The Canada - U.S. Trade in Softwood Lumber

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Abstract

The thesis examines a long standing North American trade dispute. At the centre of the conflict is the allegation by the U.S. softwood lumber industry that low provincial government stumpage fees constitute a subsidy to the Canadian softwood lumber industry. The thesis evaluates the subsidy allegation in the context of the British Columbia forest sector. The amount of Ricardian rent captured by the B.C. forest industry is decisive evidence leading to the conclusion that there is no provincial government subsidy to the softwood lumber industry. The argument is supported by evidence that lower stumpage fees in British Columbia only compensate for high costs in other areas of production. The outcome of the softwood lumber dispute is of critical importance to Canada.

Acknowledgements

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A great deal of thanks is also owed to Mr. Doug Shaw of the Forest Industries and Building Products Branch of Industry Canada who provided a lot of pertinent reference material and has offered his support for this project since its inception. Thanks also goes to Ken Montgomery of the same branch who provided some useful information on softwood lumber exports.

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Contents

Chapter 1:

Introduction

Overview

Ever since the timber trade replaced the fur trade as the great staple of the Canadian economy, the forest products sector has played a vital role in the economic development of Canada. Through considerable growth and trade expansion, the forest industry has become a major employer and vital source of export earnings. Today, the industry is a leading manufacturing sector with a strong economic force in all regions of Canada. Across the country, over 350 communities are dependent on the forest sector for their livelihood.[1]

The forest products industry directly employs over one quarter of a million Canadians and provides many high wage jobs. Statistics Canada reports that 200,000 people are directly employed in more than 4,000 industry establishments with an average annual income (including benefits) of over 55,000 dollars.[2]

In addition to direct employment, the forest industry generates over a half million indirect jobs. Indirect employment arises from industry purchases of goods and services needed in the production process. Three industries supply products worth over one billion dollars annually. The largest supplier is the utilities industry (electric power, gas, etc.) followed by the chemical and transportation industries. The metal and plastic industries both supply products worth in excess of 200 million dollars annually.

The forest industry also generates a considerable number of jobs through induced

employment. Induced employment is created by spending high industry wages on consumer products. It occurs in a wide variety of sectors ranging from housing to retail goods. It has been estimated that every direct job in the forest industry creates an additional 3.29 jobs from indirect and induced employment.[3] All told, the forest industry creates over one million jobs in Canada.

In addition to being a major employer, Canada's forest industry is the largest exporter of forest products in the world. The industry has consistently been the largest contributor to Canada's merchandise trade balance serving to offset deficits in other industries. Table 1.1 illustrates the industry's contribution to external trade.

Table 1.1 Balance of Trade ($Cdn. Millions) (June 1995-June 1996)

Machinery and Equipment	-9,776
Consumer Goods & Special Transactions	-6,613
Industrial Goods and Materials	2,328
Agricultural & Fishing Products	3,682
Automotive Products	7,366
Energy Products	8,508
Forestry Products	16,651
Total	22,146

Source: Statistics Canada, 1996.

To put trade matters in perspective, Canada recorded a merchandise trade surplus in every year over the period 1980-93 but it would have been in a deficit position in every year since 1984 without the contribution of the forest products industry.

In the early 1990s, the constant (1986) dollar Gross Domestic Product (GDP) of the forest industry exceeded that of most industries in Canada including the highly visible automotive and

information technologies industries. The forest industry accounts for approximently 15 percent of the country's manufacturing GDP. [4]

Although the sector has a national base, the forest industry is of special importance to the province of British Columbia where it accounts for one half of the province's total manufacturing activity. Whether the measure is in terms of GDP, value of shipments, exports, number of employees, salaries and wages or value added, it is evident that the industry is of much greater importance to British Columbia than to other regions of Canada. In British Columbia, the most important segment of the forest sector, by a large margin, is the softwood lumber industry. Softwood lumber is produced in sawmills from softwood or coniferous trees such as spruce, pine and fir. It is used primarily in the construction of residential homes.

British Columbia dominates Canada's softwood lumber trade. The province accounts for over half of the softwood lumber production in Canada and close to 70 percent of the value of exports (see tables 1.2 and 1.3).

Table 1.2 Softwood Lumber Production in Canada by Region (Thousands of Cubic Meters)

Year	Maritimes	Quebec	Ontario	Prairies	British Columbia	Canada
1950	1,372	2,186	1,551	1,039	8,254	14,402
1960	1,193	2,119	1,098	928	12,511	17,849
1970	1,137	3,321	1,494	1,423	18,056	25,431
1980	1,707	7,361	3,868	2,345	28,202	43,483
1990	1,981	9,153	4,288	4,575	33,505	53,502
1994	2,781	12,885	5,457	5,560	33,670	60,353

Source : Natural Resources Canada (Selected Forestry Statistics), 1995.

Table 1.3 Softwood Lumber Exports in Canada by Region (1994)

Softwood Lumber	Maritimes	Quebec	Ontario	Prairies	B.C.	Canada
Volume (1000 m^3)	1,714	6,899	6,487	1,303	28,501	44,904
Value ($Millions)	350	1,400	1,334	289	7,637	11,010

Source: Natural Resources Canada (Selected Forestry Statistics), 1995.

Approximently two-thirds of all British Columbia softwood lumber shipments are exported to the United States. Thus, the B.C. softwood lumber industry is heavily dependent on continued access to the U.S. market in order to maintain its economic viability and contribution to the Canadian economy. However, such access has been seriously threatened by a trade dispute between Canada (primarily involving B.C.) and the United States over softwood lumber.

The Canada - United States softwood lumber dispute has been called "the longest trade battle in North American history." A growing Canadian share of the U.S. softwood lumber market has caused a U.S. based softwood lumber interest group (the Coalition For Fair Lumber Imports - henceforth referred to as the Coalition) to allege that low provincial stumpage rates unfairly subsidize Canadian softwood lumber imports. Although the Coalition claims that stumpage rates are too low in the provinces of B.C., Alberta, Ontario, and Quebec, it is the provincial stumpage rate system in B.C. that is at the center of the battle. The softwood lumber dispute is essentially between British Columbia and the U.S. Pacific Northwest encompassing the States of Washington, Oregon and California.

Although the softwood lumber dispute has been fought in the years 1962, 1982, 1986, 1991 and 1996, there were three key phases of the dispute occurring in 1982, 1986, and 1991. In 1982, the Coalition For Fair Lumber Imports filed a petition with the International Trade Commission (formerly the Tariff Commission) at the Department of Commerce alleging that low

provincial stumpage rates in Canada constitute a countervailable subsidy (a countervail tariff designed specifically to offset the effects of a subsidy) to softwood lumber exporters. Another branch of the U.S. Department of Commerce, the International Trade Administration, examined the question of subsidy. In May 1983, the subsidy question seemed to be resolved when the International Trade Administration (ITA) ruled that Canadian stumpage rates did not constitute a countervailable subsidy to the softwood lumber industry.

The Coalition subsequently filed another petition with the International Trade Administration in May 1986. The subsidy allegation put forth by the Coalition was no different from the 1982 case. However, in October 1986, the ITA reversed its 1983 ruling and found that Canadian stumpage rates did constitute a countervailable subsidy estimated at 15 percent *Ad Valorem* (based on value sold). The final ruling on the subsidy question by the ITA was set for December 30,1986. However, before the final ruling was due, Canada and U.S. Government officials reached a last minute agreement under which the Coalition withdrew its petition thereby ending the countervail proceedings.

The last minute agreement was called the Memorandum of Understanding (MOU) and it called for the Canadian Government to place a 15 percent *Ad Valorem* export tax on its softwood lumber exports in return for cancellation of countervail proceedings. A provision of the MOU called for the 15 percent export tax to be eventually replaced by a corresponding increase in provincial stumpage rates.

In 1987, the British Columbia Government began increasing stumpage rates by introducing a new formula for calculating stumpage. This led the Canadian Government to cancel the export tax in 1991 citing that it was no longer needed. The U.S. responded with a

retaliatory tariff on softwood lumber. The Canadian Government appealed the tariff under the bilateral dispute resolution mechanism set up under the Canada-U.S. Free Trade Agreement. In 1992, the dispute resolution panel ruled in Canada's favor and the U.S. was ordered to return all of the revenue collected under the tariff which had remained in an escrow account pending the outcome of the dispute.

The debate in the long standing softwood lumber dispute is whether provincial (B.C.) stumpage rates constitute a subsidy to softwood lumber exporters thereby causing injury to U.S. producers in their own market. This study examines the question of whether the British Columbia stumpage rate system constitutes a subsidy that injures U.S. softwood lumber producers.

The focus of this study is on the subsidy question and not on the outcome of the softwood lumber dispute. The outcome of trade disputes requires an analysis of the perspectives of special interest groups aided by game theory. A good reference for analysis of special interest groups is an article by Grossman and Helpman (1994): "Trade Wars and Trade Talks." *Journal of Political Economy* 103 (4), p. 675-708. For a game theoretical approach to trade policy see Bierman and Fernandez (1993) *Game Theory*, Chapter 16 "Strategic Trade Policy". p. 283-293.

Structure of the Study

This study consists of seven chapters including this introduction. Chapter two begins by outlining the history of the softwood lumber dispute. The discussion traces the North American softwood lumber trade from its origins to the present day phase of the dispute. The history lesson shows that although squabbles between Canada and the U.S. over softwood lumber tariffs date back to the last century, the dispute as it existed in the 1980s and 1990s, began to take shape in

1962. This chapter also examines the question of whether market forces played a role in increasing the Canadian share of the U.S. softwood lumber market.

The third chapter focuses entirely on the British Columbia forest sector examining both the forest management process and the stumpage system. The main part of the chapter examines whether it is possible to use cross border stumpage rate comparisons as a basis for determining the existence of a subsidy.

Chapter four undertakes an extensive analysis of economic rent. The basic theory of economic rent is presented followed by estimates of the Ricardian rent in the B.C. forest sector. The chapter introduces the analytical tools necessary to answer the subsidy question in the following chapter.

The fifth chapter is an important one. It outlines the accepted definition of a subsidy and then proceeds to use three methods to test whether the B.C. stumpage rate system constitutes a countervailable subsidy to the softwood lumber industry.

Chapter six discusses the subsidy question in the broader context of the political economy surrounding the dispute. The final chapter draws some conclusions regarding the Canada - U.S. trade in softwood lumber.

Notes

1. Canadian Forest Service estimate.

2. Statistics Canada Catalogue Number 72-001. Employment, Earnings, Hours. These estimates are for the year 1993.

3. According to a paper by Dr. Jock Dobie of The Canadian Forest Service in 1988.

4. Statistics Canada Catalogue Number 15-001, GDP by Industry.

Chapter 2:

A History of The Canada - U.S. Softwood Lumber Dispute

Origins of The Lumber Trade

The Canadian timber trade was born in 1653, when the first shipment of pine masts left Nova Scotia for Portsmouth, New Hampshire, on route to the Royal dockyards in Britain. During the 1700s, the trade evolved from masts to "square timber" with no sawing until the commodity reached Britain. More importantly, around 1815, the trade evolved from square timber to the manufacture of "deals" or timber sawn into two or three inch thick softwood planks. During the 1815-40 period, the timber trade matured from a raw material export to a large well organized semi-manufactured good industry requiring considerable investment in capital equipment and precision sawing

In the 1840s, Britain's repeal of imperial preferences set in motion a decline in the exports of square timber and deals to Britain, lasting until the trade ended with the depression of 1873. At the same time as preferential duties were being eliminated, the United States was expanding westward, far beyond the original thirteen colonies, where industrial activity was beginning to firmly establish itself amid rapid population growth of great American cities. The growing urban industrial centres began to exhaust existing supplies of lumber causing the United States to look northward for alternative supplies. It was during the 1840s that the Canada - U.S. Softwood lumber trade began to establish itself as lumber replaced the fur trade as the great staple of the Canadian economy.

During the reciprocity period, from 1854-66, the U.S. market grew to sizable proportions, and for the first time, softwood lumber exports to the United States surpassed those to Great Britain. After the failure to renew reciprocity, the 1866-1900 period was characterized by a struggle between U.S. and Canadian firms over access to the Canadian forest resource manifesting itself in the form of a tariff war (see Appendix A). During this period, the Canadian softwood lumber industry spread beyond the basins of eastern waterways as far west as the Rocky Mountains as an industry developed in response to the needs of the gold rush in British Columbia.

At the turn of the century, prime minister Wilfred Laurier said the 20th century belonged to Canada and as far as the lumber trade was concerned he was right. The first quarter of the century was a period of great expansion. American industrialists flocked north to Canada to buy up timber rights in an effort to overcome supply shortages. At the same time there was a rapid growth in urban centres fuelling lumber demand. The price of softwood lumber doubled and exports to the U.S. increased sharply.

During the first world war, British Columbia moved past Ontario to become the largest lumber producing province in Canada. Throughout the 1920s, B.C. advanced steadily while production in the eastern provinces declined, until by 1926, B.C. produced more softwood lumber than all of the other Canadian provinces combined. This expansion was helped by the opening of the Panama Canal which provided a cheap sea route for B.C. to service the eastern U.S.

In 1922, the U.S. Tariff Commission undertook a survey covering the costs of B.C. lumber producers (for the year 1920) versus their counterparts in Washington and Oregon. The

survey concluded that, although B.C. stumpage rates as well as labour and marketing costs were lower than the U.S. West, these costs did not offset the higher costs in B.C. for equipment and supplies. As a result logs cost more to manufacture in B.C.

During the great depression, lumber exports to the U.S. fell back to the level of the 1890s. In an attempt to improve the situation, Canada and the United States negotiated a new trade deal which among other things reduced the duties on softwood lumber. The new trade policy helped the lumber export market and represented a change of direction in Canada-U.S. trade policy away from using the tariff as a trade weapon.

The Post WWII Period and The Decline of The U.S. Lumber Industry

The beginning of World War II marked a period of uncertainty for the North American lumber industry followed by strong demand during the middle period of the war. At the end of the conflict, U.S. softwood lumber production was well above the level recorded in 1939, but the industry soon became uncompetitive and was deprived of the long post war expansion enjoyed by many other industries in North America. Although difficulties existed in various regions in the United States, they were most visible in the Pacific Northwest region, which encompasses the coastal and inland portions of the states of Washington and Oregon as far south as California. Lumber producers from these regions were vocal in outlining the problems facing the U.S. softwood lumber industry.

The first problem was low production levels. In the Pacific Northwest, production fluctuated around the same general level with little improvement during the 1950s and a decline in 1960 (Table 2.1).

Table 2.1 Competitive Position of The U.S. Softwood Lumber Industry (1947-1961)
(Millions of Board Feet)

Year	U.S. Production	U.S. Consumption [a]	U.S. Exports	Canadian Imports [b]	Canadian Share of U.S. Market (%)
1947	27,937	26,682	972	953	3.6 %
1948	29,010	28,576	462	1,499	5.2
1949	27,197	27,366	534	1,307	4.8
1950	31,528	33,452	407	2,909	8.7
1951	29,804	30,336	876	2,085	6.9
1952	30,234	32,293	566	2,143	6.6
1953	29,562	30,821	513	2,418	7.8
1954	29,282	32,001	585	2,751	8.6
1955	30,293	32,390	652	3,330	10.2
1956	30,661	32,294	571	3,065	9.6
1957	27,100	29,617	623	2,649	8.9
1958	27,379	30,347	550	3,090	10.1
1959	30,509	33,510	608	3,666	11.0
1960	26,650	29,181	693	3,578	12.3
1961	27,079	30,505	618	3,943	12.9

a. Domestic Consumption = Production + Imports - Exports +or- change in stocks.
b. Canadian imports account for approximently 97% of total U.S. softwood lumber imports.
Source: Forest Products Division, U.S. Department of Commerce, 1962, and Sperry Lea, *The U.S. Softwood Lumber Situation in a Canadian-American Perspective*, 1962.

The low levels of production were due mainly to a sharp decline in the number of small lumber mills after 1947 (Table 2.2) as rationalization in the industry fuelled a movement toward fewer and larger mills. The mill closings continued after 1960, and were a major item under discussion at Congressional hearings into the problems facing the softwood lumber industry.

Table 2.2 Lumber Mills in The Pacific Northwest

Year	Number of Mills in Oregon	Number of Mills in Washington
1939	523	418
1947	1.466	808
1954	1.201	552
1958	645	469

Source: U.S. Census of Manufactures for 1939,1947 and 1958, and Lea, 1962.

Another problem facing the U.S. industry was declining employment as large mills required fewer employees to produce a given level of lumber output. From 1950 to 1960, overall production levels fell and the number of employees dropped from about 400,000 to 250,000 while annual production per employee rose from 93 thousand board feet to 125 thousand board feet.[1] The decline in employment after small mill closings was difficult for single industry communities, especially if the subsequent large mills were built in another location.

A third problem for the industry was a lower return on lumber sales. From 1959 to 1961 there was a 10 percent decrease in average annual returns on lumber shipments (Table 2.3). At the same time, industry costs were rising resulting in lower profitability and mill closures.

Table 2.3 Average Annual Return on Lumber Shipments from Oregon and Washington.

Year	Dollars per Thousand Board Feet (Current)
1957	71.83
1958	69.43
1959	78.94
1960	75.01
1961	71.26

Source: West Coast Lumberman's Association, 1962, and Lea, 1962.

The other problem cited by lumber producers was the amount of Canadian softwood

lumber imported into the United States. Since WWII, Canadian imports represented a growing share of U.S. domestic consumption (Table 2.1). Lumber producers in the Pacific Northwest began to blame the depressed conditions of the U.S. softwood lumber industry on Canadian imports. The "Canadian import problem" was due to a number of economic factors.

During the 1950s, almost three-quarters of lumber shipments by water to the U.S. Atlantic coast originated in the Pacific Northwest and only one-quarter in B.C., but by 1962, the B.C. share of this trade had grown to almost two-thirds (Table 2.4). B.C. shippers were able to use foreign ships (often Norwegian) designed especially for the lumber trade at rates determined competitively while U.S. shippers were required to use U.S. ships for "domestic traffic."[2] Most of these U.S. ships were obsolescent Liberty ships, placing U.S. shippers at a cost disadvantage. In addition, loading service charges were higher in ports along the Pacific Northwest coast than in B.C. The result of these factors was a cost advantage enjoyed by B.C. shippers estimated at $10 per thousand board feet.[3]

Table 2.4 Water Shipments of Lumber To The U.S. Atlantic Coast
(Millions of Board Feet and Percent Share of Total Trade)

Year	From The Pacific Northwest	From B.C.
1950-54 Average	984 (71)	411 (29)
1955-59 Average	970 (70)	420 (30)
1960	849 (55)	695 (45)
1961	594 (43)	794 (57)

Source: Forest Products Division, U.S. Department of Commerce, 1962.

The "Canadian import problem" was also due to a depreciating Canadian dollar (Table 2.5). From 1955 to 1960, Canada experienced considerable current account trade deficits; especially with the United States. This was usually offset by positive performances of the capital

account but, in 1961, a sharp reduction in capital inflows set off a balance of payments crisis. The government intervened in foreign exchange markets to bring down the value of the dollar in order to improve the trade balance, but the move was not successful. The result, in April 1962, was a loss of confidence and a speculative run against the Canadian dollar. In May, the government fixed the dollar at $U.S. 0.925 with a band of plus or minus one percent by agreement with the International Monetary Fund.[4] However the depletion in foreign exchange reserves continued and the government announced temporary emergency measures designed to stabilize the balance of payments. The measures included, among other things, temporary import surcharges of 5%, 10%, and 15% above prevailing tariff rates on a broad range of imports.[5] The surcharges did not affect lumber, but did have an affect on many U.S. exports, resulting in a decline in the U.S. trade surplus with Canada. The devaluation of the Canadian dollar also improved the profitability of B.C. producers when selling lumber in the U.S. market.

Table 2.5 Value of The Canadian Dollar

Year	Can. Dollar in U.S. Cents		Year	Can. Dollar in U.S. Cents
1950	91.5		1957	104.3
1951	94.9		1958	103.0
1952	102.2		1959	104.3
1953	101.7		1960	103.1
1954	102.7		1961	98.8
1955	101.4		1962 (Jan.)	95.5
1956	101.6		1962 (May)	92.5

Source: Lea, The U.S. Softwood Lumber Situation In A Canadian -American Perspective, 1962

Overall consumption of softwood lumber in the United States has been virtually constant

since WWII (Table 2.1) and per capita consumption has been declining. During the 1950s, U.S. softwood lumber consumption per capita was 195 board feet while in 1961 it was 158 board feet.[6] The decline was due largely to changes in housing designs away from lumber and other wood products toward substitutes such as brick, stucco and asphalt. With constant levels of total consumption in the U.S. market, Canadian imports tended to replace rather than supplement domestic production. Consequently, U.S. lumber producers wanted Canadian imports restricted to a certain threshold of the U.S. market share. The question asked by observers on both sides of the border was - were Canadian imports injuring U.S. producers by eroding market share? - or was the U.S. industry simply unable to supply their own domestic market competitively?

The 1962 Softwood Lumber Dispute

Congressional hearings on the problems facing the U.S. softwood lumber industry were held in 1954, 1956, 1958 and 1961.[7] The growing Canadian market share raised questions as to the relative costs of the two industries in selling lumber in the U.S. market. Never before had the problems facing the U.S. softwood lumber industry been the subject of such high level debate. A dispute took shape early in 1962, when lumber producers in the Pacific North West complained to their congressional representatives. Lumber industry associations filed a request for an escape clause investigation on softwood lumber, resulting in an investigation by the Tariff Commission, and led to the following initiatives:[8]

1) Hearings of a special Senate Commerce Committee from April-July 1962.

2) An interdepartmental task force for the White House directed by the Department of Commerce.

3) Numerous studies by other governmental agencies - notably the U.S. Forest Service.

4) Congressional hearings - particularly on the Government's Trade Expansion Act of 1962.

5) Discussion meetings between Canada and U.S. officials in late August 1962.

These discussions generated numerous proposals on how to solve the problems facing the softwood lumber industry and to place limitations on Canadian imports into the United States. The result was a six point lumber assistance program announced by President Kennedy on July 26, 1962 to improve the competitive position of the industry (See Appendix B). The first of the six points was to initiate negotiations with Canada concerning the amount of softwood lumber imports into the United States.

The position advocated by U.S. lumber producers in the Pacific North West was that regardless of the measures adopted to strengthen the competitive position of the industry, there must be limits set on the Canadian share of the U.S. market. The U.S. National Lumberman's Association (NLMA) proposed a temporary reciprocal tariff-quota agreement between Canada and the United States. Under the proposal, existing tariffs would be cancelled for imports under 10% of each country's domestic market, and a new 10% *Ad Valorem* tariff would be applied to imports in each market above the duty free quota of 10%.[9] The NLMA proposed a permanent arrangement similar to the temporary one. According to the NLMA, limits on the Canadian share of the U.S. market could be applied in several ways - to both countries by a reciprocal agreement - by a voluntary Canadian export quota - or unilaterally by the United States. The 1962 case was the beginning of the softwood lumber dispute as it would unfold in later decades.

Background To the Dispute in the 1980s

The basic question debated during the 1980s was whether the increased Canadian share of the U.S. market was the result of a more competitive Canadian industry or whether British

Columbia stumpage rates constituted a countervailable subsidy to the Canadian softwood lumber industry. During the period, there were some fundamental economic factors suggesting that the increased share of Canadian imports into the U.S. market was due to a more competitive B.C. industry vis a vis the Pacific Northwest.

Table 2.6 Competitive Position of The Canadian Softwood Lumber Industry

Year	Nominal Exchange Rate (Can. $ in U.S. $)	Unit labor costs (Canada) 1980=100	Unit Labour Costs (U.S.) 1980=100	Real Effective Exchange Rate[b]	Canadian share of U.S. market. (%)
1974	1.022	117.9	112.4	1.049	-
1975	0.983	113.3	107.3	1.056	-
1976	1.014	124.8	112.1	1.114	-
1977	0.940	117.1	109.7	1.067	24.3
1978	0.877	104.2	101.1	1.031	26.6
1979	0.853	101.0	99.0	1.021	26.0
1980	0.855	100.0	100.0	1.000	26.9
1981	0.834	107.5	111.3	0.966	27.3
1982	0.810	110.3	125.3	0.880	27.6
1983	0.812	115.9	128.7	0.901	28.5
1984	0.772	114.9	138.5	0.830	29.4
1985	0.733	108.7	144.7	0.751	31.6
1986[a]	0.717	100.8	120.2	0.820	30.2

a. First half.
b. Ratio of Canadian unit labor costs to U.S. unit labor costs (column 3 divided by column 4).
Sources: 1. *Bank of Canada Review*, August 1986. 2.IMF *International Financial Statistics Yearbook*, 1983. 3. IMF *International Financial Statistics* Vol. 39, No. 11, 1986. 4. Softwood Lumber From Canada, International Trade Commission Pub. No. 1874, 1986. 5. M. Percy and C. Yoder, *The Softwood Lumber Dispute and Canada-U.S. Trade in Natural Resources*, 1987.

The most important economic factor for increased exports of lumber from B.C. was the appreciation of the U.S. dollar relative to the Canadian dollar. The U.S. dollar appreciation

improved the profitability of British Columbia softwood lumber producers in selling their product in the U.S. market. An important indicator of cost competitiveness is real effective exchange rates which adjust nominal exchange rates for differing price levels between two countries. The IMF calculates real effective exchange rates based on estimates of relative normalized unit labor costs in manufacturing.[10] The evidence shows that there is a strong correlation between real exchange rate movements and the Canadian share of the U.S. softwood lumber market (Table 2.6). A fall in the value of the Canadian dollar results in an increase in exports of softwood lumber to the United States[11] (See Appendix C).

Another economic factor was the high relative productivity recorded in the B.C. softwood lumber industry. A 1982 study found that total factor productivity (both capital and labor) in the U.S. wood products industry decreased by 2.63 percentage points per year from 1973-81 compared to the period 1953-73 while the annual slowdown for total U.S. manufacturing during the same period was 1.20 percentage points.[12] A similar study conducted in Canada showed that total factor productivity in the wood products industry of B.C. declined by 1.83 percentage points per year from 1970-75 compared to the period 1961-69.[13] Productivity levels in the wood products industries of both Canada and the United States slowed down but the U.S. slowdown appeared to be greater than the one experienced in B.C.

Table 2.7 Softwood Lumber Labor Productivity (thousands of bd. ft. per employee per year).

Year	Canada	U.S.	Ratio (Can./U.S.)
1977	346	275	1.26
1978	330	292	1.13
1979	331	271	1.22
1980	348	248	1.40

1981	372	259	1.44
1982	401	318	1.26
1983	436	369	1.12
1984	464	368	1.26

Source: Int. Trade Commission, U.S. Dept. Of Commerce, 1986, and Percy and Yoder, 1987.
Note: The International Trade Commission was formerly the U.S. Tariff Commission.

The International Trade Commission's estimates show a consistently higher level of productivity for the Canadian softwood lumber industry (Table 2.7). The interior region of British Columbia achieved high levels of productivity from large investments in sawmills designed for the production of specialized dimension lumber from small logs. In addition, the B.C. industry reduced unit labor costs by capital expenditures designed to improve efficiency.

The Countervail Process

Under the U.S. constitution, congress has the ultimate authority on trade issues. It has a close relationship with the International Trade Commission (ITC) and the U.S. Department of Commerce's International Trade Administration (ITA). A trade barrier such as a countervailing duty (a countervailing duty is a tariff designed specifically to offset the effects of a subsidy) can be initiated with the ITC which issues a preliminary judgement with the case then moving to the ITA. The ITA issues a preliminary judgement and then later a final judgement after which the case moves back to the ITC for a final injury determination. Under U.S. law, each stage in the process of moving from the ITC to the ITA must be completed within a certain number of days with the entire process not exceeding 270 days.[14] In the softwood lumber dispute, the main industry association pressing for countervail duties against Canadian softwood lumber was the Coalition For Fair Lumber Imports (the Coalition) which is comprised of major U.S. forest

products companies and lumber industry associations.

The 1982-83 Dispute

The 1982 phase of the softwood lumber dispute began in October, when the Coalition filed a countervailing duty petition with the ITC, arguing that low stumpage rates unfairly subsidized Canadian imports. The ITC ruled that there was a "reasonable indication" that the U.S. industry was materially injured as a result of the alleged subsidized imports. The case then moved to the ITA. In both the preliminary and final ruling in 1983, the ITA concluded that Canadian (B.C.) stumpage rates did not constitute a subsidy to the softwood lumber industry. The ITA ruling is based on whether subsidies are provided to a specific group of industries ("specificity") at preferential rates ("preferentiality").

The first step for the ITA in making a decision is to determine if a subsidy is of specific or general applicability. Subsidies that are generally available to all industries are not countervailable since they are designed to promote the overall growth of an economy. In 1983, the ITA ruled that "stumpage programs are not provided only to a specific enterprise or industry, or group of enterprises or industries. Rather, they are available within Canada on similar terms regardless of the industry or enterprise of the recipient."[15]

The next step for the ITA was to address the question of preferentiality by assessing whether the subsidized good is provided at preferential rates to the targeted industries. The standard test of preferentiality amounted to determining "whether the government provides a good to the producers(s) of a product at a price that is lower than the price the government charges to the same users or other users of that product within the same political jurisdiction."[16] This is essentially a test of whether a government practices price discrimination for a good in its

own domestic economy. The ITA ruled that "even if stumpage programs are being provided to a specific group of... industries we determine that they do not provide goods at preferential rates to the producers of the products under investigation.[17]

Therefore, on the grounds of both specificity and preferentiality, the ITA ruled that Canadian (B.C.) stumpage rates did not constitute a subsidy to the softwood lumber industry. In both the preliminary and final ruling, the ITA rejected both the subsidy allegation and the levying of countervail duties.

Economic Changes Between 1982 and 1985

Between 1982 and 1985, the softwood lumber dispute was set in the context of powerful macroeconomic forces operating in the United States economy. After 1980, there was a sharp rise in the U.S. federal government deficit due to increased government expenditure (most notably on national defence) combined with low tax rates. Policymakers advocated low taxes in order to stimulate business investment and employment leading to increased economic growth and thus higher tax revenues than before. In order to finance the deficit through an increase in bond issues, upward pressure was exerted on short-term interest rates as investors needed an incentive to hold federal securities in place of other investments. Private domestic markets were not sufficient to finance the government's borrowing requirements and foreign investors were attracted by the higher interest rates prevailing in the United States. The result was a capital inflow into U.S. money markets placing considerable upward pressure on the value of the U.S. dollar. The U.S. dollar appreciated by over 40 percent between 1982 and 1985 resulting in an almost doubling of the merchandise trade deficit between 1983 and 1985.[18]

Foreign imports became an increasing share of the U.S. domestic market resulting in a

decline in investment in several important industries. The Canadian share of the U.S. softwood lumber market rose from 27.6% in 1982 to 31.6% in 1985 (Table 2.6).

Political Changes Between 1982 and 1985

There were extensive discussions in Congress on how to design ways to increase exports while restricting imports into the U.S. market. Congress exerted considerable pressure on both the ITC and ITA to restrict imports and limit access to the U.S. market.

In response to pressure from Congress and various interest groups, the ITA revised their interpretations of both the specificity and preferentiality requirement in ruling on the question of subsidy. The persistence and importance of the issue of national resource subsidies was cited specifically as one of the reasons for the change.

First, there was a modification of the specificity test. Under the revised criterion, a subsidy may be generally available to all potential users but technological factors could restrict its benefit to a few actual users. Moreover, the use of government discretion in the allocation of a good alleged to be subsidized was to be considered evidence of specificity. In short, the number of industries using a good and the degree of government discretion in the allocation of that good became key considerations in testing for specificity.

The standard test of preferentiality was also modified. As noted above, the criterion used by the ITA was whether a government practices price discrimination to users of a good within the same political jurisdiction. However, choice of a correct benchmark price to measure preferentiality was a controversial issue. This was especially true in the case of goods that were limited to a few actual users. For natural resources owned by the government, their use is often restricted to a limited number of actual users all of whom are charged the same price by the

government for use of the resource. Thus it was difficult to compare this price with another in the same political jurisdiction or to compare users of the resource within the same political jurisdiction.

In early 1986, following an administrative review, the ITA introduced four alternative preferentiality tests designed specifically for cases where the producers under investigation were the only users of a natural resource within a political jurisdiction. The tests compared the price of the good alleged to be subsidized to:

1) prices charged by the same seller for a similar good or related good.

2) prices charged within the jurisdiction by other sellers for an identical good.

3) the same sellers' cost of producing the good.

4) external prices, such as export prices or a commercial price in an external market that resembles the market in question. [19]

The tests were ranked by the ITA in order of priority with the use of external prices considered the least desirable alternative because it did not measure preference within an economy.

In light of these changes by the ITA in determining the existence of a subsidy, it is predictable that the outcome of the 1986 phase of the softwood lumber dispute was quite different from 1983.

The 1986 Dispute

On May 19, 1986, the Coalition, using the same subsidy allegation, filed another countervailing duty petition with the ITC requesting a 27 percent duty on Canadian softwood lumber imports. On June 26, the ITC ruling was again that there was a reasonable indication that the U.S. industry was materially injured from the alleged subsidized imports. The case once

again moved to the ITA at the Department of Commerce. On October 16, the preliminary ITA ruling was that Canadian timber was subsidized because it was provided to a specific industry or group of industries at preferential prices. This marked a complete reversal from its preliminary ruling three years earlier. The ITA went on to conclude that provincial stumpage rates constituted a countervailable domestic subsidy estimated at 15 percent *Ad Valorem* (based on value sold)

The final ITA ruling was due in December. Almost certain that the final ITA ruling would be affirmative the Canadian Government reached a last minute agreement with the U.S. called the Memorandum of Understanding (MOU). Under the MOU, the Canadian Government agreed to impose a 15 percent *Ad Valorem* export tax on its softwood lumber exports to the U.S. in return for cancellation of the countervail process with the ITA. Moreover, the export tax was to be eventually replaced by a corresponding increase in provincial stumpage rates. The Canadian Government reasoned that the temporary export tax in place of a countervailing duty would keep revenues in Ottawa rather than Washington.

In the test of specificity, the ITA concluded that the actual number of users of stumpage programs was not large. They claimed that the furniture industry which was cited as holding stumpage claims in 1982, actually held a small amount of stumpage rights. The ITA also argued that some forest firms operated in both the wood and pulp and paper industry which casts doubt upon their classification as two separate industries using stumpage rights. The ITA concluded that the market for timber harvesting rights consisted of only one industry. This meant that stumpage programs are provided to a specific industry and are not generally available to all industries in the economy.

By linking the allotment of tenures to the use of timber in sawmills, the ITA also

concluded that timber license requirements were evidence of government discretion in the allocation of a good. On both of these grounds the ITA ruled that stumpage programs provided evidence of specificity.

In the test of preferentiality the ITA relied upon the ranking of the four alternative tests developed following the administrative review in early 1986. The ITA did not use the preferred method of testing for price discrimination within the political jurisdiction and rejected the first two of the four tests. The first test was rejected because the ITA could not find a good related to softwood lumber. The second test was rejected on the grounds of data limitations. The third alternative test - the same seller's cost of producing the good - was the one chosen.

Under this method, provincial government forest related revenues were compared to forest related costs. The revenues included stumpage fees charged by the provincial forest ministry. However, the costs included two separate measures of cost that were added together. The first set included virtually all cost incurred by the provincial forest ministry including administrative overhead, inventory costs, road development and other costs. The second set included an imputed cost for the "intrinsic value of land." In B.C., the price for stumpage allotted by competitive bidding was used as a proxy for the intrinsic value of land. This cost was then added to the first set of costs. Using this methodology, the ITA found that provincial costs exceeded revenues substantially so that under the third alternative testing method the conclusion was that Canadian timber was provided at preferential prices.

These tests of specificity and preferentiality employed by the ITA in their October 1986 ruling are seriously flawed. In the specificity test, the absence of the furniture industry as a holder of tenure rights is a non issue since they also held negligible stumpage rights in 1983. The use of

some degree of vertical integration as a basis for classifying two distinct industries - the wood and the pulp and paper industry - as one industry is highly inappropriate. The generally accepted method for classifying industries in both Canada and the United States is the Standard Industrial Classification (SIC). In both countries the forest industry is not classified as one industry. In Canada, the most broad classification (the two digit SIC level) shows four distinct industries, the logging industry, the wood industry, the pulp and paper industry and the furniture industry. At more narrow classification levels (the three and four digit SIC level) there are a greater variety of industries. Five digit SIC levels are based on individual product classes. In B.C., the province under consideration, the wood industry is predominant while the pulp and paper industry does not have a strong presence. In eastern Canada the reverse is true and the pulp and paper sector is dominant. The pulp and paper industry is, in fact, completely outside the context of the softwood lumber dispute. The assumption that some degree of vertical integration should warrant them to be treated as one industry for the purposes of the specificity test is difficult to justify.

Secondly, the treatment of government discretion in the allocation of a good, as a basis for a subsidy cannot be justified. There are many reasons why discretion must be used in the allocation of a publicly owned natural resource such as forest land. Governments must act to correct market failure resulting when private benefits from a resource differ form those accruing to society. An externality is a market failure. Externalities are economic effects that are not internalized by the price system such as pollution. Forest land has an existence value (value in its present state) which sometimes needs to be protected. It also has an option value (value in alternative options) - especially when precious ecosystems and old growth forests are involved. There are many other reasons why discretion is a necessary part of managing a publicly owned

resource. These reasons are outlined by Percy and Yoder (1987), p. 53-55. In British Columbia, forest management practices have never targeted timber harvesting rights toward specific industries or products. This is evidenced by the competitive bidding process under the Small Business Forest Enterprise Program. The use of government discretion in the allocation of a publicly owned resource as evidence of a subsidy implies that all natural resources in both Canada and the United States are subsidized!

The methodology used in the ITA preferentiality test is also seriously flawed. The use of two distinct measures of costs is double counting two alternative measures of economic rent. Under the methodology, the second system of costs - the imputed cost for the intrinsic value of forest land - exactly offsets government revenues from stumpage payments. Therefore, the first system of costs (which include *all* costs undertaken by the provincial Ministry of Forests from forest fire prevention to administrative overhead and employee salaries as well as all costs related to forest management) appear as a subsidy to the forest industry.

The ITA measures the value of forest land by the Small Business Forest Enterprise Program competitive bidding price less both systems of costs (the intrinsic value of forest land and all Ministry of Forests Expenditures). The basic fallacy of the ITA methodology lies in the fact that the intrinsic value of forest land is simply Ricardian rent. The value of shipments is the appropriate measure of the current value of forest land and not the price to secure a portion of the timber harvest under the Small Business Forest Enterprise Program. Moreover, only the costs related to the forest harvest must be included and not all Ministry of Forests expenditure since most are irrelevant to the harvest. As outlined in chapter four, the costs of harvesting must be subtracted from the value of shipments to determine the value of timber land. This value of

timber land must then be compared to the revenue from stumpage payments to determine how much of the total rent is captured from the stumpage system.

If the ITA test for preferentiality is applied correctly without double counting - and only legitimate harvesting costs included - there is no evidence of a subsidy. In 1987, Percy and Yoder noted that, according to the expenditures and revenues reported by the provinces, during the 1986 phase of the softwood lumber dispute, provincial revenues generated from the timber harvest exceeded expenditures in British Columbia in 1983-84, 1984-85 and 1985-86.[20] It is noteworthy that in the year 1980, after excluding double counting and erroneous cost inclusions in the imputed cost for the intrinsic value of land, the U.S. Forest Service does not pass the ITA test of preferentiality. Clawson showed that, in 1980, U.S. Forest Service expenditures were 1.7 billion compared to revenues of 1.3 billion.[21]

The theoretical basis for measuring a subsidy in both the specificity and preferentiality tests casts doubt upon the political neutrality of the ITA. It is clear that the ITA preliminary ruling on October 16, 1986 was directed at its administrative head, the U.S. Congress. The U.S. constitution has assigned ultimate responsibility over trade issues to Congress. The ITA and the ITC are "quasi judicial" trade bodies that have a close relationship with Congress.

The issue of protectionism versus free trade is a long standing issue in political economy. The U.S. budget deficit and merchandise trade deficit were macroeconomic forces that prompted Congress to take a protectionist stance during the 1986 phase of the softwood lumber dispute. Shortly after the October 1986 ruling, Congress continued to introduce a host of new trade protectionist bills. The pressure exerted by Congress caused the ITA tests of specificity and preferentiality to become so broad that any Canadian provincial government action constituted a

subsidy. This pressure also caused the economics of the softwood lumber dispute (the notion of an appropriate Canadian share of the U.S. softwood lumber market) to be overwhelmed by political and legal issues. Various authors have argued that the reversal in the 1986 ruling was the result of the protectionist mood in Congress which pressured the ITA to broaden its definition of a countervailable domestic subsidy.[22]

The 1992 Dispute

After the 1986 phase of the softwood lumber dispute came to an end with the signing of the Memorandum of Understanding (MOU), the British Columbia Provincial Government began to honour the provision of the MOU that called for an increase in stumpage rates to replace the export tax. The provincial government formulated a new stumpage system by replacing the Rothery Formula with the Comparative Value Pricing System (see chapter three).

In 1991, well after this process was completed, Canada formally withdrew from the MOU by cancelling the export tax, citing it was no longer needed since stumpage rate increases had replaced the tax. The U.S. immediately retaliated with a 6.5 percent tariff. The province of British Columbia repealed the retaliatory tariff and the issue went before a dispute resolution panel established under the Canada - U.S. Free Trade Agreement. In 1992, the panel ruled in Canada's favour and the U.S. government was ordered to return 800 million dollars (U.S.) in tariff revenue which had remained in a special account pending the outcome of the dispute.

Appendix 2A: Chronology of Canada-U.S. Softwood Lumber Tariff Schedules

1840-46: Origins of Canada-U.S. lumber trade - American Tariff of 20-30%.

1846: New American Tariff increased duties on Canadian wood.

1854-66: The Reciprocity Period with free entry of "natural products" and raw materials into each country's markets.

1866: The General American Lumber Tariff of 20% went into effect. It was quickly countered by a Canadian export duty on pine saw logs of one dollar per thousand board feet.

1870: The U.S. put saw logs on the free list , an early signal of the U.S. industry's dependence on Canadian raw material.

1872: The U.S. changed the *Ad Valorem* duty on lumber (general tariff of 20%) to a specific duty of two dollars per thousand board feet which had the effect of limiting entrance of poor grades of lumber.

1886: Canada increased the export duty on saw logs to two dollars per thousand board feet.

1888: Canada raised the export duty to three dollars but it was lowered back to two dollars before it took effect in light of a possible trade compromise with the U.S.

1890: The Canadian export duty on saw logs was removed and the American specific duty on lumber was reduced to one dollar per thousand board feet resulting in increased Canadian exports of both products.

1894: The Wilson Bill removed remaining U.S. tariffs on lumber.

1894-97: Virtual free trade in lumber between the two countries.

1897: The Dingley Tariff of 1897 restored the U.S. specific duty on lumber of two dollars per thousand board feet. The U.S. also threatened retaliation if Canada restored the export duty on saw logs.

1898: Under the BNA Act guidelines, the Ontario government prohibited entirely the export of saw logs cut on crown lands. The other provinces followed soon after.

1910: U.S. Reciprocity offer but the Laurier Government was defeated in the general election after campaigning for reciprocity so free trade was not realized.

1922: U.S. Tariff Commission survey found that under existing stumpage policies and

production processes, the costs of B.C. producers were higher than in the U.S. Pacific Northwest.

1930: The U.S. issued the Hawley-Smoot tariff which had the effect of limiting the entry of low grade lumber into the U.S.

1932: The U.S., under The United States Revenue Act, imposed a revenue tax of $3 per thousand board feet on softwood lumber products. The rate was three times higher than existing tariff rates (which still remained) causing Canadian lumber exports to the U.S. to fall back to the level of the 1890s.

1936: U.S. reduced the duty on spruce-pine-fir-larch-hemlock planks and boards from $1 per thousand to .50 per thousand. The revenue tax was also reduced from $3 per thousand to $1.50 per thousand. The reduced rates did not apply to Douglas fir or western hemlock imports over 250,000 board feet.

1950s. U.S. tariffs and taxes on softwood lumber amounted to about 1% *Ad Valorem* for rough and surfaced lumber. Surface lumber was the principal import commodity. Canada allowed free entry of rough lumber as well as finished ponderosa pine and redwood. Canadian tariffs were 5% *Ad Valorem* for finished douglas fir, and 10% *Ad Valorem* for finished hemlock, red cedar, spruce and white pine. Rough lumber was the principal import commodity.

1962: U.S. Tariff Commission investigation into the question of injury to U.S. lumber producers from the imports of Canadian softwood lumber. U.S. industry groups proposed a reciprocal market sharing agreement removing existing tariffs in both countries for softwood lumber imports below 10% market share and the imposition of a 10% *Ad Valorem* tariff in both countries for imports over this threshold level.

1986: Canada levied an export tax of 15% on softwood lumber under the MOU.

1991: Canada withdrew from the MOU by cancelling the export tax.

1992: The U.S. retaliated with a 6.5% tariff, but was ordered to return the revenue collected, after British Columbia appealed the tariff, and a NAFTA bilateral dispute panel ruled in Canada's favour.

1996: Canada imposed a three level export tax schedule with no tax on annual export volumes up to 14.7 billion board feet, a tax of $U.S. 50 per thousand board feet on annual volumes between 14.7 bbf and 15.35 bbf and a tax of $U.S. 100 per thousand board feet on annual volumes greater than 15.35 bbf. In return the U.S. promised no more investigations on Canadian softwood lumber imports for a period of 5 years.

Appendix 2B: Kennedy Administration's Six Point Lumber Assistance Program

Immediate Release July 26, 1962

Office of the White House Press Secretary

The White House

The President today announced a program designed to assist the lumber industry and improve its competitive position. The announcement followed a meeting with Senators and Congressmen from the Northwest. The program included both immediate and long-range actions designed to increase employment, improve efficiency, and raise earnings.

The new steps outlined by the President called for:

1) The initiation of negotiations with Canada concerning the amount of softwood lumber imported into the United States.

2) The submission of a request to Congress for additional funds for the Forest Development Roads and Trails Program to assure the prompt harvest of National Forest timber.

3) The amendment of the Intercostal Shipping laws to permit use of foreign vessels when those conditions exist which indicate severe hardship to American shippers. This amendment will reduce the handicaps suffered by American producers in the intercostal shipment of lumber.

4) An immediate increase in allowable cuts which will make available 150 million board feet on the lands managed by the Department of the Interior.

5) The establishment of a preference for American products in the purchase of lumber by the Department of Defence, the General Services Administration and other Federal departments and agencies. This could be particularly significant in connection with the various aspects of the AID program.

6) Increased attention to loan applications filed with the Small Business Administration and the Area Redevelopment Administration by lumber mills in order to enable them to upgrade their production and better compete with imported lumber products.

The president was informed that west coast lumber interests had already filed a request with the Tariff Commission for an escape clause investigation on softwood lumber and that the Tariff Commission has instituted an investigation. The President indicated he would request the Commission to complete it as expeditiously as possible.

APPENDIX 2C: RELATIONSHIP BETWEEN THE EXCHANGE RATE AND SOFTWOOD LUMBER EXPORTS

Export and Exchange Rate Data For Regression

YEAR	SOFTWOOD LUMBER EXPORTS FROM CANADA TO THE U.S. (Thousand Cubic Metres)	EXCHANGE RATE (U.S. cents per Cdn. $)
1950	6733	0.9181
1951	4803	0.9498
1952	5080	1.0216
1953	5520	1.0169
1954	6393	1.0275
1955	7495	1.0139
1956	7035	1.0162
1957	6200	1.0430
1958	7173	1.0303
1959	8036	1.0428
1960	7962	1.0312
1961	8685	0.9870
1962	9866	0.9355
1963	10922	0.9272
1964	10921	0.9271
1965	10797	0.9276
1966	10358	0.9282
1967	10683	0.9270
1968	12799	0.9281
1969	12948	0.9287
1970	12699	0.9579
1971	16470	0.9903
1972	19891	1.0096
1973	19327	0.9999
1974	15100	1.0225
1975	12867	0.9830
1976	18298	1.0141
1977	24389	0.9403
1978	26903	0.8770
1979	25443	0.8536
1980	21903	0.8554
1981	21314	0.8340

1982	21336	0.8103
1983	28062	0.8114
1984	31199	0.7723
1985	33806	0.7325
1986	33026	0.7197
1987	34094	0.7541
1988	31998	0.8124
1989	31049	0.8445
1990	27795	0.8570
1991	26942	0.8728
1992	30855	0.8276
1993	35104	0.7753
1994	38350	0.7321

Source: Lumber Exports - Natural Resources Canada
Exchange Rate - Bank of Canada Review

The Canada - United States Exchange Rate is one market force that has effected the volume of Canadian softwood lumber exports to the U.S. This relationship has been important in showing that market forces have played a key role in increasing the Canadian share of the U.S. softwood lumber market. Regression analysis is used here to test the relationship between Canadian softwood lumber exports to the U.S. and the Canada - U.S. exchange rate.

Softwood lumber exports are measured in thousand cubic metres while the exchange rate is expressed in terms of U.S. cents per Canadian dollar. To take account of other explanatory factors which may effect the relationship, recession is a dummy variable for the periods, 1980-82 and 1990-92, to take account of general business fluctuations. In econometrics, dummy variables are used to take account of qualitative factors which may effect the relationship being tested.

The regression is softwood lumber exports from Canada to the United States plotted against the Canada - U.S. exchange rate and general business fluctuations. It is represented by the following equation.

$$\text{Exports} = b_1 + b_2 * \text{Exchange Rate} + b_3 * \text{Recession} \qquad 2.C.1$$

The results are the following:

$$\text{Exports} = \underset{(12.57)^*}{0.10} - \underset{(-10.51)^*}{91738} * \text{Exchange Rate} - \underset{(-.2023)^{**}}{535.20} * \text{Recession}$$

* Significant at the ninety nine percent confidence level.
** Insignificant

The adjusted R^2 is .7234

The R value or correlation coefficient between lumber exports and exchange rate is - 0.86

The results suggest that the Canada- U.S. exchange rate has some effect on the volume of Canadian softwood lumber exported to the United States.

Notes

1. See data from the Bureau of Labor Statistics, U.S. Department of Commerce, in Sperry Lea, *The U.S. Softwood Lumber Situation in a Canadian-American Perspective.* (1962), p.9.

2. Under U.S. law (the Jones Act) domestic shipping had to done with American constructed and registered ships. Please see Lea (1962), p.31. This law was amended in point number three of The six point Lumber Assistance Program of 1962.

3. Lea (1962), p.31.

4.------p.33.

5. ----------.

6.------ p.17.

7.-------p.37.

8. As outlined by Lea (1962), p.38.

9. Lea (1962), p.43.

10. The calculation is done by dividing an index of the hourly wage per worker by an index of the output per manhour adjusted to eliminate cyclical factors to obtain unit labor cost estimates. These estimates are then expressed as a ratio relative to a trade weighted average of (common currency) national indicators for 16 other countries. Please see Percy and Yoder (1987), p.35-38.

11. A study for the period 1950-83 found the exchange rate elasticity to be 0.4. A one percent fall in the value of the Canadian dollar caused a 0.4 percent increase in the Canadian share of the U.S. softwood lumber market. Please see Darius Adams, Bruce A. McCarl and Lalehrokh Homayoun Farrokh, "The Role of Exchange Rates in Canada - United States Lumber Trade." (1986). The paper is in *Forest Science*, Volume 32, No. 4, p.973-88.

12. Please see a study by Martin F. Baily, "The Productivity Growth Slowdown by Industry," (1982). The study is part of the Brookings Papers on Economic Activity, p.423-54.

13. See M. Denny, M. Fuss, and J.D. May, "Intertemporal Changes in Regional Productivity in Canadian Manufacturing." (1981). The study is in *The Canadian Journal of Economics*, Volume 14, No. 3. p.390-408.

14. Michael Percy and Christian Yoder, *The Softwood Lumber Dispute and Canada - U.S. Trade in Natural Resources.* (1987), p.22.

15. 48 Fed. Reg. 24159 - 167.

16. 51 Fed. Reg.13272.

17. 48 Fed. Reg.24167.

18. See Percy and Yoder (1987), p.29.

19. Please see Michael B. Percy and Christian Yoder, *The Softwood Lumber Dispute and Canada-U.S. Trade in Natural Resources*, 1987. pp. 49-50.

20. Percy and Yoder (1987), pp.60-61.

21. Please see Marion Clawson *The Federal Lands Revisited*, 1983. pp.293-94.

22. This argument is put forth by Percy and Yoder, (1987). It is also put forth in Debra Steger, "The Impact of U.S. Trade Laws on Canadian Economic Policies." (1986). In *Policy Harmonization: The Effects of a Canadian-American Free Trade Area.*

23. The draft as released by The White House on July 26, 1962.

Chapter 3:

The British Columbia Forest Sector

Overview

British Columbia's forests are owned almost exclusively by the provincial government and are designated provincial crown timber. Softwoods such as spruce-pine-fir-hemlock-larch-cedar make up almost all of the forest area and include valuable species such as Douglas fir and western red cedar. In total there are 28 commercial tree species in the province. Forest management is a provincial responsibility, a role assigned by the British North America Act (BNA) in 1867.[1] In British Columbia, the provincial Ministry of Forests has ultimate authority over forest management practices, and has divided all provincial Crown forest land into administrative districts of 37 Timber Supply Areas (TSAs) and 34 Tree Farm Licenses (TFLs). TSAs are managed directly by the ministry while TFL holders retain responsibility for forest management subject to approval by the Ministry of Forests. Harvesting rights are granted to private industry through volume-based tenure agreements secured by a competitive bidding process. Under the B.C. government's "Forest Renewal Plan" of April 1994, stumpage fees will be increased by approximently $600 million annually over five years with about two-thirds of the revenue going towards forest management activities.

Annual Allowable Cuts (AACs) are determined for each of the 37 TSAs and 34 TFLs in the province based on the principle of sustainable development. This ensures that timber is not depleted at a rate which exceeds regrowth. Based on Ministry of Forests long term timber supply

models (50-200 years), AACs are established for each individual species based on its growth potential and expected rate of depletion. Although harvesting is perceived to be the most important form of depletion, more forest land is lost each year in Canada from the combined effects of insects, disease and fire than from harvesting. The impact of depletions (other than harvesting) are taken into consideration when establishing the AAC. The AAC for each individual species is used as a basis for establishing the AAC for each of the 37 TSAs and 34 TFLs in the province. In turn the aggregation of the AAC for each TSA and TFL represents the provincial AAC. The method of determining the AAC in British Columbia is unique amongst Canadian provinces.

The TSA and TFL AACs are the basis for setting the AAC in each volume based tenure agreement secured by a forest company. In the tenure agreements AACs are set for a period of five years. A forest company cannot harvest more than the specified AAC over the five year period. Annual harvest levels are allowed to fluctuate between a minimum and maximum allowable cut so long as they do not exceed the threshold (AAC) over the five year period. Regardless of the number of forest companies holding tenure agreements the threshold (provincial) AAC represents a binding constraint on the amount of timber that can be harvested.

The Forest Industry in B.C.

The forest products industry dominates the provincial economy of British Columbia and accounts for about half of the province's manufacturing base and almost one-third of the total value of the manufacturing shipments. The industry supports 187,000 employees (one job in nine), and including induced employment, the number is closer to 276,000 or 18 percent of the total provincial labor force.[2] An often overlooked aspect of the importance of the forest industry

in British Columbia is the numerous single industry towns that rely on the sector for survival. Despite attempts by residents of these towns to develop economic diversification strategies, expansion has usually been limited to different segments within the forest industry. In single industry communities, over 30 percent of the labor force is directly employed in forestry and there are over 100 such communities in B.C.

Unlike eastern Canada, the wood products industry is much more dominant in B.C. than the pulp and paper industry. Softwood lumber is by far the most important forest product. A rich forest endowment with moderate climate permitting year round logging, combined with close proximity to major water export routes and a large market, has established British Columbia as a region enjoying comparative advantage in the production and export of softwood lumber. British Columbia has Canada's largest softwood lumber industry, accounting for over two-thirds of the total value of shipments and almost 70 percent of the total Canadian export value of $11 billion.[3]

The forest products industry in British Columbia is characterized by backward and forward linkages, so that factors affecting costs or profitability in one segment has similar affects on another. Delivered log costs are a major factor affecting the input costs of sawmills. Wood chips are a byproduct of sawmill production, and serve as an important source of fibre to be used in the manufacture of pulp. Softwood lumber production affects the volume of chips available and hence the cost structure of the pulp and paper industry. Timber harvesting decisions are made with a view to using high valued species for producing quality dimension lumber and low valued species for pulpwood production. In cases where there is a considerable quality mix, it may not be feasible to harvest solely for production of one product line. Thus vertical integration implies that prevailing market conditions in one industry segment, such as softwood lumber, affects the

entire forest industry.

Table 3.1 Structure of The British Columbia Forest Products Industry

	Establishments	Employment	Value of Shipments ($ Millions)
Logging	3,297	18,979	4,976
Wood Industry	607	41,939	9,640
Pulp & Paper Industry	66	17,469	3,927
Total	3,970	78,387	18,543

Source: Natural Resources Canada, Selected Forestry Statistics, 1995.

The importance of each segment of the forest industry is shown in Table 3.1. Logging supports the largest number of establishments due to the necessity of on site harvesting in the various forest management districts of the province. Unlike other segments of the industry, these establishments are often owned and operated by small independent interests. A ban on raw log exports keeps all of the log processing within the province of B.C. Logging is known as a "downstream industry" since it serves as an important source of supply directly to the wood industry and indirectly to the pulp and paper industry. As a result of its position as a downstream industry, logging has been involved in the subsidy issue in the softwood lumber dispute.

The price of logs on the Vancouver log exchange is used as a proxy for the sale value of timber in the coastal region of B.C. (chips and dimension lumber is used in the interior). The logging industry has played a crucial role in determining stumpage rates, not so much as a proxy for the final sale value of timber, but because the stumpage formula before 1987 was quite sensitive to harvesting and processing costs. During the 1980s, stumpage rates in B.C. were much lower than those in the U.S. Pacific Northwest. Percy and Yoder (1987) note, however, that once delivered log costs were considered, the disparity in stumpage rates between the two

regions disappeared.[4] Once factors such as difficult terrain, differences in quality mix, distance from market, forest management responsibilities, and other costs are considered, higher logging costs in B.C. resulted in a convergence of average delivered log costs between the two regions. Constantino (1985) showed that the average market price of logs in the Pacific Northwest reflected a much larger share of higher valued species than the average market price on the Vancouver log exchange, so that once log quality is considered, disparities in stumpage rates are overcome.[5] The lower stumpage rates in B.C. were justified on the grounds of higher costs in the logging industry. These costs in turn affect the wood industry segment or "upstream" industry.

The wood products industry consists of softwood lumber, softwood and hardwood plywood and wood based panels. Softwood lumber is overwhelmingly the most important component with the annual value of shipments almost equalling that of the entire logging and pulp and paper industry combined. It employs about the same number of people as the rest of the forest industry in the province.

The key to understanding the subsidy issue in the Canada -U.S. softwood lumber dispute lies in the economic relationship between the logging and softwood lumber industries. Stumpage rates affect costs of firms in the logging industry which sell their output (logs) to the softwood lumber industry. The effect of stumpage rates will be transmitted to the softwood lumber industry via the price of logs. Suppose the market price of logs (measured by the price on the Vancouver log exchange for the coast region) is $60 per cubic metre and the average stumpage rate on logs is $10 per cubic metre.[6] If stumpage rates are lowered by a relatively small amount (from $10 to $9), the reduction in costs in the logging industry will not affect the market price of logs which will continue to sell at $60 per cubic metre. This is because the price of logs is determined

mainly by demand conditions in the marketplace. The supply of timber in B.C. is fixed with the same quantity supplied no matter what the price of logs. The constant price of logs has no effect on the marginal cost or supply conditions in the softwood lumber industry and hence has no effect on the price or output of lumber.

The degree of vertical integration does not alter the above example. If one firm produces both logs and softwood lumber, profit maximizing behaviour in a competitive system means that the firm would consider primarily logs on the open market if the market price was less than its own supply price. If lower stumpage rates reduced costs in logging but did not alter the market price for logs it has no effect on a firm's decision regarding softwood lumber production.

It is important to identify the market structure of the softwood lumber industry in British Columbia. With a fairly low level of production concentration and a high reliance on international trade the industry is best characterized as a competitive industry. Lumber products are standardized by species with quality differences based on grading. Firms can enter the industry relatively easily. In 1990, the five largest Canadian companies had 22.3 percent of the Canadian market.[7] Though the B.C. softwood lumber industry is a competitive one, it does not represent the strict assumptions underlying an economist's notion of perfect competition. Short run profits are often highly variable and there is no long run adjustment equating price with minimum long run average cost. In the B.C. softwood lumber industry, long run economic profits are not zero. Thus, there is not a sharp distinction drawn between short and long run in the forthcoming estimates of economic rent. (Chapter Four).

Difficulties in Comparing Stumpage Rates Between B.C. and The U.S. Pacific Northwest

The U.S. claim that low stumpage rates by the province constitutes a subsidy to producers

is one that the Council of Forest Industries (COFI), representing B.C. producers, has gone to great lengths to discredit. COFI has argued that if stumpage rates were low enough to constitute a subsidy, it would show up in above normal profits for the industry which is not the case, and moreover, it is impossible to compare the rates between B.C. and the U.S. Pacific Northwest. In 1981, COFI wrote "U.S. stumpage rates clearly could not be applied in B.C. as the stumpage alone co'.ld exceed the end product value. Obviously the numerous differences between the two areas preclude direct comparison. The effects of these differences unfortunately cannot be quantified."[8]

Several factors cause difficulties in comparing stumpage rates between B.C. and the Pacific Northwest. One factor - log processing costs and quality differences has just been discussed. Another factor is the different forest management practices in the two regions. The U.S. Forest Service follows a more restrictive form of sustainable development, limiting the inclusion of high quality old growth timber in harvesting volumes. Clawson has noted in reference to the U.S. that,

> " The Forest Service has been widely criticized by the forest products industry, by some conservationists, by many economists, by some of the western states, and by others for its very slow rate of harvesting old-growth timber. Their criticism is based on several conditions: a slow harvest means great loss of timber volume from mortality; high investment in standing timber and an associated low rate of return; low or even negative rates of net timber growth, which would be possible by new second growth timber; and it unavoidably puts pressure on private timber, actually contributing to community instability rather than preventing it."[9]

In B.C., the Ministry of Forests allows more harvesting of old growth timber and adjusts the annual allowable cut accordingly to include second growth timber. Most of the B.C. forest is still in the old growth stage. Almost two-thirds of the productive forest area is classified as mature and over mature, and only 5 percent is in the regeneration phase with the remainder classified as "even aged immature stands."[10]

Another factor complicating stumpage comparisons is the greater amount of forest management responsibilities associated with holding timber harvesting rights in B.C. compared to the U.S. Pacific Northwest. This is mainly because tenures (cutting rights) are awarded for a longer term in B.C. Some old tenure agreements still existing in the province are very long term in nature while present forest management arrangements are formulated on a 20-25 year basis. Based on the long-term arrangements, five year operating plans are submitted by tenure holders, who must outline their regeneration and silviculture activities. These five year plans are subject to annual approval by the ministry to ensure forest management responsibilities are being followed. Forest management responsibilities involve higher costs for tenure holders and should be reflected in lower stumpage rates.

The third factor accounting for difficulties in comparing stumpage rates is the bidding process for federal timber contracts in the two regions. In British Columbia, the valuation of crown forests reflects the current market value of timber, and hence the competitive bidding process for firm's harvesting rights are also based on the current market value of timber. In the U.S. Pacific Northwest, the valuation of federal timber is not based on the current market value of timber, but is set on a minimum bid which is accepted for timber harvesting rights. One to five year timber contracts are awarded to firms submitting the highest bid over the minimum level.

The essential difference between the two systems is that U.S. firms must bear the burden of formulating expectations about future timber prices. If these expectations are not correct then firms are legally bound to harvest timber with a market value less than expected at the time the bid was submitted. For example, in the latter half of the 1970s, successful U.S. bids for federal timber contracts did not take into consideration the second OPEC oil price shock and the subsequent sharp rise in world real interest rates which caused a sharp decrease in U.S. housing starts. The demand for lumber fell considerably and consequently so did timber prices. Firms holding federal timber contracts could harvest the timber only by incurring huge losses. To avoid wide scale bankruptcies, Congress passed legislation allowing firms to terminate federal timber contracts with a buy-out charge. It is important to note that most U.S. timber is on private lands and the bidding process only applies to timber on federal land.

One of the most important reasons for low stumpage rates in B.C. is the considerable cost incurred by tenure holders in meeting "close utilization standards". This term refers to the amount of a tree (stump) that is left behind after a forest is harvested. "Close standards" mean leaving a stump of no more than 30 inches in height, for both the coast and interior regions, in an effort to ensure that no commercial timber is left unused. In order to meet these standards, companies incur costs by harvesting a lot of timber that is of little commercial value but appraised at the same stumpage rate as all other commercial timber. Uhler and Morrison (1986) showed that meeting close utilization standards in a coastal logging site decreased the stumpage value by 80 percent from what it would be if timber were appraised on an economic basis.[11] In the Pacific Northwest, firms are not charged the same stumpage rates for removing timber of little or no commercial value resulting in lower costs.

There are also other factors which make it difficult if not impossible to compare stumpage rates between British Columbia and the U.S. Pacific Northwest. No one with a strong knowledge of the forest industry along the Pacific coast has devised a meaningful way of comparing rates between the two regions. However, it is possible for both the Canadian and U.S. governments to agree on a definition of what constitutes a domestic or export subsidy and apply it to determine whether one exists. This leaves the subsidy question to be answered by an examination of stumpage rates and economic rent collection within the context of the British Columbia forest sector.

Appendix 3A: The British Columbia Stumpage System

Prior to 1987, the stumpage system or method of rent capture in B.C. was based on the Rothery or residual value formula. Under the old system, stumpage was calculated as the market value of timber less operating costs and an allowance for risk. The market value of timber in B.C. is measured in the coastal region by the price of logs on the Vancouver log exchange and in the interior region by the price of wood chips and dimension lumber. Operating costs were measured by conducting surveys used to construct average costs under normal efficiency. There was a base stumpage charge of 6 percent of the final sale value of timber on the coast and 3 percent of the final sale value in the interior.

The method of stumpage calculation was changed in 1987 for two reasons. First, it caused a number of economic distortions such as "high grading" which is the practice of harvesting only those trees of economic value greater than the average stumpage value and leaving the rest behind. The second and perhaps more important reason was that following the 1986 phase of the softwood lumber dispute, the Memorandum of Understanding (MOU) called for an increase in stumpage rates to eventually replace the export tax on softwood lumber.

The new Comparative Value Pricing (CVP) stumpage system differs considerably from the Rothery Formula.[12] All trees in a stand are averaged together in stumpage calculations and there is a minimum rate set at 25 cents per cubic meter. Stumpage rates are determined *Ad Valorem* or by a percentage of the final sale value of timber rather than by the residual value approach. Revenue target rates are set in each forest management unit and a decrease in one unit is often offset by an increase in another. The basic formula is:

$$VI = P-C \qquad 3.A.1$$

where VI is a value index for the provincial crown in each forest management unit, P is final sale price of timber measured by logs on the coast and wood chips and dimension lumber in the interior, and C is operating costs based on annual surveys. The value indices are aggregated to construct a mean value index (MVI) with negative rates set at the minimum stumpage. The MVI is used to determine a base stumpage rate given fluctuating harvest levels. The base stumpage rate is then compared to the required revenue target with the MVI adjusted accordingly until the expected stumpage rate equals the base rate. Stumpage for each forest management area is then determined as follows:

$$\text{Stumpage Rate} = \text{Base Rate} + (VI-MVI) \qquad 3.A.2$$

Another important difference in the new system is that forest management costs incurred by tenure holders and included in the calculation of stumpage rates are no longer given a one for one credit against stumpage charges.

Stumpage payments in British Columbia are assessed on a per cubic metre basis for a specified area. Under provincial close utilization standards all of each area (where stumpage is assessed) must be harvested. Stumpage payments are a fixed sum payment billed monthly by the Ministry of Forests. They are not a royalty (indirect) tax.

Notes

1. This did not change in the "Constitution Act, 1982." Federal involvement in forestry is limited to The Canadian Forest Service of Natural Resources Canada and the Forest Industries and Building Products Branch of Industry Canada. The federal government is currently considering leaving forestry and certain other areas of business completely.

2. The Canadian Forest Service estimates that forestry supports 1 job in 9. Please see *The State of Canada's Forests, 1994: Annual Report To Parliament*. p.93. Price Waterhouse estimates that induced employment is 276,000 or 18% of total employment. Please see Price Waterhouse, *The Forest Industry in British Columbia*, 1995.

3. Natural Resources Canada (The Canadian Forest Service), *Selected Forestry Statistics, 1995*. p. 15, 43.

4. Please see Percy and Yoder (1987), p. 63.

5. Please see Luis F. Constantino, "Sawlog Prices and Quality Differences in Canadian and United States Pacific Coastal Log Markets," Forest Economics and Policy Analysis Project, Report 85-6, University of British Columbia. Also please see Percy and Yoder (1987) pp.63-66.

6. The example is similar to one given by William Nordhaus. Please see "The Impact of Stumpage Charges on Prices and Trade Flows in Forest Products." *In The Matter of Certain Softwood Lumber Products From Canada*, 1992. p.24.

7. ---------p.23.

8. Please see Council of Forest Industries (COFI). "A Brief examination of Comparative Factors Affecting The Forest Industries of The Pacific Northwest and B.C"., 1981, and Ken Drushka, *Stumped: The Forest Industry in Transition*, 1985. p.111.

9. Marion Clawson, *The Federal Lands Revisited*, 1983. p. 82.

10. According to the British Columbia Ministry of Forests mature and over mature forests are defined as those more than 120 years old for all coniferous species except lodge pole and white bark pine. These two species combined with all deciduous species are considered mature at 81 years. Forest stands less than 20 years old are classified as in the regeneration phase, and those stands between 20 and 120 years of age are classified as 'even aged immature stands.' Please see K.L. Runyon, *Canada's Timber supply: Current Status and Outlook*, 1991. p. 54.

11. Please see R. Uhler and P. Morrison, "Utilization Standards and Economic Efficiency in British Columbia Forests." Forest Economics and Policy Analysis Project, Report 86-3, University of British Columbia, 1986. p.1.

12. The Comparative Value Pricing System is outlined by Nelson et al. In "Estimating Economic Rents in the British Columbia Forest Sector." 1994. p. 14.

Chapter Four:

Economic Rent In The British Columbia Forest Sector

Definition of Economic Rent

The inquiry into rent collection begins with a systematic and consistent definition of economic rent. The classical notion of Ricardian rent is defined as the value from each additional use of an input that contributes more to the total revenue from a resource than to the total costs (fixed and variable) of producing it.[1] The total cost includes the opportunity cost of the input which is the value of the input in its best alternative use. By applying the notion of Ricardian rent to the forest resource, rent is defined as the final sale value of timber less all the fixed and variable costs of harvesting it (including the opportunity cost of capital which allows for a normal rate of return and a risk premium). The notion of Ricardian Rent is illustrated in Figure 4.1 (Appendix 4B).

Ricardian rent includes scarcity rent. If forest land is scarce but the products produced by the timber are in high demand then there will be intensive harvesting and the owner of the forest land will earn a high return. Softwood timber stands in B.C. are fixed in supply and limited to annual allowable cuts (see chapter three) and therefore command a scarcity rent.

Ricardian rent also includes differential rent. This accrues when a seemingly identical resource is of heterogeneous quality. One timber stand in B.C. can support low valued species such as of cedar and larch while another stand can support high valued Douglas Fir. If the demand for softwood lumber is high enough to warrant harvesting the low valued cedar-larch

stand then the owner of the high valued Douglas Fir stand will (due to quality differences) capture differential rents.

It is important to distinguish Ricardian rent from quasi rent. Ricardian rent is the value from each additional use of an input that contributes more to total revenue than to the total fixed and variable costs of producing it. Quasi rent is the value the from the use of an input that contributes more to total revenue than to the total variable costs of producing it. The originator of the notion of quasi rent (Marshall, *Principles of Political Economy,* 1920. p.424.) described it as "an unnecessary profit in regard to short periods." Quasi rents accrue to firms from the use of an input over and above that necessary to ensure its short run supply. The input is usually (though not always) humanly created capital. Ricardian rent applies to natural capital (i.e. land). The main difference between the two concepts is that quasi rent occurs only in the short run while Ricardian rent accrues in both the short and long run.

Due to the fact that Ricardian rent encompasses both differential and scarcity rent and accrues in both the short and long run, it is the most comprehensive definition of economic rent. The economic rent calculations in this chapter follow directly from the definition of Ricardian rent. They are both short and long run estimates of rent accruing from the natural capital stock of forest land. Any difference between short and long run estimates reflect the degree to which the final sale value of timber as well as harvesting costs fluctuate over time. With a consistent and systematic definition it is now possible to present a basic theory of how economic rent is determined.

Basic Theory of Economic Rent

The starting point in building the basic rent theory is to understand land as an input in the

production process. Unlike other inputs, the total supply of land is fixed by nature so it is difficult to increase its supply in response to higher land prices or decrease its supply in response to lower land prices. While it is possible to use irrigation and drainage systems to create land and to use fertilizers to improve land productivity, it is also possible that land can be destroyed by natural disasters such as flooding and become depleted from overcropping. Therefore, economists accept that the characteristic feature of land is its inelastic supply.[2] The term inelastic refers to the notion that the quantity supplied is not responsive to price changes. The classical economists spoke of land eloquently as "the original and inexhaustible gift of nature whose total supply is by definition fixed."[3] In fact it was the price of the fixed supply of land that the classical economists of the nineteenth century called economic rent. In the classical notion an input such as land earns an economic rent under two conditions. First, its total supply is fixed and second it has no other use. In 1815, David Ricardo described it this way.

> "It is not really true that the price of corn is high because the price of cornland is high. Actually the reverse is more nearly the truth. The price of cornland is high because the price of corn is high. Because the supply of land is inelastic, land will always work for whatever is given to it by competition. Thus the value of the land is completely derived from the value of the product, and not vice versa."[4]

Forest land resembles the classical notion of economic rent. The amount of forest land in B.C. and the value of the standing softwood timber on it are fixed (inelastic) in supply. No matter what the price of softwood lumber in the market, the same fixed amount of tenured forest land is available for harvest in the present and in the future. This land is useful for harvest only by the forest industry. By contrast, agricultural land can often grow a variety of crops destined for

different industries. However, forest land has an existence value or use in its present state. It also has an option value (value in alternative uses) such as preserving ecosystems surrounding the forests. Other "options" include using forest land in a national park. In monetary terms, forest land is very valuable to the forest industry but of lesser value to other industries and so in this sense resembles the classical notion of economic rent.

Figure 4.2 (Appendix 4B) illustrates the process of determining economic rent from land. Economists claim that rent does not enter into the cost of production.[5] The diagram (Figure 4.2) shows that there is some truth in this. However, a B.C. forest products firm must pay the provincial crown stumpage fees for use of forest land the same way it must pay other costs and would definitely include rent in their production costs. Rent, however, does not enter into society's production costs because it is the return from an input that is inelastic in supply so that the same quantity would be supplied even if its price or the price of products produced from it are very low.

Stumpage fees are included as a cost of production for every B.C. forest products firm harvesting on crown forest land but they are viewed by society as simply an economic rent accruing from the use of a publicly-owned resource. Stumpage fees are determined by the price of timber products and these fees in no way affect the price of timber products throughout the production process.

This point is most easily understood in the context of the classical notion of economic rent where land is completely inelastic in supply and can be used for production by only one industry. As Ricardo stated - an inelastically supplied amount of land will always work for what is given to it by the private market. Therefore, the value of market products determine the value

of land which appears to every firm as a cost but to the entire economy as an economic rent.

Thus, the basic theory of economic rent is that rent does not enter directly into society's cost of production and is determined by product prices. Samuelson and Nordhaus express this key theory in the following manner:

> "What then are economists saying when they claim that rent does not enter into society's costs of production? They are reminding us that rent is the return to a factor of production that is completely inelastic in supply, so that the same quantity would be supplied whatever the price. Therefore, the price of goods really determine rent - rather than rent determining the prices of goods."[6]

According to the theory, the value of B.C. forest land (stumpage rates) must be determined by the price of softwood lumber in the competitive market. This claim is supported empirically in chapter five (Appendix 5A).

Studies of Economic Rent

The most comprehensive study of economic rent collection in Canada was undertaken by Copithorne in 1979. His measurement of rent was constructed by valuing labour and capital used in primary industries at their opportunity costs in non-primary activities and then subtracting it from primary value added.[7] The result is termed a natural resource windfall (Table 4.1).

Table 4.1 B.C. Wood Products Industry (Annual Rents 1971-73 in $Cdn Millions)[8]

	@ Own Wage	@ Ontario Wage
Windfalls	179.1	207.7
Minus Share Captured in Wage Premiums	0.7	30.1
Equals Windfall Net of Labour	178.4	177.6
Plus The Opportunity Cost of Capital	113.4	113.4

Equals non-labour additions to GDP	291.8	291.0

Source: Copithorne, Natural Resources and Regional Disparities, 1979.

The first row in table 4.1 is the windfall calculation. The exact formula is as follows:

Windfall = Census Value Added - Opportunity Cost of Labour - Opportunity Cost of Capital
- Subsidies Paid to the Industry + Indirect Taxes Paid by The Industry
- Surplus Received by Foreigners

The census value added is simply the GDP of the industry.

The opportunity cost of labour is the average manufacturing wage times the person years of total employment reported for the industry. The average manufacturing wage in B.C. was believed to contain an element of natural resource rent while in other regions of Canada it did not. For this reason, Copithorne, used two measures of the opportunity cost of labour, one using the average manufacturing wage in B.C. (@own wage in Table 4.1) and the other using the average manufacturing wage in Ontario (@Ontario wage in Table 4.1). This is because he assumed that B.C. workers have the long-run alternative of working in Ontario where the natural resource sector is less likely to influence general wage rates.

The opportunity cost of capital is defined as the interest forgone by investors holding the net capital stock plus its depreciation and is defined as

$C = r (K_1 + K_2 + K_3) + (D_1 + D_2)$ where

C = The opportunity cost of capital
r = The interest rate
K_1 = Mid year net capital stock in structures
K_2 = Mid year net capital stock in machinery and equipment
K_3 = Inventory held
D_1 = Depreciation on structures
D_2 = Depreciation on machinery and equipment.

The interest rate (r) that was used was the average yield on industrial bonds plus an

allowance for risk. This was based on the assumption that capital is highly mobile interregionally.

Subsidies paid to the industry are not normally a part of rent calculations but Copithorne was estimating rents in the entire natural resource sector and government subsidies in primary industries such as fishing at that time were considerable. Thus, subsidies artificially inflated the industry's value added and had to be subtracted.

Indirect taxes were added because they were considered to be a legitimate part of GDP even though they are excluded from Value added data. Indirect taxes were considerable in some primary industries such as fishing.

Surplus received by foreigners (retained earnings) was included for the following reason. In some industries, such as oil and gas as well as mining, the amount of foreign ownership was so large that a lot of the windfall did not belong to Canadians. While most direct payments (interest and dividends) to foreigners was accounted for in the cost of capital, retained earnings held by foreigners was not. Retained earnings were mainly reinvested in the same industry. This had the effect of raising the GDP of a particular region in Canada but this increase was not available to raise the personal incomes of Canadians directly. So retained earnings were estimated and deducted from the windfall calculation.

This is the extent of Copithorne's calculation of the windfall in the first row of Table 4.1. The second row subtracts the portion of the windfall captured by workers in the form of wage premiums. In the B.C. wood products industry, at that time, wages exceeded the average for manufacturing and the premiums were simply organized labour's share of the rent capture. The natural resource windfall is only the amount left over after these wage premiums are subtracted.

This is the result (equals windfall net of labour) shown in row three.

In row four, the opportunity cost of capital (already calculated under the windfall formula) is added on the assumption that capital is fixed in the short run. The result is the non labour addition to GDP shown in the final row of the table.

Copithorne then maximized the non-labour additions to GDP in the short run in simulation with a linear programming model and showed that British Columbia's ban on the export of raw logs may cost millions of dollars in forgone economic rents.[9] His results were updated by Michael Percy in 1986. Depending on the shadow price of labour chosen, Percy found the total economic rent in the B.C. forest sector for the year 1979 to range from 1.112 - 1.421 billion - and depending on the opportunity cost of capital, the results showed that the provincial government collected 61 -66 % of the total rents in the logging sector. [10]

Another contribution to the study of economic rent has been made by Harry J. Paarsch of the University of Western Ontario. Paarsch's study differs considerably from Copithorne and Percy in that it does not estimate economic rent collection but evaluates the effectiveness of two different stumpage mechanisms for capturing economic rent in the forest industry.

One mechanism is the existing stumpage rate system (widely used in B.C. and elsewhere) where stumpage is assessed on a per cubic metre basis and depends on harvest volumes. The greater the volume of wood harvested, the greater the stumpage charge. Under this system all types of tree species from highly valued Douglas Fir to low valued Cedar and Larch are assessed at the same stumpage rate.

Another mechanism is the lump sum payment system where stumpage is paid only once before harvesting is done. The stumpage charge is based on a set price per area of harvest and is

independent of the volume of wood (cubic metres) harvested. The important feature of this mechanism according to Paarsch is that it assesses the lump sum payment on the basis of a uniform or homogenous quality standard across all types of species in a timber stand.

Many timber stands that are harvested contain tree species that differ considerably in terms of quality. The same timber stand may contain spruce, pine, and fir species that are high in value as well as cedar and larch species that are low in value. The price of the products produced from these different species reflect this quality difference. A 2x4 made from a spruce, pine, or fir tree sells for a higher price in the market than one made from cedar or larch. Paarsch argues that because of this quality difference, the existing stumpage rate mechanism for collecting economic rent which assesses identical rates for all tree species encourages companies, when harvesting a timber stand, to take only the best species and to leave behind low quality species. This is known as selective harvesting.

Paarsch shows, using a competitive bidding model, that the existing stumpage rate system - which encourages selective harvesting - can leave three-quarters of the timber in the forest, while under the lump sum payment system - based on the assumption of homogenous quality across all tree species - 90 percent of the timber can be harvested.[11] The result is that under the stumpage rate system, fifty percent of the potential economic rent can be left in the forest.

It is important to note that this is not the case in British Columbia. The stumpage system is subject to the shortcomings discussed by Paarsch but the province enforces a regulation requiring companies to harvest all the timber in a stand and to leave behind a stump of no more than 30 inches in height to ensure that no commercial timber is left unused. In order to meet these regulations, companies incur considerable costs by harvesting a lot of timber that is of little

commercial value but appraised at the same stumpage rate as all other commercial timber. So when a B.C. timber stand is harvested no timber or economic rent is left in the forest.

The lump sum payment mechanism for securing tenures and capturing economic rent is not widely used but Paarsch's argument is quite revealing because it raises doubts as to the effectiveness of the existing (widely used) volume based stumpage rate mechanism as a satisfactory system for capturing economic rent from the forest resource.

Estimating Economic Rent in The B.C. Forest Sector

Neither Copithorne, Percy, nor Paarsch provided long range estimates of the economic rent collected in the British Columbia forest sector. This section discusses economic rent estimates for the wood products industry in B.C. The detailed methodology and calculations behind the estimates are given in appendix 4A.

Recall that the definition of Ricardian rent is the final sale value of timber less the costs of harvesting it. Calculating the available Ricardian rent in the B.C. forest sector involves estimating the final sale value of timber by the value of shipments of the wood products industry and subtracting the wood industry's total harvesting costs.[12] The harvesting costs include the opportunity cost of capital which allows for a normal rate of return and a risk premium.

It is important to understand at the outset that the total available Ricardian rent from the wood products industry in B.C. is what is available to society from the use of the publicly owned forest resource. It is a comprehensive measure of the total rent available for capture by both the public and private sector. The terms "total available economic rent" and "Ricardian rent" are used interchangeably.

This is not the same measure as direct payments which are what the forest industry pays

directly to the provincial government in stumpage fees. Direct payments are only the share of the total Ricardian rent captured directly by the government (labelled captured rent in Tables 4.2 and 4.3). They are reported at the end of each fiscal year by the B.C. Ministry of Forests. For a breakdown of the various categories of stumpage fees please see appendix 4A, step 2. The economic rent estimates for the B.C. wood products industry are shown below in Tables 4.2 and 4.3.

Table 4.2. Captured Rent and Available Economic Rent (current $, 000s)

Year	Captured Rent	Available Rent	Rent Capture (%)
1970	54980	45590	121
1971	78015	147522	53
1972	144851	357366	41
1973	263921	587618	45
1974	129351	229886	56
1975	40362	75412	54
1976	60433	233848	26
1977	101998	470275	22
1978	280096	900245	31
1979	562438	992070	57
1980	375764	386293	97
1981	106955	-158498	168
1982	87330	-378032	123
1983	137266	123830	111
1984	187349	136418	137
1985	208976	455629	46
1986	246166	889268	28
1987	536287	1430437	38
1988	623642	1065300	59
1989	651591	1003849	65
1990	573169	486035	118
1991	607918	527727	115
1992	705870	1135476	62
1993	1019348	2494751	41

Table 4.3. Captured and Available Rent Per Cubic Metre of Crown Harvest ($1986)

Year	Captured Rent	Available Rent	Rent Captured (%)
1970	3.08	2.56	121
1971	4.07	7.7	53
1972	7.18	17.68	41
1973	9.64	21.49	45
1974	4.82	8.59	56
1975	1.65	3.08	54
1976	1.63	6.3	26
1977	2.58	11.87	22
1978	6.22	19.97	31
1979	11.18	19.73	57
1980	6.89	7.08	97
1981	2.18	-3.23	168
1982	1.76	-7.65	123
1983	2.08	1.87	111
1984	2.64	1.92	137
1985	2.78	6.07	46
1986	3.18	11.47	28
1987	5.65	15.07	38
1988	6.55	11.2	59
1989	6.46	9.95	65
1990	6.13	5.2	118
1991	6.69	5.81	115
1992	7.63	12.27	62
1993	10.3	25.2	41

In Table 4.2, captured rent is the actual amount of stumpage revenue collected by the B.C. government (direct payments) while available rent is the final sale value of timber less harvesting costs (Ricardian rent). The empirical evidence shows that the stumpage system has captured a positive share of the available rent in every year since 1970. The rent capture (through stumpage) is particularly high during recessionary periods.

The data in Table 4.3 is corrected for inflation and converted to a per cubic metre of crown harvest basis to comply with the provincial government standard of assessing stumpage charges. The results show that over the period 1970-93, the provincial government captured more than 100 percent of the available rent in seven of the twenty four years. In constant dollar terms rent capture peaked in 1979 (see Appendix 4A, step 9) after large fluctuations throughout the 1970s. Rent capture has steadily increased since the introduction of the new B.C. stumpage system in 1986 almost reaching the record set in 1979.

Rent Dissipation

There is no clear answer to the question of whether the B.C. stumpage rate mechanism captures all of the economic rents accruing from commercial use of the forest resource. The issue of rent dissipation is complex and far from settled. The time series data in Table 4.3 illustrates this with rent capture exceeding 100 percent of the available rent in seven of the past 24 years while being highly variable in the other 17 years. If all of the economic rent is not captured by the provincial government than where do the remaining rents go? There are three possibilities.

The provincial government could capture the remaining rent indirectly through forest management policies. Silviculture (reforestation) costs are the responsibility of forest companies and these costs are not refundable in the calculation of stumpage rates. Silviculture refers to the

growing and maintenance of trees including reforestation (planting seedlings after harvest), pre commercial thinning (removing undergrowth) and pruning. These costs (especially for reforestation) are quite high and represent a benefit to the owner of the forest resource. Thus, there are indirect benefits to the provincial government through forest management policies not accounted for by the stumpage system.

A second possibility is that the remaining rent could be captured by labour. The "rent in wages" hypothesis was studied by Copithorne in 1978 and by Percy in 1986.[13] Neither author could substantiate empirically the claim that higher wages in some forest industry segments were due to economic rent capture by labour. In some cases rent may not show up directly in conspicuously high wages for workers but be indirect and disguised through benefits such as health insurance or paid holidays.

A third possibility is that the remaining rent is captured by the forest industry. This would appear in company balance sheets as above normal profit or rate of return on capital. It could also be more subtle and indirect in the form of corporate expenses. The Nordhaus study (1992) showed that the rate of return on capital for the wood industry was 10 percent below that of the manufacturing sector during the 1970 - 1987 period.[14] During the early 1990s, the balance sheets of most forest products firms showed net losses so provided little evidence of economic rent capture.

Effectiveness of The Stumpage System As a Method of Economic Rent Capture

There have been various claims that the B.C. stumpage system fails to capture all of the economic rent from the forest sector. The following is a summary of the arguments. First, B.C. stumpage rates are lower than the rates charged for timber harvested on public land in the U.S.

Pacific Northwest and some observers claim that this is evidence that the provincial government fails to capture all of the rents. The difficulty in making any credible comparison between the two regions has been outlined in chapter three. Most forest land in the U.S. Pacific Northwest lies on private land while in B.C. almost all of the harvest is from crown land. Considerable differences in species mix and harvesting costs create difficulties in comparing the value of the forest resource and the amount of available economic rent.

There are even difficulties in comparing stumpage rates within regions of British Columbia. Stumpage rates paid for timber under the competitive bidding process in the Small Business Forest Enterprise Program (SBFEP) is higher than rates paid on Tree Farm Licenses and Timber Supply Areas. However, these tenure holders are responsible for non refundable silvicultural costs while SBFEP licensees are not. When comparing stumpage rates it is also necessary to consider both stumpage value and costs to tenure holders. Thus it is extremely difficult if not impossible to compare stumpage rates in B.C. and the U.S Pacific Northwest and conclude that economic rent capture is too low in B.C.

A second claim that the B.C. stumpage system fails to capture all of the economic rent is based on the observation that certain harvesting licences can be sold in the private market. The argument is that if the government captures all of the economic rent, harvesting licences should be of little market value since firms have already covered costs and earned a normal profit. However, there are few market transactions involving purely harvesting licences.[15] Most also include machinery and equipment for production capabilities. The harvesting licence actually bears only a small component of the total price of a private market transaction. Another problem with this argument is that market transactions often involve "incremental supply." This refers to

the amount that a production facility is operating below capacity output. In a private market transaction a mill owner considers only the variable costs of producing the incremental output associated with the new timber license and disregards the huge fixed costs associated with the mill. Thus the purchaser of harvesting rights in a private market transaction is willing to pay more than the value of timber because fixed costs of production are not considered.

A third claim that the B.C. stumpage system fails to capture all of the economic rent is that the increase in stumpage rates following the introduction of the Comparative Value Pricing stumpage system in 1987 did not bring about large scale bankruptcies for holders of timber harvesting rights. However, there has been no systematic study of both the revenues and costs associated with the new stumpage system to systematically test the argument. It is necessary to consider both revenues and harvesting costs (other than stumpage rates) before concluding that stumpage rates fail to capture all of the economic rent.

It is important to understand that the effectiveness of the stumpage system as a mechanism for capturing all the available rent from the B.C. forest resource is a separate question from the fundamental question in the Canada - U.S. softwood lumber dispute. In the ongoing lumber dispute the fundamental question is, do low B.C. stumpage rates constitute a subsidy to the softwood lumber industry?

Earlier parts of this study have partially answered this question but this chapter has outlined the tools necessary to answer this fundamental question more completely in chapter five. The important tools are the basic theory of economic rent (rent does not enter directly into society's cost of production and is determined by product prices) and the construction of the rent estimates for the B.C. wood products industry.

APPENDIX 4A: ECONOMIC RENT ESTIMATES

METHODOLOGY

The calculation of Ricardian rent for the wood products industry begins with estimating the final sale value of timber by the value of shipments. This is reported monthly by Statistics Canada. Total harvesting costs are measured by adding together three types of costs which are also reported monthly by Statistics Canada:

Harvesting Costs = Materials & Supplies + Fuel & Electricity + Salaries & Wages (4.A.1)

This calculation is straightforward (step one).

The next step is to determine the direct payments made by the foresrt industry to the provincial government. The term direct payments refers to the various stumpage charges that the forest industry pays directly to the B.C. government as reported at the end of each fiscal year by the B.C. Ministry of Forests. The breakdown of the various categories of stumpage fees is shown in step 2. The total is simply the sum of the seven columns in the table.

The next calculation is as follows.

Ricardian Rent = Value of Shipments - Harvesting Costs + Direct Payments (4.A.2)

Direct payments are included by Statistics Canada as part of the B.C. wood industry's cost of materials and supplies for harvesting. Since they are included in harvesting costs, it means they are subtracted from the value of shipments during this stage of the rent calculation. But direct payments are a share of the total available Ricardian rent in the forest sector so must be added back in during the calculation of Ricardian rent. This is only a preliminary calculation of rent (step three) because we have not yet considered the opportunity cost of capital.

Step four calculates the cost of capital using the following formula:

$$\text{Cost of Capital} = r * (k_1 + k_2) + d_1 + d_2 \qquad (4.A.3)$$

r = prime rate plus a two percent risk premium

k_1 = value of net stock of construction

k_2 = value of the net stock of machinery

d_1 = depreciation on the net stock of construction

d_2 = depreciation on the net stock of machinery

The interest rate (r) is the prime rate (the rate which the nine chartered banks charge to their best customers) plus an additional two percent for a risk premium. The capital stock and depreciation data is reported by Statistics Canada. Detailed sources appear at the bottom of the tables.

Step five deducts the cost of capital from the preliminary rent calculation to come up with the measure of Ricardian rent which is the total available rent from the wood products industry.

Step six measures the percent of the total Ricardian rent captured by the stumpage system in direct payments.

Steps seven and eight divide the Ricardian rent and Direct Payments respectively by the crown harvest. The crown harvest data is reported annually by the B.C. Ministry of Forests on a cubic metre basis so this measure is used here. The crown harvest excludes the small portion (approximently 10 percent) of the total B.C. harvest that comes from private land. There is no rent accruing to the government from wood harvested on private lands. The rent is shown on both a dollar and on a cubic metre basis simply because stumpage is assessed on a cubic metre basis.

Step nine converts the key current dollar rent data to constant (1986) dollars using the Implicit Price Index. The conversion is simply to remove the effects of inflation over the time

series.

Finally, step 10 shows the percent rent capture in the B.C. wood products industry after removing the effects of inflation.

CALCULATIONS

Step 1: Fuel & Electricity + Materials & Supplies + Salaries & Wages = Harvesting Costs

(Current $ 000s)

Year	Shipment Values	Costs of Fuel & Electricity	Costs of Materials & Supplies	Salaries and Wages	Harvesting Costs
1970	1033577	18099	638458	293696	950253
1971	1283531	22017	743363	352667	1118047
1972	1697479	26429	932412	419352	1378193
1973	2287761	31531	1282426	509929	1823886
1974	2070349	34638	1199170	539646	1773454
1975	1810829	37129	1002899	528858	1568886
1976	2642945	52494	1471593	711703	2235790
1977	3260542	65895	1740403	847300	2653598
1978	4141574	78179	2193041	966252	3237472
1979	4840706	86705	2839816	1098613	4025134
1980	4522397	96833	2739986	1191067	4027886
1981	4142741	110856	2461896	1174702	3747454
1982	3505827	123446	2110916	1113796	3348158
1983	4641554	149041	2703845	1261432	4114318
1984	4568708	158066	2666941	1246610	4071617
1985	5091696	167643	2846409	1314456	4328508
1986	5353800	152821	2785090	1250119	4188030
1987	6641900	169200	3529800	1490300	5189300
1988	6931900	162600	4098800	1550000	5811400
1989	7193000	166700	4238800	1619500	6025000
1990	6761700	169300	4202700	1589700	5961700
1991	6029200	160900	3734500	1434700	5330100
1992	7398600	197200	4461600	1611400	6270200
1993	9639500	203200	5548200	1743100	7494500

Source: Statistics Canada, Catalogue numbers 25-201, 35-001.

Step 2: Stumpage + Royalties + Rents & Fees + Scaling Fees + Interest + Export Fees + SBFEP = Direct Payments To the B.C. Provincial Government

(Current $ 000s)

Year	Stumpage	Royalties	Annual Rents & Fees	Scaling Fees	Interest	Export Fees	SBFEP Stumpage	Total
1970	45559	5508	1914	1999				$54,980
1971	68138	5502	2251	2124				$78,015
1972	135091	5697	1864	2179				$144,851
1973	252910	6695	2018	2298				$263,921
1974	115853	8955	2004	2539				$129,351
1975	30630	5258	2012	2462				$40,362
1976	48708	7083	1976	2666				$60,433
1977	88554	8984	2157	2303				$101,998
1978	262080	8028	7676	2312				$280,096
1979	533136	15220	10743	3339				$562,438
1980	309794	13706	16194	9086	4493		3888	$375,764
1981	69894	6637	16981	7332	1493		8970	$106,955
1982	48091	5070	21321	4589	855		9384	$87,330
1983	86903	13121	20431	8942	1740		17271	$137,266
1984	78810	14663	18601	5418	2006		25450	$187,349
1985	94791	16990	19101	2458	1993		31461	$208,976
1986	122362	13133	9990	4231	1998		42168	$246,166
1987	378590	26731	19078	3902	2019		60163	$536,287
1988	393663	62110	20907	2824	4324		134456	$623,642
1989	434835	31536	17014	2723	4050	10679	147292	$651,591
1990	395040	28393	17263	2349	4461	3777	111482	$573,169
1991	411383	24505	17046	2281	3487	7663	131376	$607,918
1992	472233	25131	17268	2441	2715	9977	176105	$705,870
1993	684528	22924	17127	2498	2349	7419	282503	$1,019,348

SBFEP = Small Business Forest Enterprise Program

Source: B.C. Ministry of Forests, Annual Reports.

Step 3: Shipment Values - Harvesting Costs + Direct Payments = Economic Rent

(Current $ 000s)

			Shipments		
	Shipment	Harvesting	Less	Direct	Economic
Year	Values	Costs	Harv. Costs	Payments	Rent
1970	1033577	950253	83324	54980	138304
1971	1283531	1118047	165484	78015	243499
1972	1697479	1378193	319286	144851	464137
1973	2287761	1823886	463875	263921	727796
1974	2070349	1773454	296895	129351	426246
1975	1810829	1568886	241943	40362	282305
1976	2642945	2235790	407155	60433	467588
1977	3260542	2653598	606944	101998	708942
1978	4141574	3237472	904102	280096	1184198
1979	4840706	4025134	815572	562438	1378010
1980	4522397	4027886	494511	375764	870275
1981	4142741	3747454	395287	106955	502242
1982	3505827	3348158	157669	87330	244999
1983	4641554	4114318	527236	137266	664502
1984	4568708	4071617	497091	187349	684440
1985	5091696	4328508	763188	208976	972164
1986	5353800	4188030	1165770	246166	1411936
1987	6641900	5189300	1452600	536287	1988887
1988	6931900	5811400	1120500	623642	1744142
1989	7193000	6025000	1168000	651591	1819591
1990	6761700	5961700	800000	573169	1373169
1991	6029200	5330100	699100	607918	1307018
1992	7398600	6270200	1128400	705870	1834270
1993	9639500	7494500	2145000	1019348	3164348

Step 4: r * (k1+k2) +d1+d2 = Cost of Capital

(Current $ 000s except interest rate)

	Prime Rate	Construction	Machinery	Depreciation	Depreciation	Cost of
	Plus Two	Net	Net	on	on	Capital With
Year	Percent	Stock	Stock	Construction	Machinery	Risk Premium
	r	k_1	k_2	d_1	d_2	
1970	0.1017	172758	300579	12038	32538	92714
1971	0.0848	178551	353611	13357	37493	95977
1972	0.08	204812	399958	14678	43712	106771
1973	0.0965	238329	494910	16731	52689	140178
1974	0.1275	275851	590504	19981	65919	196360
1975	0.1142	296793	654591	22295	75950	206893
1976	0.1204	316389	713474	24411	85333	233740
1977	0.105	341977	779099	26489	94465	238667
1978	0.1169	379080	885360	29220	106920	283953
1979	0.149	447744	1055010	34056	127974	385940
1980	0.1625	533046	1247210	40442	154249	483982
1981	0.2129	599712	1421980	47246	183077	660740
1982	0.1781	629540	1436900	52213	202785	623031
1983	0.137	622194	1400840	54549	208967	540672
1984	0.1406	608614	1387160	55502	211915	548022
1985	0.1258	591574	1356170	56373	215135	516535
1986	0.1252	588400	1375400	57300	219500	522668
1987	0.1152	633621	1600400	60574	240516	558450
1988	0.1283	669656	1956140	64554	277398	678842
1989	0.1533	706710	2110780	68548	315273	815742
1990	0.1606	722370	2241020	71043	340171	887134
1991	0.1194	700837	2223960	72131	357940	779291
1992	0.0948	659500	2161370	70625	360750	698794
1993	0.0794	703153	2246510	72841	362553	669597

Source: Prime Rate - Bank of Canada Review, Various Issues
Capital Stock Information - Provided by Statistics Canada

Step 5: Economic Rent - Cost of Capital = Ricardian Rent

(Current $ 000s)

Year	Economic Rent	Cost of Capital	Ricardian Rent
1970	138304	92714	45590
1971	243499	95977	147522
1972	464137	106771	357366
1973	727796	140178	587618
1974	426246	196360	229886
1975	282305	206893	75412
1976	467588	233740	233848
1977	708942	238667	470275
1978	1184198	283953	900245
1979	1378010	385940	992070
1980	870275	483982	386293
1981	502242	660740	-158498
1982	244999	623031	-378032
1983	664502	540672	123830
1984	684440	548022	136418
1985	972164	516535	455629
1986	1411936	522668	889268
1987	1988887	558450	1430437
1988	1744142	678842	1065300
1989	1819591	815742	1003849
1990	1373169	887134	486035
1991	1307018	779291	527727
1992	1834270	698794	1135476
1993	3164348	669597	2494751

Step 6: Direct Payments / Ricardian Rent = Rent Capture

(Current $ 000s)

Year	Direct Payments	Ricardian Rent	Rent Capture (%)
1970	54980	45590	121
1971	78015	147522	53
1972	144851	357366	41
1973	263921	587618	45
1974	129351	229886	56
1975	40362	75412	54
1976	60433	233848	26
1977	101998	470275	22
1978	280096	900245	31
1979	562438	992070	57
1980	375764	386293	97
1981	106955	-158498	168
1982	87330	-378032	123
1983	137266	123830	111
1984	187349	136418	137
1985	208976	455629	46
1986	246166	889268	28
1987	536287	1430437	38
1988	623642	1065300	59
1989	651591	1003849	65
1990	573169	486035	118
1991	607918	527727	115
1992	705870	1135476	62
1993	1019348	2494751	41

Step 7: Ricardian Rent / Crown Harvest = Ricardian Rent Per Cubic Metre of Crown Harvest

Year	Ricardian Rent current $000	Crown Harvest cum 000	Ricardian Rent per cum of Crown Harvest current $
1970	45590	54700	0.84
1971	147522	56551	2.61
1972	357366	56451	6.33
1973	587616	70137	8.38
1974	229886	60086	3.83
1975	75412	50077	1.51
1976	233848	69520	3.36
1977	470275	69970	6.72
1978	900245	75164	11.98
1979	992070	76195	13.02
1980	386293	74654	5.17
1981	-158498	60780	-2.61
1982	-378032	56231	-6.72
1983	123830	71444	1.73
1984	136418	74556	1.83
1985	455629	76868	5.93
1986	889268	77503	11.47
1987	1430437	90591	15.79
1988	1065300	86807	12.27
1989	1003849	87414	11.48
1990	486035	78317	6.21
1991	527727	73676	7.16
1992	1135476	74004	15.34
1993	2494751	78012	31.98

Source: Crown Harvest Data - B.C. Ministry of Forests, Annual Reports

Step 8: Direct Payments / Crown Harvest = Rent Captured Per Cubic Metre of Crown Harvest

			Rent Captured
	Direct	Crown	per cum of
	Payments	Harvest	Crown Harvest
Year	current $000	cum 000	current$
1970	54980	54700	1.01
1971	78015	56551	1.38
1972	144851	56451	2.57
1973	263921	70137	3.76
1974	129351	60086	2.15
1975	40362	50077	0.81
1976	60433	69520	0.87
1977	101998	69970	1.46
1978	280096	75164	3.73
1979	562438	76195	7.38
1980	375764	74654	5.03
1981	106955	60780	1.76
1982	87330	56231	1.55
1983	137266	71444	1.92
1984	187349	74556	2.51
1985	208976	76868	2.72
1986	246166	77503	3.18
1987	536287	90591	5.92
1988	623642	86807	7.18
1989	651591	87414	7.45
1990	573169	78317	7.32
1991	607918	73676	8.25
1992	705870	74004	9.54
1993	1019348	78012	13.07

Step 9: [(1 / Implicit Price Index No.) * 100] * Current Dollar No. = Constant Dollar No.

	Ricardian Rent per Cubic Metre of Crown Harvest	Rent Captured per Cubic Metre of Crown Harvest		Ricardian Rent per Cubic Metre of Crown Harvest	Rent Captured per Cubic Metre of Crown Harvest
Year	Current $	Current$	Implicit Price Index 1986 =100	Constant $	Constant $
1970	0.84	1.01	32.8	2.56	3.08
1971	2.61	1.38	33.9	7.7	4.07
1972	6.33	2.57	35.8	17.68	7.18
1973	8.38	3.76	39	21.49	9.64
1974	3.83	2.15	44.6	8.59	4.82
1975	1.51	0.81	49	3.08	1.65
1976	3.36	0.87	53.3	6.3	1.63
1977	6.72	1.46	56.6	11.87	2.58
1978	11.98	3.73	60	19.97	6.22
1979	13.02	7.38	66	19.73	11.18
1980	5.17	5.03	73	7.08	6.89
1981	-2.61	1.76	80.9	-3.23	2.18
1982	-6.72	1.55	87.9	-7.65	1.76
1983	1.73	1.92	92.3	1.87	2.08
1984	1.83	2.51	95.2	1.92	2.64
1985	5.93	2.72	97.7	6.07	2.78
1986	11.47	3.18	100	11.47	3.18
1987	15.79	5.92	104.8	15.07	5.65
1988	12.27	7.18	109.6	11.2	6.55
1989	11.48	7.45	115.4	9.95	6.46
1990	6.21	7.32	119.4	5.2	6.13
1991	7.16	8.25	123.3	5.81	6.69
1992	15.34	9.54	125	12.27	7.63
1993	31.98	13.07	126.9	25.2	10.3

Source: Implicit Price Index - Bank of Canada Review, Various Issues.

Step 10: Captured Rent per Cu.M / Ricardian Rent per Cu.M = Rent Capture

	Captured Rent per Cubic Metre of Crown Harvest	Ricardian Rent per Cubic Metre of Crown Harvest	
Year	Constant $	Constant $	Rent Capture (%)
1970	3.08	2.56	121
1971	4.07	7.7	53
1972	7.18	17.68	41
1973	9.64	21.49	45
1974	4.82	8.59	56
1975	1.65	3.08	54
1976	1.63	6.3	26
1977	2.58	11.87	22
1978	6.22	19.97	31
1979	11.18	19.73	57
1980	6.89	7.08	97
1981	2.18	-3.23	168
1982	1.76	-7.65	123
1983	2.08	1.87	111
1984	2.64	1.92	137
1985	2.78	6.07	46
1986	3.18	11.47	28
1987	5.65	15.07	38
1988	6.55	11.2	59
1989	6.46	9.95	65
1990	6.13	5.2	118
1991	6.69	5.81	115
1992	7.63	12.27	62
1993	10.3	25.2	41

APPENDIX 4B: FIGURES

Figure 4.1 Ricardian Rent

P = product Price C= Marginal Cost Q = Production Units

All units of forest land used for harvest earn the return P* - C* giving rise to scarcity rent. In addition, the higher quality forest lands have actual marginal costs [C] less than C* so that the sum of the differences between C* and C give rise to differential rent. The sum of scarcity rent plus differential rent is Ricardian rent. The source of this diagram is F.J. Anderson, *Natural Resources in Canada: Economic Theory and Policy.*

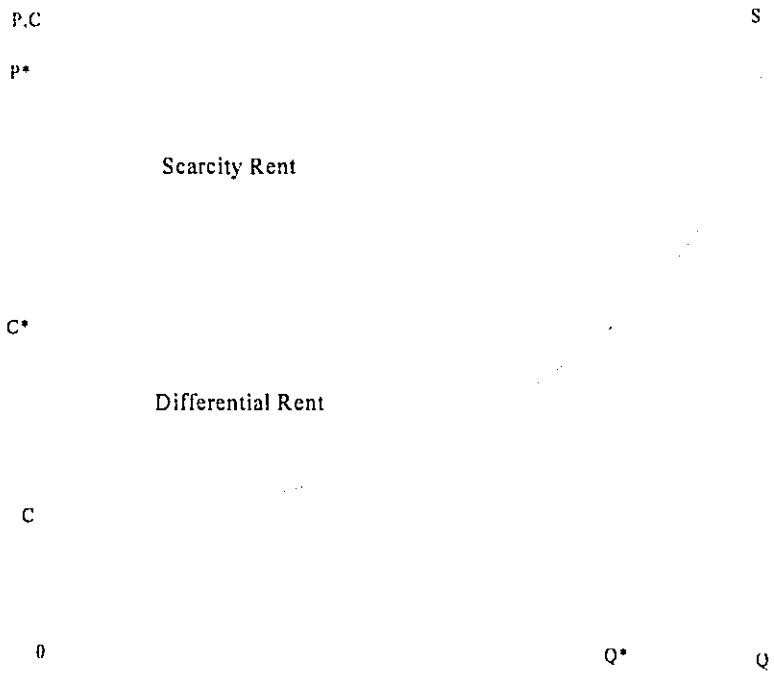
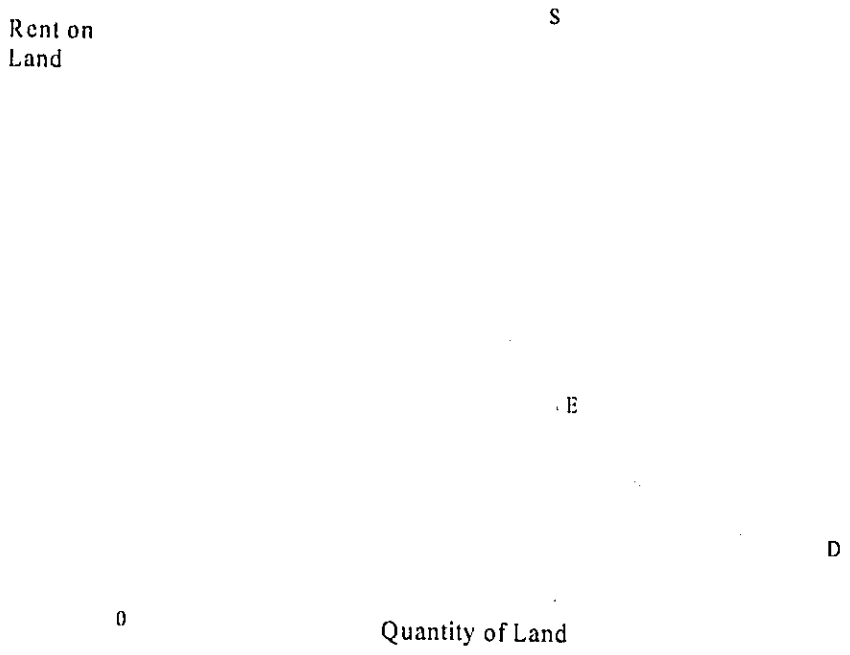


Figure 4.2 Determination of Economic Rent in a Private Market System

Since the supply of land is fixed and its quantity does not vary with the price of land the supply curve is inelastic. The equilibrium level of economic rent is determined by the intersection of the supply and demand curves at point E. Above point E firms are bidding for a quantity of land which exceeds the amount available at the existing price. Thus market pressure lowers the economic rent. Below point E firms are bidding for the use of more land than is available and some firms, unsatisfied with the shortage, bid up the price until the economic rent is restored to the equilibrium level. Thus it is clear that the economic rent from land is determined by a competitive market price where the total land demanded is identical to its total fixed supply.



Notes

1. Economic rent was discussed by William Petty in "A Treatise of Taxes and Contributions" in *The Economic Writings of Sir William Petty*, 1662 and by Quesnay in *Tableau Economique*, 1758. A prominent mercantilist that discussed rent was Adam Smith in *An Inquiry into the Nature and Causes of The Wealth of Nations*, 1776. Ricardian Rent was originally discussed in letters from David Ricardo to Malthus and others in 1813 and 1814. The Ricardian concept of rent was discussed by T.R. Malthus in *An Inquiry into the Nature and Progress of Rent and The Principles by which it is Regulated*, 1815. It was also discussed in 1815 by E. West in "Essay on The Application of Capital to Land with Observations Showing the Impolicy of Any Great Restriction of the Import of Corn, and that the Bounty of 1668 did not lower the price of it" in *A Reprint of Economic Tracts*, 1903. The Malthus and West discussions of Ricardian Rent were summarized by Ricardo himself in, *The Principles of Political Economy and Taxation*, 1817 which is the source of the definition given in this chapter. For a good discussion on the various concepts of economic rent, please see Harry Nelson, R. Quentin Grafton and G. Cornelis Van Kooten, "Estimating Economic Rents in The British Columbia Forest Sector,"1994. p. 36.

2. According to Paul Samuelson and William D. Nordhaus in the classic introductory text book in economics. The reference is Samuelson, Paul A. and William D. Nordhaus, *Economics* (Thirteenth Edition), 1989. p. 666.

3. It is important to distinguish the schools of economic thought. Not all of the economists who discussed rent were from the classical school. William Petty and Adam Smith were mercantilist thinkers in the seventeenth and eighteenth centuries respectively. Quesnay was associated with a school of economic thought in France known as the Physiocrats. The prominent classical economists who spoke of rent this way were Ricardo and Malthus.

4. The quote is from Samuelson and Nordhaus (1989), p. 667. The original source is Ricardo, 1815.

5. According to Samuelson and Nordhaus (1989). p. 667.

6. Paul A. Samuelson and William D. Nordhaus, *Economics*. Fourteenth Edition, 1992. p.265.

7. Lawrence Copithorne. *Natural Resources and Regional Disparities*. Report Prepared For The Economic Council of Canada, 1979. p. 75.

8.------p.234.

9. -----pp.236-237.

10. Michael B. Percy. *Forest Management and Economic Growth in British Columbia*. Report Prepared For The Economic Council of Canada, 1986. p. 39.

11. Harry J. Paarsch. "The Effect of Stumpage Rates on Timber Recovery." *The Canadian Journal of Economics*, 1993, Volume 26, No. 1. p.112.

12. The methodology follows Nelson, Grafton and Van Kooten (1994). p. 36.

13. Please see Lawrence Copithorne, *Natural Resources and Regional Disparities: A Skeptical View*, Discussion Paper 106 For The Economic Council of Canada, 1978. pp. 19-30 and Percy (1986), pp. 36-38.

14. William D. Nordhaus, "The Effect of Stumpage Charges on Prices and Trade Flows in Forest Products, 1992. pp 32-33.

15. Please see Richard Schwindt and Terry Heaps, *Chopping Up The Money Tree: Distributing The Wealth From British Columbia's Forests*, 1996. pp 47-49.

Chapter 5

The Subsidy Question

Definition of Subsidy

A subsidy may be defined as a "payment" made by government to private industry which lowers production costs to firms and thus increasing the quantity produced and decreasing the price of a good. The payment can be a one time lump sum payment or an *Ad Valorem* payment based on value sold. It could also be a per unit payment such as $10 per unit produced. In practice, subsidies are rarely direct payments from a government to firms but involve indirect cost reductions for firms.

In the context of the softwood lumber dispute, the U.S. Department of Commerce has defined a subsidy much more generally. In describing its economic model of a subsidy during the 1986 phase of the dispute, it stated. "This model which generally defines a subsidy as a distortion of the market process for allocating an economy's resources underlies the Department's entire countervailing duty methodology."[1] It later explained that the - distortion of the market process for allocating an economy's resources - meant increasing the quantity produced and decreasing the price of a good from what would be dictated by the market system.

It is clear that the definition of subsidy given by economists and the more general definition given by the U.S. Department of Commerce are the same. Under both, the quantity of a good produced increases and its price decreases from what the market allocates.

This study follows the accepted definition by defining a subsidy as a government program

which distorts the allocation of the market system by increasing the quantity produced and decreasing the price of a good. If B.C. stumpage rates do not have the effect of increasing the quantity of softwood lumber produced or decreasing its price from the market allocation then there is no evidence of a subsidy.

Testing For The Existence of a Subsidy

This section will use three tests to determine if low B.C. stumpage rates constitute a subsidy to the B.C softwood lumber industry.[2] The first test examines the impact stumpage rates may have on the financial profitability of forest products firms. If stumpage rates constituted a subsidy then this would show up in above normal profits for companies producing softwood lumber.

A Canadian Federal Government review of the forest products sector in 1978, a study by Pearce in 1980, and more recently by Nordhaus (1992), have all shown the poor financial performance of the forest products industry compared to manufacturing industries in Canada.[3] In 1985, the large forest products companies (most operating in B.C.) had an after tax return on shareholders equity of 4.3 percent while the average return for all industries in Canada was 9.8 percent.[4] In 1986, during a key phase of the softwood lumber dispute, Price Waterhouse reported that the large forest companies earned an after tax return of 0.6 percent on shareholders equity (for the year 1984) while the average for all industries in Canada was 9.9 percent.[5] In 1992, during another key phase of the dispute, Nordhaus showed that the average rate of return on capital for the wood products industry in Canada, over the period 1970-87, was one and one half percentage points below the average rate of return in the manufacturing sector. Moreover, the risk of employing capital in the wood industry (measured by the standard deviation of annual

profitability) was 5.5 percent compared to 2.1 percent for the manufacturing sector.[6] Thus, there is a considerable amount of evidence to indicate a poor financial performance for the forest products industry in Canada.

The financial performance of the Canadian forest industry relative to their U.S. counterparts has also been lacklustre. The after tax earnings as a percentage of shareholders equity for the two industries is shown in Table 5.1. Almost all of the companies included in the representative sample of Canadian companies are large B.C. based firms.

Table 5.1 Profitability*of Forest Products Companies: Canada vs. United States, 1973-85

Year	Canada	United States
1973	18.7	22.7
1974	11.7	17.5
1975	1.7	10.9
1976	8.7	14.3
1977	11.0	14.9
1978	19.5	17.6
1979	23.4	17.6
1980	14.8	11.1
1981	0.9	8.3
1982	-11.5	4.1
1983	-0.3	5.6
1984	-0.6	6.6
1985	4.3	6.9

Source: Price Waterhouse, " Profitability of Selected Canadian and U.S. Forest Products Companies,"1986.
* Profitability is defined as after tax earnings as a percentage of shareholders equity.

These results show that, over the period 1973-85, the U.S. industry outperformed the Canadian industry in all but three of those years. This trend has continued into the 1990s. From 1990 through to 1993 inclusive, the Canadian Forest Industry recorded negative net earnings while the U.S. industry recorded positive net earnings.[7] Historically, the B.C. and Canadian forest products industry has been chronically unprofitable. The evidence on financial profitability suggests that stumpage rates do not constitute a subsidy to the B.C. forest industry.

The second method of testing whether B.C. stumpage rates constitute a subsidy is to examine the amount of available economic rent captured by the stumpage system. The available rent (Ricardian Rent) is the total available return to both owner and user of forest land. The stumpage system allows the owner to capture a share of the total return. If the B.C. government is not capturing a share of the available rent then stumpage rates are too low and there may be evidence of a subsidy. If the government is capturing more than the available rent then stumpage rates are too high and would constitute a tax. If the government is capturing a positive share of the available rent then stumpage rates are at normal levels and there is no evidence of a subsidy. The empirical evidence on the B.C. government's rent capture from the stumpage system was shown in chapter four. The same results are reproduced below in Tables 5.2 and 5.3.

Table 5.2 Captured Rent and Available Economic Rent (current $, 000s)

Year	Captured Rent	Available Rent	Rent Capture (%)
1970	54980	45590	121
1971	78015	147522	53
1972	144851	357366	41
1973	263921	587618	45
1974	129351	229886	56
1975	40362	75412	54
1976	60433	233848	26
1977	101998	470275	22
1978	280096	900245	31
1979	562438	992070	57
1980	375764	386293	97
1981	106955	-158498	168
1982	87330	-378032	123
1983	137266	123830	111
1984	187349	136418	137
1985	208976	455629	46
1986	246166	889268	28
1987	536287	1430437	38
1988	623642	1065300	59
1989	651591	1003849	65
1990	573169	486035	118
1991	607918	527727	115
1992	705870	1135476	62
1993	1019348	2494751	41

Table 5.3 Captured and Available Rent Per Cubic Metre of Crown Harvest ($1986)

Year	Captured Rent	Available Rent	Rent Captured (%)
1970	3.08	2.56	121
1971	4.07	7.7	53
1972	7.18	17.68	41
1973	9.64	21.49	45
1974	4.82	8.59	56
1975	1.65	3.08	54
1976	1.63	6.3	26
1977	2.58	11.87	22
1978	6.22	19.97	31
1979	11.18	19.73	57
1980	6.89	7.08	97
1981	2.18	-3.23	168
1982	1.76	-7.65	123
1983	2.08	1.87	111
1984	2.64	1.92	137
1985	2.78	6.07	46
1986	3.18	11.47	28
1987	5.65	15.07	38
1988	6.55	11.2	59
1989	6.46	9.95	65
1990	6.13	5.2	118
1991	6.69	5.81	115
1992	7.63	12.27	62
1993	10.3	25.2	41

In Table 5.2, captured rent is the actual current dollar amount of stumpage payments collected by the B.C. government while available rent is the final sale value of timber less harvesting costs. The empirical evidence shows that the stumpage system has captured a positive share of the available rent in every year since 1970. This suggests that stumpage rates are at normal levels with no evidence of a subsidy. The average annual rent capture is 71 percent. Results show that rent capture is quite volatile. The lowest capture was 22 percent in 1977 but the peak of 168 percent came just four years later in 1981. The rent captured is well above the average over the 24 years in 1970, 1980-84, and 1990-91 ranging from 97 to 168 percent. It is well below the average in the remaining sixteen years ranging from 22 to 65 percent. Rent capture is most volatile during recessionary periods.

It is very difficult and indeed not desirable for the provincial government to capture close to 100 percent of the economic rent. If the government captures too large of a share then forest industry profits are squeezed to the point where the industry will not continue to harvest timber nor produce forest products. The forest industry's share of the rent capture must also include a portion for labour employed by companies.

The data in Table 5.3 is corrected for inflation and converted to a per cubic metre of crown harvest basis to comply with the provincial government standard of assessing stumpage charges. Recall from the discussion in chapter two that the key phases of the dispute were in 1982, 1986, and 1991. In light of that, the results in Table 5.3 are dramatic. During two of those phases (1982 and 1991), the B.C. provincial government captured more rent from the forest industry than was available. This suggests that during key times when there have been allegations of subsidy, the stumpage rate mechanism has been capturing more than 100 percent of the total

available economic rent. In fact, this result has occurred in seven of the twenty four years over the period 1970-93. In seventeen of the twenty four years covered in the time series, stumpage rates are at normal levels while in the other seven years they are too high. This is decisive evidence to conclude that stumpage rates do not constitute a subsidy to the B.C. softwood lumber industry.

It was outlined in chapter four that the stumpage rate system is not a perfect mechanism for capturing economic rent. In some cases it leaves uncaptured rents in the forest and in other cases (like the seven years just discussed), it captures too much rent. However, there is no link between the adequacy of the rent collection mechanism and a subsidy to the softwood lumber industry. To establish that a subsidy exists, it must be proven that low stumpage rates allow forest companies to expand their production (and hence exports) of softwood lumber and sell their product at a lower price in the U.S. market thereby injuring U.S. softwood lumber producers.

If the provincial government captured all of the economic rent from the forest resource then there would be no incentive (or profit) for firms to engage in timber production. If the stumpage system fails to capture all of the available rent from the forest resource, then the most that firms can do is collect the difference between the available rent and what the stumpage system does not capture. This difference would turn up in increased profits to forest companies. It would not lead to an increase in the production of softwood lumber because firms would still face the same harvest restrictions imposed by the Ministry of Forests under the annual allowable cut. This is a necessary part of forest management. Thus, ironically enough, U.S. firms cannot possibly be injured as a result of low B.C. stumpage rates. This casts some doubt on the

credibility of the entire subsidy allegation.

The third method for determining if stumpage rates constitute a subsidy is called the market distortion test.[8] This test employs economic analysis to compare how the quantity and price of softwood lumber under a stumpage system compares to that under the private market system. If a stumpage system does not increase the quantity produced nor decrease the price of softwood lumber from the market allocation, there is no evidence of a subsidy.

The economic analysis employed in the market distortion test makes use of the economic rent theory introduced in chapter four. Under the basic theory, available rent is determined by the price of softwood lumber outside the context of each individual firm's cost of production (for a statistical proof of this please see appendix A). Unlike available rent, stumpage rates are a part of each firm's production costs. They have the effect of increasing or decreasing a firm's marginal cost of production. Marginal cost refers to the incremental cost of producing an additional unit of softwood lumber.

In the absence of stumpage rates (or any other government rent collection program) the forest companies would capture all of the available economic rent by producing quantity X of softwood lumber at a given price. But since forest companies must pay stumpage rates there is an increase in their marginal cost of production compared to the hypothetical situation where the industry reaps all the rent. This increase in marginal cost has the effect of lowering the industry's production of softwood lumber from the quantity X. Depending on the magnitude of the marginal cost increase, production may actually remain at X but will likely decrease. It will not increase. Thus, for all stumpage rates above zero, the effect of the stumpage rate system is to keep constant or decrease the quantity of softwood lumber produced compared to the market allocation. B.C.

stumpage rates cannot have the effect of increasing the production of softwood lumber from a market allocation.

The affect of B.C. stumpage rates have on the quantity of softwood lumber produced can be summarized rather succinctly. If stumpage rates are zero, then the profit maximizing decision for the forest company is to produce softwood lumber independently of the stumpage system and to set output at the maximum possible level. If stumpage rates are higher than the available rent then the profit maximizing decision for the forest company is not to produce softwood lumber and to set output at the minimum possible level (there is a minimum annual allowable cut in B.C.). However, for normal stumpage rates (above zero but less than available rent), the profit maximizing decision for the forest company is to set output at a level equal to or below the market allocation.

It is also necessary to consider the effect of the increase in marginal cost (under stumpage rates) on the price of softwood lumber. The increase in marginal cost to forest companies will have the effect of increasing the price of softwood lumber. Once again, depending on the magnitude of the increase, the price may remain the same but will likely increase. It will not decrease. Thus, for stumpage rates above zero, the effect of the stumpage rate system is to keep constant or increase the price of softwood lumber compared to the market allocation. Under B.C. stumpage rates, the price of softwood lumber cannot be lower than a market allocation.

The outcome of the market distortion test is that, for any level of stumpage rates above zero, the stumpage system cannot have the effect of increasing the quantity produced nor decreasing the price of softwood lumber compared to a private market allocation without stumpage rates. Thus, there is no evidence that B.C. stumpage rates constitute a subsidy to the

softwood lumber industry.

The market distortion test is set in the context of a competitive softwood lumber industry in B.C. With fairly low levels of production concentration and a high reliance on international trade the industry is best characterized as a competitive industry. Lumber products are standardized by species with quality differences based on grading. Firms can enter the industry relatively easily. In 1990, the five largest Canadian companies had 22.3 percent of the Canadian market.[9] Though the B.C. softwood lumber industry is a competitive one, it should not be modelled according to an economist's concept of perfect competition since, among other things, long run economic profits are not zero.

This chapter has investigated the possibility that low stumpage rates constitute a subsidy to the B.C. softwood lumber industry. The financial performance test has shown that Canadian forest companies earn returns below that of the manufacturing sector and below that of their U.S. counterparts. The economic rent test has shown that stumpage rates are either at normal levels, where the provincial government captures an adequate share of the available rent, or at excessive levels where the provincial government captures too much rent. The market distortion test has shown that B.C. stumpage rates cannot increase the quantity produced nor decrease the price of softwood lumber from the private market allocation. On the basis of the accepted definition of subsidy and on the basis of the three tests that have been conducted, there is decisive evidence to conclude that there is no subsidy.

It is instructive to compare the results in this chapter from those of Professor Nordhaus. In his 1992 paper, "The Impact of Stumpage Charges on Prices and Trade Flows in Forest Products," Nordhaus discussed basic economic rent theory but did not attempt to measure

economic rent nor use this approach to test for the existence of a subsidy. The Nordhaus method of testing for the existence of a subsidy is based on the identification of three levels of stumpage charges. First, there is the case of *net benefits* where stumpage charges are less than the net commercial benefits of government services to the tenure holder. Under this scenario the quantity of logs produced increases and their price decreases. This decreases the marginal cost of producing softwood lumber resulting in an increase in the quantity produced and a decrease in its price. This constitutes a subsidy.

The second case is one of *excessive stumpage* where stumpage charges are so high that they raise the marginal cost of harvesting timber above its market price. This leads to a decrease in the quantity produced and an increase in the price of logs. This increases the marginal cost of producing softwood lumber leading to a decrease in quantity produced and an increase in its price. This does not constitute a subsidy but rather a tax.

The third case is *normal stumpage charges* which are in between net benefits and excessive stumpage charges. In this case, there is no effect on the quantity produced nor the price of logs. As a result there is no effect on the marginal cost, quantity or price of softwood lumber. Under normal stumpage charges there is no evidence of a subsidy.

Furthermore, Nordhaus defines economic rent as the return to a factor of production that is fixed in supply and assumes the volume of standing timber is fixed in supply. Rent does not enter directly into the firms cost of production and is price determined. Consequently, as long as the rent from forest land (in the form of stumpage charges) is less than the net price of timber there is no impact on output. His conclusion is that for stumpage charges in the normal region there is no distortionary effect on the output or price of logs and hence no effect on the marginal

cost, output or price of softwood lumber.

Nordhaus' principle method of examining the subsidy question is the market distortion test in the broad context of the Canadian logging and softwood lumber industry while the principle method in this chapter is economic rent capture in the context of the British Columbia Forest Industry. The definitions of subsidy employed are the same as well as the conclusion that there is no evidence of a subsidy to the softwood lumber industry.

Appendix 5A: Relationship Between Available Rent and The Price of Softwood Lumber

The basic theory of economic rent predicts that the price of softwood lumber determines the amount of available economic rent. This hypothesis has been very important in showing that there is no evidence of subsidy to the B.C. softwood lumber industry. Thus, it warrants a statistical test using formal econometric methods. Regression analysis is used to test the relationship between economic rent and the price of softwood lumber.

The economic rent data (calculated in chapter four) is the available economic rent per cubic metre of crown harvest in 1986 Canadian dollars. The price of softwood lumber is measured per thousand board feet for random length Western Spruce-Pine-Fir (kiln dried) standard or better 2x4 lumber. It is also in 1986 Canadian dollars.

It is necessary to take account of other explanatory factors which may effect the relationship between economic rent and the price of softwood lumber. One such factor is recessionary periods which may effect the level of available economic rent.

In the regression, recession is a dummy variable for the periods, 1980-82 and 1990-92, to take account of general business fluctuations. In econometrics, dummy variables are used to measure qualitative factors which may effect the relationship being tested.

Table 5.A.1 Rent and Price Data for Regression

YEAR	RENT	PRICE
1971	7.70	291.92
1972	17.68	367.98
1973	21.49	405.17
1974	8.59	276.29
1975	3.08	255.36
1976	6.30	279.36
1977	11.87	325.06
1978	19.97	397.19
1979	19.73	399.38
1980	7.08	269.04
1981	-3.23	231.21
1982	-7.65	196.56
1983	1.87	247.02
1984	1.92	208.10
1985	6.07	213.78
1986	11.47	255.66
1987	15.07	253.08
1988	11.20	208.90
1989	9.95	188.80
1990	5.20	181.78
1991	5.81	173.77
1992	12.27	223.30
1993	25.20	337.45

* Source for the price of lumber is Resource Information Systems Inc.

The model regresses economic rent against the price of softwood lumber allowing for recessionary periods and the new stumpage formula after 1987. It is represented by the following equation.

$$Rent = b_1 + b_2 * price + b_3 * recession + E \qquad (5.A.1)$$

The results are the following:

$$\underset{\substack{(-1.64)^{**}\\ (3.85)^{*}\\ (-0.98)^{***}}}{Rent = -9.19 + 0.07 * price - 2.95 * recession} \qquad (5.A.2)$$

* Significant at the ninety nine percent confidence level.
** Significant at the ninety percent confidence level.
*** Significant at the seventy five percent confidence level.

The adjusted R^2 is .51.

The results show that the price of softwood lumber significantly affects the level of available economic rent. The lack of explanatory power of the recession variable measuring general business fluctuations further supports this claim. The results support the long standing theory that economic rent is determined by product prices and does not enter directly into production costs.

The theory of economic rent is used to show that available rent is determined by market forces. To see this, consider the following. The data in Table 5.A.1 reveals that the constant (1986) dollar price of softwood lumber was at historical low levels in 1982 and 1991. The low lumber prices caused decreases in the volume of lumber shipments. As a result of low prices and low shipments the value of wood industry shipments decreased considerably (please see chapter 4, appendix A, step 1). Since available rent is determined by shipment values less harvesting costs, the decrease in wood industry shipments led to a sharp decrease in available economic rent. Table 5.A.1 shows that the available economic rent was negative and at its lowest level in

1982. The rent was also very small in 1991, when prices were very low, indicating that the amount of rent depends very heavily on the price of lumber.

Notes

1. 54 Fed. Reg. 23, p.367 (May 31, 1989).

2. Please see William D. Nordhaus, "The Effect of Stumpage Charges on Prices and Trade Flows in Forest Products," 1992. p.9.

3. Please see Government of Canada. *Review of the Canadian Forest Products Industry*, 1978. pp. 147-148. and Peter H. Pearce. *The Forest Industries of British Columbia*, 1980. p.29. and Nordhaus (1992). p.33.

4. Michael B. Percy and Christian Yoder. *The Softwood Lumber Dispute and Canada-U.S. Trade in Natural Resources*, 1987. p.167.

5. Price Waterhouse. "Profitability of Selected Canadian and United States Forest Products Companies," Appendix VII of "Memorandums of Canadian Forest Industries Council Concerning the Alleged Stumpage Subsidies,"1986.

6. Nordhaus (1992). p.33.

7. According to Standard & Poors Inc.

8. Nordhaus (1992). p.9.

9. ----------p.23.

Chapter 6

The Present Dispute

In 1987, the British Columbia Government formulated a new stumpage system in an effort to begin replacing the export tax under the MOU. Canada formally withdrew from the MOU in 1991 by cancelling the 15 percent export tax, and this action was followed, in 1992, by a U.S. retaliatory tariff of 6.5%.[1] British Columbia appealed the tariff and the dispute went before a bilateral dispute resolution panel set up under the North American Free Trade Agreement (NAFTA). The panel ruled in Canada's favour and the U.S. government was ordered to return $800 million in tariff revenue which had remained in an escrow account pending the outcome of the dispute.

In the period, 1991 to 1995, the Canadian share of the U.S. market rose from 27 percent to 36 percent.[2] In response, the U.S. lumber producers once again put forth the subsidy argument, complaining that Canadian stumpage rates are so low that U.S. companies cannot compete in their own market. The Coalition For Fair Lumber Imports (the Coalition) wants to limit the Canadian share of the U.S. market to no more than 30 percent. The coalition prepared to file a countervail petition with the ITC on Thursday February 15, but U.S. trade officials requested that the petition be delayed to allow time for a possible negotiated settlement with Canada. The coalition requested a quick solution or they would take their case to the ITA at the Department of Commerce. The negotiations with Canada involved the provinces of British Columbia, Alberta, Ontario, Quebec, New Brunswick and Nova Scotia. British Columbia proposed a combination of

an export tax and a quota to limit Canadian exports. Quebec considered this concession too strong and proposed a simple increase in provincial stumpage fees.

In 1992, Canada had defended itself by claiming that U.S. countervailing duties violated their own trading rules under sections of NAFTA and the bilateral panel ruling reflected this claim. Since then the U.S. altered those trading rules and put forth the subsidy argument on a province by province basis which fragmented the Canadian defence.[3] On April 1, 1996, a new agreement took effect for a period of five years called *The Softwood Lumber Agreement Between The Government of Canada and The Government of The United States*.[4]

Under Article II of the new agreement, Canada places softwood lumber on the Export Control List under the Export and Import Permits Act. A federal export permit is required for softwood lumber exported to the United States that is originally manufactured in B.C., Alberta, Ontario, or Quebec. Upon issuing the permit, the Canadian Government collects an export tax based on the following three level schedule.

Export Volume	**Export Tax**
14.7 billion board feet (bbf)	Free
14.7 bbf to 15.35 bbf	$U.S. 50 per thousand board feet
More than 15.35 bbf	$U.S. 100 per thousand board feet

The tariff schedules are adjusted each year for inflation and allocations are transferable between Canadian provinces. In addition, the Canadian Government can collect fees quarterly if exports exceed 28.75 percent of the "annual established base" of 14.7 billion board feet (bbf). A board foot is a measure of lumber one foot long by one foot wide by one inch thick. Canada may export to the U.S. an additional 92 million board feet in any quarter where the average $U.S. price per

thousand board feet of lumber is equal to or greater than $U.S. 405. This is called the "Trigger Price" and is covered under Article III of the agreement.[5] After March 31, 1998, the Trigger Price rises to $410.

In return for these measures the United States agreed, under Article I, not to self initiate any investigation against Canadian softwood lumber [under the Tariff Act of 1930, The Agricultural Act of 1956, or The Trade Act of 1974] for the five year period covering the agreement. Both governments agreed, under Article IV, to collect and exchange information on softwood lumber exports on a monthly basis to facilitate a smooth execution of measures discussed above.

A dispute resolution mechanism is written into the agreement under Article V, whereby, failing a negotiated settlement of a dispute, the matter is referred to an arbitration panel composed of three panellists from lists established under either the World Trade Organization (WTO) or NAFTA.

On September 8, 1996, the Minister For International Trade, Art Eggleton, announced a plan to allocate, on a company basis, the "annual established base" export of softwood lumber to the United States. When the allocations are aggregated by province they are as follows: (bbf = billion board feet)

British Columbia	8.673 bbf	59.0 percent
Alberta	1.320 bbf	7.7 percent
Ontario	1.514 bbf	10.3 percent
Quebec	3.381 bbf	23.0 percent [6]

No fees apply to the export of softwood lumber to the United States from the other Canadian

provinces or territories. According to the Minister, the allocations allow for the entrance of new market participants in the softwood lumber industry.

Allocations will be adjusted if they are underutilized. Any unused allocations will returned to a national pool for redistribution. Allocations can be transferred from one company to another with Ministerial approval. The allocation plan is a national program under the Export and Import Permits Act.

Revenues collected by the Government of Canada from the export fee will be distributed to the four provinces covered by the agreement in accordance with their share of softwood lumber shipments subject to the fee.

The present softwood lumber agreement is an official confirmation that industry and government representatives in both Canada and the United States acknowledge that the softwood lumber dispute is essentially a dispute over market share. The stumpage as subsidy allegation is merely a tactic used by the Coalition to limit Canadian access to the U.S. market. The present agreement attempts to limit Canadian access to the U.S. market to 30 percent. The Coalition's position is that no matter how superior the competitive position of the B.C. industry, a certain percentage of the U.S. softwood lumber market should be reserved for U.S. producers. Far more progress can be made toward an ultimate solution to the softwood lumber dispute if the Coalition stated their market share objectives clearly.

The present market share agreement is somewhat flexible in terms of the duty free export volumes allowed. For the four provinces covered in the agreement, the threshold level of duty free softwood lumber exports from Canada to the United States (14.7 bbf) is a level higher than the 1992-94 average annual exports from these four provinces. If the fee schedule were applied to

the record exports of 16.2 bbf in 1995, ninety one percent of softwood lumber exports to the U.S. from these four provinces would enter the U.S. duty free.

However, the present agreement has caused a certain amount of turmoil in the North American Softwood Lumber market.[7] Some B.C. forest companies may close lumber mills rather than export volumes above the threshold level and pay the export tax. The export reductions also restrict the supply of lumber in the North American market which has exerted upward pressure on the price of lumber. This has upset the residential construction industry in the U.S. who must in turn raise the price of new homes. Some analysts predict it will take at least one year for the North American market to adapt to the lumber supply restrictions brought about by the agreement.

Large B.C. based forest companies are not well placed to absorb a new export tax. Timber West Forest Ltd. and other companies have just announced considerable layoffs due to lack of profitability. The companies argue that large increases in stumpage rates (63 percent on the coast and 81 percent in the interior) in May 1994, combined with rising transportation costs, have driven production costs so high that profits are not recorded despite historically high lumber prices.

Notes

1. The Ottawa Citizen, "Canada, U.S. Look For Peace in Lumber Dispute." Friday, February 16, 1996, p. B8.

2. ----------.

3. Interview with Canadian Government Official at Industry Canada, Forest Industries and Building Products Branch, May, 1996.

4. The subsequent discussion follows the outline of the *Softwood Lumber Agreement Between The Government of Canada and The Government of The United States*. The document was signed by Raymond Chretien representing The Government of Canada and Ira S. Shapiro representing The Government of The United States on May 29, 1996.

5. Under Article III, The Trigger Price of $U.S. 405 is established based on the average price per thousand board feet as published in *Random Lengths* for Spruce-Pine-Fir, Eastern, Kiln Dried, 2x4 random length, Standard and Better, Great Lakes delivered.

6. As outlined in a Federal Government Summary of the Minister's speech obtained by the author titled "Minister Announces Softwood Lumber Plan." Draft 9 dated September 8, 1996.

7. Please see the article "How Much Wood?" It appears in the Financial Post, November 16, 1996. p.18.

Chapter 7

Conclusions

This study has examined the allegation that low provincial stumpage rates constitute a subsidy to the British Columbia softwood lumber industry. On the basis of the three tests for subsidies there is no evidence to conclude that B.C. stumpage rates constitute a subsidy. There is evidence to conclude that the B.C. softwood lumber industry is cost competitive.

The issue of whether a stumpage system captures all of the economic rent in the B.C. forest sector has no link to the subsidy question. In order to establish that a subsidy exists, it must be proven that U.S. producers are harmed as a result of a trading advantage enjoyed by Canadian exporters. If the stumpage system captures a very low share of the available economic rent, it would show up in above normal profits for lumber companies but would leave production unchanged since the annual timber harvest must be within 10 percent of the annual allowable cut set by the Ministry of Forests. U.S. producers cannot be harmed as a result of low stumpage rates. The conclusion is not only that there is no subsidy but regardless of stumpage rates, it is unlikely that the provincial stumpage system is capable of causing harm to U.S. producers.

Any potential subsidy would likely lie in the area of forest management policies that allowed the annual timber harvest to adjust with market conditions. It is also possible that it could lie in provincial payments to the forest industry to marshall the harvest of timber. To date, there have been no studies suggesting that either form of subsidy exists in B.C.

The analysis of economic rent is most compelling in disproving the subsidy allegation

when it is set in the context of testing for market distorting increases in softwood lumber production or decreases in its price. It is ironic that this is the methodology proposed by the U.S. Department of Commerce in its economic model of a subsidy and then not followed in its investigation of the subsidy question during key phases of the softwood lumber dispute.

Between 1982 and 1986, the U.S. statutory laws concerning subsidies and countervail duties did not change but the U.S. Department of Commerce's (ITA) interpretation did. The interpretation was broadened to the extent that virtually any exercise of discretion by the B.C. provincial government in the allocation of crown timber constituted a subsidy to the softwood lumber industry. The interpretation of economic concepts in U.S. trade law have been broadened to the extent that the legitimacy of the countervail process should be questioned. The flaws in the methodology behind the ITA determination of subsidy in 1986 indicates that there is little value in government officials on both sides of the border debating the subsidy issue unless both countries agree on the definition and methodology that should be employed to determine the existence of a subsidy.

The Coalition (in their attempt to secure an adequate share of the U.S. softwood lumber market) consistently charge that Canadian imports are unfairly subsidized on the basis of a simple cross border comparison of stumpage rates. The coalition has repeatedly urged the U.S. Department of Commerce to use cross border stumpage comparisons (even in the 1996 petition) as the appropriate methodology in examining the subsidy question. This methodology is so flawed that even Commerce has acknowledged that it is an unacceptable benchmark in testing for a subsidy. Species mix, obligations of tenure holders, utilization standards, bidding processes, log processing costs, quality variations and transportation costs all account for differences in

stumpage rates between British Columbia and the U.S. Pacific Northwest. These factors result in higher production costs in British Columbia which s ıld be reflected in lower stumpage rates. The persistent claim that cross border stumpage rate comparisons are evidence of subsidized Canadian imports reflects a certain degree of intransigence on the part of the Coalition. These comparisons have been the source of a considerable amount of political illwill in both Canada and the United States. They have also mislead both the public and the media about the nature of the dispute and distracted the focus from the basic economic issue behind the dispute - the role of market forces in determining an appropriate Canadian share of the U.S. softwood lumber market.

There is a considerable amount of evidence to suggest that market forces have played a key role in increasing the Canadian share of the U.S. market. Since WWII, the U.S. softwood lumber market has suffered from a number of structural weaknesses including declining levels of production, declining employment, higher costs and a lower return on lumber sales. Much of this resulted from rationalization in the industry which led to fewer and larger capital intensive mills. Timber supply policies in the United States, forcing competitive bidders to formulate expectations about future timber prices, is another factor placing U.S. firms at a competitive disadvantage compared to B.C. producers.

The International Trade Commission's own estimates show that the B.C. softwood lumber industry records higher levels of productivity. This is due partly to investments in sawmills designed to produce specialized dimension lumber from small diameter logs.

The most important market force placing U.S. firms at a competitive disadvantage has been the appreciation of the U.S. dollar relative to the Canadian dollar. The U.S. dollar appreciation improves the profitability of B.C. softwood lumber producers in selling their

product in the U.S. market. The empirical evidence presented in chapter two, appendix C, shows that there is a strong inverse relationship between the exchange rate and the volume of softwood lumber exports to the U.S. An appreciation in the U.S. dollar (fall in the Canadian dollar) results in an increase in the volume of Canadian softwood lumber exports to the United States. When the nominal exchange rate is adjusted for price levels in the two countries (the real effective exchange rate) the empirical evidence shows that B.C. is a low cost producer relative to the U.S.

These market forces leading to an increased Canadian penetration of the U.S. softwood lumber market have been the underlying cause of the Coalition's desire to limit Canadian imports of softwood lumber to a certain threshold of the U.S. market. When this was agreed upon in March 1986, the Coalition was content to withdraw its countervailing duty petition. This in itself, undermines the integrity behind the Coalition's belief that on the basis of cross border stumpage comparisons, the B.C. softwood lumber industry is unfairly subsidized. Each phase of the softwood lumber dispute was set in motion by a subsidy allegation at a time when the Canadian share of the U.S. market increased considerably. The Canada - U.S. softwood lumber dispute should be viewed as a disagreement over the appropriate Canadian share of the U.S. softwood lumber market rather than a debate over subsidy issues based on cross border comparisons of stumpage rates. Each country has the right to reserve a certain share of their own market for domestic producers but it is inappropriate that this share is maintained by alleging that imported timber is subsidized.

It is necessary for the U.S. Government to take measures to correct the effects of failed fiscal policy. The large U.S. trade deficit was the result of the large federal government budget deficit and its effect on the value of the U.S. dollar. The trade deficit can be improved by first

introducing policies designed to improve the budget deficit. However, one of the first approaches adopted by Congress was to introduce protectionist trade legislation. This is inconsistent with free trade practices agreed upon by both countries under the Free Trade Agreement and later the North American Free Trade Agreement. This was evident in the decision of the bilateral dispute resolution panel in favor of Canada in 1992.

The present day phase of the ongoing softwood lumber dispute is a clear message to the Canadian lumber industry that limited access to the United States market is a long term consequence of selling their products south of the border. This is true regardless of the North American Free Trade Agreement. In the future, the Canadian Softwood Lumber Industry must adapt to changes necessitated by the 1996 softwood lumber agreement. One important change is the ability of B.C. lumber companies to increase their share of emerging markets -most notably in the Pacific Rim. This involves producing softwood lumber designed to meet specific building codes in countries like Japan and South Korea. A ready water export route places B.C. mills at a considerable advantage over other lumber regions in exporting to Asia.

Another vital change is reorienting production toward higher value added products such as pre-fabricated homes. Replacing traditional forest products such as softwood lumber with higher value added wood products is a transition already underway in the wood products industry. There is a considerable export of pre fabricated homes to Japan. Producing alternative products will minimize the damage of limited access to the U.S. softwood lumber market.

Given that there is conclusive evidence to suggest that the B.C. softwood lumber industry is not subsidized, expanding exports to alternative markets while maintaining a certain share of the U.S. softwood lumber market is the only reasonable solution to the longest trade dispute in

North American history.

Glossary

Annual Allowable Cut - The maximum amount of timber that can be harvested annually in each forest management unit (tree farm licence or timber supply area). It is set by the B.C. Ministry of Forests.

Annual Established Base - Under the current (1996) softwood lumber agreement, it is the maximum amount of softwood lumber (14.7 billion board feet) that can enter the United States each year free of export duty.

Bilateral Dispute Resolution Mechanism - A panel set up under a provision of The North American Free Trade Agreement to deal with trade disputes between Canada and The United States.

Board Foot of Lumber - A board foot is a measure of lumber one foot long by one foot wide by one inch thick. Lumber prices are quoted in U.S. dollars per thousand board feet.

Close Utilization Standards - This term refers to the amount of a tree (stump) that is left behind after harvesting. The B.C. Ministry of Forest requires that all timber in a given stand must be harvested with no stump left behind more than 30 centimetres in height.

COFI - Council of Forest Industries. A B.C. based forest industry association.

CFLI - Coalition For Fair Lumber Imports. A U.S. based forest industry association comprised of major U.S. forest companies and lumber industry groups.

Countervailing Duty - A tariff issued by a national government of one country to another designed specifically to offset the effects of a subsidy.

Crown Forest Land - Forest land owned and managed a provincial government.

Deals - A manufactured commodity developed during the 1815-40 period. It was simply timber sawn into two or three inch thick softwood planks.

Delivered Log Costs - The cost (including stumpage - harvesting - transportation) of delivering a log to a sawmill.

Department of Commerce - The federal department of the U.S. government dealing with financial matters.

Dimension Lumber - Lumber sawed into specified dimensions such as 2x4, 2x8, 2x10, 2x12.

Even Aged Immature Stands - Those forest stands between 20 and 120 years of age (except for lodge pole and white bark pine).

High Grading - A process whereby forest companies will harvest only the best timber in a stand and leave behind timber of lesser value.

Imperial Preferences - A policy of the British Government that allowed certain commodities (including timber) from British colonies to enter the mother country free of duty. They were repealed during the 1840s causing a change of direction in the colonial timber trade away from Britain toward the United States.

ITC - International Trade Commission. A branch of the U.S. Department of Commerce formerly known as the Tariff Commission.

ITA - International Trade Administration. A branch of the U.S. Department of Commerce concerned with trade matters.

Mature and Over Mature Forests - According to the B.C. Ministry of Forests they are defined as more than 120 years old for all coniferous species except lodge pole and white bark pine. These two species combined with all deciduous species are considered mature at 81 years.

Memorandum of Understanding - A last minute agreement reached during the 1986 phase of the softwood lumber dispute whereby Canada placed a 15 percent *Ad Valorem* tax on its softwood lumber exports in return for cancellation of countervail proceedings. A provision called for the export tax was to be eventually replaced by a corresponding increase in provincial stumpage rates.

National Lumbermen Association (NLMA) - A timber lobby in the U.S. northwest prominent during the 1962 phase of the softwood lumber dispute. Its role was eventually replaced by the Coalition For Fair Lumber Imports

Pre Fabricated Homes - Small pre assembled wooden homes exported mainly to Japan.

Regeneration Phase - Forests stands less than 20 years old are classified as in the regeneration phase.

Silviculture - Refers to the growing and maintenance of trees including reforestation (planting trees after harvest), pre commercial thinning (removing undergrowth) and pruning.

Small Business Forest Enterprise Program - A system for allocating forest tenures in B.C. based on competitive bidding. It was designed to prevent large companies from holding all available timber and to allow small sawmill operators to secure tenures.

Softwood Lumber - Lumber with specified dimensions (i.e, 2x4, 2x6, 2x8, 2x10) manufactured in sawmills from coniferous or softwoods such as spruce-pine-fir-cedar-larch.

Square Timber - A commodity exported from the colonies to Britain during the 1700s and early 1800s. It was a simply a tree cut and squared on four sides with an axe with no sawing.

Stumpage Rate - The price charged by provincial governments to forest companies for the right to harvest crown owned timber. It is assessed on a per cubic meter basis.

Stumpage System - A provincial government method of collecting economic rent from the forest resource under which tenure holders pay a given amount per cubic metre of wood harvested.

Tree Farm License (TFL) - A license granted by the B.C. government to harvest crown timber under which the license holder retains responsibility for forest management subject to the approval of the Ministry of Forests.

Timber Supply Area (TSA) - A B.C. Ministry of Forests administrative district for the purposes of allocating timber harvesting rights. The Ministry is directly responsible for forest management in these areas.

Tenures - Cutting rights awarded to forest companies by a provincial Ministry of Forests.

U.S. Forest Service - A federal agency regulating timber in the United States. As owner and manager of forest land it plays much the same role as the provincial governments in Canada.

U.S. Pacific Northwest - A region of the U.S. covering the states of Washington, Oregon and California.

Rothery Formula - Named after an American Forest Economist (Julian Rothery) in 1946. It is the method used by the U.S. Forest Service for calculating stumpage payments on federal forest lands. It was used in British Columbia until 1987.

Volume Based Tenure Agreements - A right to harvest a certain volume (cubic metres) of wood in a specified area.

Wood Chips - A by product or residue left over from the sawmilling process. These chips are in turn used for the manufacture of pulp.

References

Carrothers, W.A. "Forest Industries of British Columbia." A.R.M. Lower, *The North American Assault on the Canadian Forest: A History of The Lumber Trade Between Canada and The United States*. Toronto: Ryerson Press, 1938. pp.227-344.

Dellert Lois. "Crisis In British Columbia's Forest Economy and Environment: Is Innis Relevant Today?" *Innis Research Bulletin*. Harold Innis Research Foundation, 1995.

Drushka, Ken. *Stumped: The Forest Industry in Transition*. Vancouver: Douglas and McIntyre, 1985. pp. 91-115.

Easterbrook, W. T. and Hugh G.J. Aitken. *Canadian Economic History*. Toronto: Gage Publishing Limited, 1980. pp. 187-205.

Government of Canada and Government of the United States. *Softwood Lumber Agreement Between The Government of Canada and The Government of The United States*. Washington: May 29, 1996.

Haley David and Martin Luckert. "Forest Tenures in Canada: A Framework For Policy Analysis." Information Report E-X-43. Ottawa: Forestry Canada, 1990.

Heaps, Terry and Richard Schwindt. Chopping Up The Money Tree: Distributing The Wealth From British Columbia's Forests. Vancouver: The David Suzuki Foundation, 1996.

Industry Canada. Letter From The Director of Investigation and Research, Competition Bureau, to The Director General, U.S. Trade and Economic Policy Bureau, Department of Foreign Affairs and International Trade. May, 28, 1996.

Innis, Harold A. "The Lumber Trade in Canada." Mary Q. Innis (ed.), *Essays in Canadian Economic History*. Toronto: University of Toronto Press, 1956. pp. 242-251.

Lower, A.R.M. *The North American Assault on The Canadian Forest: A History of The Lumber Trade Between Canada and The United States*. Toronto: Ryerson Press, 1938. pp. 1-204.

Lea, Sperry. *The U.S. Softwood Lumber Situation in a Canadian - American Perspective*. Montreal: Canadian American Committee, 1963. pp.3-50.

Marchak, Patricia. *Green Gold: The Forest Industry in British Columbia*. Vancouver: The University of British Columbia Press, 1983. pp. 303-322.

Marr, William L. and Donald G. Paterson. *Canada: An Economic History*. Toronto: The Macmillan Company of Canada, 1980. pp. 61-73, 117-148.

Natural Resources Canada (The Canadian Forest Service). *The State of Canada's Forests, 1994.* (Annual Report to Parliament). Ottawa: Her Majesty the Queen in Right of Canada, 1995.

Natural Resources Canada (The Canadian Forest Service). *Selected Forestry Statistics, 1995.* Ottawa: Minister of Supply and Services Canada, 1996.

Nelson, Harry, R. Quentin Grafton and G. Cornelis Von Kooten. "Estimating Rents in The British Columbia Forest Sector." May 17, 1994.

Nordhaus, William D. "The Impact of Stumpage Charges on Prices and Trade Flows in Forest Products." *In The Matter of Certain Softwood Lumber Products from Canada.* Washington D.C.: Capital Hill Reporting, April 29, 1992.

---. "Comment on Coalition for Fair Lumber Imports". Letter of February 27, 1992. -----.

---. "Analysis of Preliminary Determination on Softwood Lumber Products from Canada".-----.

---." Reply to Coalition for Fair Lumber Imports Pre-hearing Brief of April 21, 1992." -----.

---. "Transcript of Proceedings Before The United States Department of Commerce." -----.

Nordhaus, William D. and Robert E. Liton. "Empirical Analysis of The Effect of Stumpage on Timber Harvesting. A British Columbia Case Study." *In The Matter of Certain Softwood Lumber Products from Canada.* Washington D.C.: Capital Hill Reporting, April 29, 1992.

Ottawa Citizen (The), "Canada, U.S. Look For Peace In Lumber Dispute."Friday, February 16, 1996. p. B8.

Ottawa Citizen (The), "U.S. Law Forces Canada to Sign Lumber Deal." Wednesday, April 3, 1996. p. A1.

Paarsch, Harry. "The Effect of Stumpage Rates on Timber Recovery." *The Canadian Journal of Economics*, Volume 26, No.1. The University of Toronto Press, 1993. pp. 107-120.

Percy, Michael B. and Christian Yoder. *The Softwood Lumber Dispute and Canada - U.S. Trade in Natural Resources.* Halifax: The Institute For Research on Public Policy, 1987. pp. 1-167.

Province of British Columbia. *Ministry of Forests Annual Report 1993-94.* Victoria: Crown Publications, 1994.

Runyon, K.L. *Canada's Timber Supply: Current Status and Outlook.* Ottawa: Minister of Supply and Services Canada, 1991. pp. 54-64.

Schwindt Richard. "The British Columbia Forest Sector: Pros and Cons of The Stumpage System." Thomas Goaton and John Richards (eds.) *Resource Rents and Public Policy in Western Canada.* Halifax: The Institute for Research on Public Policy, 1987. pp. 181-207.

Uhler, Russell and Peter Morrison. "Utilization Standards and Economic Efficiency in British Columbia Forests." *Forest Economics and Policy Analysis Project Report 86-1.* Vancouver: University of British Columbia, 1986.

United States - Canada Free Trade Agreement Binational Panel. "Article 1904 Binational Panel Review USA-92-1904-01. Decision of The Panel. May 6, 1993." *In The Matter of Certain Softwood Lumber Products from Canada.* Washington D.C.: Capital Hill Reporting, April 29, 1992.