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The author is Visiting Assistant Professor, Department of Rural Economy, University of Alberta, Edmonton.

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The Security of Investment Environments for Some British Columbia Forest Tenures

1 Introduction

Governments worldwide frequently regulate the commercial use of forests because of concerns that market forces will not allocate resources and distribute incomes in a manner which best furthers social objectives. British Columbia is no exception. In order to regulate its forest lands, the government of British Columbia, like that of most Canadian provinces, has retained title to almost all forested land. In the few cases where the British Columbia government has chosen to grant private ownership rights to forested land, policies nonetheless exist which regulate the behavior of land owners.

Despite the predominance of public forests, the industrial facilities used to harvest and process timber are generally owned and operated by the private sector. Therefore, in order to facilitate the utilization of public forest resources, the government has granted usufructuary rights to forestry firms. The different combinations of rights to forests, both public and private, which firms may hold are known as forest tenures. Forest tenures specify the conditions which tenure holders must follow in order to enjoy benefits derived from forest resources. These conditions frequently require the tenure holder to: pay stumpage fees, royalties or taxes; adhere to harvesting guidelines; reforest; and abide by numerous other restrictions designed to protect the public interest.

In specifying the legal harvesting and management responsibilities of forestry firms, tenures have a great influence on how public forest resources are used and maintained. If governments perceive that tenure holders are not acting in ways which represent the best interests of society, they frequently change the structure of tenures. Thus, tenures have emerged as primary policy tools for governing the use of forest resources.

By specifying the rules of operation, tenure regulations influence the behavior of forestry firms in two important ways. First, and most obviously, rules exist which directly require firms to do things which they are not likely to do voluntarily. For example, restrictions may be placed on firms which cause them to increase their utilization of felled trees or reforest to government standards. However, in addition to these direct effects, there is a second, more indirect, way that regulations can affect the behavior of firms. When tenure holders are forced to abide by requirements, they incur costs associated with performing activities which do not further their interests. The costs which tenure holders bear from imposed regulations reduce the benefits that may be derived from the their tenure rights and may thus decrease incentives to invest in silviculture (Luckert and Haley, 1989a).

As the values of society and forest resources change, governments frequently find it necessary to change the specifications of tenures. When tenure policies are changed, the associated costs to tenure holders increase or decrease depending on whether requirements are made more or less restrictive. More restrictions decrease incentives to invest because of increased costs. However, the effects of new regulations on investment decisions do not stop here. Changing policies influence future expectations of tenure holders which, in turn, further influence investment decisions. Boyd and Hyde (1989) refer to this effect as a "dynamic cost of regulation" which results from "the costs imposed by new regulations as they alter future expectations". To make matters worse, governments may also influence investment decisions even if tenure policies do not actually change. If tenure holders merely perceive a chance that there will be changes in their tenures, then decisions to invest may be altered.

Recognizing the many effects of changing, or potentially changing, government policies on investment incentives allows us to define secure and insecure tenures. Secure tenures have holders which expect no changes in policy, or changes which will, on balance, increase the benefits which they may derive from their rights. Insecure tenures have holders which expect policy changes which will, on balance, decrease their benefits.

Despite the necessity for governments to periodically review and change tenure policy, governments should consider how their decisions affect the security of tenures. Investments in forestry are inherently risky because of long investment periods, the possibility of natural disasters, and fluctuating demands of forest products. If governments add the institutional risk of tenure insecurity, they may create an investment environment which allocates far fewer resources to forestry than is socially optimal.

In this paper, a methodology is presented for collecting quantitative data on the security that tenure holders perceive in their tenures. The methodology was applied in a case study among holders of selected tenure types in British Columbia. Following the collection of tenure security data, the B.C. Ministry of Forests and Lands announced new forest policies which changed the specifications of those tenures surveyed. Thus, the case study provides a unique opportunity to assess how accurate tenure holders were in their perceived tenure security, and postulate how their past performance in anticipating policy changes may affect future investments.

2 Methodology

2.1 Background

As discussed above, tenures are made up of a variety of restrictions which regulate the behavior of forestry firms. Any one restriction may vary across a wide spectrum of alternatives. For example, in the case of transferability, at one end of the spectrum a tenure may be freely transferable to any party under any conditions while, at the other end, a transferal in any form may be forbidden. Between the two extremes, different degrees of transferability may be permitted. In analyzing the security of tenures, the methodology which follows is designed to determine whether tenure holders anticipate changes in the specifications of restriction spectra.

There are two components to be measured when analyzing the security of tenures. First, there are costs and benefits associated with an expected change of a restriction spectrum. Second, each expected change has a probability of occurrence within a given period.

The costs and benefits of all possible expected changes, E(0), for the spectrum of transferability restrictions are depicted in Figure 1A by the assumed function AXB where X represents the position of the tenure holder on the restriction spectrum, and segments AX and XB represent, respectively, areas of expected beneficial and harmful change.¹ As transferability of tenure is increased, benefits of tenure holders increase along XA until they reach a maximum at O⁺ with free transferability. As transferability of tenure is restricted, costs to tenure holders increase along XB until they reach a maximum at O⁻ with no transferability.

Figure 1B shows an assumed probability density function for changes in the position, X, of the tenure holder. The probability density function assumes, with its shape, that there is a higher probability of small changes in the transferability of tenures than for large changes.²

If the two functions, depicted in Figures 1A and 1B, were known for every restriction spectrum, then the security of a tenure holder within a certain period could be expressed by summing the products, along each restriction spectrum, which result from multiplying benefits and costs of changes (Figure 1A) times the probability of their being changed (Figure 1B).

Unfortunately, ascertaining these functions for every restriction would be practically impossible. Such a methodology would first require proposing numerous changes, representing different points along the spectrum in Figure 1A, and measuring tenure holders' perceptions of benefits and costs expected for different changes. Then, tenure holders would have to be asked to express their opinions on the probability of change

^{1.} The functional form in Figure 1A is assumed only to illustrate the concept of varying costs and benefits to tenure holders of different specifications of restrictions. The study does not assume this functional form in the methodology that follows.

^{2.} The functional form in Figure 1B is assumed only to illustrate the concept of different probabilities associated with changes in restrictions. The study does not assume this functional form in the methodology that follows.

A. Benefits and Costs of Expected Changes



B. Probability Density Function of Expected Changes



Figure 1: Theoretical Measurements of Tenure Characteristic Security

for several points along each restriction spectrum, as shown in Figure 1B. Even if changes along the transferability spectrum could be described, it is doubtful that tenure holders would have a clear enough idea of specific costs, benefits, and probabilities. Furthermore, even if tenure holders did have a clear knowledge of these values, the time required to determine their perceived values along each restriction spectrum would be prohibitive.

The following procedures were designed to avoid these problems and obtain an accurate measurement of the perceived security of tenure holders.

2.2 Procedures

It was necessary to interview tenure holders to obtain information about their perceived security. The interview procedures were as follows:

- 1. The tenure holders were given a pile of randomly shuffled cards which had possible directions of change printed for each tenure restriction. For example, the card describing tenure transferability changes proposed the possibilities of 1) increases, 2) decreases, or 3) no change in transferability. The tenure holder was asked to go through the pile and circle either 1), 2), or 3) depending on their expectation of change over the next 20 years.
- 2. The tenure holder was asked to sort the cards into two piles: a) cards where changes (1 or 2) had been circled, and b) cards where no change (3) had been circled.
- 3. The tenure holder was asked to sort the cards in pile a) into three more piles according to how the expected change would affect the potential benefits a tenure holder may derive from a tenure: 1) changes that would increase benefits of the tenure holder, 2) changes that would decrease benefits of the tenure holder, and 3) changes that would have no effect on the potential benefits.
- 4. The tenure holder was then asked to order the cards: 1) in the pile which decreased benefits, from most harmful to least harmful; and 2) in the pile which increased benefits from most beneficial to least beneficial. This provided ordinal rankings of the expected policy changes.
- 5. Finally, the tenure holder was asked to assign each of the cards ratings of how harmful or beneficial the expected changes would be. Ratings were assigned by laying the cards on a scale ranging from 10 to -10 where -10 was most harmful, 10 was most beneficial and 0 was a point of reference where there was no effect. Tenure holders used a scale with equal appearing intervals and were asked to pay specific attention to proportionalities when assigning ratings.³ The end result was a ratio scale with cardinal ratings.

The above procedure yields <u>security perception numbers</u> which are similar to results that the ideal theoretical methodology would produce if it were feasible. Whereas, the ideal methodology would propose numerous possible changes for tenure holders to respond to, in the above procedures, tenure holders were asked to specify an expected change or no change. Whereas the ideal methodology would ask tenure holders about expected costs, benefits, and probabilities of policy changes, in the above procedures, tenure holders assigned each change a rating reflecting these components. Thus, the many possible combinations that could be obtained from combining Figures 1A and 1B are summarized by one number representing the mean expectation of the tenure holder.

3. Thurstone and Chave (1929) pioneered the process of using equal appearing intervals to obtain proportional ratings.

3 A British Columbia Case Study

3.1 The Sample

Holders of three British Columbian tenure types were interviewed: Tree Farm Licences, Taxation Tree Farms, and Timber Lands. A brief description of each of these tenure types follows.⁴

Timber Lands are properties which the Crown has given or sold to the private sector. These lands have relatively few restrictions; although taxes payable to the Crown and log export restrictions may greatly affect benefits of Timber Land holders.

Taxation Tree Farms are private lands which are being managed according to plans approved by government. The tenure holder is required to follow: Ministry of Forests and Lands guidelines for protecting environmentally sensitive areas; utilization requirements; and stipulations which require the forest be protected from fire, insects and disease. Plans of tenure holders must include the calculation of an allowable annual cut which may be increased if investments in forest management can be shown to increase future yields. In return for giving up some autonomy of operations, holders of Taxation Tree Farms receive tax concessions.

Tree Farm Licences give tenure holders exclusive rights to an allowable annual cut of timber within the area of the tenure holder's licence. Licences are granted for 25 years and may be replaced with a new licence every 10 years for an additional 25 years. Tree Farm Licences are granted to holders who, among other things, intend to operate a timber processing plant. Licensees are required to submit plans which follow Ministry of Forests and Lands: environmental protection guidelines; harvesting utilization requirements; and regulations governing the protection of forests from fire, insects and disease. Following harvesting, reforestation is undertaken by the Licensee who is reimbursed with credits which may be deducted from stumpage fees. If the Licensee can convince the Ministry of Forests and Lands that increased yields will result from management expenditures, then the allowable annual cut may be increased.

Tree Farm Licences are made up of Schedule B lands, and any combination of Schedule A Timber Licence lands, and private lands, some of which are held as Taxation Tree Farms.⁵ Schedule B lands are Crown lands for which tenure holders pay stumpage and annual rents. Schedule A Timber Licence lands are historic cutting rights, (known as Old Temporary Tenures), which have lower harvesting fees in the form of statutory royalties, and lower annual rents than Schedule B lands. In return for lower stumpage fees, owners must provide road access to the timber and reforest without reimbursement. The amalgamation of these different types of holdings are managed as one Tree Farm Licence under a single management plan.

At the end of 1985, there were 30 Tree Farm licences, 52 Taxation Tree Farms, and hundreds of Timber Land holdings in the province of British Columbia. However, not all of these tenures were held by separate firms. Twenty firms held the 30 Tree Farm Licences; thirty-six firms held the 52 Taxation Tree Farms; and the hundreds of Crown Grants were held by 57 firms or individuals.

Interviews were conducted with questions referring to a specific tenure holding. Only one interview per tenure type was administered to a given tenure holder because of the excessive time requirements and tediousness that tenure holders possessing several holdings of one tenure type would have experienced.

^{4.} As of January 1, 1987, new legislation was put into effect which changed the taxation policy for private lands. Furthermore, on September 15, 1987, the British Columbia Ministry of Forests and Lands announced "New Directions for Forest Policy in British Columbia". The following description reflects the tenures as they were at the time of study before the policy changes had taken effect. Section 3.3. will discuss the results of the survey in light of the new policies.

⁵. Taxation Tree Farms and other private lands that lie within Tree Farm Licences, are managed under the Tree Farm Licence management plan. Therefore, they were surveyed with Tree Farm Licences and in this study are referred to as private lands within Tree Farm Licences.

Interviews were granted by 19 of the 20 firms that held Tree Farm Licences. Out of the 36 firms that held Taxation Tree Farms, several had tenures which were within, and therefore surveyed with, Tree Farm Licences. Furthermore, several Taxation Tree Farm holders have their lands managed by one consulting firm. This left 23 companies, including consultants, which managed Taxation Tree Farms outside of Tree Farm Licences. Interviews were granted by 22 of these companies. Of the 57 firms holding Timber Land, 20 were interviewed. 6,7

When arranging interviews with each firm, the interviewer sought the person who was most familiar with the costs of tenure restrictions, and who was responsible for allocating funds for silvicultural investments among different tenure types. In the case of large corporations, this person was most often the Chief Forester or Vice President of Planning and Operations. In the case of smaller firms, the owners themselves were interviewed.

3.2 Results

The mean values of security perception numbers for holders of Timber Land, Taxation Tree Farms, and Tree Farm Licences are shown, respectively, in Tables 1-3. Restriction spectra are ordered from highest to lowest absolute values of means. The data in Tables 1-3 may be interpreted to disclose three important types of information.

Restriction Spectrum		# of Increases	# of Decreases	# of No Changes	Means	
1.	Property Taxes	14	2	4 .	-3.78*	
2.	Environmental Protection Guidelines	13	0	7	-1.95*	
3.	Log Export Controls	. 7	4	9	0.70	
4.	Forest Protection Stipulations	8	1	11	-0.40	

Table 1: Security Perception Number Means for Timber Lands

* Mean ratings significantly differ from zero at the 5% level of significance.

6. Because several firms managed more than one tenure type, several tenure holders were the subject of more than one interview. A total of 43 firms were interviewed.

^{7.} Because such a large proportion of the tenure holders were sampled, a common practice would be to adjust statistical results to reflect the increased representation of the population. Specifically, the variance of the sample mean could be reduced by a factor of (N-n)/(N-1), where n is the number of observations drawn from a population of N individuals (see, for example, Wonnacott and Wonnacott, 1977). Although using such a factor could greatly reduce mean variances of descriptive numbers, this factor will not be used so that the results presented are conservative. Conservatism is warranted because of the new approach used to measure tenure security in this study.

Restriction Spectrum		# of Increases	# of Decreases	# of No Changes	Means	
1.	Annual Allowable Cuts	10	2	10	1.90*	
2.	Penalties for Cutting Over the AAC	2	. 9	11	1.53	
3.	Sustained Yield Cut Controls	01	10	12	1.50*	
4.	Property Taxes	12	10	0	-1.45	
5.	Penalties for Cutting Under the AAC	2	6	14	0.67	
6.	Environmental Protection Guidelines	12	2	8	-0.64	
7.	ACE ² Provisions	· 0	5	17	0.57	
8.	Harvesting Utilization Requirements	9	1	12	-0.52	
9.	Non-Voluntary Planning Costs	7	3	12	0.38	
10.	Forest Protection Stipulations	6	2	14	-0.33	
11.	Reforestation Requirements	10	0	12	-0.19	
12.	Log Export Controls	2	б	14	-0.01	

Table 2: Security Perception Number Means for Taxation Tree Farms

* Mean ratings significantly differ from zero at the 5% level of significance.

1. Hypothetical changes proposing increases of restrictions along this spectrum were not given as an option to the holder because holders were already thought to be at the spectrum extreme.

2. The Allowable Cut Effect (ACE) provisions allow holders to increase their current cuts in return for investments in forest management which can be shown to increase future yields.

Restriction Spectrum		# of Increases	# of Decreases	# of No Changes	Means	
1.	Stumpage Fees	16	2	1	-4.41*	
2.	Accumulated Section 88 ¹ Credits	4	12	3	-2.76*	
3. -	Silviculture Expenditure Reimbursements	3	15	1	-2.42*	
4.	Environmental Protection Guidelines	15	1	. 3	-2.41*	
5.	Annual Allowable Cuts	9	8	2	2.17	
6.	Non-Voluntary Planning Costs	13	2	4	-2.13*	
7.	Road Building Reimbursements	2	11	6	-1.76*	
8.	Sustained Yield Cut Controls	02	5	. 14	1.66*	
9.	Harvesting Utilization Requirements	12	2	5	-1.05	
10.	Forest Protection Stipulations	9	0	. 10	-1.00	
11.	Reforestation Requirements	10	2	7	-0.89	
12.	Adding Royalty Fees to Private Lands Within Tree Farm Licences	5	03	14	-0.74	
13.	Period Before Section 88 ¹ Reimbursements	6	4	9	-0.55	
14.	Penalties for Over-cutting the AAC	7	3	9	-0.37	
15.	Tenure Terms	2	4	13	-0.37	
16.	Allotment Type	. 0	2	17	0.37	
17.	Certainty of Replacement Opportunity	2	2	15	0.29	
18.	Processing Stipulations	3	3	13	-0.26	
19.	ACE ⁴ Provisions	0	2	17	0.26	
20.	Schedule A Royalty Charges	7	0	12	-0.21	
21.	Tenure Transfers	1	2	16	-0.21	
22.	Log Export Controls	5	5	9	0.11	×
23.	Penalties for Under-cutting the AAC	6	2	11	-0.11	
24.	Adding Property Taxes to Timber Licences Within Tree Farm Licences	6	03	13	-0.10	
25.	Property Taxes on Private Lands Within Tree Farm Licences	7	4	8	0.05	

Table 3: Security Perception Number Means for Tree Farm Licences

* ' Mean ratings significantly differ from zero at the 5% level of significance.

1. Section 88 of the British Columbia Forests Act allows approved expenditures on forest management to be subtracted from stumpage fees.

2. Hypothetical changes proposing increases of restrictions along this spectrum were not given as an option to the holder because holders were already thought to be at the spectrum extreme.

Hypothetical changes proposing decreases of restrictions along this spectrum were not given as an 3. option to the tenure holder because holders were already thought to be at the spectrum extreme.

The Allowable Cut Effect (ACE) provisions allow holders to increase their current cuts in return for 4. investments in forest management which can be shown to increase future yields.

First, the frequency of responses under each category of change reflect the stability of the tenure policy environment by indicating whether tenure holders expected change. Those tenures which have restrictions for which a large number of increases and/or decreases were expected are unstable.

Second, the mean values of security perception numbers may be analyzed to determine whether tenure holders were in agreement as to how changes in tenure restrictions were expected to affect their future benefits. If a given restriction has a security perception number with a significantly positive mean value, then there is a general consensus among tenure holders that a beneficial change will occur. Likewise, if a given restriction has a mean value significantly less than zero, then tenure holders generally believe a harmful change will occur. Statistical tests were done on all mean values of security perception ratings, u_{SPr}^{8} to see if they were significantly different from zero:

H₀: $usp_r=0$, H₁: $usp_r=0$, a=5%. Asterisks in Tables 1-3 indicate mean values of security perception numbers for each restriction that is significantly different from zero.

Lastly, the average of those mean values of security perception numbers which are statistically significant, indicates whether a tenure was perceived as being secure. A positive average indicates that tenure holders expected more and greater beneficial changes than harmful changes, while a negative average indicates expectations of generally harmful changes.

3.3 Security of Tenure and the New British Columbia Forest Policies

The interviews were administered from January through March, 1987. Prior to this period, several issues emerged that were expected to affect the perceived security of tenure holders. As of January 1, 1987, new legislation was passed which changed the taxation policy for private forest lands. Despite the fact that legislation had already been enacted, very few specifics of assessment procedures had been established. The security of Tree Farm Licences was expected to be affected by a memorandum of understanding that had just been reached between Canada and the United States regarding the issue of countervailing duties.⁹ This memorandum allows provinces to replace the tariff with increased stumpage charges. Furthermore, the Minister of Forests and Lands at that time, the Honorable Jack Kempf, was suggesting the elimination of Section 88 from the Forest Act (British Columbia Ministry of Forests and Lands, 1987a).¹⁰

Results in Table 1 show that holders of Timber Land generally knew of upcoming changes in their property taxes. Property taxes (1.) was perceived as the most unstable restriction with 16 of 20 holders surveyed expecting changes. The significance of the negative mean value of this restriction's security perception number indicates that tenure holders generally agreed that the impending changes would increase their taxes and thereby decrease the benefits they could derive from their property. Table 1 also shows that Timber Land holders believed that environmental protection guidelines (2.) would become more restrictive. The most stable restriction was forest protection stipulation (4.) which still had 9 holders expecting change. Considering all Timber Land restrictions, the average number of holders that expected changes was 12.25, or 61% of all surveyed Timber Land holders. The average of those means which were statistically significant was -2.87, indicating Timber Land holders perceived their tenures as insecure.

10. Section 88 of the British Columbia Forest Act allows Tree Farm Licence holders to receive credits against stumpage fees for approved expenditures in silviculture and road building on Crown Lands.

^{8.} Where r is the rth restriction r=1-4 for Crown Grants, r=1-12 for Taxation Tree Farms, and r=1-25 for Tree Farm Licences.

^{9.} In 1986, a group of American lumber producers, the "Coalition for Fair Lumber Imports", submitted a petition to the U.S. Department of Commerce claiming Canadian timber was subsidized (U.S. Department of Commerce 1986a). The preliminary determination of the International Trade Administration placed a 15% interim tariff on softwood lumber pending final determination (U.S. Department of Commerce, 1986b). The petition was withdrawn when an agreement called the "Memorandum of Understanding" was reached just before the final determination was due. (U.S. Trade Representative, 1986) The Memorandum allows the government of Canada to collect a 15% tariff on softwood lumber being exported to the U.S.

Table 2 shows holders of Taxation Tree Farms, like holders of Timber Land, perceived property taxes (4.) as being the most unstable restriction with all 22 tenure holders surveyed expecting change. However, although Taxation Tree Farm holders knew that some kind of taxation change would occur, they were split in their expectations about what the new policy would bring. Thus, the mean value of the security perception number is insignificant indicating that there was no general consensus about whether the changes would benefit or harm them. Table 2 also shows that Taxation Tree Farm holders perceived that the new legislation would decrease sustained yield cut controls (3.) and thereby allow their allowable annual cuts (AAC's) to increase (1.). The most stable stipulation was allowable cut effect (ACE) provisions (7.) which had 5 tenure holders expecting change. Considering all Taxation Tree Farm restrictions, the average number of tenure holders that expected changes was 7.75 or 35% of all surveyed holders. The average of those mean values which were significant was 1.7, indicating that holders of Taxation Tree Farms generally perceived their tenures as secure.

Table 3 shows that as a result of the countervailing duty case and threats to section 88, holders of Tree Farm Licences perceived stumpage fees (1.) and silviculture expenditure reimbursements (3.) as being the most unstable restrictions with 18 of the 19 licensees surveyed expecting change. Licensees' expectations of stumpage increases (1.) had the greatest negative mean value of security perception numbers. Fears of losing accumulated credits (2.) and silviculture reimbursements (3.) caused these stipulations to have the second and third largest negative mean security perception numbers. In addition to these anticipated insecurities, holders of Tree Farm Licences also expected environmental protection guidelines (4.) and non-voluntary planning stipulations (6.) to become more stringent, while road cost reimbursements (7.) were expected to decrease. The only significant beneficial change expected by holders of Tree Farm Licences were decreases in sustained yield cut controls (8.) The most stable restriction was allotment type (16.) which had only 2 licensees expecting change. Considering all Tree Farm Licence restrictions, the average number of tenure holders that expected change was 9.6 or 51% of all surveyed holders. The average of those mean values which were significant was -2.03, indicating a generally insecure tenure.

With the benefit of hindsight, it becomes possible to see whether tenure holders were correct in their expectations of what the new forest policies would bring.

Following the property assessments for 1987, the office of the British Columbia Surveyor of Taxes (1988) reported that with the new taxation policy, taxes for previously classified Timber Lands and Taxation Tree Farms have decreased. Thus, holders of Timber Land and Taxation Tree Farms received unexpected beneficial changes. Taxation Tree Farm holders expected and received reduced sustained yield cut controls as new taxation policy no longer requires Taxation Tree Farms to be managed on a sustained yield basis. Taxation Tree Farm holders are only required to follow "acceptable harvesting practices" (British Columbia Assessment Authority, 1988). Timber Land holders have not yet received their expected more stringent environmental guidelines, but long term trends in British Columbia forest harvesting suggest that stringency may well increase in the more distant future.

On September 15, 1987, the Ministry of Forests and Lands announced "New Directions For Forest Policy In British Columbia" which changed many tenure stipulations of Tree Farm Licences. Just as tenure holders expected, the new policy: increased stumpages, eliminated reimbursements for management and most road building expenditures, and initiated requirements for pre-harvest silvicultural planning. Tree Farm Licence holders expected only two changes which did not occur: increased environmental protection guidelines and less stringent sustained yield cut controls. The expectation of less stringent cut controls was consistent with expectations of policies being implemented for Taxation Tree Farms. However, Licensees were caught by surprise when the regulation of annual allowable cuts on Tree Farm Licences were made more stringent with the new policy. Licensees also believed environmental protection requirements would increase. Despite the fact that the new policy did not specifically address this issue, as was the case with holders of Timber Land, it is likely that tenure holders were assessing long term trends which have gradually increased these restrictions.

4 Summary and Conclusions

Results of this study show that tenure holders are abreast of possible future changes in tenure policy. The reason tenure holders are aware is that future policy changes can greatly affect the benefits that tenure holders derive from their tenures. By affecting the expected benefits of tenure holders, policy changes can influence the allocation of investment resources.

In British Columbia, tenure holders were found to be fairly accurate in their tenure policy predictions. The fact that the new policies showed holders perceived insecurities and securities about tenures to be correct, will likely strengthen the influence of expectations on investment decisions. Thus, it may be predicted, *ceteris paribus*, that holders of Tree Farm Licences and Timber Land will have less incentive to invest in silviculture, while holders of Taxation Tree Farms are likely to increase their investments.¹¹

Changes in forest policy are inevitable as tenures must be adjusted to adapt to changing social values. However, changing policies have the potential to produce negative side effects in the longer term as investment incentives are eroded. Thus it appears that a policy solution is needed which would allow the government flexibility to change policies while assuring tenure holders the security required for long term investments.

One possible solution lies in the government adopting a compensation principle. Courts uphold the rights of tenure holders when all or a large portion of property rights are at stake, such as in the case of government expropriation of private land. However when private rights are attenuated by changes in individual restrictions, as with the new British Columbia forest policy, compensation is seldom granted.

Considering a compensation principle raises several questions. As tenure policies adjust to changes in social values, who should pay for, and benefit from, policy changes? The question of who should pay for policy changes raises fundamental questions about what tenures are in terms of their legal definitions as property rights. Given the importance of tenure security in influencing investment decisions, further study into the possibility of a compensation principle and/or other means of alleviating security seems warranted.

With further research into this, and other, means of alleviating tenure security, the continuing evolution of tenure policy may take a more direct and efficient path towards meeting social objectives.

^{11.} While security of tenure may be a necessary condition for promoting investment incentives, it is by no means sufficient. Recent work by Luckert and Haley (1989a, 1989b) discusses other factors affecting investment incentives.

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