TIMBER MARKETS IN NEW BRUNSWICK AND NOVA SCOTIA AND THEIR USE IN ASSESSING STUMPAGE PRICES IN OTHER CANADIAN PROVINCES

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Forward

This report was one of a number of reports prepared by the CFS as part of Canada's legal defence during the fourth Canada/US Softwood Lumber Dispute. It formed part of the legal record used in the NAFTA and WTO dispute resolution proceedings.

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SECTION 1
INTRODUCTION

1.1   Background

The Coalition for Fair Lumber Imports Executive Committee[1] has put on record a report by its consultant, J. Lutz, entitled "Assessment of Maritime Provinces Private Woodlot Prices as Indicators of Public Softwood Sawtimber Values in Other Provinces" (hereafter referred to as "Lutz (2004)" or "the Report."). The Report argues that private stumpage prices in New Brunswick and Nova Scotia are distorted due to alleged price suppression activities of Crown licensees.

The Report also finds that timber in the two Maritime Provinces is unrepresentative of timber in other Canadian Provinces. In the event that the Department uses the Maritime stumpage prices as a benchmark, Lutz provides some recommendations for how to adjust for differences in timber conditions across Canada.

1.2   Purpose and Outline

The purpose of this report is to:

- provide a description and assessment of timber markets in New Brunswick and Nova Scotia;
- conduct an empirical test of the price suppression theory put forward by Lutz;
- critique the evidence and methods used by Lutz in his report; and,
- examine the methods used by Commerce in the administrative review's preliminary determination to account for differences in timber conditions across Canada.

Section 2 of this report provides a description of New Brunswick's timber markets and examines the observed behaviour of the timber markets to test the validity of Lutz's price suppression theory. Section 3 repeats this analysis for Nova Scotia's timber markets. Section 4 provides a critique of the methods and information used by Lutz in his report. Section 5 reviews and tests the stumpage price adjustment methods used by the Department and the methods proposed by Lutz.

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[1] Hereafter referred to as the "Executive Committee" or the "Coalition."

1.3   Summary

The main findings of this study are:

- Private timber markets in New Brunswick and Nova Scotia appear to be functioning well and responding appropriately to market signals.

- When Lutz's price suppression theory is confronted with observed behaviour in the two timber markets, the theory is rejected.

- Lutz does not empirically test his theory in the 2004 Report; rather, he relies on selected quotations from numerous sources as the basis for his arguments. He also ignores contrary information contained in the original documents and misrepresents the level of harvest concentration in New Brunswick.

- Lutz acknowledges that adjustments for timber quality are required when conducting inter-jurisdiction stumpage price comparisons. In addition, he notes that a state-wide average price will no longer provide an appropriate stumpage price benchmark. In doing so, Lutz abandons the main tenet of his previous work on the validity of inter-jurisdiction stumpage price comparisons.

- The Department's methods for adjusting stumpage prices are shown to be unreliable.

SECTION 2
THE TIMBER MARKETS OF NEW BRUNSWICK

2.1   Introduction

The main purpose of this section is to examine the observed behaviour of timber markets in New Brunswick in order to test whether the behaviour of market participants predicted by Lutz's price suppression theory could in fact be seen. Prior to doing this, we give some background material on the forestland of New Brunswick, examine Crown forestland management in the province, and review the past and present timber supply and demand balance in the province.

2.2   Forestland in New Brunswick

New Brunswick, with 84% of its surface area classed as productive forestland, has the highest such percentage in all of Canada. Figure 2-1 shows the distribution of productive forestland ownership amongst four ownership categories. Crown land refers to the lands owned by the province. Private land totals 47% of the land and is divided between two private ownership categories. Woodlots refer to forestlands held by individuals who do not own a timber processing facility. This group, comprising over 40,000 individuals, holds 29% of the forestland. Private industrial freehold landowners (individuals or firms that own a timber processing facility) hold a further 18% of the forestland. Finally, the Federal government holds some 2% of the forestland.[2]
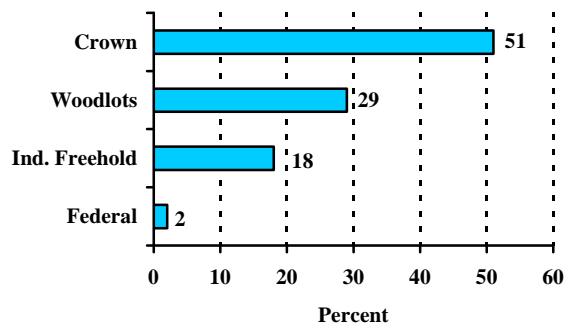
FIGURE 2-1
Distribution of Productive Forest Land Ownership in New Brunswick
(Source: Staff Review of the Jaako Pöyry Report, New Brunswick DNR, 2004 (hereafter "NB DNR (2004)"))

These forestlands are not homogenous; rather, they vary with regard to species composition, productivity, age-class distribution, distance from market, and accessibility. For example, in describing New Brunswick's private forestlands, Green (1990) states:

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[2] Federal land holdings consist of 15 native reserves, 2 national parks, the Acadian Research Forest and Canadian Forces Base Gagetown. The small harvests from these lands are typically sold by auction.

In terms of productive potential, private holdings are closer to markets, use existing road systems and, due to a tendency toward better soil types, have above average potential for timber production. (page 6)[3]

2.3   Crown Forestland Management in New Brunswick

Prior to 1982, New Brunswick was faced with a timber supply shortage and concerns over the sustainability of its forest resources.[4] This led to a massive overhaul of its forest management polices with the passage of the *Crown Lands and Forests Act* in 1982. Under this act, all previous Crown forest tenures were annulled and replaced by ten area-based forest licenses. This system was selected as the best option to meet the province's sustainable forest management requirements while achieving the flexibility to ensure effective utilization of the available harvest.[5]

Under these licenses the licensees have the responsibility to:

- Prepare 25-year management plans upon which future forest management activities and harvest scheduling will be based. These plans are updated every 5 years and assess forest sustainability and planning over an 80-year time horizon.
- Develop 5-year operating plans for the implementation of forest management and harvest scheduling. These plans are updated annually.
- Implement the forest management activities, including silviculture, identified in the operating plans.

The plans prepared by licensees are based on the forest management objectives set by the Department of Natural Resources and Energy (hereafter referred to as the DNR). These plans are then reviewed and approved by the DNR. In addition, the DNR updates its forest management objectives every five years to account for changing social and environmental priorities. For example, an update that increased protection of non-timber values resulted in an 18% decrease in the Crown AAC (Erdle, 1999).

While these licensees have forest management responsibilities over the tenure they manage, they do not have sole access to the harvests from these lands. Instead, a number of sub-licenses are assigned to each license.[6] These sub-licensees have an equal legal right to a share of the license's total harvest.[7] The maximum allowable cut for each license is determined as part of the 25-year plan based on the province's forest management objectives. The DNR then allocates this maximum cut between the licensee and each sub-licensee when the maximum cut is recalculated every five years.

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[3] Filed as Coalition Evidentiary Information at Tab 8.
[4] See Baskerville (1983) for a description of the conditions prior to 1982.
[5] See Baskerville (1987) at page 19 for a discussion of the selection of the province's forest management system.
[6] The overlap of sub-licensees on licenses is very similar to the overlapping tenure system of Ontario's Sustainable Forest Licenses.
[7] See Baskerville (1987) for a description of the methods by the license' AAC was allocated to sub-licensees and licensees.

The annual harvest taken from a license must be within 10% of the AAC within any given year and within 5% during a five-year period (NB DNR, undated). As such, licensees and sub-licensees have limited ability to increase harvests when prices rise. Table 2-1 lists the ten licenses, the license area, the current AAC and the license holder. Six firms hold the ten licenses. Also shown in the table is the use of each license's softwood AAC over the period 1997-2002. Complete or almost complete use of the available harvest was achieved by each license, the lowest use being 96% of the AAC. With harvests at these levels, there would be little, if any, ability to undertake the large scale shifting of harvests between land ownership categories theorized by Lutz.

TABLE 2-1
Crown Forest Licenses in New Brunswick

License	Name	Area	2002-2006 AAC[1]	1997-2002 Use[2]	Licensee
		(ha)	(m3)	(%)	
1	Upsalquitch	427,580	346,757	100	Bowater
2	Nepisguit	259,369	279,920	97	UPM
3	Lower Miramichi	316,354	297,421	98	UPM
4	Upper Miramichi	384,049	458,395	97	UPM
5	Kent	71,590	46,789	100	Weyerhaeuser
6	Queens- Charlotte	631,351	707,594	99	J.D. Irving
7	Fundy	428,784	384,821	96	Irving Pulp & Paper
8	York	252,027	189,317	98	St. Anne Nackawic
9	Carleton	133,245	147,553	99	Fraser Papers
10	Restigouche-Tobique	402,200	635,720	100	Fraser Papers
Totals		3,306,549	3,494,287		

1. NB DNR (2004), Table 3.
2. NB DNR (2003), Table 2.

2.4   Timber Supply and Demand in New Brunswick

Staff of the DNR have conducted a recent assessment of timber supply and demand within New Brunswick.[8] Figure 2-2 shows the DNR estimates of sustainable softwood harvests from New Brunswick forests and the current consumption. It clearly shows that consumption outstrips domestic sustainable supply, requiring imports of 1.5 million cubic metres of softwood timber. In addition, the DNR believes that the current harvest rate on private lands is greater than the long-term sustainable harvest rate. Because of this, the DNR (2004) concludes that:

> *Consequently, it is now known that the demand for wood within New Brunswick exceeds the available supply.* (page 7)

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[8] See NB DNR (2004). This report was published in January 2004 and consequently contains data from prior to that time and observations that apply to the 2002-2003 period.
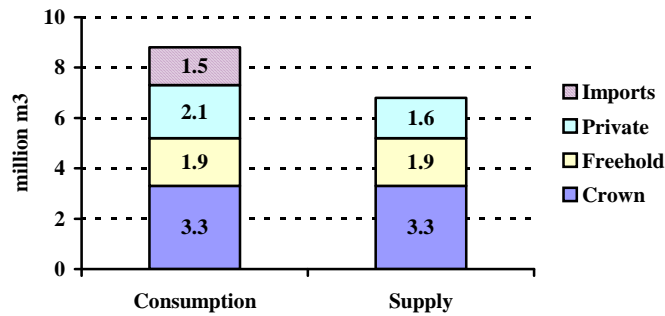
FIGURE 2-2
Consumption and Sustainable Supply of Softwood in New Brunswick
(Source: New Brunswick DNR (2004))

The tightness of the timber supply and demand balance has been a feature of New Brunswick forests for a considerable time. See Baskerville (1983) and Erdle (1999) for descriptions of conditions in the 1980's and 1990's.

2.5   Observed Behaviour of New Brunswick Timber Markets

In this section, we examine the empirical harvest behaviour within New Brunswick's timber markets. It should be noted that the Maritimes function as one timber market.[9]

Lutz's price distortion hypothesis is based on the theory that Crown tenure holders withdraw from the woodlot when stumpage prices are high and increase the harvests on their tenures and private industrial freehold land in order to suppress private woodlot timber prices. According to Lutz's theory, the reverse would allegedly happen when prices were low.

Before turning to an empirical analysis of this theory, we must first raise a number of practical difficulties that licensees would face if they did act in the manner suggested by Lutz. First, the AAC restrictions mean that 1) the ability to increase a license's harvest in any given year is limited, given that all licensees are harvesting at or fractionally below their limit, and 2) any large increase or decrease in any one year limits the Crown harvest flexibility in future years. (AAC limitations are, of course, only one of many potential reasons why Crown harvest might be limited by factors that have nothing to do with price. Other factors could include adverse weather, terrain limitations, milling capacity fluctuations due to work stoppages, or other developments.) Second, six licensees do not control the Crown harvest, as Lutz (2004) attempts to portray; rather, it is controlled by 6 licensees and approximately 80 sub-licensees. Third, for a shifting of harvests to have an effect on market prices, it must be undertaken simultaneously by most, if not all, of the

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[9] By concentrating on only one part, we are missing some of the important linkages with market participants in other parts of the Maritimes. If anything, the analysis understates the level of competitiveness in New Brunswick. The same comment applies to the discussion of Nova Scotia timber markets in Section 4.

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licensees and sub-licensees. Coordination of such activity by over 86 actors would be difficult to say the least. Fourth, the theory requires that individual market participants, on seeing this shift, do not attempt to profit from the reduced woodlot prices by increasing their purchases from woodlots. The supply-demand balance in New Brunswick has been described as tight, as discussed above. Thus, the possibility of large-scale shifting of timber between sources appears dubious at best. Finally, the theory requires that there must be no alternative market for the woodlot timber, such as export markets. If alternative markets exist (and an export market does exist) then attempts at price distortion would fail. Individually, each assumption is tenuous at best, but collectively, they are untenable and Lutz's theory is simply not credible.

Empirical Analysis

We now turn to an empirical analysis of observed harvest patterns as a means of testing Lutz's theory. We use correlation and graphic analysis to see if there is a relationship between harvests from different land ownership categories. If harvests expand and contract in the same manner, then there will be a positive correlation. If the harvests move in different directions, then they will have a negative correlation. Correlations are measured using a correlation coefficient. A value of +1 for the coefficient means perfect positive correlation of harvests. A coefficient of zero means no correlation in movements whatsoever. Similarly, a coefficient that is negative indicates a negative correlation. Thus, the correlation coefficient will range from +1 to –1, with 0 indicating no correlation in harvests.

If Lutz's theory is correct, then two things should be observed in New Brunswick's harvest patterns. First, there should be a strong negative correlation between the woodlot harvest and the harvest from Crown lands and private industrial freehold lands caused by the alleged timed shifting of harvests to and from different land ownership types in order to suppress prices. Second, the harvests from woodlots should be negatively correlated with upward price movements, since major buyers are allegedly relying more on industrial freeholds and Crown lands during periods of high prices.

On the other hand, if New Brunswick's timber markets are functioning without these distortions, then harvests from different land ownership categories should be positively correlated with each other and with price. As the price of end products increased, demand for timber would rise and firms would attempt to access more timber from each supply source. This would cause timber prices to rise, which is required to induce more supply. A caveat to the correlation of Crown harvest is that the supply response on Crown lands may not be controlled by price – it can be affected by a wide range of factors, and, can be muted and ultimately capped by the annual allowable cut (AAC) restrictions placed on Crown harvests.)

With the two alternative hypotheses of the functioning of New Brunswick's timber markets in mind (distorted vs. competitive), we examine harvest patterns over the period

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1990 to 2001.[10] Two measures of harvest are examined. The first is total industrial roundwood harvest.[11] This consists of the harvest of private industrial roundwood, which consists of logs and bolts,[12] pulpwood, and other private industrial roundwood such as poles, pilings, and other uses. The second is logs and bolts alone, as it is the supply to sawmills that is of particular interest. Table 2-2 provides the harvest data.

TABLE 2-2
New Brunswick Timber Harvests 1990-2001

	Crown	Private Ind. Freehold	Woodlot	Total
Total Industrial Roundwood				
1990	3,669,260	1,589,201	1,808,453	7,066,914
1991	3,448,920	1,562,210	1,633,240	6,644,370
1992	3,909,000	1,729,000	1,723,000	7,361,000
1993	3,691,870	1,506,370	1,915,560	7,113,800
1994	3,580,600	1,738,860	1,918,830	7,238,290
1995	3,651,920	2,024,100	2,052,010	7,728,030
1996	3,728,080	2,068,350	2,430,910	8,227,340
1997	3,713,570	1,868,760	2,068,480	7,650,810
1998	3,717,427	2,164,702	1,901,802	7,783,931
1999	3,646,220	1,733,880	2,029,230	7,409,330
2000	3,622,760	2,246,476	1,953,464	7,822,700
2001	3,340,262	1,795,332	1,839,157	6,974,751
Logs and Bolts				
1990	1,949,807	1,309,824	581,401	3,841,032
1991	1,867,700	1,179,830	525,370	3,572,900
1992	2,374,000	1,445,000	537,000	4,356,000
1993	2,483,680	1,358,830	943,700	4,786,210
1994	2,537,090	1,473,390	1,147,140	5,157,620
1995	2,541,860	1,625,150	1,129,800	5,296,810
1996	2,636,550	1,845,710	1,658,230	6,140,490
1997	2,928,360	1,711,540	1,560,930	6,200,830
1998	3,002,643	1,986,029	1,278,453	6,267,125
1999	3,047,200	1,524,940	1,606,210	6,178,350
2000	2,901,759	2,041,385	1,429,566	6,372,710
2001	2,772,535	1,621,512	1,403,103	5,797,150

Source: National Forest Data Base.

Figure 2-3 shows the trends in the harvest of softwood roundwood. It shows generally a relatively stable harvest from each source, with a small decline from Crown tenures and a small increase in private industrial freehold harvests. Woodlot harvests do not show any of the remarkable fluctuations that Lutz's price distortion theory would require. In addition, private harvests peaked in 1996, a year of high lumber prices, which would contradict Lutz's theory. Figure 2-4 shows the harvest share by ownership category. Not surprisingly, it shows relative stability in market share, with Crown tenures showing a modest decline and private industrial freehold shows a modest increase.

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[10] Data is obtained from the National Forestry Data Base of the Canadian Council of Forest Ministers, at http://nfdp.ccfm.org.

[11] Note that the term "industrial roundwood" simply refers to roundwood used for industrial purposes (e.g., production of wood or paper products). The term bears no relation to the term "industrial freehold".

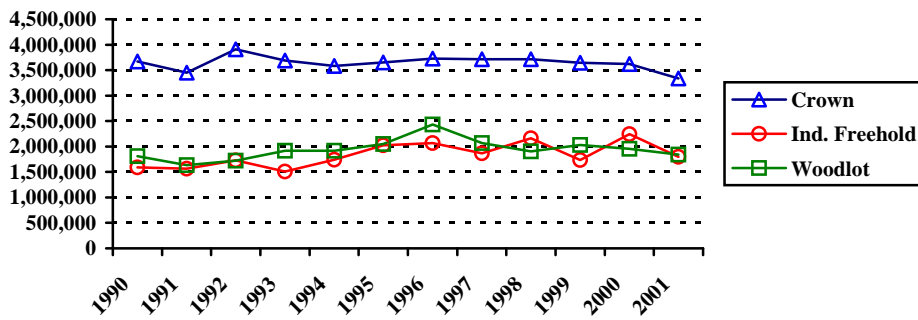[12] Bolts are short logs sawn for lumber or peeled for veneer.

FIGURE 2-3
Softwood Roundwood Harvests
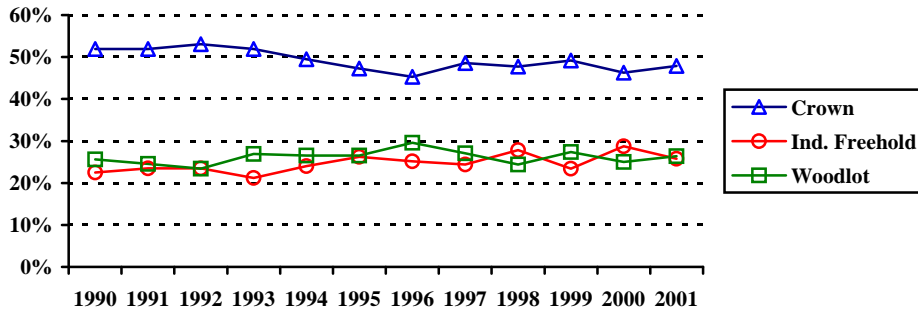**by Ownership Category in New Brunswick**
(cubic metres)

FIGURE 2-4
Share of Softwood Roundwood Harvest
by Ownership Category in New Brunswick (%)

Next we examine softwood log and bolt harvests in New Brunswick. Figure 2-5 shows an increasing harvest of softwood logs and bolts from all land ownership categories, with Crown and private harvests showing the greatest increase. Given the relative stability of the total roundwood harvest shown above, these increases have been offset by a corresponding decrease in pulpwood harvest. This shift is shown in Figure 2-6, which shows the percent of total industrial roundwood harvest that was classed as logs and bolts. This shift is due to the rapidly increasing North American demand for lumber and the advances in sawmill technology that have allowed for utilization of a broader range of logs in lumber production. Note that the greatest shift in harvest from pulpwood to logs and bolts occurred in the private woodlot harvests. Unquestionably then, the demand for private logs and bolts (both from woodlots and freehold land) has risen considerably over the last decade, and woodlot owners have had the greatest relative increase. This also reflects the growing importance of the wood products industry in the Maritimes and contradicts Lutz's characterization of the region as being dominated by the pulp and paper industry.
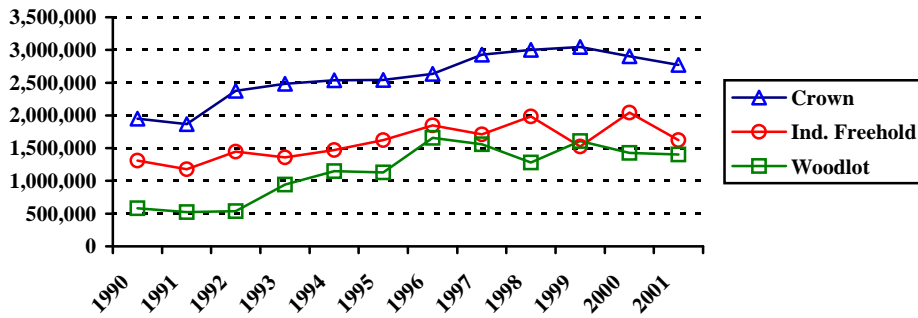
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FIGURE 2-5
Softwood Log and Bolt Harvest by Ownership Category in New Brunswick
(cubic metres)
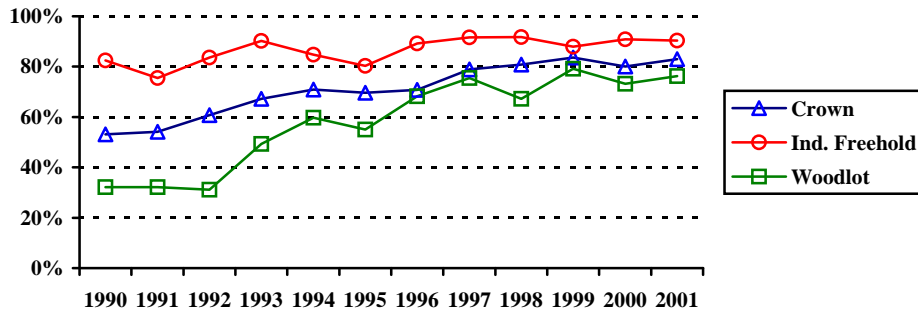
FIGURE 2-6
Softwood Log and Bolt Harvest Share of Total Softwood Roundwood Harvest
by Ownership Category in New Brunswick (%)

Figure 2-7 shows the share of total log and bolt harvest by land ownership category. It shows a decline in the share provided by Crown tenure and private industrial freehold harvest, with a corresponding increase in the share provided from woodlots. Thus, the sawmilling industry of New Brunswick is becoming more dependent on woodlots for its timber inputs.

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FIGURE 2-7
Share of Softwood Log and Bolt Harvest by Ownership Category in New Brunswick (%)

Correlation of Harvests
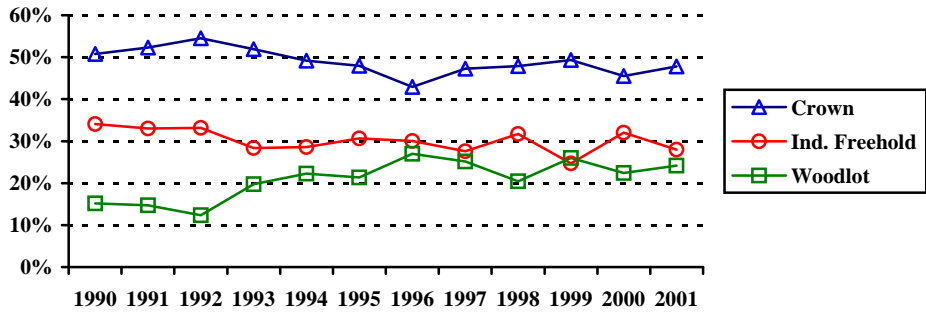
Next we examine the correlation between woodlot harvest and the harvest from Crown and private industrial freehold land. If Lutz's distortion theory is correct, then a strong negative correlation should be observed. Figure 2-8 plots Crown softwood harvest against woodlot softwood harvests (the coefficient 'r' should have a value close to –1 if the Coalition's theory is correct). Panel A shows the total roundwood harvests from each source, while Panel B shows the log and bolt harvest. Panel A suggests a weakly positive relationship, which is confirmed by the correlation coefficient of 0.245. Panel B suggests a strongly positive correlation, which is again confirmed by the correlation coefficient of 0.865. The lower positive correlation for total harvest is not surprising, as the AAC restrictions on Crown land will mute the supply response for Crown harvests. The much higher correlation coefficient for logs and bolts is due in part to the shift in harvests from pulpwood to logs and bolts but this, in turn, shows that harvests from both lands are responding to the same market forces. Lutz's theory of a strong negative correlation is clearly rejected in both cases.
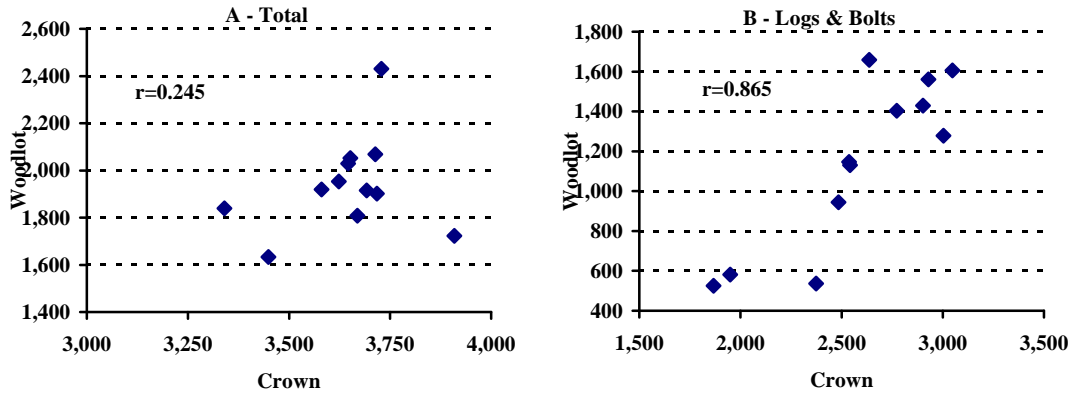
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FIGURE 2-8
Correlation Between Woodlot and Crown Harvests in New Brunswick 1990-2001
(Softwood Harvest in '000 m^3)

Figure 2-9 plots woodlot harvests against private industrial freehold land harvest, with Panel A showing total softwood harvest and Panel B showing softwood log and bolt harvest. Panel A suggests a positive relationship, which is confirmed by the correlation coefficient of 0.515. This value is double that of the correlation between woodlot and Crown harvest. This is not surprising, as private industrial freehold land is not subject to the AAC restrictions of Crown tenures. Panel B shows a strong positive correlation between woodlot and freehold lands for log and bolt harvests. The correlation coefficient was 0.723. While not as high as the correlation between woodlot and Crown log and bolt harvest, it is still quite strong. This is not surprising, given that the shift from pulpwood to logs and bolts was lower for freehold land. These results again confirm that timber harvests from woodlot and freehold land are responding to the same market forces. Again Lutz's theory, which requires a strong negative correlation, fails.
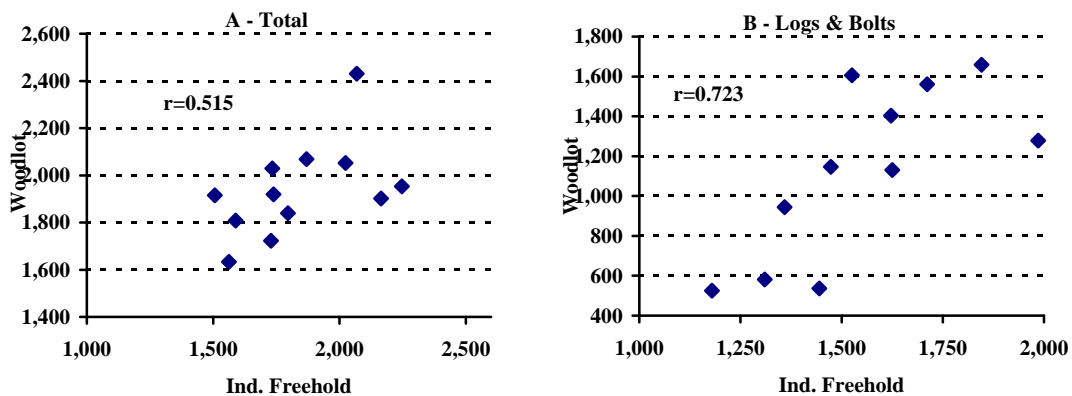

FIGURE 2-9
Correlation Between Woodlot and Private Industrial Freehold Harvests
In New Brunswick 1990-2001
(Softwood Harvest in '000 m3)

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Correlation of Harvest with Lumber Prices

We now examine the correlation of harvests from each land ownership category with price. We do not have an annual price series for stumpage or logs for New Brunswick. However, we do have lumber prices. As the demand for timber is a derived demand, derived from the demand for forest end products such as lumber, there should be a relationship between lumber prices and timber prices within a given market. The reaction of stumpage prices to lumber price movements will vary with the local supply and demand conditions in each market, which make cross-market comparisons difficult, if not impossible, to conduct. There are, of course, a host of other site-specific factors that affect stumpage price and supply that are not controlled for when using lumber prices as a proxy. The factors have been described in detail in Canada's other submissions during the initial investigation and first administrative review and will not be repeated here.

With these caveats in mind, we use lumber prices in the correlation analysis below. Random Lengths Inc. framing lumber composite price for North America is used as the lumber price, which is measured in U.S. dollars per thousand board feet. Use of an exogenously determined lumber price will also avoid simultaneity issues that could arise if stumpage prices were used.

Lutz's price distortion theory requires that Crown tenure holders withdraw from the woodlot timber market when prices are high and return when prices are low. This means that the woodlot timber harvests should be negatively correlated with price. But this is not what is observed, as shown in Figure 2-10 below. Once again, Panel A shows total softwood harvest from woodlots, while Panel B shows softwood log and bolt harvest. In both cases, there is a strong positive relationship between private harvests and prices. The correlation coefficient is 0.695 for total softwood harvest and 0.765 for logs and bolts. The higher correlation for logs and bolts is not surprising, as this is the input for sawmills. This finding fails to support Lutz's theory, and instead supports the hypothesis that private timber markets are responding to price movements in a manner that would be observed in a competitive market.
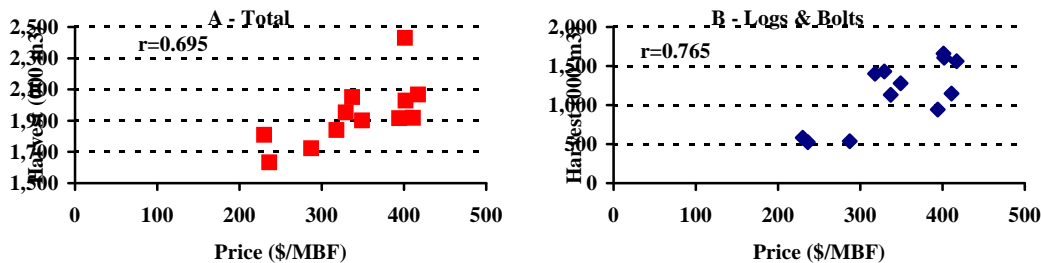

FIGURE 2-10
Correlation of Woodlot Softwood Harvests
with Lumber Prices in New Brunswick

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Lutz's theory also requires that Crown and freehold harvest be highly positively related to price because he alleges that large buyers draw a larger share of their wood from these sources when demand is high in order to suppress private woodlot prices. Figures 2-11 and 2-12 repeat the correlation analysis for Crown and freehold lands, respectively. The correlation of total harvest from Crown lands with price is positive but weak, with a correlation coefficient of only 0.19. This low correlation is not surprising, as the Crown AAC restrictions will limit the price response from Crown lands. Note that Lutz's theory does not address or take account of AAC restrictions on the alleged ability of Crown tenure holders to switch harvests between sources of supply. The correlation coefficient for logs and bolts is much higher at 0.723, but not as high as was the correlation of private woodlot logs and bolts with price. The higher Crown log and bolt response is due to increased production of logs and bolts relative to pulpwood described earlier.

The correlation coefficient for total softwood harvest from freehold land was positive, but only 0.26. The coefficient for logs and bolts was higher, at 0.409, but still not strong as required by Lutz's theory.
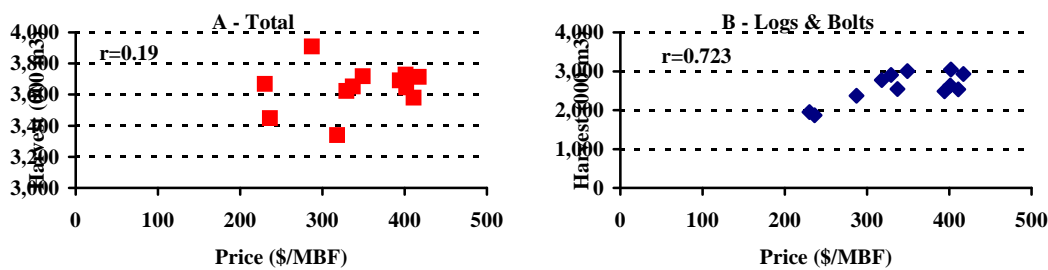
FIGURE 2-11
Correlation of Crown Softwood Harvests with Lumber Prices in New Brunswick
1990-2001
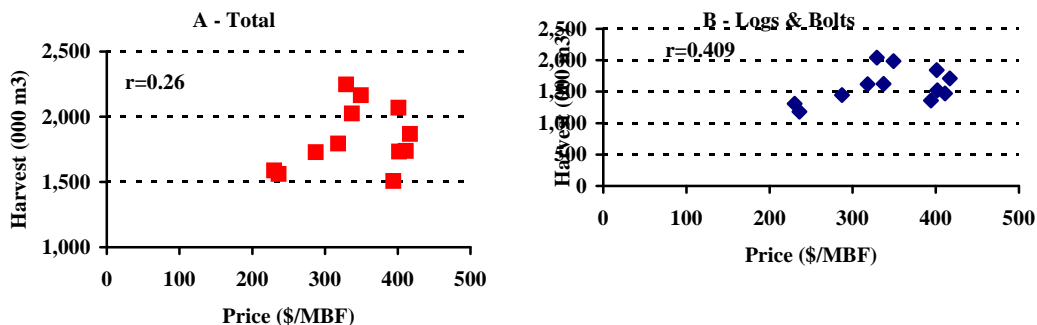
FIGURE 2-12
Correlation of Private Industrial Freehold Softwood Harvests
with Lumber Prices in New Brunswick 1990-2001

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Conclusion

In order for the price distortion theory put forward by Lutz and its consultant to hold, the harvest pattern for Crown, private freehold and woodlots must conform to the behaviour postulated by the theory. That is, woodlot harvests would have to be strongly negatively correlated with Crown and freehold harvests, woodlot harvests must be strongly negatively correlated with price, while harvests from Crown and freehold land must be strongly positively correlated with price. None of these requirements is met by the observed harvest behaviour in New Brunswick. Lutz's theory fails when it is confronted with actual observations.

SECTION 3
THE TIMBER MARKETS OF NOVA SCOTIA

3.1   Introduction

Lutz makes the same claims of woodlots stumpage price distortion in Nova Scotia that were made with respect to New Brunswick stumpage prices. This section confronts these claims with the empirically observed behaviour of Nova Scotia timber markets. Prior to the analysis we first provide an overview of Nova Scotia's forestlands and an assessment of timber supply and demand.

3.2   Forestland in Nova Scotia

Figure 3-1 shows the distribution of forestland ownership in Nova Scotia. The lighter bars show the distribution of all forestlands, while the darker bars show the distribution of unreserved forestland (land not reserved from harvesting). Private landholdings clearly dominate in Nova Scotia, with a total of 68.5% of forestland and 74% of unreserved forestland. Woodlot owners are the dominant subgroup, with 47.1% and 50.9% of total forestland and unreserved forestland, respectively. Compared to New Brunswick, provincial Crown holdings are considerably smaller at 28.9% and 25.8% of forest and unreserved forestlands. As was the case in New Brunswick, federal forestland holdings in Nova Scotia are meagre.
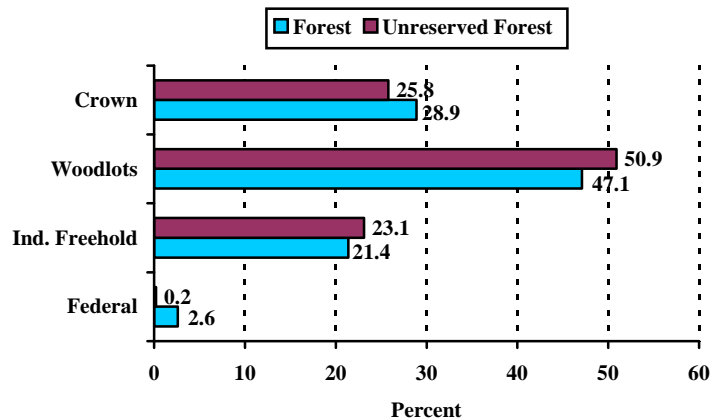
FIGURE 3-1
Distribution of Forestland Ownership in Nova Scotia
(Source: Canadian Forest Inventory)

The softwood harvest that is produced from these lands is concentrated onto private lands, as shown in Figure 3-2. Federal lands produce a negligible harvest, and the provincial Crown land's share of harvest is less than half that of its share of total forestland. Naturally, this means that the private land share of harvest is higher, with woodlots producing 56% of the softwood harvest and freehold lands producing a further 35%.
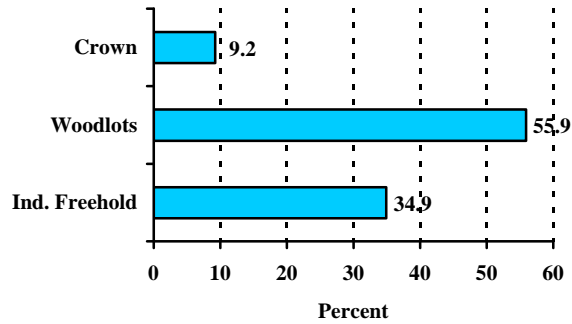
FIGURE 3-2
Distribution of Softwood Harvest by Land Ownership in Nova Scotia in 2002
(Source: Nova Scotia Registry of Buyers)

3.3   The Supply and Demand for Timber in Nova Scotia

Table 3-1 summarizes timber purchasing activity in Nova Scotia in 2002 as reported by
the Nova Scotia Registry of Buyers. There are a large number of both registered buyers
and active buyers during 2002. The greatest demand for timber came from sawmills,
followed by pulp and paper mills and chip plants. Note that exporters were the fourth
largest source of demand.

TABLE 3-1
Distribution of Nova Scotia's 2002 Timber Harvest to Buyer Categories

Category	Registered	Active	Percent of Harvest
			(%)
Sawmills	266	208	59.8
Pulp/Paper Mills	3	3	17.4
Chip Production Plants	3	3	10.8
Exporters	54	36	10.0
Firewood Sales	18	17	0.3
Other	13	8	1.7
Total	357	275	100.0

Source: Nova Scotia Registry of Buyers, 2002 Annual Report.

Timber Exports

Log exports have been a growing source of demand for Nova Scotia timber. During the
1981-85 period exports averaged 100,000 m^3 annually. They grew to an annual average
of 300,000 m^3 during the 1986-90 period. As shown in Table 3-1 and 3-2, exports
totalled 10% of the total harvest and 12.9% of the softwood harvest. The softwood
volume exported in 2002 was over 666,000 m^3.

TABLE 3-2
Nova Scotia Softwood Harvest and Exports, 2002

Ownership Category	Harvest	Percent of Total Harvest	Exports	Percent of Harvest
Woodlots	2,895,645	55.9	482,821	16.7
Ind. Freehold	1,806,899	34.9	181,487	10.0
Crown	476,502	9.2	1,720	0.4
Federal	39	-	0	0.0
Total	5,179,085	100.0	666,028	12.9

Source: Nova Scotia Registry of Buyers, 2002 Annual Report.

3.4   Observed Behaviour of Timber Markets in Nova Scotia

This section repeats for Nova Scotia the analysis undertaken in Section 2 for New Brunswick. That is, we compare the observed behaviour in Nova Scotia timber markets with the behaviour predicted by the Coalition's price distortion theory. Once again, if the Coalition's theory is correct, then we should observe that woodlot harvests are strongly negatively correlated with harvests from both Crown lands and private industrial freehold lands. In addition, woodlot harvests should be negatively correlated with price, while harvests from Crown and freehold land should be strongly positively correlated with price. Table 3-3 provides the harvest data.

TABLE 3-3
Nova Scotia Harvest Data 1990-2001

	Crown	Private Ind. Freehold	Woodlot	Total
Total Industrial Roundwood				
1990	469,967	1,067,113	2,157,484	3,694,564
1991	518,438	1,058,023	1,908,696	3,485,157
1992	546,636	950,742	2,071,702	3,569,080
1993	680,444	1,032,696	2,125,970	3,839,110
1994	589,827	979,653	2,636,749	4,206,229
1995	585,945	914,223	3,343,429	4,843,597
1996	557,866	1,050,776	3,660,115	5,268,757
1997	575,195	1,195,037	4,399,346	6,169,578
1998	540,232	1,459,068	3,224,327	5,223,627
1999	440,837	1,445,481	3,530,611	5,416,929
2000	539,663	1,751,184	3,347,445	5,638,292
2001	476,502	1,804,710	2,895,645	5,176,857
Logs and Bolts				
1990	120,001	100,459	902,496	1,122,956
1991	89,922	288,134	569,614	947,670
1992	110,327	192,998	597,839	901,164
1993	252,784	276,517	700,778	1,230,079
1994	149,984	314,555	1,080,920	1,545,459
1995	142,172	334,863	1,256,033	1,733,068
1996	143,936	411,941	1,508,166	2,064,043
1997	177,240	479,591	2,352,462	3,009,293
1998	259,882	966,326	1,809,541	3,035,749
1999	234,363	1,140,158	2,403,249	3,777,770
2000	259,951	1,369,650	2,172,321	3,801,922
2001	202,765	1,612,799	2,088,656	3,904,220

Source: National Forest Data Base.

Figure 3-3 shows softwood industrial roundwood harvests by ownership category over the period 1990-2001. Crown harvests are relatively small and stable. Given their small share of total harvests, there would be little ability for Crown licensees to shift harvests from woodlots to Crown lands, even if Lutz's theory was correct. Freehold land harvests are the second largest category, and they show stability over the period 1990 to 1995 followed by an upward trend since 1995. In both of these categories, there do not appear to be large fluctuations occurring with price changes. Private woodlots provide the largest volume of timber in Nova Scotia, and the harvests from these lands have fluctuated over time. However, note the large harvest increase that started in 1994 through 1997 that corresponds to a period of rapidly increasing lumber prices. Harvests then fell in 1998, when lumber prices fell, rose again in 1999, when lumber prices rose, and fell off in 2000 and 2001 when lumber prices fell again. This suggests that private harvests are positively correlated with price rather than negatively correlated, as required by Lutz's price distortion theory.
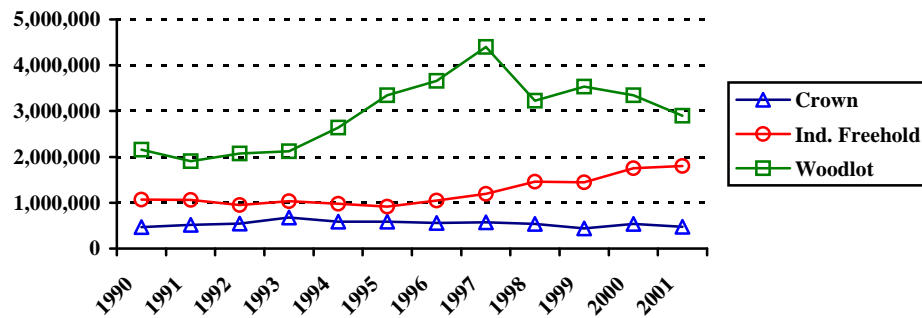
FIGURE 3-3
Softwood Roundwood Harvests by Ownership Category in Nova Scotia
(cubic metres)

Note also that the large increases in freehold land harvests occurred as the harvests from private woodlots fell. This suggests that freehold landowners are attempting to maintain production levels in the face of declining prices that caused declines in private harvests. This is also contrary to the predictions of the Lutz 2004 theory.

Figure 3-4 shows the trends in softwood log and bolt harvest over the period 1990-2001. The patterns observed in this graph are the same as those observed in total softwood harvest, perhaps even more accentuated. As noted above, these patterns do not support Lutz's theory.
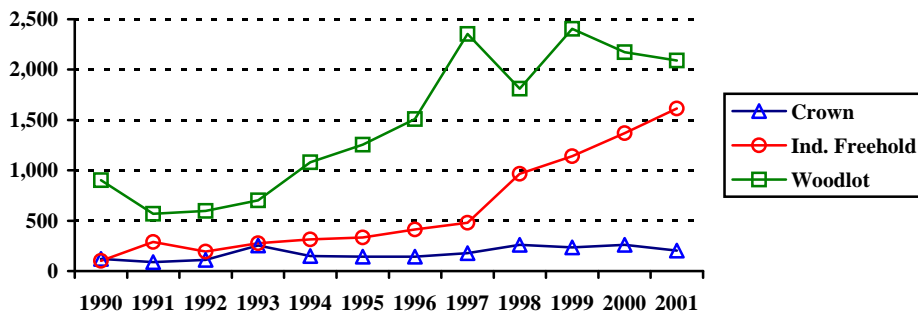
FIGURE 3-4
Softwood Log and Bolt Harvest by Ownership Category in Nova Scotia
(cubic metres)

Figure 3-5 shows the log and bolt harvest share of total softwood industrial roundwood harvest by land ownership category. All three categories show a rising trend, with that of woodlot and freehold lands showing the greatest similarity. Again, this trend can be attributed to rising North American lumber demand coupled with improvements in sawmill technology. Once again, the supply of timber from each category is shown to be responding to the same market forces.
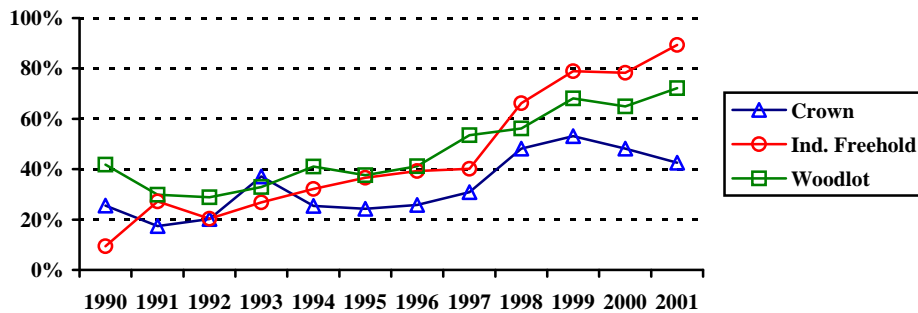
FIGURE 3-5
Softwood Log and Bolt Harvest Share of Total Roundwood Harvest
by Ownership Category in Nova Scotia (%)

Correlation Between Harvests

Next we examine the correlation between woodlot harvests and the harvest from Crown and freehold land. Once again, Lutz's theory requires that there be a strong negative correlation between these harvests. Figure 3-6 shows the correlation between private and Crown harvests. Panel A shows the correlation in total softwood industrial roundwood harvest, while Panel B shows softwood log and bolt harvests. Panel A does reveal a slight negative correlation; however, with a correlation coefficient of only -0.057, it cannot be said to be significantly different from zero. On the other hand, Panel B shows that softwood log and bolt harvests are positively related, with a correlation coefficient of

0.602. The results from Panel A are not surprising, given the relatively small size of the Crown harvest and the restrictions placed on Crown harvest by AAC limits. The much stronger correlation in Panel B is also not surprising given the increasing share of total harvests directed to log and bolt production amongst all land ownership categories. In sum, these correlation patterns do not support the predictions of Lutz's theory.
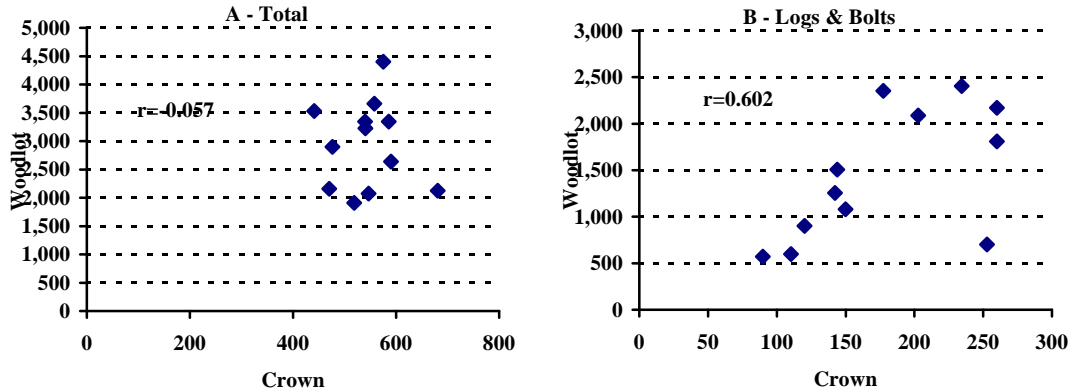
FIGURE 3-6
Correlation Between Woodlot and Crown Harvests
In Nova Scotia 1990-2001
(Softwood Harvest in '000 m^3)

Figure 3-7 shows the correlation between woodlot and freehold land harvests. The correlation coefficients are 0.322 and 0.775 for Panels A and B, respectively. Again, these positive correlations contradict Lutz's theory.
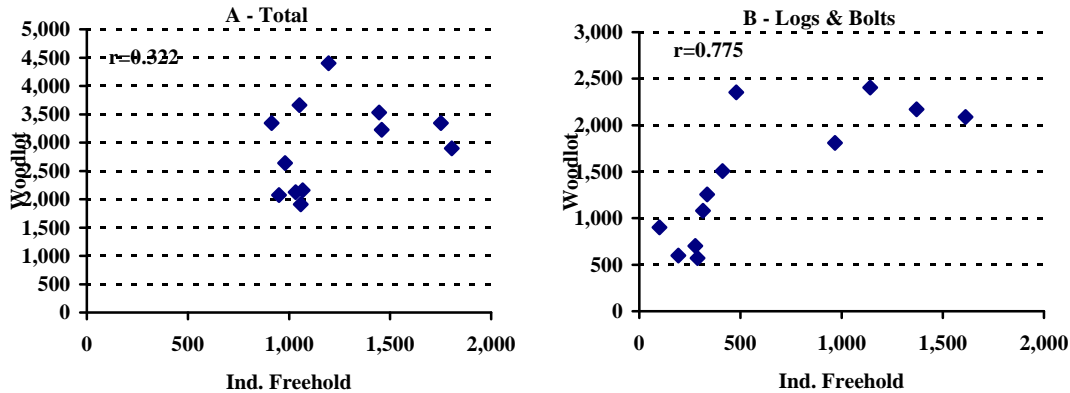
FIGURE 3-7
Correlation Between Woodlot and Private Industrial Freehold Harvests
in Nova Scotia 1990-2001
(Softwood Harvest in '000 m^3)

<u>Correlations with Price</u>

Next we examine the correlation of harvest with lumber price. The caveats raised earlier in the New Brunswick analysis must be kept in mind here also. Again, we have used Random Lengths Inc. composite framing lumber price as we do not have a stumpage price series for Nova Scotia. Figure 3-8 shows that private woodlot harvests are positively related to price, with correlations of 0.649 and 0.484 in Panels A and B, respectively. This contrasts sharply with the predictions of a strong negative correlation posited by Lutz's theory.
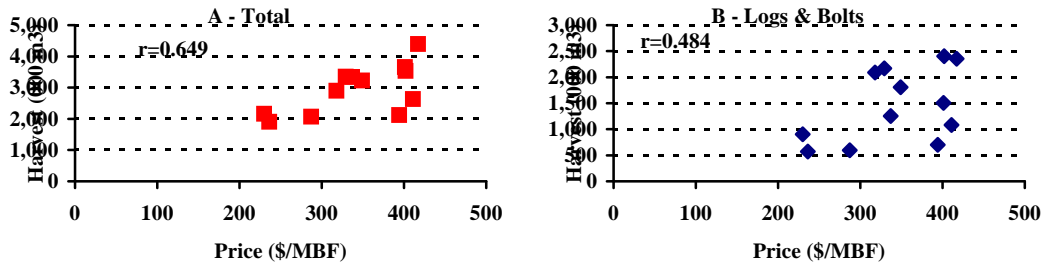
FIGURE 3-8
Correlation of Woodlot Softwood Harvests
with Lumber Prices in Nova Scotia

Figure 3-9 shows the correlation of price with Crown harvests. The coefficient was 0.421 in Panel A and 0.491 in Panel B. Compared to the coefficients for private woodlots, the Crown coefficient is significantly smaller for total harvest and approximately equal for log and bolt harvest. This does not accord with Lutz's theory, which posits that harvests from Crown land should be strongly positively correlated with price.
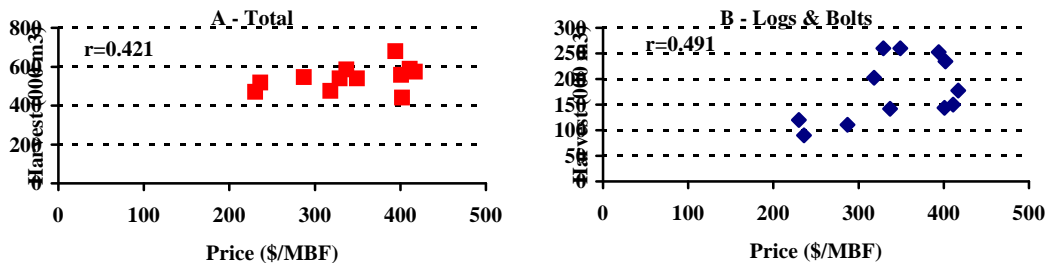
FIGURE 3-9
Correlation of Crown Softwood Harvests with Lumber Prices in Nova Scotia

Figure 3-10 shows the correlations between price and freehold land harvests. Panel A shows a coefficient of only 0.03, while Panel B shows a coefficient of 0.153. While positive, the coefficients are not strongly positive, as required by Lutz's theory. The coefficients are also much smaller than those for private woodlots shown earlier.
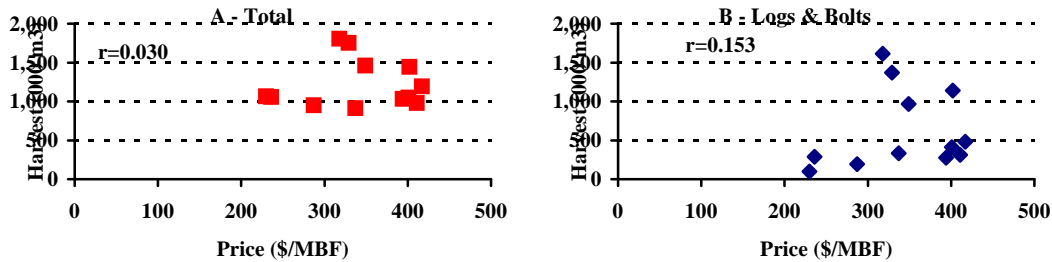
FIGURE 3-10
Correlation of Private Industrial Freehold Softwood Harvests
with Lumber Prices in Nova Scotia

Conclusion

The conclusions for Nova Scotia are the same as those for New Brunswick. That is, when Lutz's theory is confronted with the observed behaviour of timber markets in Nova Scotia, the theory fails.

SECTION 4
CRITIQUE OF THE COALITION'S SUBMISSION

4.1   Introduction

In the previous two sections we have examined the timber markets of New Brunswick and Nova Scotia and found that they were functioning competitive markets. The following sections examine the evidence provided by Lutz.

4.2   Incorrect Portrayal of Ownership Concentration in New Brunswick

Lutz asserts that the forest industry in New Brunswick is very concentrated, which allows "a small group of major Maritimes processors… to suppress the private woodlot prices" (p.1). This observation is central to his theory that buyers can and do suppress timber prices on private woodlots in the Maritimes. As we have already shown in sections 2 and 3, the empirical evidence contradicts this theory. However, it is also useful to take a closer look at the evidence presented by Lutz and how it is used to support his view.

Lutz states that "New Brunswick timber markets are dominated by the six Crown licensees…." (p.5) and that "These six licensees, in turn, are responsible for allocating *some of the timber* on the Crown licenses to a *limited number of sub-licensees*" (Emphasis added, p.7). As further support for this statement, Lutz cites a study published 16 years ago (deMarsh, 1988), which states that "Six privately owned companies own ten mills and also control two-thirds of the less important sawmilling industry"(p. 7).

According to Lutz, only six players dominate the entire industry. He does point out that Crown timber is allocated to sub-licenses, but minimizes the importance of this by implying that there are few sub-licensees. This is a mischaracterization of the industry. The New Brunswick Forest Products Commission reports that there are 77 sub-licensees in the province holding rights to Crown timber. Furthermore, the Commission's directory includes a caveat to state that the "listing is NOT inclusive of all sawmills in the province."[13] Thus, it would appear that sub-licensees and other players in New Brunswick's timber markets are not "limited" in number as Lutz suggests.

Lutz also states that these sub-licensees only receive "some of the timber" from Crown land. We analyzed this proposition using the data from the New Brunswick Timber Utilization Survey for the Year 2002 that Lutz reports in Table 1 of his report (p.9-10). This table shows the timber utilization for mills consuming Spruce-Pine-Fir studwood or logs during 2002 by source of wood. We note that only 4 of the 6 major licensees (Bowater, J.D. Irving, UPM, and Fraser-Nexfor) were reported to be consuming SPF logs and studwood in 2002 and among these, J.D. Irving was the only licensee with more than one mill in this category. All other major licensees are engaged primarily in pulp and paper production and, as a result, could not be expected to be wielding market power to

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[13] New Brunswick Forest Products Commission, Directory of Directory of Crown Licensees and Sub-Licensees, p. 5

suppress prices for sawlogs and studwood from private woodlots, contrary to Lutz's theory.

In Table 4-1, we divide SPF log and studwood consumption between major licensees and other users from data reported by Lutz. These data show that only 41.2 percent of this wood from Crown lands and 39.3 from private woodlots went to major licensees in 2002. Thus, a more accurate characterization of the industry would be that the *majority* of Crown harvest is going to sub-licensees and other producers. Again, the evidence runs contrary to Lutz's portrayal of the New Brunswick timber market being dominated by the 6 major license holders.

Table 4-1
New Brunswick SPF Log and Studwood Consumption in 2002

Category	Crown License	Industrial Freehold	Marketing Board	Federal	Imports	Total
Major Licensees	1,048,970	872,222	428,610	4,890	737,735	3,092,427
Other	1,500,096	424,561	661,290	12,526	303,654	2,902,127
Total	2,549,066	1,296,783	1,089,900	17,416	1,041,389	5,994,554
Percent to Major Licensees	41.2	67.3	39.3	28.1	70.8	51.6

Source: Derived from New Brunswick, Timber Utilization Survey for the Year 2002

Table 4-2 lists the number of mills that purchased or received timber from each land ownership category. It shows a large number of participants in each category regardless of whether we talk of total harvest or concentrate solely on SPF harvest. Note also the large number of participants that purchased timber from an unrelated private industrial freehold owner.

TABLE 4-2
Market Participation: Number Of Mills Purchasing Timber

Purchasing From	All Species	SPF Only
Woodlots	79	34
Federal Land	15	10
Own Freehold	37	23
Freehold Purchases	51	19
Crown	78	39
Imports	36	22
Total	93	43

Source: Derived from New Brunswick, Timber Utilization Survey for the Year 2002

3 Mills

Lutz observes (at page 8) that there were three mills that processed SPF that did not use Crown timber. He then notes that these same three mills did not purchase timber from

woodlots. Instead, these mills used timber from their own freehold land or imported the timber. Lutz construes this as evidence that woodlot prices are suppressed. This conclusion is without logic. That these mills did not purchase woodlot timber is strong evidence that woodlot prices are competitive rather than evidence of suppression as theorized by Lutz.

Roundwood Exports

Table 4-3 lists New Brunswick's timber imports and exports for 2002. It shows that New Brunswick is a substantial net importer of timber.

TABLE 4-3
New Brunswick Timber Imports and Exports

Species	Imports	Exports
SPF	1,272,629	51,540
Red & White Pine	13,039	0
Cedar	63,663	11,752
Hardwoods	260,134	530,356
Total	1,609,465	593,648

Source: New Brunswick, Timber Utilization Survey for the Year 2002

Comparison to U.S. Concentration Levels

Given the importance Lutz places on ownership concentration, it is instructive to compare ownership patterns in New Brunswick to those in found in U.S. states. Data on sawmill capacity in U.S. states are taken from a U.S. Forest Service report.[14] This report also provides comparable data for the Maritime Provinces. Concentration is measured as the percentage of total state capacity owned by the six largest firms in each state. Concentration of sawmill capacity is highly relevant, as it is from sawmills that the derived demand for timber comes and where price suppression must take place if it occurs at all.

Table 4-1 shows the concentration of sawmill production capacity in the fifteen largest U.S. lumber-producing states. Concentration levels range from a low of 48.1% to a high of 85.4%, with an average of 67.7%. The concentration for the six New Brunswick license holders was 54.5%. If New Brunswick were added to this list, it would place thirteenth. Note that Maine, which Lutz claims has a highly competitive stumpage market, has a concentration level of 72.3%.

Note that two of the six license holders do not have sawmills in New Brunswick. Thus, to ensure fairness of comparisons, the concentration levels for the top four largest firms are also shown in Table 4-1. Now U.S. state concentration levels range from a low of

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[14] Capacity data is taken from Spelter and M. Alderman. 2003. Profile 2003: Softwood Sawmills in the United States and Canada. USDA Forest Service. Forest Products Laboratory Research Paper FPL-RP-608.

38.5% to a high of 80.9%, with an average of 58.1%. In this list, New Brunswick would now be tied for tenth spot with the bordering state of Maine.

TABLE 4-
Concentration of Softwood Sawmilling Capacity in the
15 Largest U.S. Lumber Producing States
(Percent of Sawmill Capacity Owned by 6 Largest and 4 Largest Firms)

Rank	State	Top 6	Top 4
1	Louisiana	85.4	68.7
2	Texas	84.0	76.6
3	Florida[b]	80.9	80.9
4	Idaho	75.4	63.4
5	Maine	72.3	57.7
6	South Carolina	71.9	60.5
7	Montana	70.9	60.9
8	North Carolina	68.0	63.8
9	Mississippi	66.9	57.8
10	California[a]	65.5	65.5
11	Arkansas	63.7	45.7
12	Georgia	56.9	44.0
13	Washington	54.4	46.6
14	Oregon	51.1	40.2
15	Alabama	48.1	38.5

a. Concentration of largest 3 firms
b. Concentration of largest 4 firms

4.3 Selected Quotes and Anecdotal Evidence

As noted above, Lutz relies on selected quotes from a number of works to support his theory. Many of these citations are articles, columns or editorials from trade magazines. Others are statements of individuals, while still others are studies by political scientists and anthropologists. Few are economic studies *per se*. In the following we comment on some of the quotes in the order in which they appear in the Lutz 2004 Report.

- *Huber (1985, Lutz Exhibit 29)* – In this analysis, Huber examines market data for each province over the period 1977 to 1982. Thus, this analysis predates the period of review by twenty years. Huber argues that there is some 'circularity' in using private prices to set Crown stumpage rates. He argues that when Crown rates are low, licensees will increase their tenure harvest rates and decrease their private purchases. Conversely, when Crown rates are high, they will decrease their tenure harvest rates and increase their private purchases. Thus, Huber's direction of causation is exactly the opposite of the direction proposed by Lutz. Huber has licensees responding to the price of Crown stumpage but taking private prices as given, while Lutz contends that licensees respond to private stumpage prices and take Crown rates as given. By taking private stumpage rates as given, Huber ignores the effect that moving harvests from Crown lands to private lands

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will have on private prices. Taken together, Huber's analysis might suggest that Crown rates set a price floor below which private rates would not fall (but can rise above), rather than a price ceiling.

Huber notes that actions of licensees are restricted by AAC constraints that are 'relatively rigid.' However, neither Huber nor Lutz address the situation of licensee action when the maximum AAC is binding and the demand for timber is high. But this is exactly this condition that characterizes New Brunswick timber markets in recent years.

- *O'Donnell (1994, Lutz Exhibit 52)* – Lutz cites an extensive passage from O'Donnell that describes the historical development of markets in New Brunswick. The passage begins "In the early 1900's…" (page 8 of O'Donnell cited by Lutz at page 15). While this passage is of historical interest, it is unclear what relevance conditions in the early 1900's have to market conditions in New Brunswick in the period of review (2002-2003). O'Donnell's study is not an economic analysis of timber markets; instead, its objective is to "identify opportunities which might serve to strengthen the linkage between marketing and management in order to increased the level of management on woodlots." (page 6)

- *Herron (2002, Lutz Exhibit 27)* – This work is not a formal study, but rather an editorial in the magazine the *Atlantic Forestry Review*. In the piece cited by Lutz, Herron is responding to the views expressed in two articles in the Fredericton newspaper the *Daily Gleaner*. Part of the quote from Herron used by Lutz states:

   > *My frustration grew even greater after reading in the second Gleaner article reporting David Ferguson's response to questioning by NDP Leader Elizabeth Weir regarding 'forest cutting data.' She had asked about apparent overcutting by provincial licensees. Although it wasn't a quote, he apparently responded that the price of wood was high that year and companies must have decided to take advantage of overcutting. What he really said here was that Crown wood was cheaper than open-market wood.* (page 9)

   Note that Herron did not have the actual quote of David Ferguson, but rather what Ferguson 'apparently' said. Moreover, Herron's conclusion is questionable. When the price of lumber increases, the demand for timber will also increase, which in turn causes timber prices to rise in response. The correct response in a competitive market is for producers to increase their supply from all sources such that the delivered cost from all sources in that market is equal. New Brunswick lumber producers should then be expected to increase harvests on Crown tenures, freehold land and private purchases, as we show that they in fact did.

- *Short (2002, Lutz Exhibit 65)* – This work is the author's thesis for his Bachelor of Science in Forestry at the University of New Brunswick. The study's objective is an:

... attempt to discover if there are significant differences between the woodlot owners that the [marketing] boards represent (within their jurisdictions). If there are only minute differences between the values, attitudes and behaviour of all the wood producers that are represented, perhaps amalgamation of the seven boards into a single negotiating power for the entire province would better suit their original purpose: to have collective bargaining power. (page 3)

The author conducted a telephone survey for the opinions of the directors of each of the seven marketing boards. The author concluded that:

There was a great deal of similarity in the values, attitudes and behaviour of all the directors that I surveyed. I suggest that the positive impacts of combining separate marketing boards into a single, unified entity (to gain more negotiating power and provincial influence) would far out-weigh the negative consequences that might affect the delivery of regional services and programs. (page ii)

It would appear that Short believes that a single monopoly marketing board is required. In Short's view, this need arose because of a provincial policy change in 1992 under which marketing boards "lost their guaranteed contracts and all their marketing power with the mills." (page ii)

Note that Short does not examine harvest patterns before or after the 1992 policy change to see if the policy change had some effect on purchases. His findings are based solely on the opinions collected in his telephone interviews and not on any market data or analysis.

- *MacNaughton (1991, Lutz Exhibit 38)* - This work is the author's Masters degree thesis in the Department of Anthropology at the University of New Brunswick. It is not an economic study of market behaviour. As the author states:

  The principal objective of this study is to comprehend the means by which various constructions of property rights enter into the activities of producers and their associations. ... This thesis addresses the current need for greater flexibility and clarification in the tools of a legal pluralist analysis; specifically, the concept of a social field. (page ii)

- *deMarsh (1988, Lutz Exhibit 16)* - This paper examines the relationship between woodlot owners and industry in the period 1960 to 1986. Not only is the discussion related to a period almost 20 years ago, but as the author clearly states in his introduction:

  This paper does not present a dispassionate, scientific analysis of the issues considered. These issues have been and continue to be political in nature, and the opinions expressed are those of an active and partisan

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participant in the recent history and current debates which are discussed. (page 71)

- *Palmer (2004, Lutz Exhibit 54)* – This work is a brief article that appeared in the *Atlantic Forestry Review*. Lutz quotes a single sentence concerning the author's view on a sawmill acquisition by J.D. Irving Ltd and ignores passages that show that private markets respond to market fluctuations. Palmer states:

  > *However, even those mills that are blessed with full wood yards, like Louisiana-Pacific and Domtar, are taking a cautious approach. They know from experience how fast a surplus can disappear and how hard it is to get it back. They are also concerned that loggers may be moving away from hardwood to softwood in response to increased demand for logs and studwood. ... Indeed with lumber prices warmed up, sawmillers are starting to chase wood with some real money.* (page 23)

- *Higgins (1999, Lutz Exhibit 28)* – This work is another article from the *Atlantic Forestry Review* from which Lutz again takes selective quotes, ignoring statements that contradict his theory of price suppression. Examples of statements that contradict Lutz's theory include:

  > *It adds up to forestry being poised for record profits – if it has access to wood. But if wood supplies fail, some saws and paper machines will halt, irreversibly hurting the Atlantic economy – and not just in rural areas.*

  > *"We're very concerned," says Max Cater, executive director of the New Brunswick Forest Products Association. "Really, we're short on supply now, but we're importing enough to keep plants going."* (page 57)

  Higgins continues later with:

  > *Demand is creating a bonanza for private woodlot owners, but they're overharvesting at an estimated 30% to 40% above the sustainable rate. With Crown land being cut at its sustainable maximum, the wood shortage on private lands is widely agreed to be steering the forest industry to a crunch.* (page 57)

- *Baskerville (1983 and 1987, Lutz Exhibits 2 and 3* – Lutz makes passing reference to the two reports prepared for the New Brunswick DNR by Professor Baskerville, the former Dean of Forestry at the University of New Brunswick. These papers contain insights which are not helpful to the positions put forward by Lutz.

  For example, Baskerville (1983) contains an assessment of the timber supply and demand balance at that time. He states:

  > *The balance between softwood demand and supply in New Brunswick is extremely tight. The 7.9 million cubic metres available annually will meet*

the average annual consumption levels of the existing softwood industry on a continuing basis. The forests could not sustain the industry if it operated continuously at its maximum capacity of 8.8 million cubic metres annually. (page 3)

Thus, the tight timber supply in New Brunswick, as described earlier in Section 2, has been an industry feature for an extended period. This puts in question the ability of the industry to shift harvests between supply sources as contended by Lutz.

Baskerville (1987) provides a detailed description 1) why forest management responsibilities were concentrated in 10 area-based tenures, 2) the role of sub-licensees and 3) the process by which harvest volumes were allocated to licensees and sub-licensees. On the first point, Baskerville states:

> *It is not possible in New Brunswick to give each mill a separate license big enough to cover its needs. …In short, New Brunswick has too many sawmills to allocate each one a sustaining forest area without overlap. Since it is not socially reasonable to reduce the number of mills, there are two possible approaches: (i) separate licenses much smaller than needed to sustain each mill, or (ii) joint occupancy on licenses large enough to provide the flexibility to supply an associated group of mills. Only the latter offers any real chance of achieving sustainability of sawlog flows, and even this must be regarded as a sharing of a diminishing wealth.*
>
> *From the perspective of establishing management control in the forest the large licenses have been successful. Progress towards management has been considerable. … The licenses appear to be large enough to give management flexibility, without being so large as to dissipate management effort.* (page 19)

In describing licensees and sub-licensees earlier in the report, Baskerville states:

> *One user of each license was designated the Licensee and the others became Sublicensees. The Licensee and the Sublicensees had identical legal access to a share of the raw material flow, but the Licensee took on responsibility for the design and implementation of management on the license. The responsibility included preparation of a 25-year management plan, a 5-year operating plan, and implementation of these plans in the forest covering all activities of the Licensee and Sublicensees. The Licensee had responsibility to identify stands for harvest in a manner consistent with the wood supply forecasts upon which the license area was based, as well as the design and implementation of silviculture consistent with those wood supply forecasts.* (page 8)

In describing the allocation of harvest volumes to licensees and sub-licensees, Baskerville states:

The crucial first step was to establish a reconciliation between demands for raw materials and the capability of the existing forests.

The demand on the Crown forest was established as a residual. This was done by determining the historical maximum total consumption for each mill, and subtracting from that amount, the maximum sustainable supply of wood available from forests owned by the mill, subtracting a proportional share of the maximum sustainable supply of wood available regionally from non-industrial freehold forests, subtracting wood available from other industry sources (eg. chips), and wood traditionally available through import. The residual of the arithmetic was the amount required from the forests to maintain the mill at its highest demonstrated level of production, and was defined as the Crown dependency of the mill.

When the Crown dependencies of all mills in the Province were totalled, the sustainable harvest from the Crown forest over the transition period could meet only 74% of the calculated Crown need. … Since the sustainable flow of raw materials from the Crown forests could not meet this maximum theoretical need of all the mills over the period of transition, Sublicensees were allocated 100% of their Crown dependency, and Licensee mills were allocated 72% of the Crown dependency. …While the quantity of material seemed marginally sustainable, there was no room for industrial expansion until well into the next century, and the quality of raw material was not sustainable. (page 7)

This clearly demonstrates that the portrayal of the concentration of harvesting rights in New Brunswick as presented by Lutz is greatly overstated and flawed.

- *Hatheway (Dec. 2000/Jan. 2001, Lutz Exhibit 26)* – Lutz cites Hatheway to show increased concentration of forest tenures that occurred with passage of New Brunswick's *Crown Lands and Forest Act* in 1982. Hatheway's work is an article from the *Logging and Sawmilling Journal*. With passage of the 1982 Act, all old forest tenures were annulled and ten new area-based tenures were created. What Lutz ignores is the role of the sub-licenses that were also created. These were described by Hatheway as follows:

  But something entirely new was ensured [sic] access to Crown land for operators of local sawmills, ranging from a few medium-sized, modernized mills to a large number of small, often family-owned and operated establishments – perhaps 150 in all.

  Groups of these operators, now called sub-licensees, were assigned to licensees who were required – as a condition of their licence – to ensure access to the allocated quantity of wood, strictly determined by the government.

Obviously there were differences of opinion about the quantities of wood allocated to the different players, but government held its ground and, while expansion and change of ownership have resulted in lots of pressure, the basic plan has worked well. (page 5)

Lutz has again ignored the importance of sub-licensees in New Brunswick's forest tenure system and has overstated the concentration of harvest rights given to the main licensees.

- *Gruenwald, (2004, Lutz Exhibit 24)* – This piece is another guest editorial in the *Atlantic Forestry Review*. It is a student opinion piece subtitled "A UNB forestry student's perspective on Jaakko Pöyry ."

- *Presentations to the Select Committee (Lutz Exhibits 33, 34, 52 and 60)* – These exhibits are statements made by woodlot owners and directors of marketing boards to the New Brunswick Legislature's Select Committee on Wood Supply. The Committee was holding public hearings on the recommendations of a study jointly commissioned by the New Brunswick Forest Products Association and the DNR. This study had concluded that it was feasible to double the Crown AAC over the next 60 years through a program of intensive silviculture and changes to the provincial forest management system. The committee hearings were an opportunity for the people of New Brunswick to voice their opinions on the study and its implications for Crown forest management practices. Many voiced disapproval and the DNR's staff report (DNR, 2004) also found fault with many of the study's findings. Note that the doubling of the AAC, even if not realized for 60 years, is not a marginal change, but rather would represent a huge increase in the Crown share of the total provincial harvest.

4.4 Abandonment of Previous Positions on Cross-Border Comparisons

In a surprising turnabout, Lutz abandons a key tenet of his previous work on cross-border stumpage price comparisons. In Cox, Ehlen and Lutz (2004), the authors defend the use of cross-border inter-jurisdictional stumpage price comparisons. While the Cox, Ehlen and Lutz report does acknowledge that numerous factors can and do affect stumpage prices, they contend that adjustments are only required for site-specific stumpage assessments and are not required for inter-jurisdictional comparisons. The following excerpts from pages 7 and 8 of their report summarises the authors' logic in reaching this conclusion:

"Sale appraisals" which determine prices expected in individual timber sales are very different from appraisal of timber values in entire forests. The larger the tract of timber being examined, the greater the chance that it will be closer to the average, other things being equal. So, for very large tracts, site-specific appraisal factors become less of an issue because conditions will then average out. Therefore, not all appraisal factors will be relevant for all tracts.

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For extremely large tracts (or entire states), many individual variations will cancel out and become irrelevant. ….

The comparisons of timber values that the DOC is undertaking, then, vary in fundamental ways from a common appraisal of a typical small tract of commercial timber. An ordinary appraisal differs from the DOC's undertaking much as a comparison of two lots of automobiles differs from a comparison of Hertz's and Avis's fleets of cars. Appraisal factors may be relevant and might be <u>considered</u> by the DOC. But the likelihood that an <u>adjustment</u> will be warranted by any given factor is considerably lower than for a site specific appraisal or value of one car, because variations are neutralized due to the vast size of the assets compared. (footnote omitted)

In addition, at page 116 of Cox, Ehlen and Lutz (2004), the authors state:

We are aware of no changes in the Québec or Maine sawtimber harvests in the intervening two years that would change our analysis, and no contrary evidence or arguments have been put forth to date...

However, in his 2004 Report, Lutz claims that stumpage prices in Eastern and Western Maine sell for consistently different amounts. In examining Maine stumpage prices, Lutz (2004) states:

Timber sold in the western highlands, along a line roughly corresponding to the Allagash River and the White Mountains, consistently sells for substantially more than timber to the east. (page 41)

The acknowledgement by Lutz, that state-wide averaging is no longer appropriate and that there is now a need to control for inherent differences in timber quality within the State of Maine, undermines Lutz's own previous position on cross-border comparisons. Lutz's current views cannot be reconciled with those of Cox, Ehlen and Lutz (2004). Lutz's new position asserting the need to control for many issues before timber can be compared in any reasonable fashion, however, echoes the consistent views of forest experts in Canada and the United States for the past twenty years.

SECTION 5
INTER-JURISDICTION STUMPAGE PRICE COMPARISONS

5.1   Introduction

In this section we critique the methods used by the Department to apply the Maritime
private stumpage prices to British Columbia and Alberta.

**5.2   The Adjustment of the Maritime Benchmark Using the Western/Eastern
Ratio**

The Department treats the forests from the Maritimes through Saskatchewan as a
homogeneous forest, with no variation in timber quality and species mix, nor with any
differences in harvest costs, transportation costs, or other market conditions. However,
once the Rocky Mountains are reached, it believes some abrupt change occurs which
calls for adjustments to account for what the Department calls "the higher value timber in
B.C. and Western Alberta." This sweeping assumption is not well founded. Nonetheless,
the Department attempts to make this adjustment for supposedly greater timber value
across western Canada.

In pursuing its course, the Department does not assess whether it is reasonable to use
Maritime timber values generated by the local Maritimes market condition as a legitimate
proxy for values elsewhere. It also does not attempt to find data on whether there are any
actual differences in timber quality (or in the other myriad factors that heavily affect
timber values) between these western provinces and the Maritimes. (Problems with
unreasonable timber value comparisons based on inadequate adjustments have been
discussed in detail elsewhere and will not be repeated here.) Instead, the Department
goes out of the country and develops comparisons based on Eastern U.S. and Western
U.S. states to develop differences. These differences are then transferred back across the
international border in an attempt to impute the value differences found to some kind of
value difference between the western Canadian provinces and the Maritimes.

Leaving aside the broader issues raised by the Department's exercise there are many
technical errors in what Commerce has done. Commerce's value adjustment method
involves the creation of three ratios of the average stumpage values of certain species
groups in selected western states and the value of the SPF species group in Maine. The
three western species groups are SPF, Douglas-fir and Hem-Fir.

1. The Maine stumpage price data does not contain a listing of stumpage prices for
   SPF as a group. Thus, Commerce's first step is to construct an average SPF price
   for Maine. To do this, the Department arithmetically averages the prices of the
   spruce & fir sawlog category with the averages of two other sawlog categories,
   mixed softwoods and other softwoods. The Maine stumpage price reports define
   "other softwood" as "tamarack/larch, pitch pine, jack pine, etc." No definition is
   given for mixed softwoods; presumably it would include the species used in the
   Department's SPF constructed group and also non-SPF species such as cedar,

hemlock, red pine, and white pine. The appropriateness of including the mixed softwood category is unsupported, given that the mix of species is unknown.

Commerce then calculates a weighted average of its constructed SPF group with the price for studwood. The Maine stumpage price report defines studwood as "Small sawlogs intended to be sawn into small dimensional lumber." However, the Maine report does not list an SPF studwood price; it instead lists an all-species average price. Nevertheless, Commerce treats this all-species price as representative of an SPF species price.

The studwood price reported by Maine is in $/ton, not $/MBF, and Commerce must convert the reported price to $/MBF. To do this requires the use of two conversion factors, first a conversion factor from tons to cords, and then a second factor from cords to MBF. The Maine reports include species specific ton-to-cord conversion factors. The Department does not specify which conversion factor is used, but it appears that it uses the spruce & fir conversion factor. Commerce then converts from cords to MBF using a conversion factor of 2 cords/MBF. The Maine report states: "For purposes of comparing volumes, a rough conversion of 1 MBF = 2 cords is commonly used."

The Department then weight averages the sawlog and studwood stumpage prices using the percent of Maine's sawmill production capacity that produced studs. Commerce repeats this calculation for the years 1999 to 2002, and then arithmetically averages the results over the four years to yield its constructed SPF benchmark price for Maine: $90.691/MBF.

2. Commerce's second step is to construct benchmark prices for different species groups in U.S. states bordering British Columbia and Alberta. The Department selects stumpage bid prices from Western Washington, Eastern Washington, Idaho and Montana. It then constructs benchmark stumpage prices for three species groups: SPF, Douglas-fir and Hem-Fir.

To construct a stumpage benchmark price for SPF, it takes a weighted average of camp-run prices for true firs, lodgepole pine, spruce, white bark pine and an "all pines" category. Averaging across different jurisdictions and different timber growing areas is not reasonable, as mentioned above and discussed further below. Having made this error, the Department compounds it with the inclusion of the all pines category, since this category would include higher-valued ponderosa pine and white pine that are not part of the SPF grouping. This is confirmed by noting that this group has the highest species price for all species included in the Department's SPF calculation. The volume weighted average price over the four-year period 1999-2002 is $143.86/MBF.

For the Hem-Fir benchmark price, Commerce uses species prices for true firs, Grand Fir/Hemlock, and Hemlock/true firs. Note that the true fir prices are used twice by Commerce, first in the SPF calculation and also in the Hem-Fir calculation. For the Douglas-fir benchmark price, the Department volume

weights Douglas-fir prices from Western Washington with Douglas-fir/Larch prices and Douglas-fir/true fir prices over the four-year period.   The benchmark prices are $212.46/MBF and $276.68/MBF for Hem-Fir and Douglas-fir, respectively.

By constructing volume-weighted averages across three states, the Department is implicitly assuming that either the forests are homogeneous across the region or that the volume from the sample of timber sales used is representative of the region's harvest. Neither of these alternative assumptions is true. The percent of the total volume used in the species group benchmark prices from each state and sub-region is given in the table below. It shows that for Douglas-fir and Hem-Fir, the majority of the volume was from sales in the coastal rainforest of Western Washington whereas for SPF, it was sales in Idaho and Montana that dominated. These sales are not representative of the region as a whole or, more importantly, of the conditions in British Columbia or Alberta, to which the prices are indirectly applied.

Table 5-1
Share of Total Volume in Calculated Benchmark Prices

Region/State	SPF	Douglas-fir	Hem-Fir
	(%)	(%)	(%)
Western Wash.	4.61	51.16	64.05
Eastern Wash.	10.40	10.11	5.66
Idaho	45.94	25.97	26.13
Montana	39.05	12.76	4.16

3. Commerce's third step is to divide the western benchmark prices for SPF, Douglas-fir and Hem-Fir by the Main SPF benchmark price to yield three western/eastern ratios. The ratios are 1.586 for SPF, 3.051 for Douglas-fir and 2.343 for Hem-Fir. Commerce alleges that these ratios, when multiplied by the Maritime SPF benchmark, yield the benchmark prices for SPF, Douglas-fir and Hem-Fir stumpage prices in Coastal B.C., Interior B.C., and Alberta. That is, SPF stumpage prices in British Columbia and Alberta should be 58.6% higher than SPF stumpage prices in the Maritimes, Douglas-fir prices should be 305.1% higher than Maritime SPF prices and Hem-Fir prices should be 234.3% higher.

Flaws in Commerce's Ratio Methodology

There are multiple major flaws in the Department's methodology. Time constraints require us to focus on just some of them; others reflect the basic error in trying to do these kinds of comparisons across jurisdictions that has been explained many times before. All available evidence demonstrates that stumpage prices are determined by local market conditions and, as a result, stumpage markets are not integrated. This means that the ratios of stumpage prices between different regions will not be stable over time and that the ratios will vary considerably between regions, including bordering regions. Both of these points are demonstrated in the two graphs below. Figure 5-1 shows the variation

in the price ratios based on the annual data contained in Commerce's Price Benchmark Memo. The figures show considerable variation over time, with a generally declining trend. The declining trend is discussed more fully below. Clearly, there is no stable price ratio over time.
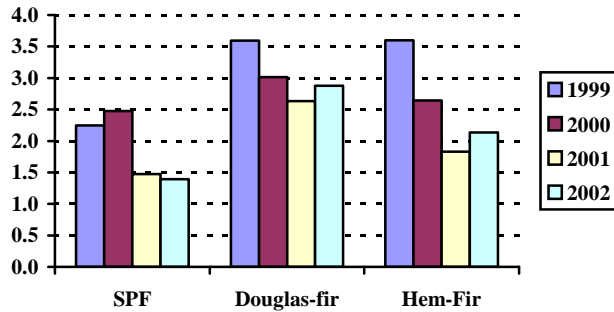

Figure 5-1
Variation in Annual Western/Eastern Price Ratios

Figure 5-2 shows the variation in average species price ratios across the four western areas that Commerce uses to develop the western benchmark prices. It shows large variation in the ratios by area. If the ratios are not stable within the area that Commerce uses to derive the western prices, they cannot be expected to apply to regions outside of this area. This result is not surprising, given the significant differences that exist between the forests of the three states.

Figure 5-2
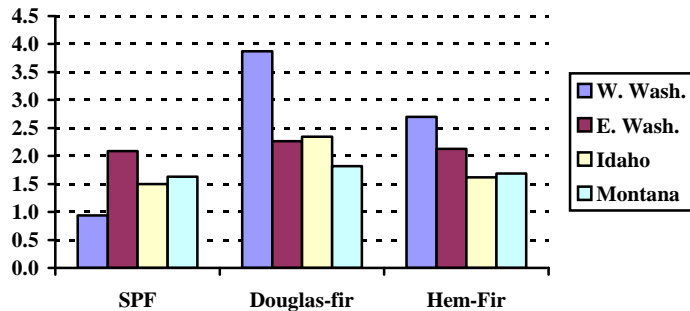**Variation in Four-Year Western/Eastern Price Ratios by State**

Another logical flaw in Commerce's ratio methodology is that these western benchmark prices are assumed to apply equally across the coastal and interior regions of British Columbia and also to Alberta. This must imply that Commerce believes that timber quality is homogenous across these two provinces. This is not a tenable assumption.

<u>Other Technical Errors</u>

Commerce's ratio methodology also includes a number of technical problems, including:

- *Conflicting Log Scales* – In Canada, timber is measured as a cubic volume in m³ using fairly consistent measuring rules across the nation, although there is a variation in implementation of these rules in utilization standards and in other measurement practices (such as deductions for defect) that can influence cross-jurisdictional comparisons. This is not true of the United States, where a host of board foot log scale rules are used. In the Eastern United States, including Maine, the international 1/4-inch log scale rule is the dominant log scale. In the Western United States, the Scribner log scale is used. In addition, there are two variants of the Scribner log scale – the long-log scale used in Western Washington and the short-log scale used in the U.S. interior. The volume estimates produced by the two Scribner scales can vary dramatically because of the different assumptions and log measuring conventions employed. This means that the western prices used in the ratio numerator are a combination of two different measures that are then divided by a third log scale measure. This ratio of three different U.S. log scales is then applied to prices measured in a fourth log scale in Canada. This process has a high probability of an inaccurate result.

- *Conflicting U.S. Log Scales* - International ¼-inch rule vs. Scribner long-log rule vs. Scribner short-log rule estimate log volumes using different assumptions of log length, taper and particularly defect, as well as different methods of measuring diameter (e.g., Decimal C in Scribner).

- *Four Year Averaging* – Commerce calculates its ratios using price from the four-year period 1999-2002. The following table shows the weighted average species prices.

Table 5-2
Weighted Average Species Prices

Species Group	1999	2000	2001	2002	4-Year Avg.
	($/MBF)	($/MBF)	($/MBF)	($/MBF)	($/MBF)
Maine SPF	85.21	99.29	92.45	85.82	90.69
W. SPF	191.41	245.78	136.12	119.53	143.86
Douglas-fir	306.35	299.42	243.60	246.80	276.68
Hem-Fir	306.51	262.44	169.02	183.34	212.46

Table 5-2 shows that while the constructed Maine SPF stumpage price was relatively constant across the four years, the western species price fell over the same period. This means that use of the four-year period inflated the ratios compared to what would have been the case if only 2002 prices had been used. The next table compares the ratios based on the four-year period and the 2002 ratios. In all cases, the ratio drops.

Table 5-3
Comparison of Weighted Average Species Price Ratios

	Four-Year	2002
SPF Ratio	1.586	1.393
Douglas-fir Ratio	3.051	2.876
Hem-Fir Ratio	2.343	2.134

SBFEP Comparison

To justify the use of the ratio multipliers for adjustment of Maritime stumpage values to BC and Alberta benchmark prices, Commerce compares BC SBFEP auction prices to the Maritime prices. After some dubious adjustments described next Commerce finds that the ratio of BC auction prices to Maritime prices is similar to that derived using US prices.

In "adjusting" the SBFEP auction prices Commerce adds the costs of road building incurred by the program and their silviculture costs to the auction prices because they say that these costs overlap with the costs incurred by private harvesters. This is false reasoning. The timber prices in the Maritimes reflect the costs borne by the harvester, if the cost increases the stumpage price decreases. Thus the Maritime prices have netted out of the stumpage prices all obligations borne by the harvester. If the program costs borne by the SBFEP were now transferred to the harvester, then the auction price would fall not rise as assumed by Commerce. If Commerce now believes that there is a need to make adjustments for the site-specific differences in the factors that affect stumpage prices then it should do so for all factors and for stumpage prices across all regions of Canada.

Note also that there is no basis for the assumption that SBFEP costs would be borne by private timber purchasers in the Maritimes. SBFEP road building costs are for major access roads not for the minor access and or site roads build by harvesters. The latter work is also required by harvesters of SBFEP sales.

5.3   Tests of the Accuracy of the Western/Eastern Ratio Methodology

The flaws in Commerce's price ratio methodology can be demonstrated by applying its methodology to areas within the United States. If the method can be transferred across an international border, it should be able to perform equally well within the United States, where the ratios were developed. Three tests of Commerce's ratio methodology are conducted. The first is to apply it to the 2002 stumpage price in the western region from which the ratios were developed. The second is to apply it to the individual states contained within the western region. The third is to test it against states bordering the selected western region.

- *Test of the 2002 Stumpage Prices in the Western Region* – Commerce's method
  suggests that all three species are subsidised in the western region used to
  calibrate the ratios. This indicates that Commerce's methodology may not
  produce accurate results when applied to other areas, as it cannot accurately
  predict a subsidy or lack of a subsidy within the area used to calibrate the ratios.

Table 5-5
Comparison of Benchmark Prices with Western Region Stumpage Prices

Species	Wt. Average Stumpage	Benchmark	Difference	Percent Difference
	($/MBF)	($/MBF)	($/MBF)	(%)
SPF	119.53	136.13	-16.60	-13.9
Douglas-Fir	246.80	261.81	-15.01	-6.1
Hem-Fir	183.34	201.04	-17.70	-9.7

- *Test of the 2002 Stumpage Prices in the States Within the Western Region* – In
  this test, we examine the weighted average stumpage price for each species with
  the three states used to calibrate the ratios. Washington is divided into Eastern
  Washington and Western Washington to account for the major differences in
  forest types, as was done for the coastal and interior regions of British Columbia.
  The results are presented in the table below. Commerce's methods would
  indicate that both Idaho and Montana harvesters receive large subsidies for all
  three species groups. In Washington, some species groups also have large
  subsidies while others have positive differences. Under Commerce's calculation
  logic, a positive difference would be interpreted as showing that it was Maine's
  stumpage that was being subsidised.

Table 5-6
Comparison of Benchmark Prices with State Stumpage Prices

Species	Wt. Average Stumpage	Benchmark	Difference	Percent Difference
	($/MBF)	($/MBF)	($/MBF)	(%)
W. Wash.				
SPF	72.99	136.13	-63.14	-86.5
Douglas-Fir	297.65	261.81	+35.84	+12.0
Hem-Fir	212.46	201.04	+11.42	+5.4
E. Wash.				
SPF	260.00	136.13	+123.87	+47.6
Douglas-Fir	222.36	261.81	-39.45	-17.7
Hem-Fir	173.57	201.04	-27.47	-15.8
Idaho				
SPF	102.46	136.13	-33.67	-32.9
Douglas-Fir	185.51	261.81	-76.30	-41.1
Hem-Fir	144.63	201.04	-56.41	-39.0

Montana				
SPF	124.62	136.13	-11.51	-9.2
Douglas-Fir	101.86	261.81	-159.95	-157.0
Hem-Fir	124.74	201.04	-76.31	-61.2

- *Test of the 2002 Stumpage Prices in Bordering States* – The data set in Commerce's Benchmark Price Calculation Memo contains stumpage prices for Oregon, for Wyoming and Colorado combined, and for Nevada and Utah combined. Using Commerce's logic, Wyoming borders Idaho and Montana, and both Nevada and Utah border Idaho, so they too should provide good tests of the methodology. The results are given in the table below.

Table 5-7
Comparison of Benchmark Prices with Bordering State Stumpage Prices

State	Species	Wt. Average Stumpage	Benchmark	Difference	Percent Difference
		($/MBF)	($/MBF)	($/MBF)	(%)
Wyoming & Colorado	SPF	86.42	136.13	-49.71	-57.5
Nevada & Utah	SPF	201.00	136.13	+64.87	+32.3
Nevada & Utah	Hem-Fir	51.00	201.04	-150.04	-294.2

According to the Department's methodology, Wyoming and Colorado SPF is subsidized. Nevada and Utah SPF has a positive price difference, but the subsidy for Hem-Fir is very large.

Conclusion

Commerce's ratio methodology for converting eastern stumpage prices into comparable western stumpage price benchmarks failed in all tests. The methodology imputed large stumpage subsidies to species in different states, both within and bordering the area used to develop the ratios. In other cases, the results would suggest, based on the logic of Commerce's methods, that it is Maine prices that are being subsidised.

Given that the method failed when applied within the United States, there is no reason to believe that its application in Canada would prove accurate. Indeed, as discussed above, there is every reason to believe that the results would be even more erroneous than the U.S. test results.

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