumber, and discusses impacts due to technological change (Grübler 1998: 47, 48).

Softwood lumber is an well-established product that can be considered as a declining product in the product life cycle. Therefore, softwood lumber has already passed through the phase of invention. Innovation, the second phase, is classified into two types: one is product innovation; the other is process innovation. The wood industry in developed countries has been focusing on both process and product innovation for the past twenty years. Process innovation includes sawmill automation and technology for milling small-diameter logs. Both technologies enhance productivity. Process innovation dramatically improved processing efficiency in the US and Sweden in the latter part of the 1980s and the beginning of the 1990s. In addition, technology for milling small-diameter logs improved the availability of raw material (logs) for sawmills expanding existing log resources. This process innovation has already occurred for softwood

lumber in the US and Sweden while the Japanese industry is now making efforts on this first front.

A product innovation creates a new or modified product with direct usage of technological hardware. Kiln-dried (KD) lumber and Engineered Wood Products (EWPs) are wood-based examples of product innovation. By incorporating processing technologies in a regular production process for green lumber, such as kiln-drying, the material inputs for some of these EWPs are produced. Technologies such as flaking machines and press technology are increasing the availability of forest resources. With these technologies, lower quality raw materials are converted into EWPs with superior performance properties. As a result, product innovation contributed to diversifying wood products and expanding raw material supply. These facts support the theory by Hill and Utterback (1979) that process technology focusing on production cost and product quality is more important once markets and products mature.

While process innovation and product innovation occurred for softwood products during the 1980s and 1990s in the US and Sweden it is only now occurring in Japan where process innovation is now the focus.

7.2 FACTORS FOR NTM IMPLEMENTATION

There is a logical progression towards the final implementation of NTMs. Several factors contribute to the implementation of restrictive trade measure, both tariff and NTMs (**Figure 7-1**). This section discusses the role of each factor.

7.2.1 Recession

One pattern that emerged from exploring these case studies was the occurrence of an economic recession just prior to the rise of protectionism for softwood lumber in each region. US producers initiated the start of the current Canada-US softwood lumber dispute in the second year of a deep recession in 1982. Finland announced the finding of the pinewood nematode in 1983, before the U.K. and European had recovered from the recession of the early eighties. Although Japan has entered for economic recessions

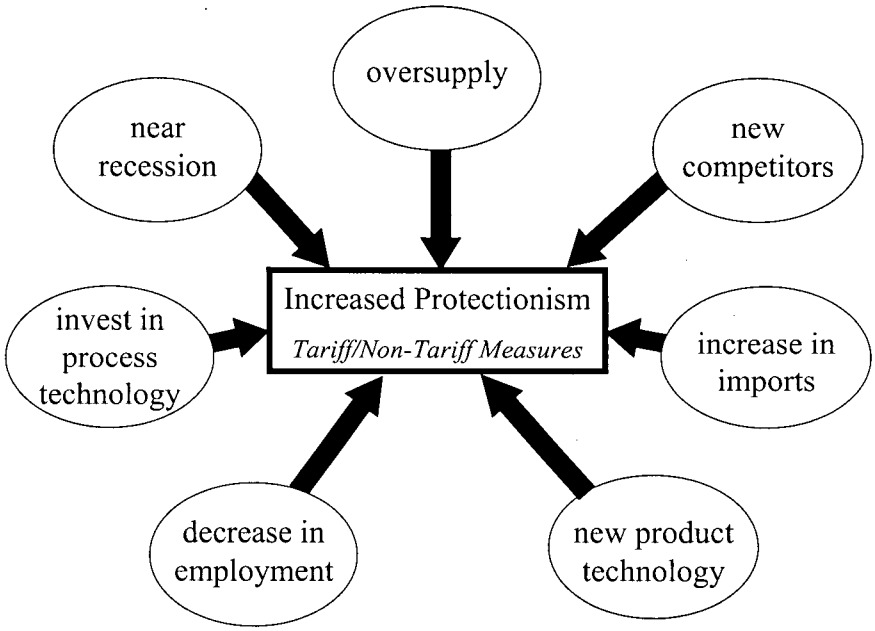

Figure 7-1: Factors Contributing to the Development of the Tariff and NTM Implementation.

since the early nineties, 1998 was exceptionally harsh because of the meltdown of the entire Asian economy due to the Asian financial crisis. Two years after the intense crisis in 1998 and before recovery had really started; Japan initiated an investigation of safeguard action. These facts indicate that recession prompts an atmosphere for protectionism, and triggers movements towards either tariff or NTMs.

Once the atmosphere to protect industry exists, then imports from specific countries considered the most competitive to domestic producers are targeted. The US has complained about increasing Canadian softwood lumber imports to the US since the 1980s so they were the natural targets of a US NTM. The Canadian share of softwood lumber in the U.K. was expanding in the late 1970s and early 1980s leading to a NTM based on phytosanitary requirements. In Japan, lumber imports had been increasing from a growing number of exporting regions during the 1990s, generating initiatives to apply for tariffs on all lumber imports into Japan. The

connection between recessionary times and trade protectionism for softwood lumber is well supported by these cases.

The increase in imported supply during low economic growth, and a corresponding decline in demand, led to oversupply in all three cases. The stress of general economic recession and oversupply also led to increased unemployment, which contributed to the general atmosphere supporting protectionist measures. In the EU and Japan, new competitors also added to an increasingly competitive environment as well as oversupply and a public supportive of trade restrictions.

7.2.2 Process Innovation

Sawmills in both the US and Sweden upgraded their facilities during the 1980s and the early 1990s. As a result, productivity dramatically increased, resulting in increased output of softwood lumber per sawmill (section 4.3.1 and 5.3.1). In addition, political decisions, which reduced harvests in certain regions, created incentives to increase capacity in other regions and increase overall production in the US. The increased output overcompensated for less than expected production declines and became one of the causes of oversupply, which worked to push lumber price downward. With increasing productivity, the number of sawmills, decreased leaving the largest and most efficient sawmills to increase production. Upgrades of these large sawmills resulted in continuously increasing production and a continuously decreasing cost of processing despite a decrease in the number of overall mills.

Historically, Japan experienced oversupply caused by the creation of a large number of small sawmill operations during the post-war recovery period. Although the Japanese government promoted large sawmills and a decrease in the total number of sawmills during the 1960s, it was a different type of movement from the one in both in the US and Sweden in the 1980s. Compared to lumber exporting countries, Japanese sawmill's productivity remained low. As a result, the forest and forestry basic plan in 2001 continued to repeat the policies from the sixties

to upgrade and enlarge sawmills in order to increase efficiency in the future, despite the almost continuous decline in the number of sawmills.

7.2.3 Product Innovation

The shift from high-quality old-growth natural timber to low quality logs from plantations and second growth stands promoted the adoption of new processing technology. This processing technology contributed to the removal of defects from lumber produced from lower quality logs (e.g. fingerjoined lumber). It also enabled to use low quality logs to produce EWPs. That is, "product innovation" produced new products by utilizing new processing innovations such as flakers, dryers, and presses.

Increasing development and demand for EWPs during the 1990s often captured market share from softwood lumber. This contributed to a more competitive market for building materials and a decreasing market share for lumber particularly in the construction sector.

In Japan, new regulations established by the government contributed to increasing demand for housing performance, this required more stable lumber or EWPs. Currently, more Japanese capacity is needed to produce both kiln-dried and laminated lumber to fill growing market demand for stable lumber. Unfortunately, the current Japanese recession prohibits the necessary capital investment needed for this capacity expansion.

7.2.4 Increased Availability of Forest Resources

Technology adoption contributed to the expansion of timber resources. For example, kiln-drying technology enabled the southern yellow pine lumber producers to make products more suitable for some construction purposes in the US. As a result, the southern yellow pine market expanded in the US and much of what had previously been considered low-grade lumber could be used for more valuable uses.

Increasing lumber production was supported by a corresponding increase in timber availability in the US and Sweden, predominantly from private lands. For example in the US, timber from private forests increased, and in Sweden the forest stock was increasing, also mostly on private land. There were two areas where technological adoption increased timber supply: growing trees and utilizing previously uneconomic trees. Technologies for planting and growing trees such as planting improved genetic stock, fertilization, species selection, thinning, and pruning increased yields in forest plantations, enabling more logs from the same area of forestland. In addition, new harvesting and processing technologies enabled harvest and use of logs that had previously been uneconomic due to high logging costs, poor quality such as curves or due to being of a species previously considered unsuitable for wood product manufacture (e.g. aspen). These technologies resulted in more raw materials being available from the same amount of forestland to produce a greater array of products, many of which could substitute for lumber.

7.2.5 Imports

Increasing trade of softwood lumber resulted in increasing imported volumes and the capture of market share by imports of softwood lumber in all regions in this study. This contributed to an atmosphere that enhanced protectionism. From 1975 to 1985, the Canadian share of the US softwood lumber market increased. The US industry used this increasing share of Canadian softwood lumber as a key argument to win support for protectionist measures. During the latter half of the 1980s, the softwood lumber share held by European producers in the U.K. had been decreasing while the Canadian share had been increasing. In Japan, during the 1990s, lumber imports had been accelerating during the early 1990s although volume of lumber imports had been increasing for several decades. However, the introduction of new products and new supply regions seemed to highlight the lack of competitiveness of domestic mills. With the economy slowing, the increasing share held by imports was linked to the poor financial state of the domestic industry.

7.3 ROADMAP TO OVERSUPPLY

Factors that contribute to trade restrictions, such as recession, process innovation (leading to improved productivity), product innovation (leading to EWPs), increased availability of forest resources and imports were summarized in section 7.2. Together, these factors contribute to oversupply and enhance the atmosphere for protectionism. This section discusses how these factors are related to each other, how protectionism develops, grows, and eventually leads to the implementation of restrictive trade practices. This process is graphically shown in **Figure 7-2**.

Rectangles surrounded by a black line indicate the size of demand for softwood lumber in **Figure7-2**. The combination of domestic production (the shaded area in **Figure 7-2**) and imported production (white area in **Figure 7-2**) indicates total supply. Gaps between supply and demand determine prices.

In phase 1, there is a balance between overall supply (domestic plus imported) and demand. In phase 2, recession decreases demand, creating oversupply and downward pressure on prices. Recessions occurred from 1980 to 1981 in the EU, in 1982 in the US, and in 1998 in Japan. If imports remain constant, domestic supply (domestic production capacity) far exceeds demand. This puts pressure on prices and often results in poor performance of domestic industries leading to not only financial losses but also increased impatience with the role of imports in their domestic market over a short time horizon. This impatience encourages the government to adjust the balance between domestic and imported supply to ensure utilization of domestic capacity and contribute to a recovery from the recession. There is often much emotion regarding job losses and potential bankruptcies in a recession, which often triggers a public sentiment and a social environment that supports protectionism.

In addition to recession, increased production contributes to oversupply. In fact, recession often instigates increased process innovation to improve productivity, reduce costs and thus return to profitability. This leads to more output from a mill, and the total domestic supply increases

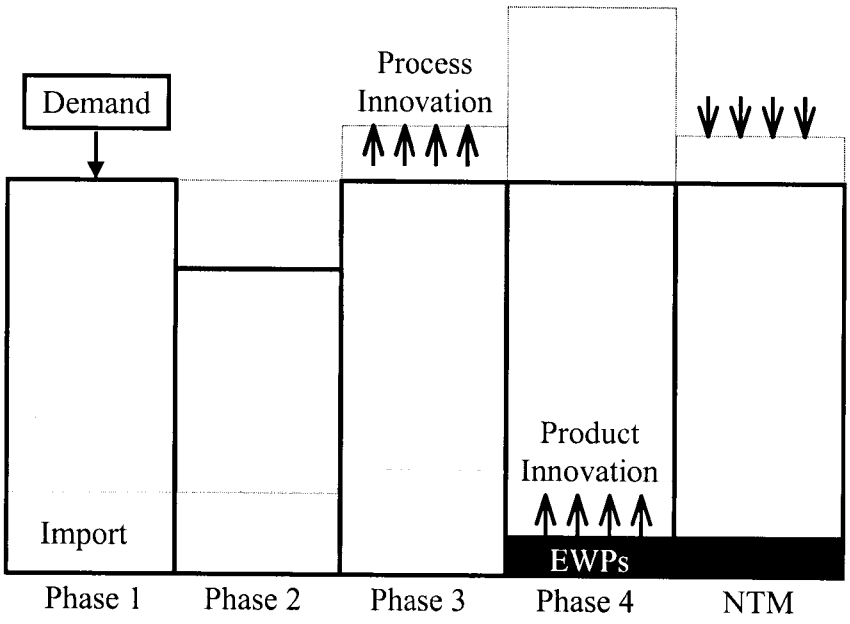

Figure 7-2: Concept of Implementation for NTMs.

(Phase 3). This phase was observed during the late 1980s and the early 1990s in the US and Sweden. Producers from regions exporting to these markets also implement technology to increase their production and imports often increase as well. Increasing domestic and imported production puts downward pressure on prices. In these study cases, imports increased and eroded domestic share; competition became more intense, prices declined and the domestic industry's antipathy for imports increased.

Concurrently, product innovation contributes to a decrease in the size of softwood lumber demand. Product innovation produced EWPs (black area in **Figure 7-2**), which have superior properties to conventional softwood lumber. This resulted in EWPs substituting for softwood lumber, and capturing market share from softwood lumber (Phase 4). Thus, product technology makes overall softwood lumber demand decline, while at the same time process technology makes production and supply increase. This creates excessive supply and demand imbalances even in good economic times. With increasing supply and declining demand, some producers

(either domestic producers or exporters of lumber or EWPs), must lose market share to reestablish a balance between demand and supply. The assumption of national governments is that if a sector needs to decrease in size, imported products need to be limited to save the domestic industry.

7.4 NTM AND TECHNOLOGICAL STAGE

Even though the WTO allows implementing trade restriction when increasing imports seriously injure the domestic industry, this route was not used in the US and EU. In this section, the relationship between technological stage and trade restrictive measures in the US and the EU is compared to that in Japan.

The US and the EU implemented NTMs while Japan has not implemented NTMs but is looking towards a safeguard case. Whether a certain region experienced process innovation may be an important factor in NTM implementation. Process innovation improved productivity and domestic production in the US and the EU, preceding the implementation of NTMs. The EU industry increased lumber productivity in the early 1990s. The US industry increased lumber productivity during the late 1980s, and has also implemented product innovation by continuously increased production of EWPs since the beginning of 1990s. (See **Figure 7-3**.) Under this overproduction of domestic softwood lumber and increasing EWPs, it is rational that the domestic industry requested that the government create additional space in the domestic market to sell their increased production and new products.

Japan has not experienced the same level of process innovation as the US and the EU, and sawmill productivity is far lower than that in the US and the EU. Japan also has not implemented a NTM but has been exploring a direct tariff or a quantity control according to accepted international trade agreements in order to create an opportunity for its domestic industry to adopt new processing technologies.

The US and the EU have adopted innovative processing and product technology and

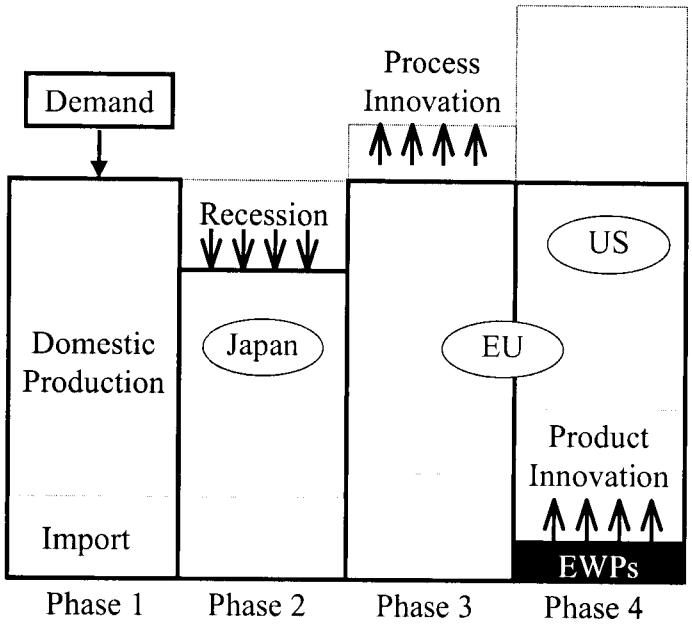

Figure 7-3: Degree of Technology Adoption of the US, the EU and Japan

implemented NTMs while Japan has not adopted these technologies and has not implemented NTMs. This indicates technological innovation may be a prerequisite for the implementation for NTMs.

The WTO allows a member country takes a trade restriction using tariff or quantity control such as a quota allocation if its domestic industry is injured or threatened with injury by a surge in imports. In the US and the EU cases, one of the major drivers towards protectionism was domestic oversupply caused by the adoption of new process and product technologies. Oversupply in both the US and Europe was caused not only by increasing imports but also by increasing domestic production. Under this condition, the argument that imports injured the domestic industry cannot stand scrutiny and trade restriction under the international agreement cannot be used. According to this point of view, injury to the domestic industry was partially due to domestic technological development. Instead of formal WTO trade restriction, NTMs, which are not clearly regulated for implementation under the agreement, are adopted to restrict imports and protect the domestic industry.

7.5 MECHANISM FOR NTM IMPLEMENTATION

Finally, the mechanism for NTM implementation in terms of technology adoption is discussed based on findings in the previous sections. The concept is shown in **Figure 7-4**, which is redrawn based on the theoretical framework in Chapter 2.

Availability of forest resources increases due to the adoption of new technology. For example, small-diameter logs, which have been regarded as uneconomic, can be used. This increasing availability enables sufficient log supply to provide raw material for increasing production. Two different types of innovation lead to oversupply: process and product innovation (as previously discussed). In addition, increasing softwood lumber imports accelerates competition in lumber market. Oversupply under these conditions leads to sawmill closures and contributes to

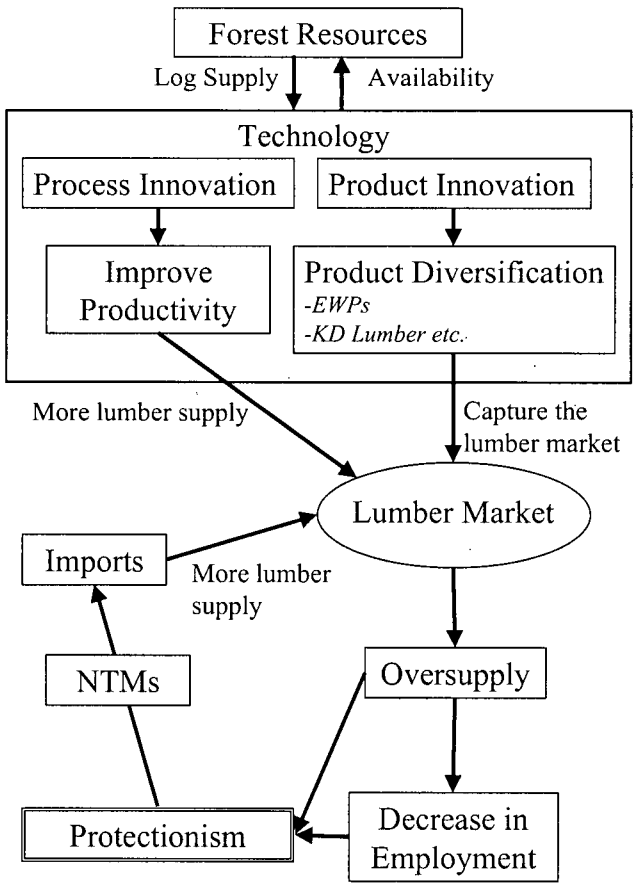

Figure 7-4: Mechanism for NTM Implementation.

decreased employment in the industry. As a result, both oversupply and unemployment create an atmosphere that encourages protectionism. One of the major drivers of protectionism is domestic oversupply caused by innovation. The WTO, however, doesn't allow a trade restrictive measure to moderate increasing domestic product. Therefore, NTMs that are not clearly regulated under the WTO are implemented instead.

8 SUMMARY AND CONCLUSION

The comparison between increasing protectionism for softwood lumber by examining NTMs in the US and the EU, and Japanese safeguard consideration has uncovered a mechanism or model in section 7.5 which allows a better understanding of the growing protectionism for softwood lumber. It has also explored connections between technological development and protectionism.

Factors such as economic recessions, process innovation, product innovation, and increasing supplies from imports, all encourage protectionist movements in the wood products industry. These all lead to oversupply in the domestic market.

Oversupply is caused either by decreasing lumber demand in the domestic market or increasing production capacity or a combination of the two. Oversupply impacts the industry in two different ways. Firstly, a sawmill's inventory increases under oversupply, which in turn can lead to price reductions and poor financial performance. Second, production control, mill closures or the adoption of new technologies often initiated in response to oversupply decreases employment opportunities.

Both process and product innovations accelerated oversupply and encourage protectionist movements. Process innovation dramatically improved productivity, and increased output per sawmill. This enhanced overall softwood lumber production capacity in the domestic industry, and contributed to supply exceeding demand. Product innovation enabled new products such as EWPs to substitute for conventional softwood lumber, which decreased the use of softwood lumber in the market. Technology also enabled the use of low quality logs, which used to be regarded as uneconomic. The increasing availability of forest resources supported increasing softwood lumber and EWP production, contributing to oversupply.

Increasing softwood lumber imports captured an increasing share of domestic softwood lumber markets, which accelerated competition in the domestic market. However, imports alone did not

drive increased protectionism. An additional driver of protectionism was domestic oversupply caused by technology adoption. The impact of oversupply included a decreasing number of sawmills for the past 20 years and an increase in the average size of sawmills. Under this condition, increasing softwood lumber imports were targeted to reduce softwood lumber supply and/or increase prices due to trade restriction. However, some regions couldn't use acceptable tariff measures under the WTO since the WTO didn't allow a trade restrictive measure to moderate an increasing domestic product. Therefore, these regions (the US and the EU) used NTMs since they are not clearly regulated under the WTO. As a result, NTMs reduced softwood lumber import by adding extra costs for softwood lumber exporters or by creating quotas without directly violating international trade agreements.

In agriculture, technology led to overproduction, and overproduction generated protectionism. The wood products industry is now following a similar path. In the wood products industry, technology improved both manufacturing productivity and the availability of the forest resource. This resulted in overproduction, in which encouraged protectionism. The similarity between agriculture and the wood products industry indicates that the framework for NTMs may be appricable in a larger context. However, the type of protectionism implemented in the wood products industry is different from agriculture. Agriculture used more direct methods such as subsidy (due to a lack of international trade agreements prohibiting such methods), while the wood products industry uses NTMs (to be in general accordance with international trade agreements).

Future studies could include testing the model established in this study with detailed analysis of technology adoption, the sawmills' and/or public attitude towards protectionism and policy, and research into the impact of protectionism on exporters. In addition, the Japanese case should be monitored and updated.

This study indicated that the degree of technological adoption deeply influence to create the protectionist movement by using secondary data. To disprove the model, tests using additional information regarding the structure of the softwood lumber sector as primary data is required to adopt this model to predict future NTM efforts. The information could include the relationship between the degree of technology adoption and productivity and the attitude of the managers of export sawmills towards protectionism. To gain deeper insight towards protectionism, primary survey research should be conducted once the political atmosphere allows accurate responses.

It would be interesting to analyze the policy cycle for trade-restrictive movements since politicians' decisions and activities for protecting domestic industries is one of the major requirements for successful protectionism (Drucker 2001). For example, recent Japanese safeguard actions were implemented to protect domestic vegetable growers right before the National Election.

This study uncovered a mechanism or model of the implementation of NTMs by focusing on importing countries. Research from the exporters perspective would add much to the information base. For example, sawmills in Canada, one of the largest softwood lumber exporters, have also upgraded their facilities and improved their productivity. Since lumber supply in Canada far exceeds demand, Canadians have to find markets to export increased products. With this condition, Canadian exporters tend to regard any regulations in an importing country as NTMs, regardless the health, environmental or safety considerations of the regulation for the importing country. Understanding the roles of exporters in triggering protectionism is required for better understanding of trade disputes.

Future trends in Japan provide an appropriate case to verify the theory established in this study. Currently, Japan has not implemented NTMs. However, if the government promotion of upgrading sawmill facilities is successful, Japanese lumber production will increase in the near future. Japanese action under this condition must be tracked.

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APPENDIX 1

GLOSSARY

[A]

Annual allowable cut (AAC)

It is defined as "the level of harvest set by the provinces and territories for a year (Natural Resource Canada 2000)." The amount of timber harvested each year is not exceed the amount grown in the same period.

American Consumers for Affordable Home (ACAH)

ACAH is a broad-based ad-hoc alliance of organizations interested in promoting affordable housing for consumers in the United States. Its mission is to support policies that will open the softwood lumber market between the U.S. and Canada. (ACAH)

Anti-Dumping Duty

A special duty imposed to offset the price effect of dumping that has been determined to be materially injuring domestic producers (Carleton University).

[C]

Canada-US Free Trade Agreement (FTA)

In North America, usually refers to the Canada-US Free Trade Agreement that entered into force on January 1, 1989 (Carleton University).

Coalition for Fair Lumber Imports (CFLI)

CFLI is a group of U.S. lumber producers primarily funded by Georgia Pacific and International Paper (ACAH website)

Coalition of Fair Canadian Lumber Imports (CFCLI)

CFLI was a coalition of the US West, South and Northeast sawmill companies (Cashore 1997).

Countervailing Duty

a tariff applied to offset the impacts of unfair subsidization of imports (Wilfrid Laurier University 1997)

[D]

Dumping

"The practice of selling a commodity at a lower price in the export market than in the domestic market for reasons unrelated to differences in costs of servicing the two markets (Lipsey et al. 2001: 850)."

[E]

Established Base (EB)

See Softwood Lumber Agreement.

Extraordinary Challenge Committee (ECC)

It was an committee that was established to judge the adequacy of the bilateral panel ruling under the FTA.

Export and Import Controls Bureau (EIBC)

EIBC is a part of the Department of Foreign Affairs and International Trade, Canada. It had responsibility for an export fee collection under the SLA.

Export Quotas

Specific restrictions or ceilings imposed by an exporting country on the value or volume of certain exports designed, for example, to protect domestic producers and consumers from temporary shortages of the goods affected or to bolster their prices in world markets. Some International Commodity Agreements explicitly indicate when producers should apply such restraints. Export Quotas are also often applied in Orderly Marketing Agreements and Voluntary Restraint Agreements, and to promote domestic processing of raw materials in countries that produce them (Carleton University).

[F]

Free Trade

An economic concept used for analytical purposes to denote trade unfettered by government-imposed trade restrictions; also used as a general term to denote the end result of a process of trade liberalization. Freer trade is the comparative term used to denote circumstances between current practice and the achievement of free trade (Carleton University).

[G]

General Agreement on Tariffs and Trade (GATT)

General Agreement on Tariffs and Trade, a multilateral treaty which delineates rules for international trade, subscribed to by 108 countries which together account for more than four-fifths of world trade. The primary objective of GATT is to liberalize world trade and place it on a secure basis, thereby contributing to global economic growth and development (Carleton University)

Gross Domestic Product (GDP)

Gross Domestic/National Product. The total of goods and services produced by a country (Carleton University).

[I]

Injury

The term used in international commerce to describe the effect on domestic producers of a decline in output, lost sales, decline in market share, reduced profits and return on investment, reduced capacity utilization, etc., as a result of import competition. A distinction is often made between serious injury (required for emergency safeguard measures) and material injury (required for anti-dumping

and countervailing duties) (Carleton University).

International Trade Administration (ITA)

The branch of the US Department of Commerce responsible for investigating and determining the existence of dumping or subsidization in US trade remedy cases (Carleton University).

International Trade Commission (ITC)

US International Trade Commission. An independent US fact-finding and regulatory agency whose six members make determinations of injury and recommendations for relief for industries or workers seeking relief from increasing import competition. In addition, upon the request of Congress or the President, or on its own initiative, the Commission conducts comprehensive studies of specific industries and trade problems, and the probable impact on specific US industries of proposed reductions in US tariffs and non-tariff trade barriers (Carleton University).

[K]

kiln-dried (KD)

Wood dried in a kiln, which is a chamber having controlled air flow, temperature, and relative humidity used for dry lumber, veneer, and other wood products,, to not more than 19% moisture content (Mullins et al. 1981: 368).

[L]

Lower Fee Base (LFB)

See Softwood Lumber Agreement.

[M]

Memorandum of Understanding (MOU)

It is an informal record, document, or instrument that serves as the basis of a future contract. In this paper, a Memorandum of Understanding (MOU) indicates the record written on softwood lumber trade between the US and Canada on December 30 1986.

[N]

Non-Tariff Measures (NTMs)/Non-Tariff Barriers (NTBs)

Government measures or policies other than tariffs that restrict or distort international trade. Examples include import quotas, discriminatory government procurement practices, measures to protect intellectual property. Such measures have become relatively more conspicuous impediments to trade as tariffs have been reduced during the period since World War II (Carleton University).

NTMs are "government laws, regulations, policies and or practices which either protect domestically produced products from the full weight of foreign competition or artificially stimulate exports of particular domestic products.

NTMs include both formal institutional measures designed to restrict or distort trade patterns and other restrictions which act as impediments with the same result." (New Zealand Forest Research Institute 1999).

Northwest Independent Forest Manufacturers (NIFM)

It was a coalition of the US Pacific Northwest sawmill companies.

[S]

Softwood Lumber Agreement (SLA), the

The SLA is the agreement signed between the government of Canada and the government of the United States. Under the agreement, the government of Canada had to collected export fees as follows:

- If the annual export was less than or equal to 14.7 billion bf (Established Base levels), no fee was collected.
- If the export was between 14.7 billion bf and 15.35 billion bf (Lower Fee Base levels), then a fee of $US 50 per thousand bf was collected.
- If the export exceeded 15.35 billion bf (Upper Fee Base level), $US 100 per thousand bf were charged.

Stumpage

Stumpage is the fee that individuals and firms are required to pay to the government when they harvest Crown timber. Stumpage is determined through a complex appraisal of each stand or area of trees that will be harvested for a given timber mark. In BC, a stumpage rate ($ per m3) is determined and applied to the volume of timber that is cut (m3). (MoF 2001b).

Subsidy

An economic benefit granted by a government to producers of goods, often to strengthen their competitive position. The subsidy may be direct (a cash grant) or indirect (low-interest export credits guaranteed by a government agency, for example) (Carleton University).

[T]

Tariff

A duty (or tax) levied upon goods transported from one customs area to another. Tariffs raise the prices of imported goods, thus making them less competitive within the market of the importing country. After seven "Rounds" of GATT trade negotiations that focussed heavily on tariff reductions, tariffs are less important measures of protection than they used to be. The term "tariff" often refers to a comprehensive list or "schedule" of merchandise with the rate of duty to be paid to the government for importing products listed. The tariff rate is the rate at which imported goods are taxed (Carleton University).

[U]

Uruguay Round

Eighth in a series of multilateral trade negotiations held under the auspices of GATT. This round was launched at Punta del Este, Uruguay in September, 1986 and concluded at Marrakesh, Morocco in April, 1994 (Carleton University).

Upper Fee Base (UFB)

See Softwood Lumber Agreement.

[V]

Voluntary Export Restraint (VER)

An agreement by an exporting country to limit the amount of a good exported to another country (Lipsey et al. 2001: 849).

APPENDIX 2

Please answer all questions for your company.

Section 1: COMPANY INFORMATION

Name: _____ Job Title: _____

Company: _____

Company Location (Please check all that apply.): ❑ BC Coast ❑ Interior BC ❑ Alberta

1. Please indicate your total lumber production for 2000.

   _____ MMBF

2. From 1995 to 2000, did total production increase, decrease or stay the same? If it increased or decreased, please approximate the percentage of change.

	Stayed the Same	Increased	Decreased
Total Production	❑	❑ by ___%	❑ by ___%

3. Please indicate the proportion (%) of volume shipped in 2000 to each of the countries and regions listed below. (Total should equal 100%.)

Destinations	% of volume shipped
Canada	%
USA	%
UK	%
Other Europe	%
Japan	%
Other Asia	%
Other_____	%
Other_____	%
Total	100%

4. From 1995 to 2000, did shipments increase, decrease or stay the same to the following regions? If it increased or decreased, please approximate the percentage of the change.

Products	Stayed the Same	Increased	Decreased
Canada	❑	❑ by____%	❑ by____%
USA	❑	❑ by____%	❑ by____%
UK	❑	❑ by____%	❑ by____%
Other Europe	❑	❑ by____%	❑ by____%
Japan	❑	❑ by____%	❑ by____%
Other Asia	❑	❑ by____%	❑ by____%
Other _____	❑	❑ by____%	❑ by____%

5. For each category listed below, please indicate the percent of SOFTWOOD LUMBER by VOLUME for each country your company produced in 2000. (Total for each country should equal 100%)

	Total	Canada	US	Japan
Commodity products	%	%	%	%
Specialty products	%	%	%	%
Customized products	%	%	%	%
Others _____	%	%	%	%
Total	100%	100%	100%	100%

NOTE:
"Commodity products" refer to 2x4s, 2x6s, 2x... or studs, etc.
"Specialty products" have a specific characteristic. e.g. MSR, lamstock.
"Customized products" are sawn to customers' specific requirements.

6. For each region, please state whether the change in the sale of each product type was positive (+), negative (-), or remained the same from 1995 to 2000. Also, please estimate the proportion of change.

	e.g.	Total	Canada	US	Japan
Commodity products	+5 %	___%	___%	___%	___%
Specialty products	0 %	___%	___%	___%	___%
Customized products	-5 %	___%	___%	___%	___%
Others	0 %	___%	___%	___%	___%

7. Please indicate your total sales revenue in Canadian dollars for 2000. From 1995 to 2000, did the revenue increase, decrease or stay the same? If it changed, please approximate the percentage of change.

Total Sales Revenue (CDN$1,000) in 2000	Stayed the Same	Increased	Decreased
1,000$	❑	❑ by ___%	❑ by ___%

8. Please approximate proportion of chip sales in your total sales revenue in 2000. From 1995 to 2000, did the sales increase, decrease or stay the same? If it increased or decreased please approximate the percentage of change.

% of chip sales ($)for total Sawmill in 2000	Stayed the Same	Increased	Decreased
%	❑	❑ by__%	❑ by___%

9. Please rank the following product types in terms of profitability to your company (rank from 1 to 3 with 1 being the most profitable)

____ Dimension lumber ____ Studs ____ Boards

____ MSR ____ Siding ____Timbers

____ Clears ____ Engineered wood products

SECTION 2: EFFECTS OF THE SLA

The Canada – US Softwood Lumber Agreement (SLA) was signed in 1996. Under the Agreement, the Canadian government collected export fees on softwood lumber from four provinces to the United States: BC, Alberta, Ontario and Quebec. The fee increased with export volume and was determined as follows:

- If the annual total softwood lumber export was less than or equal to 14.7 billion board feet (Established Base: EB), no fee was collected.
- If the export was between 14.7 billion board feet and 15.35 billion board feet (Lower Fee Base: LFB), then a fee of approximate $US 50 per thousand board feet was collected.
- If the export exceeded 15.35 billion board feet (Upper Fee Base: UFB), approximate $US 100 per thousand board feet was collected.

The Established Base (14.7 billion board feet) and Lower Fee Base (0.65 billion board feet) were allocated to companies as quotas.
The following questions are concerned with the Softwood Lumber Agreement (SLA).

10. Please indicate how much quota was allocated to your company by the government of BC and/or Alberta. (If your company had quota both from the government of BC and Alberta, please indicate the total.)
NOTE: EB (Established Base) indicates the amount of quota that could be exported for free. LFB (Lower Fee Base) indicates the amount of quota that could be exported for US$52.93 - US$53.94/thousand bf. RFB (Re-priced Lower Fee Base) indicates the amount of quota that was allocated only to BC companies and could be exported for US$107.88/thousand bf.

(MMBF)	EB	LFB	RFB: Re-priced LFB BC only
April 1999 – March 2000			
April 2000 – March 2001			

11. If you have some comments on the SLA, please describe below.

_____

_____

_____

_____

_____

_____

THANK YOU FOR YOUR CO-OPERATION!!!

Please answer all questions for ONE MILL.

SECTION 1: SAWMILL INFORMATION

Name: _____ Job Title: _____

Company: _____

Sawmill Location (Please check one.): ❑ BC Coast ❑ Interior BC ❑ Alberta

1. Please indicate the average number of people employed at your sawmill in 1995 and 2000.

	1995	2000
Number of employee		

2. Please indicate your total solid wood production (excluding chips) and the percentage of production by species for 2000. (Total should equal 100%)

	2000
Total Production (MMBF)	

Species (%)

Pine	%
Fir	%
Spruce	%
Hemlock	%
Cedar	%
Other _____	%
Other _____	%
Other _____	%
Total	100%

3. From 1995 - 2000 did production (total and by species) increase, decrease or stay the same? If it increased or decreased, please approximate the percentage of change.

	Stayed the Same	Increased	Decreased
Total Production (MMBF)	❑	❑ by__%	❑ by __%

Species (%)

Pine	❑	❑ by__%	❑ by___%
Fir	❑	❑ by__%	❑ by___%
Spruce	❑	❑ by__%	❑ by___%
Hemlock	❑	❑ by__%	❑ by___%
Cedar	❑	❑ by__%	❑ by___%
Other _____	❑	❑ by__%	❑ by___%
Other _____	❑	❑ by__%	❑ by___%
Other _____	❑	❑ by__%	❑ by___%

4. Please indicate the proportion (%) of volume shipped in 2000 to each of the countries and regions listed below. (Total should equal 100%.)

Destinations	% of volume shipped
Canada	%
USA	%
Japan	%
Europe	%
Other _____	%
Total	100%

❑ Please check if you don't know about this question.

5. For each category listed below, please approximate the percent of SOFTWOOD LUMBER by VOLUME that your facility produced in 2000. (Total should equal 100%)

	2000
Commodity products	%
Specialty products	%
Customized products	%
Others _____	%
Total	100%

NOTE:
"Commodity products" refer to 2x4s, 2x6s, 2x... or studs, etc.
"Specialty products" have a specific characteristic. e.g. MSR, lamstock.
"Customized products" are sawn to customers' specific requirements.

6. From 1995 to 2000, did each category increase, decrease or stay the same? If it increased or decreased, please approximate the percentage of change.

	Stayed the Same	Increased	Decreased
Commodity products	❑	❑ by____%	❑ by___%
Specialty products	❑	❑ by____%	❑ by___%
Customized products	❑	❑ by____%	❑ by___%
Others	❑	❑ by____%	❑ by___%

7. For each product listed below, approximate the proportion (%) of total volume produced and the volume exported to the US from your mill in 2000. (Total should equal 100%.)

Products	Total	US
Dimension Lumber	%	%
Studs	%	%
Boards	%	%
MSR	%	%
Siding	%	%
Timbers	%	%
Clears	%	%
Engineered wood products	%	%
Other _____	%	%
Other _____	%	%
Other _____	%	%
Other _____	%	%
Total	100%	100%

8. From 1995 to 2000, did production of the following products increase, decrease or stay the same? If it increased or decreased, please approximate the percentage of change.

Products	Stayed the Same	Increased	Decreased
Dimension Lumber	❑	❑ by__%	❑ by__%
Studs	❑	❑ by__%	❑ by__%
Boards	❑	❑ by__%	❑ by__%
MSR	❑	❑ by__%	❑ by__%
Siding	❑	❑ by__%	❑ by__%
Timbers	❑	❑ by__%	❑ by__%
Clears	❑	❑ by__%	❑ by__%
Engineered wood products	❑	❑ by__%	❑ by__%
Other_____	❑	❑ by__%	❑ by__%
Other_____	❑	❑ by__%	❑ by__%
Other_____	❑	❑ by__%	❑ by__%
Other_____	❑	❑ by__%	❑ by__%

9. From 1995 to 2000, did exports of the following products to the US increase, decrease or stay the same? If it increased or decreased, please approximate the percentage of change.

Products	Stayed the Same	Increased	Decreased
Dimension Lumber	❑	❑ by__%	❑ by__%
Studs	❑	❑ by__%	❑ by__%
Boards	❑	❑ by__%	❑ by__%
MSR	❑	❑ by__%	❑ by__%
Siding	❑	❑ by__%	❑ by__%
Timbers	❑	❑ by__%	❑ by__%
Clears	❑	❑ by__%	❑ by__%
Engineered wood products	❑	❑ by__%	❑ by__%
Other_____	❑	❑ by__%	❑ by__%
Other_____	❑	❑ by__%	❑ by__%
Other_____	❑	❑ by__%	❑ by__%
Other_____	❑	❑ by__%	❑ by__%

10. Please indicate the approximate total sales revenue (in Canadian dollars) for your sawmill in 2000. From 1995 to 2000, did the revenue increase, decrease or stay the same? If it increased or decreased, please approximate the percentage of change.

Sales Revenue for Sawmill in 2000	Stayed the Same	Increased	Decreased
CDN$	❑	❑by___%	❑by___%

11. Please indicate the proportion of chip sales of your total sales revenue in 2000. From 1995 to 2000, did the sales revenue of chips increase, decrease or stay the same? If it increased or decreased, please approximate the percentage of change.

% of chip sales ($) for total Sawmill in 2000	Stayed the Same	Increased	Decreased
%	❑	❑by__%	❑by__%

12. What is your kiln capacity?
❑ Please check if you have no kilns and go to question 13.
_____ MMBF

13. Please indicate the percentage of your volume of production that was kiln dried in 2000. From 1995 to 2000, did kiln capacity increase, decrease or stay the same? If it increased or decreased, please approximate the percentage of change.

% kiln dried in 2000	Stayed the Same	Increased	Decreased
%	❑	❑ by ____%	❑ by ____%

14. If specific events (e.g. worker strike, mill fire, forest fire, or lay-off etc.) occurred after 1996 and caused a temporally mill closure, briefly describe what happened, when it occurred and indicate how long it impacted mill production.

_____

_____

SECTION 2: EFFECTS OF THE SLA

The Canada – US Softwood Lumber Agreement (SLA) was signed in 1996. Under the Agreement, the Canadian government collected export fees on softwood lumber from four provinces to the United States: BC, Alberta, Ontario and Quebec. The fee increased with export volume and was determined as follows:

- If the annual total softwood lumber export was less than or equal to 14.7 billion board feet (Established Base: EB), no fee was collected.
- If the export was between 14.7 billion board feet and 15.35 billion board feet (Lower Fee Base: LFB), then a fee of approximate $US 50 per thousand board feet was collected.
- If the export exceeded 15.35 billion board feet (Upper Fee Base: UFB), approximate $US 100 per thousand board feet was collected.

The Established Base (14.7 billion board feet) and Lower Fee Base (0.65 billion board feet) were allocated to companies as quotas. The following questions are concerned with the Softwood Lumber Agreement (SLA).

15. Please indicate how much quota was allocated to your company by the government of BC and/or Alberta. (If your company had the head office allocate between multiple mills, please indicate the amount allocated by the head office.)
NOTE: EB (Established Base) indicates the amount of quota that could be exported for free. LFB (Lower Fee Base) indicates the amount of quota that could be exported for US$52.93 - US$53.94/thousand bf. RFB (Re-priced Lower Fee Base) indicates the amount of quota that was allocated only to BC companies and could be exported for US$107.88/thousand bf.

(MMBF)	EB	LFB	RFB: Re-priced LFB (BC only)
April 1999 – March 2000			
April 2000 – March 2001			

16. Please indicate your agreement with the following statements for the period 1996 – 2001. These statements all refer to the impact of the SLA.

a.	Softwood lumber originally targeted for the US was exported to other offshore markets.	❑ Yes	❑ No	❑ Don't know
b.	We invested in our facilities in order to produce SLA-exempt products for export to the US.	❑ Yes	❑ No	❑ Don't know
c.	More softwood lumber was shipped to domestic remanufacturers rather than to the US.	❑ Yes	❑ No	❑ Don't know
d.	The number of countries importing our products increased.	❑ Yes	❑ No	❑ Don't know

17. Please indicate your agreement with the following statements for the period 1996 – 2001. These statements all refer to the impact of the SLA.

Key: 1=Strongly agree, 2=Agree, 3=Neither agree nor disagree, 4=Disagree, 5=Strongly disagree

		Strongly agree<->Strongly disagree
a.	Our company's profitability decreased because of the SLA.	1 2 3 4 5
b.	We would have exported more lumber to the US without the SLA.	1 2 3 4 5
c.	Losses due to the payment of export fees were compensated by more favourable exchange rates.	1 2 3 4 5
d.	The SLA created higher selling prices for lumber in the US.	1 2 3 4 5
e.	Higher prices compensated for the payment of export fees.	1 2 3 4 5
f.	Lower grade lumber was reprocessed in Canada and exported as SLA exempt products.	1 2 3 4 5
g.	We increased chip production instead of increasing the production of lower-grade lumber.	1 2 3 4 5
h.	Increased exports of softwood lumber to other countries were a tactic to avoid export fees.	1 2 3 4 5

(Continued from previous question)

Key: 1=Strongly agree, 2=Agree, 3=Neither agree nor disagree, 4=Disagree, 5=Strongly disagree

		Strongly agree <->Strongly disagree
i.	The shipment of lower-grade lumber to offshore markets increased.	1 2 3 4 5
j.	We tried to export more lumber to the US in order to increase quota for subsequent years.	1 2 3 4 5
k.	Lumber production at our mill was determined based on the quota allocated.	1 2 3 4 5
l.	We gave priority to more profitable products to export to the US.	1 2 3 4 5
m	We will accept an export restriction, like the SLA, to continue to access to US markets.	1 2 3 4 5
n.	We are going to shift some of our export focus from the US to Japan.	1 2 3 4 5
o.	Export fees were not a big obstacle for accessing the US market.	1 2 3 4 5
p.	The amount of quota allocated to our company was enough for our needs.	1 2 3 4 5
q.	We kept exporting lumber to the US despite poor returns in order to retain quota for subsequent years.	1 2 3 4 5
r.	Our mill's quota helped us compete against sawmills from other provinces.	1 2 3 4 5
s.	It would be easier to have a new long term trade agreement even if it included an export fee.	1 2 3 4 5
t.	We would have better financial performance if we could purchase logs on the open market.	1 2 3 4 5
u.	We could live with several years of tariffs if it would finally allow for the free trade of lumber with the US.	1 2 3 4 5
v.	We support a totally free market.	1 2 3 4 5

18. Please apportion 10 points between your head office and your sawmill based on the degree of influence that each has for the following decisions (before and during the SLA). Total should equal 10 points. For example, if the head office is more influential, you should give it more points. (See examples in the table below.)

[BEFORE the SLA]

Decision	Head office	Sawmill	Total
EXAMPLE	6	4	10
Annual lumber production	_____	_____	10
Product mix	_____	_____	10
Destination of shipments	_____	_____	10

[DURING the SLA]

Decision	Head office	Sawmill	Total
EXAMPLE	3	7	10
Annual lumber production	_____	_____	10
Product mix	_____	_____	10
Destination of shipments	_____	_____	10

19. If you have any comments on the SLA, please state below.

_____

_____

_____

_____

THANK YOU FOR YOUR CO-OPERATION!!!