

SOME ECONOMIC IMPACTS OF SETTLING
TREATIES WITH FIRST NATIONS IN BRITISH COLUMBIA

by

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B.A.(Hons), University of Regina 1986

M.A., University of Victoria 1989 .

THESIS SUBMITTED IN PARTIAL FULFILMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

in the Department

of

Economics

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December 1996

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0-612-24322-2

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On September 22, 1992 representatives of First Nations in British Columbia, the Government of Canada and the Government of British Columbia made a commitment to clarifying land title in British Columbia through the negotiation of treaties.

A treaty and to some extent, a lands claim settlement, can be divided into two economic components. Compensation is usually paid to First Nations so that they relinquish claims to property rights over specified lands. On those lands not thereby exchanged by First Nations, property rights are specified so as to facilitate, among other processes, a more efficient exchange economy.

This dissertation utilizes data from detailed expenditure and income surveys from nine Shuswap communities in the Kamloops area, four treaty compensation simulations, Keynesian multiplier methods, two case studies from the Shuswap Nation and a model of public institutional dynamics to assess some economic impacts from settling treaties with First Nations in British Columbia.

Due to the small, import-reliant nature of the economies under investigation, the Keynesian multipliers are very small in magnitude (never greater than 1.04) regardless of which treaty compensation simulation is applied. Tax multipliers for the Governments of British Columbia and Canada, however, are relatively high, yielding up to 25¢ in tax revenues for every dollar of treaty compensation spent off reserve in nearly all simulations.

The property right clarification and subsequent institutional changes induced by treaty settlement will have mixed effects on First Nation economies. On the basis of this First Nation case study, it is suggested that First Nation public institutions may not be stable or credible enough to encourage significant investment and trade in the post treaty environment. First Nation public institutions, however, should be flexible and small enough to adapt to the emergence of new technologies, and could perhaps technologically "leap frog" existing institutions.

ACKNOWLEDGEMENTS

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This research project began in October, 1990, when as a cocky young man who had just failed two comprehensive examinations, I entered Professor Terry Heaps office and suggested that perhaps I was not meant to be an economist. He directed me to Professor Robert Anderson, who at that time was Director of the Community Economic Development Research Centre. Professor Anderson then set up a meeting with Wayne Haimila and Bob Manuel, who were the strategic forces behind the Shuswap Nation Tribal Council. They hired me to establish a Shuswap statistics program. That this group of people, with the addition of John Munro, would form my supervisory committee six years later is a testament to their patience and understanding. It is difficult to imagine any other student who has had the benefit of such wisdom and experience in the preparation of their dissertation as I have had.

The extensive original survey research in this dissertation was conducted by the Shuswap Information System. For all their courage in the face of dangerous animals, roads, administrators and respondents, their patience during hours of tedious data processing, and their wisdom of survey semantics and crises management, I would like to acknowledge, Matilda Morgan, Gerri Matthews, Diane Bin, Louella Jules, Tammy Brown, George Caismir, Lenora Fletcher, Dianne Anthony, Mike Moyer, and Shawn Reinhart. I would especially like to acknowledge Verna Billy and Louisa Celesta, the guiding forces behind the Shuswap Information System and my ever-patient tutors. I am lucky to call all these people friends.

Research requires money. The original "seed" for this project was provided by the SNTC and in particular two leaders, Chief Ron Ignace and Chief Richard LeBourdais. Subsequent funding and technical support was provided by the Department of Indian and Northern Affairs, the National Aboriginal Management Board, the Department of Finance, Industry Science and Technology Canada, Statistics Canada and the Ministry of Aboriginal Affairs. A special recognition for financial support is due to the Indian Taxation Advisory Board who have demonstrated considerable stamina by keeping a "Phd candidate" under contract. The financial support and guidance provided by Chief Manny Jules, the Chairman

ACKNOWLEDGEMENTS

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of the Indian Taxation Advisory Board and Ken Scopick, the renaissance man of the Indian Taxation Advisory Board has been greatly appreciated.

The graphs and figures in this dissertation were created by Christine Beaton. In addition to my acknowledgements, I suspect the reader appreciates the reduction in verbiage that these illustrations entail. Christine's support, however, extends well beyond the technical aspects of a dissertation, and I hope that I can be as supportive in her endeavours for the rest of my life.

Finally, I would like to acknowledge my parents, Paul and Reine. I hope that one day I have the opportunity to defy nature with nurture, as they have done with me.

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Chapter 1
Compensation and Institutions - The Economic Components of a Treaty

Since joining the Canadian Confederation in 1871, land title in British Columbia (B.C.) has not been, in the legal sense, quiet. Quiet title corresponds to what is referred to in the economics literature as well-defined property rights. Consider the following excerpt from the Shuswap Memorial of 1910 which is representative of similar documents and statements from most First Nations¹ in B.C..

"With us, when a person enters our house he becomes our guest and we must treat him hospitably as long as he shows no hostile intentions. At the same time we expect him to return to us equal treatment for what he receives. Some of our Chiefs said, "These people wish to be partners with us in our country. We must, therefore, be the same as brothers to them, and live as one family. We will share equally in everything – half and half – in land, water and timber, etc. What is ours will be theirs and what is theirs will be ours. We will help each other to be great and good.

In a petition signed by fourteen of our chiefs and sent to your Indian Department, July, 1908, we pointed out the disabilities under which we must labour owing to the inadequacy of most of our reservations, some having hardly any good land, others no irrigation water, etc., our limitations re pasture lands for stock owing to fencing of so called government lands by whites; the severe restrictions put on us lately by the government re hunting and fishing; the depletion of salmon by overfishing of the whites, and other matters affecting us. ... We are becoming regarded as trespassers over a large portions of this, our country. ... So long as what we consider justice is withheld from us, so long will dissatisfaction and unrest exist among us, and we will struggle to better ourselves. ... We desire that every matter of importance to each tribe be a subject of a treaty, so we may have a definite understanding with the government on all matters of moment between us and them"

(The Shuswap Memorial, August 25, 1910)

¹ Although this term will be used throughout this document its definition is hardly clear. A nation is commonly understood to be a "people holding in common such attributes as ethnicity, history, culture, religion, language" (Kingsbury and Roberts, 1989, p. 10) and occupying a defined geographical area. The Indian Act definition of a "band", (Hawley, 1993, p. 1) is not a nation and is the principal source of the confusion. Throughout this thesis a band will be referred to as a community and a First Nation will be used to indicate a nation of people in the sense of Kingsbury and Roberts.

Eighty-two years after this presentation was made to Wilfred Laurier, the Shuswaps and other First Nations in B.C. received their response.

"On September 21, 1992, representatives of the federal government, the provincial government, and the First Nations Summit signed an agreement establishing the British Columbia Treaty Commission. The role of the five member Commission is to facilitate the treaty negotiations process, coordinate the start of negotiations, monitor the progress of negotiations and allocate funds to enable the First Nations to participate in negotiations" Government of Canada, 1993a.

To date, forty-seven First Nations and First Nation communities have sent letters of intent to negotiate to the B.C. Treaty Commission. Furthermore, on February 15, 1996 a treaty agreement in principle was reached between the Nisga'a Nation, the Government of B.C., and the Government of Canada. This first "modern day" treaty in B.C. will contain several important precedents for other treaty negotiations.

The purpose of this thesis is to analyze and estimate some economic impacts from settling these treaties in B.C.. The economic impacts to be analyzed are those related to the payment of treaty compensation to First Nations and those impacts related to changes in First Nation government institutions.

The pivot around which the economic components, and all other aspects, turns in a treaty is the existence and extent of aboriginal title². The definition of this aboriginal property

² The terms aboriginal "title" and "rights" are virtually interchangeable among people working in the 'Indian Industry' (Smith, 1995, p. vi). Title is used here since it is from this which any right flows. "Take the word title to mean a vested right ... something to which the right is already acquired" O'Dell v Gregory, 1985 as cited in Yogis, 1990, p. 221.

right would specify (1) the boundaries of the First Nation economy and (2) the jurisdictional scope of First Nation self government - both important ingredients for an economic impact assessment.

Although helpful, the precedent concerning aboriginal title set by the Nisga'a Treaty Agreement in Principle is by no means certain. First, before the May 28, 1996, election in B.C. both opposition political parties, the B.C. Liberal Party and B.C. Reform Party, respectively promised to revisit aspects of the agreement or tear it up. Secondly, the bargaining priorities and subsequent strategies of the Nisga'a Nation need not reflect the circumstances or strategies of other First Nations. Finally, it is possible that the Nisga'a people will not ratify the agreement in principle. Therefore, it is instructive to briefly introduce the Aboriginal title debate.

First, consider the following explanation of aboriginal title by the former Chief of Neskonalith, Robert Manuel:

"As far as most Canadians are concerned, Crown title is not an issue. It just lays around and sleeps under their property. But the minute they don't pay their taxes it wakes up with the full force of the law to inform them in a most unpleasant way of its existence. Aboriginal title is similar but more forceful because it has been sleeping longer. The purpose of a treaty is to determine how these two titles can coexist" (Bob Manuel Interview, October, 1993).

Does Aboriginal title exist and, if so, then where is it now³? What is its relationship to Crown title; superior, inferior, or equivalent? How does the answer to the previous question determine the parameters for First Nation self government?

The legal case for the weak existence of Aboriginal title is built around the 1991 McEachern decision in the Delgamuukw case - brought forward by the Gitksan and Wet'suwet'en in an attempt to validate their long standing claim to their traditional territory in the eyes of the Canadian legal system.

"Aboriginal persons and commentators often mention the fact that the Indians of the province were never conquered by force or arms, nor have they entered into treaties with the Crown. Unfair as it may seem to Indians or others on philosophical grounds, these are not relevant considerations. The events of the last 200 years are far more significant than any military conquest or treaties would have been. The reality of crown ownership of the soil of all the land of the province is not open to question." (Chief Justice Allan McEachern, Delgamuukw case, 1991, as quoted in Smith, 1995, p.125).

In other words aboriginal title is inferior to that of the crown⁴. Even the subsequent 1993 B.C. Court of Appeal decision specified the extent of this title exists only over those practices and activities which were an integral part of their (the First Nations) distinctive

³ As George Manuel, the first president of the World Council of Indigenous Peoples states: "There is no Trail of Tears that can be drawn on Canadian maps as it must be drawn for the Cherokee Nation. We were not banished from our land. It is as though the land was moved from under us." (Manuel and Poslums, 1974, p. 32). In a less poetic manner, a number of First Nation leaders point out that the extinguishment provisions in earlier treaties prove the existence of aboriginal title as you can not extinguish that which is not there.

⁴ In response to the current legal standing of this claim as expressed in the Delgamuukw v. British Columbia ruling, the position of these First Nation groups are best represented by Badcock, 1976. "It seems, then, that the non-Indian claims to North America are based on the preposterous proposition that only civilized Christians could have any claim to land and that therefore, a Christian from one side of the world, if he should "discover" land on the other side of the world inhabited by uncivilized heathens, assumed rights, which if they ever did exist for the original inhabitants, were thereby annulled."

culture (Smith, 1995, p. 135)⁵. Although this case was scheduled for appeal to the Supreme Court of Canada, the plaintiffs, the Gitksan and Wet'suwet'en, withdrew their petition on June 13, 1994 in favour of a negotiated treaty settlement. As such this is the existing legal precedent on the scope of aboriginal title in B.C.⁶

The legal scope of aboriginal title, however, is far from settled. Advocates of sovereign aboriginal title point to the wording of the October 7, 1763 Royal Proclamation⁷ as an indication that treaties are between nations.

"And whereas it is just and reasonable, and essential to our Interests, and the security of the Colonies, that the several Nations or Tribes of Indians with whom We are connected, and who live under our protection, should not be molested or disturbed in the Possession of such Parts of Our Dominions and Territories as, not having been ceded to or purchased by Us, are reserved to them or any of them as their Hunting Grounds ... if at any Time any of the said Indians should be inclined to dispose of the said Lands, the same shall be purchased only for Us, in our Name, at some public place or Assembly of the Said Indians..."

The legal argument that the Royal Proclamation is a recognition of sovereign title can be

⁵ Other aspects of this appeal court decision which are directly related to the nature of aboriginal title include 1) upholding the original decision concerning ownership, and 2) agreement with the original decision that the court can not grant self government which is not present in the Canadian constitution. The appeal court, however, did overturn the original judgement concerning extinguishment of some aboriginal rights before 1871. (Government of British Columbia, 1994, pp. 8-9).

⁶ By no means is it the first decision on the nature of aboriginal title. The McEachern interpretation followed in many respects the 1887 Supreme Court of Canada decision in the St. Catharines Milling Co. case, and the 1984 Supreme Court of Ontario Bear Island Foundation Potts case (Clark, 1987). In particular, consider the sarcastic words of Justice Taschereau in 1887 *"The necessary deduction from such a doctrine (the 1763 Royal Proclamation) would be that all progress of civilization and development in this country is and always has been at the mercy of the Indian race."* (Clark, 1987, p. 113)

⁷ Both a divided 1973 Supreme Court (Calder v. Attorney General of B.C.) and the B.C. Appeal Court in the Delgamuukw case held that the Royal Proclamation does not apply to B.C. (Burns, 1992, Smith, 1995).

paraphrased as follows. Between 1600-1800 the foundations for a fundamental common law between aboriginals and settler communities were laid. When the British gained French Canada between 1759-1763, they made known their intentions towards the Indian nations occupying this area in the Royal Proclamation. Branches of this common law were subsequently applied to the interpretation of treaties signed in the eighteenth and nineteenth century (Slattery, 1992, p. 118)⁸.

Moreover, even in the 1993 B.C. Appeals Court decision in the Delgamuukw case there was some disagreement from the panel of 5 judges who upheld the B.C. Supreme Court decision by a narrow margin of 3-2⁹.

"All aboriginal rights were not extinguished before 1871, [dissenting] Justice Harry Hutchison said, as the Appeal Court ruled that the scope, consequences, and context of any native rights will have to be determined by a trial court." - (Toronto Star, June 26, 1993, A10).

To confuse the issue further, the legal analysis of inherent right to self-government and, implicitly, of the parameters of aboriginal title of the Royal Commission on Aboriginal

⁸ *"The [aboriginal] title imported rights of exclusive use and possession that, on a quasi-feudal model, formed a burden on the ultimate title of the Crown. ... However, under the Constitution Act, 1867, provincial legislatures apparently lacked the power to extinguish aboriginal land rights whether by legislation or treaty" (Slattery, 1992, p. 118).*

⁹ Most legal opinion on this matter suggests that the matter will ultimately be determined by the Supreme Court (Doyle-Bedwel, 1993 p. 199). Furthermore, in a related and potentially precedent setting Australian Supreme Court decision in the Mabo case, the Australian parliament recognized that aborigines can "claim ownership to land based on traditional or historical association." (Vancouver Sun, December 23, 1993, A11).

Peoples states¹⁰:

"The Aboriginal right of self government has a substantial basis in existing Canadian law, even in the absence of explicit constitutional clauses of the kind proposed in the Charlottetown Accord of 1992. The original basis for this right was the autonomous status of Aboriginal nations at the time they entered into association with the French and British Crowns. The right of Aboriginal nations to govern their own affairs was acknowledged in inter-societal practice and formed a tacit premise of many treaties"; (Royal Commission on Aboriginal Peoples, 1993, p. 40).

For the federal government the net result of the form and nature of aboriginal title is¹¹:

"that while the courts and the Constitution of Canada both recognize existing Aboriginal rights, the scope and meaning of those rights have not been fully defined. Clarification of First Nation rights will occur through the treaty negotiation process." (Government of Canada, 1994b).

The provincial government concurs that the issue of the coexistence of crown and aboriginal title is a matter for negotiations¹².

¹⁰ After contrasting the American historical legal interpretation of the spirit and intent of the Royal Proclamation with that of Canada Clark, 1987 concludes: *"The Indian interest is enforceable. It has to be purchased or duly expropriated to stop existing. The onus is on the Crown to prove an extinguishment. And the Crown cannot legitimately override Indian laws applicable to yet unceded Indian Territory because Indian jurisdiction is guaranteed by the inherent aboriginal right of self government"* (Clark, 1987, p. 114).

¹¹ It would be wholly inappropriate in even such a brief historical analysis of the legal issue of aboriginal title to ignore the 1973 Supreme Court decision in the Calder case. In essence the *"Supreme Court had split on the idea that the non-treaty parts of Canada, which included Labrador, the Northwest Territories, the Yukon, and almost all of Quebec and British Columbia, were still under the legal title of the First Nations who reside there."* McFarlane, 1994, p. 173. The result was a change in the federal government's position towards aboriginal rights as reflected through a willingness to negotiate treaty discussions in all of these areas. It is also directly responsible for the Nisga'a treaty negotiations.

¹² The fact that the province of B.C. is even willing to participate in these negotiations is a major concession given their historical position of non-recognition of aboriginal title in B.C.. That position is based legally on Article 13 of B.C.'s Terms of Union with Canada which specifically states that *"charge of Indians shall be assumed by the Dominion Government"* (Smith, p. 79, 1995) and on Section 109 of the British North American Act which gave B.C. jurisdiction over land and resources (Price, 1991). Thus and as Smith, 1995 argues, why should the government of B.C. participate in a treaty making process when they may only lose jurisdiction which they already possess in the Constitution?

"Taken together, these rulings [in the Delgamuukw appeal case] also delivered the strong direction to the provincial government to carry out its commitment to resolve treaty issues through productive discussions at the negotiating table and not in the courts." (Government of B.C., 1994, p. 9).

The very fact that negotiations are taking place indicates that the parameters of aboriginal title have yet to be established. In economic language, property rights are unclear. In the absence of some defined boundaries it is difficult to engage in the economic impact analysis of treaty compensation payments. Fortunately, however, there is enough substance in the historical relationships, the modern treaties and the Nisga'a Treaty Agreement in Principle to establish the general economic components of treaties, and to identify a finite possible number of property rights scenarios.

It is hypothesized that the two salient economic components of treaties are financial compensation given for extinguishment of First Nation land claims¹³ and institutional (property right) considerations describing the property rights of lands retained by First Nations, and their governmental powers. Specifically, there are three possible property right boundaries for self government - aboriginal nation, public government, or constituency government (Royal Commission on Aboriginal Peoples, 1994). The principal sources for making this determination are the 73 treaties previously signed or awaiting legislation in Canada¹⁴ and the negotiating positions of the principals.

¹³ In the Council of Yukon Indians treaty settlement umbrella agreement compensation was given to those First Nations for the removal of their Section 87 of the Indian Act taxation exemption (Courchene and Powell, 1992).

¹⁴ Some of these were signed before the confederation of Canada but most were signed between 1871 and 1923 (63 in total before 1923), and 10 more were negotiated to the point of signing between 1973 and the present.

1.1 Treaty Compensation

The basis for compensation in treaties is clear in the 1763 Royal Proclamation and is certainly a result of a fundamental tenant of English common law that due compensation be given for the appropriation of another's property. It would legally follow that First Nations should be duly compensated in the settlement of a treaty for the appropriation of their traditional lands for non-native settlement.

This position is clear in the so-called eleven numbered treaties signed between 1873 and 1923. In Treaty #1 signed in 1871 by the Swampy Cree and the Chippewas and the Government of Canada at Lower Fort Garry, the treaty was being used to appropriate aboriginal title for the purpose of settlement. In Treaty # 8 signed in 1899 by the Cree, Beaver, Chippewyan and other tribes of the Treaty # 8 areas, and extending into north-eastern B.C., the specific terms of compensation are described. The specific clauses were:

Treaty # 1 - 1871

"said Indians have been notified and informed by Her Majesty's said Commissioner that it is the desire of Her Majesty to open up to settlement and immigration a tract of country ... and to obtain the consent thereto of Her Indian subjects inhabiting said tract...."

Treaty # 8 - 1898

"said Indians do hereby cede, release, surrender and yield up to Govt of Dominion of Canada, Her Majesty the Queen and Her Successors for ever all their rights, titles, and privileges whatsoever to the land — (in exchange for) The Queen agrees with the said Indians that they shall have their right to pursue their usual vocations of hunting, trapping and fishing, ... Her

Majesty hereby agrees to make each Chief a present of \$32, each headman a present of \$20 and to each and every Indian a present of \$12, and for each year after to give \$25 to each chief, \$15 to each Headman, and \$5 to each and every Indian of whatever age and further to provide a suit of clothing to each chief and headman every 3 years"

Similar forms of direct payment for compensation can be found in the other numbered treaties (Price, 1991, p. 54-57)¹⁵. The precedent of compensation has carried over to the contemporary treaties signed after 1973¹⁶.

- ▶ The November 11, 1975 James Bay and Northern Quebec Agreement involved \$225 million (1975 current dollars) in compensation. (Department of Indian Affairs, 1978)
- ▶ The Inuvialut Final Agreement signed on June 5, 1984 had a one time compensation of \$152 million (1984 current dollars) (Department of Indian Affairs, 1988)
- ▶ The Nunavet Agreement signed on May 25, 1993 has a compensation component

¹⁵ In those treaties where compensation is perpetual there has been no indexing of payments, so for example as is specified in Treaty 8 each chief still receives \$25 per year, and each Indian person who is a descendent receives \$5 per year.

¹⁶ The reason that no treaties were settled in the period between 1923 and 1973 can best be summarized in the words of Duncan Campbell Scott *"to continuously protect a class of people who are able to stand alone. . . . Our objective is to continue until there is not a single Indian in Canada that has not been absorbed into the body politic . . ."* Duncan Campbell Scott, DIA Deputy Superintendent General, 1913, cited in Titley, 1986. Not coincidentally, this was the period of the Indian residential school experiment (1923-1974 in Kamloops), the prohibition of potlatches (changed in 1950s), the prohibition of Indian political organizations (changed in 1950s) and the prevention of unabsorbed, to use Scott's words, Indians from voting. In regards to the Indian residential school experiment, "The abuse included poor diet, a proscription of the Indian language, forced labour and a military-style discipline that was enforced by beatings. [As one student observed] *'the priests would hammer it into our heads that we were not to think or act or speak like an Indian. And that we would go to hell and burn for eternity if we did not listen to their way of teaching.'* (McFarlane, 1994, p31). The mistrust generated by this system is an underlying factor in the methodological development presented in Chapter 5.

of \$580 million to be paid out over 14 years in 1989 dollars (Tungavik Federation of Nunavut and the Government of Canada, 1993, p. 314)

- ▶ In the Yukon a series of four agreements originating from the 1993 Council of Yukon Indians Umbrella Agreement were signed with individual communities (Vuntut Gwitchin, Nacho Nyak Dun, Champagne and Aishihik, and the Teslin Tlingit) with compensation payments totalling about \$80 million (Smith, 1995, p. 14)

It should be noted that most of these settlements have occurred north of the 60th parallel and may not be directly applicable to treaty settlements in B.C. A more informative precedent in B.C. would be the Nisga'a Treaty Negotiations Agreement in Principle which also contains a monetary compensation component.

"The capital transfer from Canada and British Columbia to Nisga'a Central Government will be \$190 million" (Government of Canada, The Province of British Columbia, and the Nisga'a Tribal Council, 1996, p. 90)

Therefore, the precedent for compensation payments in treaty settlements has been established. Undoubtedly, some sort of compensation will be paid to B.C. First Nations as a result of treaty settlement. What happens, though, after compensation is given? This question forms the focus of the next three chapters of this thesis.

1.2 The Institutional Components of Treaty Settlement

The tragedy of the commons is well known in the political and economic literature.¹⁷ As it pertains to First Nations, the tragedy arises when two aggregates (the Crown and the First Nations) claim title over the same land. This is the current situation on traditional First Nation territory outside of Indian reserves.

The opportunity costs resulting from this disputed title has been estimated by the Government of Canada at \$1 billion, as measured by foregone or postponed investment in the forestry and mining sectors (Government of Canada, 1993b). Investments are apparently being postponed because these industrial sectors are uncertain about the territorial and financial extent of the property rights that will be assigned to First Nations in treaty settlements (Government of B.C., 1996). It is little wonder, therefore, that the principal justification for both federal and provincial governments in the treaty negotiation process is to clarify property rights for the purpose of encouraging investment¹⁸.

"Treaties will provide the certainty which is essential to creating a positive climate for social and economic development. [Certainty] will encourage and stimulate the investment necessary to create jobs and bring stability to towns and cities throughout B.C." (Government of Canada, 1993a, p. 3).

¹⁷ Stevenson, 1991, points out that for this particular issue a distinction should be made between common property and open access. Most of the game theoretic results refer to issues of open access and not common property controlled by a group which is the more applicable circumstance for First Nations.

¹⁸ It has been established in the literature that when investment is irreversible that increased uncertainty leads to less investment. It is likely no coincidence that two reports commissioned by the B.C. government on the economic impact of treaty settlement, stressed the positive economic impact from increased business certainty resulting from treaty settlement.

"Organizations base their investment and operating decisions, in part, on the level of certainty about future ownership of lands and resources. By clarifying the rights of First Nations ... promotes private investment by reducing the risk of commercial disruption." (Government of B.C., 1996, p. 4)

Settlements will end the years of uncertainty surrounding land entitlement. Once these concerns are addressed, investors, many of whom have been waiting in the wings pending the outcome of negotiations, will be encouraged. Government of B.C., 1994, p. 4.

In addition to clarifying the title in First Nation traditional territories, another purpose of treaty settlement is to replace the Indian Act with First Nation self government. To date, property rights¹⁹ on reserve are guided by the Indian Act. Among other specifics, the Indian Act sets the jurisdictional authority and administrative structure for First Nation governments, determines who is and who is not a First Nation community member, and provides the rules and restrictions for on reserve business development. Many First Nation leaders see it as the main obstacle to economic development on reserves²⁰. Consider the contrary incentives contained in Sections 87 and 89 of the Act.

In 1985 Section 87 of the Indian Act was revised and now states, in part:

- "87(1) *Notwithstanding any other Act of the Parliament of Canada or any Act of the legislature of a province, but subject to section 83, the following property is exempt from taxation, namely,*
- (a) *the personal property of an Indian or a band in reserve lands or surrendered land; and*
 - (b) *the personal property of an Indian or a band situated on a reserve.*
- (2) *No Indian or band is subject to taxation in respect of the ownership, occupation, possession or use of any property mentioned in paragraph 1(a) or (b) or otherwise subject to taxation in respect of such property.*
- (3) *No succession duty, inheritance tax or estate duty is payable on the death of any*

¹⁹ The imprecise nature of property rights in Canada is well known especially after the attempt to entrench specific property rights was rejected in the 1992 Charlottown Accord. "One can only speculate on how Canadian courts would define "property" if this were left undefined." (Johansen, 1991, p. 8)

²⁰ This was evident in interviews with Chief Manny Jules (July 13, 1995) and former Chief Robert Manuel (October, 1993).

Indian in respect of any property mentioned in paragraphs 1(a) or 1(b) or for succession thereto if the property be taken into account in determining the duty payable under the Dominion Succession Duty Act (citation omitted) on or in respect of other property passing to an Indian" (Hawley, 1993, p. 80).

Section 89 of the Indian Act states:

"89(1) Subject to this Act, the real and personal property to an Indian or band situated on a reserve is not subject to charge, pledge, mortgage, attachment, levy, seizure, distress or execution in favour or at the instance of any person other than an Indian or a band" (Hawley, 1993, p. 102)

The net institutional impact of these two sections of the Indian Act is that there is little on or off-reserve business development by First Nation persons²¹. Businesses are encouraged to develop on-reserve to take advantage of the Section 87 tax exemption, but have difficulty offering any collateral because of the restrictions concerning property on-reserve contained in Section 89²². A self-governing First Nation would define on-reserve property rights more clearly.

Therefore, the broad question addressed in Chapter 5 of this thesis is: how can the reduction of uncertainty resulting from more clearly defined land ownership and First Nation governmental powers in treaties, be measured? More specifically, since it is

²¹ This result of under investment for common improvements is predicted in the game theory literature (Stevenson, 1991, p. 27), although there is some disagreement with this game theoretic result:

"Covenants, even without a sword, have some force, Policy makers ... responsible for common pool resources, should not presume that the individuals involved are caught in an inexorable tragedy from which there is no escape. Individuals may be able to arrive at joint strategies to manage these resources more efficiently" (Ostrom, Walker and Gardner, 1992, p. 148).

²² This is not entirely true as there are examples of First Nation Citizens who hold certificates of possession for portions of reserve land who use these certificates to secure debt, such as Skihish Esso in Neskonlith.

assumed here that these altered property rights will define the boundaries of, and the rules for, First Nation institutions, how will these institutional changes affect the transactions costs²³ present internally within First Nation institutions and the revenue generated externally²⁴ from their potential "market"²⁵? It is argued in Chapter 5 that lower institutional transaction costs are indicative of increased certainty (Dietrich, 1994, p. 110).

It should be evident that the extent of property rights contained in the eventual treaties will be the pillars upon which First Nation institutions are built. The parameters of these property rights are crucial in defining the boundaries of First Nation economies and the jurisdiction of First Nation governments. Although, for obvious reasons, the property rights issue is much clearer in the contemporary post-1973 settlements, the older treaties do contain specific references to property rights over First Nation land. The following is taken from Treaty 4 signed on September 15, 1874 in what is now southern Saskatchewan.

"Her Majesty agrees that Her Said Indians shall have right to pursue their avocation of hunting, trapping and fishing throughout the tract surrendered, subject to such regulations as may from time to time made by the Government of the Country acting under the authority of

23. Transactions costs will be discussed more thoroughly in Chapter 5, but at this point it is sufficient to recognize that transactions costs originated with Coase, (1960), are in the Arrow (1969) sense the "costs of running the economic system" and in the Williamson (1985) sense can not exist without asset specificity (property rights).

24. Loosely, "internal" refers to the organizational management of the institution in the Coasian, view of a firm, and "external" refers to the market which the institution serves. These concepts are given greater attention in Chapter 5.

25. Specifically, institutional change encompasses all the aspects of treaty settlement other than compensation and includes at least child welfare, education, fisheries allocation, timber licenses, fee simple land title, taxation and a host of other treaty induced institutional changes. The issue of certainty will be most evident in the interactions of these new institutions with their markets and in the transaction costs inherent in these institutions.

Her Majesty, and saving and excepting such tracts as be required from time to time for settlement, mining or other purposes of the government" (Treaty 4, 1874).

The modern-day treaties, of which the first three of those described below are sometimes called extinguishment treaties, are much more specific in the parameters of property rights which First Nations will have:

- ▶ In the Gwich'in agreement signed on April 22, 1992 the Gwich'in were given fee simple ownership²⁶ over 23,800 square kms of land in the Northwest Territories and the Yukon, 6,160 square km of subsurface rights, a portion of royalties²⁷, wildlife and harvesting rights and participation in decision making bodies dealing with renewable resources and land use planning (Smith, 1995, p. 15).
- ▶ The Nunavut agreement provides for 350,000 square km of fee simple ownership to the Inuit, wildlife and harvesting rights, a share of royalties from resource extraction, and self government. (Tungavik Federation of Nunavut and the Government of Canada, 1993).²⁸

²⁶ For practical purposes fee simple ownership is distinct from crown title. *"A fee simple title is an estate of virtually infinite duration conveyed or granted absolutely to a person and his heirs indefinitely. Strictly speaking the holder of the estate is known as the tenant in fee simple ... [technically a tenant of the Crown] ... all intents and purposes he is the absolute owner"* (Yogis, 1990, p. 89).

²⁷ The specification of access to royalties could be considered fee simple title plus. It is quite clear in this treaty that this is a case of revenue sharing granted by the federal government and not a ceding of taxation jurisdiction to the First Nation.

²⁸ That self government is specifically mentioned in this 1993 settlement is *not particularly surprising given the Government of Canada's pre-election position on this issue. "The liberal government will act on the premise that the inherent right to self government is an existing aboriginal and treaty right."* (Liberal Party

- ▶ The Sahtu Dene and Metis Agreement signed on September 6, 1993 includes among other things over 41,400 square km of fee simple ownership rights; over 1,800 square km of subsurface rights, a share of resource royalties, exclusive trapping rights and participation in land use decisions. (Department of Indian and Northern Affairs, 1993).

- ▶ "There will be about 1,930 square kilometres of Nisga'a lands in the Lower Nass River area... The Nisga'a will own both surface resources (including forests) and subsurface resources on Nisga'a lands ... The Nisga'a government, as owners of Nisga'a land, will be able to set conditions on any new interests they grant in the future ... the Nisga'a will manage Nisga'a forest resources... the Nisga'a will be able to manage their [fish] harvest ... the Nisga'a will be able to make laws governing such things as culture and language, employment, public works ... health, child welfare and education services." (Department of Indian Affairs, 1996, <http://www.inac.gc.ca/news/aip.html>)

It is agreed that treaty settlement will result in property right induced institutional changes.

The uncertainty created by these institutional changes is discussed in Chapter 5²⁹. Analysis

of Canada, 1993, <http://www.liberal.ca/english/index.html>). A position which builds upon the 1983 position presented in the so called Penner report. "If, as many assert, the right to self-government exists as an absolute right, there could be a substantial re-ordering of powers, Indian governments may have implicit legislative powers that are now unrecognized." (Johansen, 1993, p. 43).

²⁹ Cassidy and Dale, 1988, detail a number of uncertainties resulting from institutional changes in the management of fish, forests, and non-renewable resources which must be considered in the treaty process. This thesis attempts to analyze one of their principal conclusions "that ...

there and in Chapters 2-4, however, requires that the boundaries of these institutional changes be further delineated. Therefore, it is necessary not only to view the bounds of self-government in past treaty settlements briefly discussed above, but also to discuss the strategic positions held by the current principals negotiating First Nation self government.

1.21 The Boundaries of Self Government

Treaties are a recognition of some form of aboriginal title. Title involves inherent jurisdiction. Depending upon which of the many layers of possible jurisdiction First Nations have, so are defined the parameters of the inherent right to aboriginal self government (Royal Commission, 1993).

Like treaties³⁰, the boundaries of an inherent right to self-government are in the eye of the advocate. The August, 1994 draft of the Royal Commission's Governance Policy Paper outlines three models of Aboriginal government: Aboriginal nation government, Aboriginal public government, and Aboriginal constituency government. Of these, only the nation and

settlements would not have a uniform effect upon all parts of the province or upon all natural resource sectors [which generates considerable uncertainty]" (Cassidy and Dale, 1988, p. 175).

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In the case of treaties the provincial government considers them to be "an agreement arrived at between British Columbia, Canada and the aboriginal peoples in the province" (Government of B.C., 1994, p. 17) the federal government views treaties as "agreements between First Nations and governments" (Government of Canada, 1994b) and the First Nations view treaties as international covenants between nations.

public government models are considered here³¹.

The nation government is based on a well defined land base and government is established on the basis of the inherent right to self-government. A nation, unless specified in a treaty or other agreement, has jurisdiction over all its citizens regardless of their place of residency. For First Nations governments this implies jurisdiction over all on-and off-reserve citizens³². A map of this jurisdiction would resemble an octopus with the tentacles reaching out to each First Nation citizen³³.

Aboriginally controlled public governments are conceived as territorial based governments, at the local or regional level with an existing territorial jurisdiction or agreement, not unlike the current Canadian provincial or even municipal model of government. The distinction

³¹ The constituency model occurs when association is voluntary and not based on residency. The constituency model is appropriate for what Perry Lewis and Fontan, 1992 call communities of interest, akin to a club, or an e-mail discussion group. Such a model is unlikely to be called self government in the manner interpreted by most First Nation and non First Nation persons. However, it may be applicable to the situation facing aboriginal people living off Indian reserves, a topic largely ignored in this study.

³² Sections 5 -15 of the Indian Act specify the rules of who and who is not a First Nation citizen according to the Government of Canada.

³³ To appreciate the significance of this model, consider that it is possible for two next door neighbours, one a First Nation citizen, the other not, being subject to totally different rules concerning taxation, education, environmental regulation, zoning or a host of other jurisdictional layers. It would be premature, however, to dismiss such a model because of its administrative difficulties. There are many instances throughout the world where neighbours have been subject to different rights of property and to different jurisdictional rules based upon citizenship, or domicile status. The best known is the extension of diplomatic privileges to foreign embassies. Gottlieb, 1994, proposes a form of this type of jurisdiction under the title "soft nationalism" for national communities, in the Kingsbury and Roberts, 1989, sense, excluded from states
"the adoption of diverse kinds of intermediate status between autonomy and territorial sovereignty; the elaboration of new kinds of regional standing for national communities that have no state of their own. All of this is within the reach of contemporary statecraft" (Gottlieb, 1994, p. 112).

between the public and nation government, as is pointed out by Courchene and Powell (1992), is that in the nation model jurisdiction is defined by citizenship and in the public model jurisdiction is defined by residency. In the public model the boundary is much more clearly defined by the territory of a reserve, or the territory of a reserve plus the land received from treaty settlement.

Of these two possible models of self government the Nisga'a precedent favours the public government over the nation government. A useful metric for demonstrating this assertion is to view the scope of taxing authority accorded to the First Nation in the agreements reached in contemporary treaties. In Canada, municipal governments collect real property tax, provincial governments can collect direct taxes (sales, income, real property and corporate) and the federal government can collect all the provincial tax (except real property) plus indirect taxes (like the former manufacturing sales tax), duties and tariffs³⁴.

- ▶ The Sechelt Indian Band Self Government Act of 1986 grants the legislative power to the Sechelt government of "taxation, for local purposes, and of occupants and tenants of Sechelt land in respect of their interests in those lands, including assessment, collection, enforcement procedures and appeals relating thereto" (Hawley, 1993, p. 184). The Sechelt government has the taxing authority of a

³⁴

Alternatively, an analysis of the expenditure aspects of self government jurisdiction could have been undertaken. In as much as the items which government's tax are far fewer than the items upon which they spend, analysis of taxation jurisdiction is more succinct.

municipal government³⁵.

"It is my view that it is this municipal kind of self government [along the Sechelt model] on existing reserves that should be extended to native peoples. If properly done, it can be viable, practical, achievable, and affordable." (Smith, 1995, p. 277).

- ▶ The Nunavut Settlement Area Agreement in Principle sets out the boundaries of the new territory of Nunavut and specifies that the Inuit will receive access to some royalty revenue and have jurisdiction over real property tax³⁶ in some areas. This is a self government model between that of a municipal and provincial government or more simply a public government.
- ▶ "Nisga'a government will have the power to tax Nisga'a citizens on Nisga'a land ... Nisga'a government [can] impose property taxes on non-Nisga'a occupiers of Nisga'a lands ... Nisga'a government, Canada and B.C. propose to negotiate the coordination of their respective tax systems" (Department of Indian Affairs, 1996, <http://www.inac.gc.ca/news/aip.html>)

Although the Nisga'a Agreement in Principle and the Nunavut settlement suggest that a public model of self government between that of a current Canadian municipality and a

³⁵ Interestingly, however, the Sechelt government is also given legislative authority over health services, education and social and welfare services on Sechelt lands - expenditure powers which are associated with a provincial government (Hawley, 1993, p. 187).

³⁶ Bill C-115 as an amendment to the Indian Act passed in 1988 allowed First Nation governments to collect property taxes from designated reserve lands. Since that time over 45 First Nation communities have begun collecting property tax, principally from non-native interests (businesses, utilities, residents) located on reserves (Indian Taxation Advisory Board, 1993).

province is the most likely result of treaty negotiations³⁷, to impose the parameters of a settlement in the midst of negotiations is foolish. It is worth while, therefore, to consider the other possibility for First Nation government - sovereign nationhood. This is a position clearly held by the Assembly of First Nations who said:

"We the First Nations, have never ceded or surrendered our jurisdiction over the redistribution of wealth and resources ... The power to raise revenues through taxation within the Traditional First Nation Territory is within exclusive jurisdiction of the First Nation Governments. ... Our jurisdiction over and immunity from taxation is part of the sovereignty, treaty and inherent rights of First Nations." (Assembly of First Nation position paper presented to the federal Ministers of Finance, Revenue, and Indian Affairs on May 29, 1995).

This position is also supported in the Harvard study of Economic Development on U.S.

Indian Reservations.

"The implication for (First Nations) is clear. The strategic political and economic choices tribes make, and the adequacy and appropriateness of those choices, will determine to a significant degree their success or failure in achieving their development goals. For federal policy makers the fundamental issue is simpler. To the extent that federal policy reinforces the legal, political and institutional foundations of tribal sovereignty, it increases the chances that tribes can find their own pathways ..." (Cornell and Platt, 1989 p 42).

Moreover, in its draft policy on Indian Government Taxation the Department of Finance expresses a willingness to discuss sharing federal tax revenues collected on reserves with First Nations.

"The federal government should explore with Indian governments methods of integrating Indian government taxation with the federal tax system. ... harmonized Indian government taxation ... Under these circumstances the federal government should be prepared to share existing

37

"The federal government will use a new approach to aboriginal self government talks that could create aboriginal governments with the powers of a small province [as] Indian Affairs Minister Ron Irwin yesterday unveiled the government's new policy on aboriginal self government ... The municipal and provincial powers aboriginal governments could take include health, education, social services, language, ... taxation and housing." (Montreal Gazette, August 11, 1995, p. A1 and A9).

federal tax revenues derived from economic activities on Indian lands with Indian governments." Department of Finance, 1993, p. 29.

A rather liberal interpretation of this policy suggestion is that the federal government is willing to vacate some of the current national tax jurisdiction over Indian land. An alternative reading of this policy is that the federal government is willing to share their revenue with another government much in the same manner the B.C. provincial government shares revenue through grants with the B.C. municipalities, or the federal government shares revenue with the provinces through transfers.

Although the national or, as it is referred to in the United States, "domestic sovereignty" model is perhaps unlikely, it is clearly on the negotiating table. As such, it behooves this thesis to consider the economic impact of both the public and nation models of government. This consideration will impact the analysis in two ways.

First, in regard to investigating the economic impact of treaty compensation, the parameters of self-government define the boundaries of the First Nation economy - the first requirement for any impact assessment. It will be assumed that the public model of government refers to the current reserve boundaries of First Nations in B.C.. The nation model of government will extend these reserve boundaries to the residents of the off-reserve First Nation citizens. Returning to the octopus metaphor, the reserve would be the head and the off-reserve residents would be the tentacles. The implications of these boundaries will be discussed in Chapters 2-4.

Secondly, the scope of self government will determine the magnitude of the transaction costs First Nation institutions must endure internally, and the markets from which they can draw revenue externally. Extending jurisdiction off reserve increases the number of external transactions with non-First Nation parties, compared to the public model of reserve jurisdiction.

The possible boundaries of the First Nation economy figure prominently in the rest of this thesis - a thesis principally devoted to two questions:

1. What will be the economic impact of treaty compensation on First Nation households and to a lesser extent on the public finances of non-native governments?

Chapter 2 develops a methodology rooted in Keynesian techniques for estimating the economic impact from treaty settlement based on a three year research project conducted in the communities of the Shuswap Nation in the interior of B.C.. Chapter 3 explores the methodology for collecting the data used for this thesis and foreshadows an anecdote presented in Chapter 5. Chapter 4 presents the results of the economic impact assessment and discusses some of their implications.

2. What will be the economic impact of new First Nation institutions brought about by treaty settlement?

Endogenous growth and institutional economics literature is employed in Chapter 5 to develop a model of the relationship between institutions and economic growth. This model forms the basis of a preliminary economic impact assessment resulting from treaty inspired First Nation institutional changes.

Chapter 2 - A Methodology for Estimating the Impact of Treaty Compensation in B.C.

The precedent for compensation from treaty settlement has already been established. To date, compensation has been given to First Nations for both specific and comprehensive land claims, the latter being tantamount to treaty settlement¹.

"We have pledged to end 125 years of injustice in B.C. through the negotiation of just, fair and honourable treaties said Minister of Aboriginal Affairs, Andrew Petter" - (Vancouver Sun, May 19, 1993, B4).

"Canadians' enthusiasm for the creation of the new territory of Nunavut wanes considerably when they are told it will cost \$1 billion" - (Vancouver Sun, May 31, 1994, A6).

"The Parkland Indian Band has voted to accept \$4.2 million from the Federal Government for land taken from the band in Riding Mountain National Park 60 years ago." - (Winnipeg Free Press, Feb. 25, 1994, B1).

As the B.C. Treaty Commission continues negotiations, it is almost certain that the form and magnitude of compensation will gather considerable attention. And when First Nations are compensated for the use and (probable) official surrender of their traditional lands through treaty settlement, what will happen next? Will Friedmanian helicopters be launched to drop millions of dollars over Indian reserves? Or will, as some First Nation leaders fear, treaty compensation disappear into the same sink hole that has swallowed up so many previous federal economic and social development programs for First Nations?

¹ It is not necessary in this paper to delve into the nuances and differences between specific and comprehensive land claims. It is sufficient that a specific land claim arises from the alleged loss of land awarded to a First Nation as a reserve or in the settlement of a treaty, and a comprehensive claim involves the alleged appropriation of a First Nation's traditional lands.

The literature of regional economics is rich in methods for estimating the impact from treaty compensation monies. Figure 1 contains one possible treaty compensation scenario:

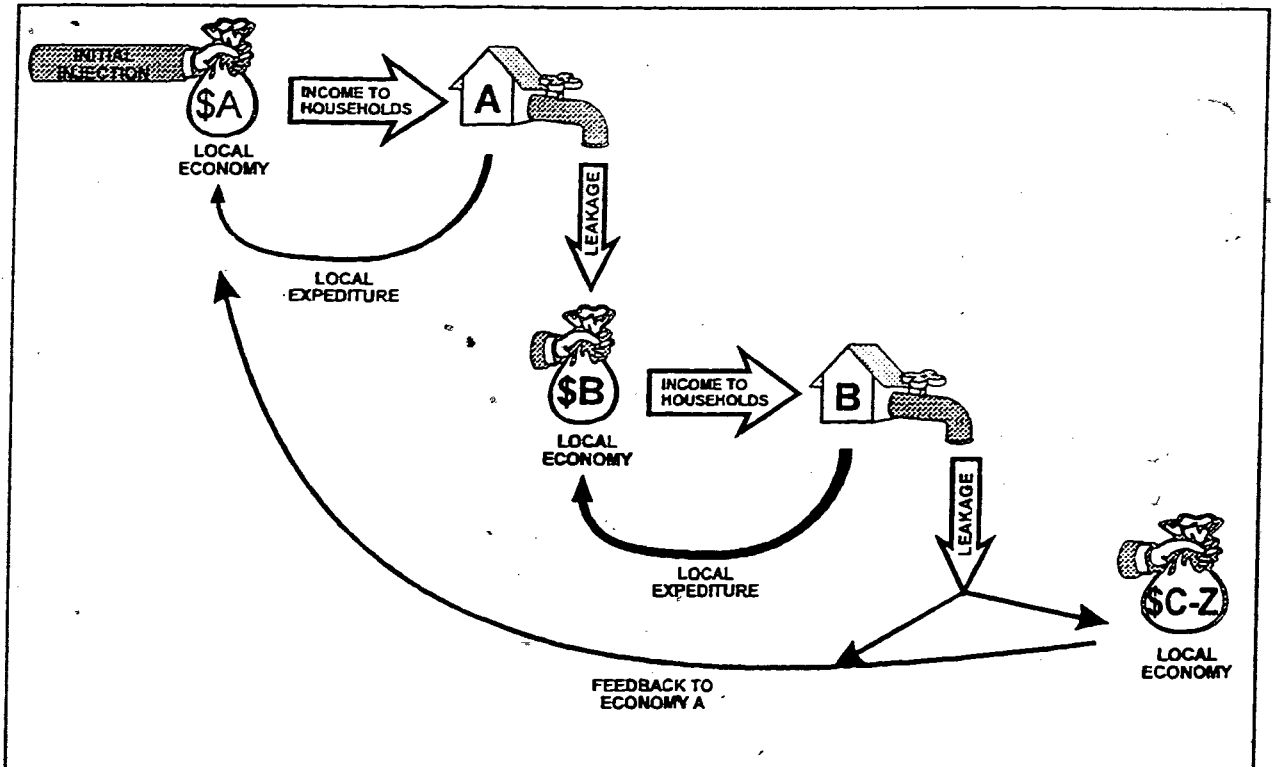


Figure 1 A Treaty Compensation Economic Impact Scenario

Let Economy A be the First Nation economy. Households in economy A each receive a bag of cash from treaty settlement. Part of this money is spent in economy A and the rest (for simplicity) leaks into economy B. Part of the expenditures in A becomes income for some households in A, typically called an induced effect (Armstrong and Taylor, 1986).

Likewise in Economy B some of the leakages from Economy A become income for economy B households. Some of this income is spent in B, some of it leaks into economies C-Z and some of it might feed back into economy A, typically called an interregional feedback. If one is interested in estimating the impact of the initial cash injection on economy A, then it is simply a matter of tracing the cash through the loops in Figure 1 until they peter out. Although other treaty compensation scenarios could contain more details, the process, as illustrated in Figure 1, would be similar².

Applying such a model to treaty compensation, however, is not such a simple task. In the first place, where does one regional economy stop and the other start? On the topic of economic boundaries the literature is, to say the least, vague³.

To begin, where is the local First Nation economy? Who are its economic agents? Does it matter which agent in this economy receives the treaty compensation money? How might the different agents spend the money? Sections 2.1-2.3 of this chapter are devoted to these questions.

² Absent from this illustration are any indirect effects, increases in local investment resulting from the initial injection.

³ At the local level, defining the bounds of a community and by extension those of its economy, has been widely debated in the community economic development literature (Boswell, 1990). On a national scale there has also been some recent debate about the boundaries, especially pertaining to capital flows, surrounding national economies (Norwood, 1993).

What about the money spent outside the First Nation economy? Who gets it? How is it spent? Does any of it re-enter the First Nation economy? Section 2.4 of this chapter begins to address these issues.

Once the possible patterns of treaty compensation expenditures are identified, attention can be refocused on the original question. What will be the economic impact of treaty compensation on the First Nation economy? Section 2.5 of this chapter employs the information from sections 2.1-2.4 and attempts to develop the most appropriate methodologies for treaty compensation impact assessment.

2.1 The First Nation Economy

Within the boundaries of a jurisdiction resides one of its most slippery occupants, its economy. The boundaries of an economy, in practical terms, conventionally owe their existence to the administrative, political, or otherwise-determined boundaries of the jurisdiction. To locate the First Nation economy, therefore, it is necessary to define the administrative, jurisdictional or political boundaries of the First Nation.

2.11 The Boundaries

Although it is certainly the focal point, the reserve boundaries do not necessarily encompass the First Nation. The issue is clouded by the possible nature of treaty jurisdiction.

As was discussed in Chapter 1, there are three possible models of self government, one of which, the constituency model, was dismissed as being outside the realm of possibility in Chapter 1. This left only the public and national models of governments for consideration.

As a public government⁴, a First Nation economy would probably encompass the residents of a reserve. The economic activities on a reserve conducted by the households on the reserve, the First Nation community government, and the businesses on the reserve would form the basis for economic impact assessment.

As a national government, the First Nation economy would contain all its citizens. Presently, according to 1991 Census data, 19% of all people reporting any aboriginal ancestry reside on-reserves. Are the remaining people reporting some aboriginal ancestry actually citizens⁵ of First

⁴ For the purposes of impact assessment the municipal model is a subset of the provincial model where a municipal population is all the residents within its boundaries. It is only in more complicated jurisdictional matters such as taxation, and resource management, that a distinction between municipal and provincial is necessary.

⁵ This issue can become even more murky while the definitional void is being filled. The Indian Act defines an Indian as being recognized as one before 1985, or as a Bill C-31 reinstatement Indian

Nations? The situation is further confused by the existence of Bill C-31 reinstatements, some of whom live on-reserves, others who live off-reserve, and still others who are in a state of identity limbo between status First Nation community members and non-status Canadian citizens. In the case of First Nation national jurisdiction, would income earned off-reserve by these persons be considered an export in the national economic accounts for the First Nation?

With the Treaty negotiations just beginning this largely jurisdictional issue is far from being settled. Until it is, two types of boundaries, one surrounding the reserve (provincial and municipal), and the other encompassing all the citizens of a First Nation (national) should be considered in the treaty compensation impact assessment.

2.2 On-reserve Economy

The story behind the current reserve boundaries for B.C. First Nations is complicated. Consider the history of the reserves for the Shuswap in the southern interior of B.C.

The Shuswap reserves were established in the period 1858-1910 (Fisher, 1978). Between 1858 and 1860, James Douglas, Governor of what was then a colony of Britain, went about

process of self selection (Statistics Canada, 95-384). Into this void some Mohawk communities in Quebec have decided to define who is a citizen using a form of percentage Mohawk analysis..

The Shuswap reserves were established in the period 1858-1910 (Fisher, 1978). Between 1858 and 1860, James Douglas, Governor of what was then a colony of Britain, went about determining fair allocations of land for the First Nation people of B.C.. For example, in the Kamloops area he determined that a reserve approximately 4 miles wide and 40 miles long stretching along the South Thompson river between present day Kamloops and Chase would represent the main reserves for the Shuswap people of Kamloops, Neskonlith and Adams Lake.

"Douglas claimed his policy of reserving the village sites, the cultivated fields, and familiar places of resort of the Indians and securing them against encroachment by settlers had been productive of the happiest effects on the minds of the natives" (Fisher, 1978, p. 156).

In 1864 a new commissioner of lands and works was appointed, Joseph William Trutch. He felt Douglas had been far too generous in setting the boundaries of the reserves. In October, 1866 he redefined the borders of the Kamloops, Neskonlith and Adams Lake reserves. Each community would only receive 3 or 4 square miles of reserve.

"The Indians really have no right to the lands they claim, nor are they of any actual value or utility to them; and I cannot see why they should either retain these lands to the prejudice of the general interests of the Colony, or be allowed to make a market of them either to Government or individuals" (Trutch, 1867, as quoted in Fisher, 1978, p. 164).

The reallocation of reserves in this area which, occurred on January 1, 1867, was met with considerable resistance by the Shuswaps in the area. Subsequently a series of Indian Commissions were established to settle the land question. When B.C. became a province in 1871 any commissions which agreed with the boundaries established by Douglas were ignored or

dismissed, and any commissions which endorsed the boundaries of Trutch⁶ were endorsed. The frustration of the Shuswap and other First Nations grew at what they legitimately viewed as unfair treatment. In regard to the unrest at the time,

"It was Sproat's opinion (an Indian Land Commissioner) that any outbreak that occurred would be logical outcome of provincial policies. An Indian rising "would not be a revolt against authority, but the despairing action of men suffering intolerable wrong, which the Provincial government will take no steps to remedy. Ottawa concurred, "It was obvious, wrote the minister of the interior, "that the discontent of the Indians is wholly due to the policy which has been pursued towards them by the local authorities. ... in the event of an Indian war the people of Canada generally would not sustain a policy towards the Indians of that Province which is in my opinion not only unwise, and unjust, but also illegal" (Fisher, 1978, p. 192).

Eventually, through minor adjustments to reserve boundaries, and by playing one First Nation community off against the other, the boundaries of the Shuswap reserve were settled for the most part by 1915. It is no small irony that without the unyielding attitude of the original provincial governments of B.C., the negotiation of a modern-day treaty would probably not be an issue one hundred years later (Fisher, 1978, p. 189).

The province of B.C., though, does not shoulder the whole blame. The settlement of First Nation persons on-reserves was the responsibility of the sovereign of Canada, and was administered by her agents in Canada, the elected federal government of the country. The

⁶ To further appreciate Trutch's attitude towards the Indians consider that on the prairies each family of Indians was given 160 acres, whereas Trutch felt a fair allocation was 10 acres. Fisher, 1978, p. 184.

administrative tool of the federal government of Canada, once First Nation persons were situated on-reserves, was and still is as discussed in Chapter 1, the Indian Act.

The existence and the rules of the Indian Act are the principal force in the expenditure flows in a First Nation economy. From a methodological standpoint, since each First Nation economy is bound by the parameters of the Indian Act, it is possible to employ the case study and generalization approach to the analysis of the compensational impacts of treaty settlement, provided, where possible, such generalizations are substantiated empirically or qualitatively.

2.3 The On-reserve Economy of Nine Shuswap Communities

The case studies chosen for this thesis are the nine communities which comprised the Shuswap Nation Tribal Council as of March, 1994. These are the communities of Adams Lake, Bonaparte, Canoe Creek, Kamloops, Neskonlith, North Thompson, Skeetchestn, Spallumcheen, and Whispering Pines. The map in Appendix A, shows the traditional territory of the Shuswap Nation. The Shuswap Nation, proper, has 17 communities, but for geographical, administrative and historical reasons only nine, at least in 1994, belong to the Shuswap Nation Tribal Council located in Kamloops.

By the Kingsbury and Roberts, 1989, definition of a nation, the area on the Appendix A map delineates the Shuswap Nation. In the event that a unified position could be formed by the 17 communities of Shuswap people, the jurisdiction over this territory would certainly be discussed in some form or another in treaty negotiations⁷. To avoid confusion concerning the definition of a First Nation, the term "nation" will refer to the boundaries of the Shuswap Nation, "Shuswap community" will be used to denote what the Indian Act refers to as Indian Bands, and "Shuswap Nation Tribal Council" (SNTC) will be used to denote the nine Shuswap communities comprising this organization in 1994.

For even greater clarity, Table I contains some geographical reference points and Shuswap community details which will be utilized throughout this thesis.

Table I Geographical Summary for SNTC Case Study Communities

| <u>Community Name</u> | <u>Inhabited Reserves</u> | <u>Nearest Non-Native Community</u> | <u>Abbreviation</u> |
|-----------------------|---------------------------|-------------------------------------|---------------------|
| Adams Lake | Glen Eden, Adams Lake | Chase & Salmon Arm | |
| Bonaparte | Bonap. 1, 2, 3 | Cache Creek | Bonap. |
| Canoe Creek | Canoe Cr. 1,2 Dog Cr. 1,2 | 100 Mile House & Williams Lake | |
| Kamloops | SKam 1, Paul Lake | Kamloops City | SKam |
| Neskonlith | Neskon. 1,2,3 | Chase & Salmon Arm | Neskon. |
| North Thompson | ChuchuaLouis Cr. | Barriere | N. Thomp. |
| Skeetchestn | Skeetch 1 | Savona | Skeetch. |
| Spallumcheen | Enderby, Salmon River | Enderby | Spall. |
| Whispering Pines | W. Pines, Clinton | Kamloops City | W. Pines |

Note: SKam - Kamloops Shuswaps which is differentiated from its neighbour Kamloops city (Kam City)

⁷ For perspective, consider that the reserve lands of these 17 communities currently occupy about 0.4 percent of the entire Shuswap traditional territory (approximately 200 square miles divided by approximately 56,000 square miles).

The Shuswap Nation Tribal Council was formed in 1981. The principal goals of the Shuswap Nation Tribal Council (SNTC) have always been the reestablishment of Shuswap national unity and the settlement of a modern-day treaty. The political representatives of these nine communities meet once a month at the head office of the SNTC in Kamloops.

Among the many politically inspired acts of this body was a refusal by SNTC communities to participate in the 1981 and 1986 Statistics Canada population censuses. After eight years of negotiation an agreement between the SNTC and Statistics Canada was signed in 1990. The pact principally entailed an exchange of SNTC census participation for Statistics Canada technical expertise in the development of SNTC information management capacity. A primary component of this information management capacity was the collection of data detailing the expenditure, employment and income of the three economic decision makers, the households, governments, and businesses, in as many SNTC communities as was possible. This extensive data base will be employed to estimate the economic impact of the compensational components of treaty settlement⁸. A thorough review of the collection methodology and potential survey biases is given in the next chapter.

⁸ For comparative purposes, and when it is available, other information sources such as Statistics Canada or the Department of Indian Affairs are presented together with the SNTC data.

2.31 The On-reserve Shuswap Households

A strategy favoured by some First Nation communities is to distribute compensation settlements among its households⁹. What happens to the money next depends upon the expenditure behaviour of each individual. Although one day the combination of debit card type transactions with secure data bases might permit the personal economic impacts of any policy, neither the technology nor the permission for such a disaggregated analysis exists for the SNTC data employed in this thesis. Thus, only the general features of the on-reserve economy pertinent to the treaty compensation economic impact estimate will be presented.

2.311 Shuswap Demographics

If money is to be distributed to on-reserve households the obvious questions are: Who are the people who live on-reserves? How many are there? What are some of the demographic features of this population? The answers to these questions in short, are 1) aside from a few notable

⁹ For example, in 1984, after selling land to Canadian National Railways, the Kamloops Shuswaps distributed half of the money to its households and kept the other half for community economic development projects. Similar discussions are being held in the communities impacted by the Nunavet settlement.

exceptions, there are relatively few people on-reserve, 2) the majority is of aboriginal ancestry¹⁰, and 3) they are very young compared to the general population.

Table II presents the on-reserve population estimates for the nine SNTC case study communities. Despite the differences in the population estimates of the SNTC and Statistics Canada, it is clear that these are small places. The total on-reserve population of these nine SNTC communities is only 2,371¹¹.

Table II Population Estimates for the SNTC Case Study Communities

| | Adams Lake | Bonap. | Canoe Creek | SKam. | Neskon. | N. Thomp. | Skeetch. | Spall. | W. Pines |
|---------------------------------|------------|--------|-------------|-------|---------|-----------|----------|--------|----------|
| SNTC | 300 | 181 | 207 | * | 200 | 254 | 109 | 276 | 45 |
| Statistics Canada ¹² | ** | 170 | 158 | 799 | ** | 248 | 154 | ** | ** |

* - The SNTC SKam survey was conducted on persons over 15 years of age so no population figures are available

** - Statistics Canada population counts were not available in these communities in SC 95-384.

¹⁰ These exceptions include reserve communities such as Westbank near Kelowna, Kamloops, and Squamish in North Vancouver, which have sizable non-native populations leasing land from the reserve.

¹¹ This figure is also comparable with Indian and Northern Affairs 1993 membership data presented later, which suggests that there are 2,151 on-reserve residents in these communities. The principal differences between the combined SNTC-Statistics Canada estimate and the Indian and Northern Affairs estimate, occurs in Kamloops where Statistics Canada reports 799 on-reserve people and Indian Affairs reports 467.

¹² The differences between the Statistics Canada and the SNTC population estimates are discussed in the next chapter.

In addition to their small population size, the populations of these Shuswap communities are unique by their relative youth in comparison to the general Canadian population. As is indicated by Table III a greater proportion of the Shuswap populations is under 25 years old than is the population of B.C. or of Canada in general.

Table III Age Cohort Data for the Case Studies Communities (%)

| | <u>0-4</u> | <u>5-9</u> | <u>10-14</u> | <u>15-19</u> | <u>20-24</u> | <u>25-34</u> | <u>35-64</u> | <u>65+</u> |
|------------------|------------|------------|--------------|--------------|--------------|--------------|--------------|------------|
| Adams Lake | 10 | 8 | 13 | 8 | 10 | 17 | 31 | 3 |
| Bonaparte | 11 | 10 | 10 | 5 | 10 | 12 | 39 | 3 |
| Canoe Creek | 17 | 13 | 9 | 5 | 9 | 22 | 19 | 6 |
| Neskonlith | 8 | 12 | 8.5 | 6.5 | 6 | 9 | 45 | 5 |
| North Thompson | 13 | 8 | 11 | 9 | 7 | 20 | 23 | 9 |
| Skeetchestn | 3 | 9 | 4 | 10 | 14 | 27 | 29 | 4 |
| Spall. | 14 | 6 | 5 | 9 | 9 | 22 | 31 | 4 |
| Whispering Pines | 12 | 6 | 7 | 13 | 8 | 24 | 28 | 2 |
| B.C. Abor.* | 14 | 12 | 12 | 8.8 | 8.8 | 19 | 18 | 5 |
| Canada** | 6 | 6.2 | 6 | 5.7 | 7.5 | 16.5 | 42.1 | 10 |
| B.C.** | 6 | 7 | 6 | 7.1 | 7.4 | 13 | 40 | 14 |

* - This is the 1991 Statistics Canada Census data for all persons reporting aboriginal ancestry in B.C.

** - This is the 1991 Statistics Canada Census data for the general population of B.C. and Canada.

This information may be important in the context of Modiglianni and Miller's life cycle saving hypothesis. One possible model of lifetime savings behaviour is illustrated below in Figure 2.

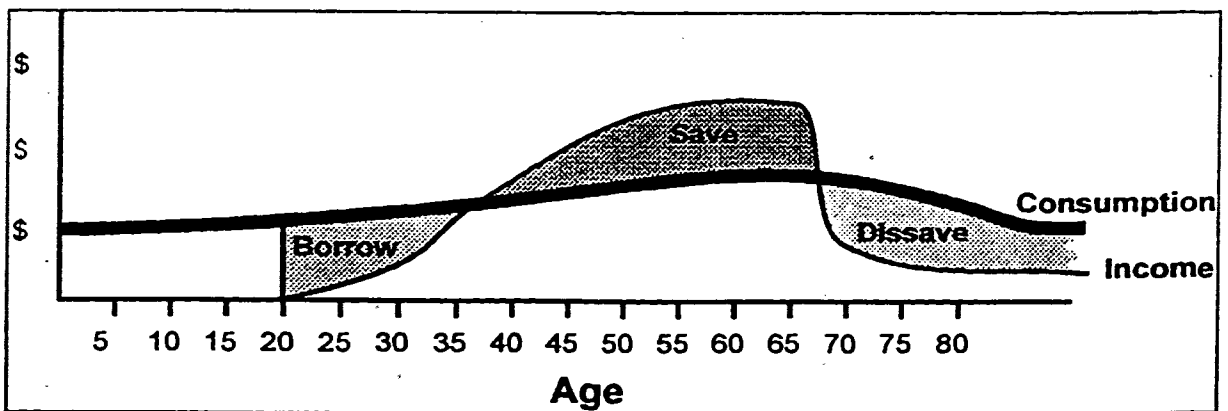


Figure 2 The Life Cycle Savings Hypothesis

Simply stated, when consumption is viewed as an intertemporal lifetime decision, effort is taken by risk-averse individuals to ensure a relatively stable pattern of consumption throughout their lifetime. Borrowing occurs when people are young as income streams are usually low, saving occurs during their mid life as income earnings rise, and when they are old they draw on this saving for consumption¹³. By this hypothesis, distributing treaty compensation money to older First Nations people, therefore, may entail greater consumption and a larger impact (Kotlikoff, 1994). The level of the treaty compensation recipient's income is also important and is thus given some consideration in Chapter 4.

Seventy-seven percent of the B.C. population reporting aboriginal ancestry are under 35 compared to 46% for the general B.C. population and 48% for the general Canadian population¹⁴. The proportion of the Shuswap communities under 35 years of age range from 50% in Skeetchestn to 75% in Canoe Creek with the median occurring Adams Lake, 66%. If the life cycle savings hypothesis is appropriate for First Nation communities, then a great deal of treaty compensation may be saved, given the relative youth of the First Nation population.

¹³ Figure 2 further emphasizes the importance of which generation (young or old) is the benefactor or the debtor of a particular government policy, in this case treaty settlement.

¹⁴ The B.C. and Canadian figures include the aboriginal population (approximately 4% of the Canadian population) and thus the comparisons would be even more dramatic were these populations somehow removed.

2.312 Household Expenditure

The question of economic impact depends critically upon how on-reserve households spend their treaty compensation money. It was no coincidence that the SNTC research sought to determine what on-reserve households purchased, where their money was spent, and how much they spent.

To illustrate the scope of this research one SNTC community monthly expenditure profile for the northern-most SNTC community Canoe Creek is presented below in Table IV.

Table IV Monthly Expenditure Profile for the Canoe Creek Shuswap¹⁵

| Expenditure Type | On-reserve | Williams | 100 Mile | Other | Total |
|--------------------------|--------------------|--------------------|-------------------|-------------------|--------------------|
| Grocery | \$5,314.25 | \$11,544.90 | \$1,825.55 | \$2,296.80 | \$20,981.50 |
| Restaurants | \$101.50 | \$1,799.45 | \$159.50 | \$333.50 | \$2,393.95 |
| Household Repairs | \$0.00 | \$58.00 | \$72.50 | \$166.75 | \$297.25 |
| Utilities | \$468.35 | \$2,741.95 | \$514.75 | \$343.65 | \$4,068.70 |
| Housing | \$6,047.95 | \$638.00 | \$0.00 | \$1,377.50 | \$8,063.45 |
| Veh. Oper. and Main. | \$2,501.25 | \$587.25 | \$253.75 | \$471.25 | \$3,813.50 |
| Transportation | \$536.50 | \$130.50 | \$0.00 | \$58.00 | \$725.00 |
| Payments (loans) | \$290.00 | \$2,035.80 | \$0.00 | \$0.00 | \$2,325.80 |
| Clothing | \$97.15 | \$1,682.00 | \$311.75 | \$635.10 | \$2,726.00 |
| Health and personal care | \$0.00 | \$524.90 | \$72.50 | \$217.50 | \$814.90 |
| Insurance | \$377.00 | \$2,309.85 | \$232.00 | \$137.75 | \$3,056.60 |
| Daycare | \$1,508.00 | \$0.00 | \$0.00 | \$0.00 | \$1,508.00 |
| Leisure | \$184.15 | \$291.45 | \$0.00 | \$159.50 | \$635.10 |
| Culture | \$0.00 | \$290.00 | \$0.00 | \$87.00 | \$377.00 |
| Recreation | \$29.00 | \$188.50 | \$0.00 | \$957.00 | \$1,174.50 |
| Hunt/Fish | \$271.15 | \$536.50 | \$174.00 | \$58.00 | \$1,039.65 |
| Education | \$72.50 | \$667.00 | \$145.00 | \$362.50 | \$1,247.00 |
| Savings | \$0.00 | \$667.00 | \$145.00 | \$435.00 | \$1,247.00 |
| Gifts & Donations | \$111.65 | \$159.50 | \$101.50 | \$232.00 | \$604.65 |
| Total | \$17,910.40 | \$26,852.55 | \$4,007.80 | \$8,328.80 | \$57,099.55 |

Source: The 1991 Canoe Creek Economic Development Study. See data field definitions in Appendix C.

¹⁵ The sample data has been multiplied by a factor of 1.54 to represent expenditure behaviour for the entire on-reserve population in Table IV (see next chapter for discussion).

Canoe Creek is the most isolated and the poorest of the SNTC communities which appear in this thesis¹⁶. It is made up of two settlements, Dog Creek and Canoe Creek which are separated by about 40 km of extremely unsafe roads¹⁷. Dog Creek is the larger of the two and houses the government offices, a co-op store and a gas station.

Among the statistical highlights from this Canoe Creek expenditure profile are:

- ▶ In the month of this survey, 69% of all expenditures are made off-reserve mainly into the 100 Mile House, and Williams Lake economies.
- ▶ Despite having an on-reserve grocery store, 75% of all groceries are bought off the reserve
- ▶ Assuming this month is not atypical, and that most expenditures have been captured in this survey, it can be estimated that the 54 households of Canoe Creek spend about \$670,000/year, or about \$12,400 per household, of which about \$460,000 is directly spent in the off-reserve economy.

¹⁶ The relative poverty of the Canoe Creek Shuswaps, though, can not be attributed entirely to isolation. History does play a role. "Their reserves have been repeatedly cut off smaller for the benefit of the whites, and the best and most useful part of them taken away till some tribes are corralled on a small piece of land, as at Canoe Creek, or elsewhere" - Father Grandidier, 1874, as quoted in Fisher, 1978, p. 185. In 1864 some of the Shuswaps of Canoe Creek had decided to kill a settler who had cut their access to water and taken some of their land (Fisher, 1978, p. 107).

¹⁷ Originally these two communities were separate but the 1862 smallpox epidemic caused heavy losses in the populations of the two villages. In the 1900's the two communities were amalgamated as one "band" by the Department of Indian Affairs. The union, in the opinion of former Chief Agnes Jack, has caused more hardships than benefit.

A similar monthly expenditure profile could be presented for each SNTC community. The pattern for each, though, is the same. There is significant first round expenditure leakage from each community in most expenditure except those categories which include tobacco and gasoline¹⁸. To illustrate this, Tables V and VI present a summary of the proportionate expenditures by commodity grouping, and the proportionate leakages into the off-reserve economy by commodity grouping, respectively. These tables are important for understanding the general expenditure behaviour of on-reserve households¹⁹, and for developing a methodology for estimating the impacts from treaty settlement on the First Nation economy and the economies of their neighbours.

¹⁸ Gasoline is included in the category vehicle maintenance and operation in Table IV, and tobacco is included in groceries.

¹⁹ The assertion that these SNTC communities are representative of other First Nations is tested on the basis of the population later in this chapter.

Table V Proportionate Expenditures by Type and Community²⁰

| Expend. Type | Adams | Bonap. | Canoe | Neskon. | Skeetch. | Spall. | W. Pines |
|--------------------------|--------|--------|--------|---------|----------|--------|----------|
| Groceries | 25.58% | 22.23% | 36.75% | 30.41% | 20.36% | 26.69% | 19.05% |
| Tobacco | 1.84% | 3.02% | | 2.01% | 1.91% | 3.28% | 2.99% |
| Restaurants | 3.70% | 4.06% | 4.19% | 3.76% | 2.50% | 3.82% | 4.92% |
| HH Repairs | 1.41% | 5.27% | 0.52% | | 4.34% | 2.22% | 1.83% |
| Utilities | 6.85% | 8.14% | 7.13% | 8.50% | 5.10% | 7.66% | 7.23% |
| Housing | 12.76% | 5.25% | 14.12% | 12.67% | 2.03% | 13.11% | 0.00% |
| Gasoline | 8.04% | 7.76% | | 7.37% | 5.79% | 4.72% | 10.19% |
| Car Repairs | 2.78% | 3.81% | 6.68% | 3.38% | 3.48% | 3.33% | 4.36% |
| Transport. | 0.58% | 0.33% | 1.27% | 1.02% | 1.13% | 0.87% | 0.19% |
| Payments | 7.73% | 5.69% | 4.07% | 5.89% | 8.82% | 5.09% | 8.63% |
| Clothing | 4.59% | 5.54% | 4.77% | 4.19% | 3.77% | 5.33% | 5.22% |
| Health and personal care | 1.27% | 1.81% | 1.43% | 1.56% | 1.48% | 1.49% | 1.88% |
| Spec. Health | 0.24% | 0.71% | | 0.34% | 0.42% | 0.31% | 0.59% |
| Insurance | 5.49% | 5.92% | 5.35% | 4.20% | 3.33% | 9.89% | 6.76% |
| Daycare | 2.22% | 1.03% | 2.64% | 3.49% | 1.28% | 2.69% | 6.82% |
| Leisure | 7.13% | 3.12% | 1.11% | 3.07% | 3.36% | 2.78% | 2.94% |
| Culture | 1.45% | 1.17% | 0.66% | 1.43% | 8.01% | 1.13% | 0.23% |
| Recreation | 1.49% | 3.47% | 2.06% | 2.49% | 2.76% | 2.11% | 5.12% |
| Hunt/Fish | 0.70% | 0.75% | 1.82% | 0.54% | 1.48% | 0.73% | 1.56% |
| Education | 0.44% | 0.94% | 2.18% | 0.71% | 1.19% | 0.46% | 3.21% |
| Savings | 1.66% | 7.97% | 2.18% | 1.66% | 5.69% | 1.06% | 3.25% |
| Gifts & Don. | 2.04% | 2.03% | 1.06% | 1.34% | 1.76% | 1.23% | 3.05% |

Note: All estimates are based on the household survey sample results from each community's community economic development study conducted between 1991-1993. The Shuswap/Kamloops and North Thompson communities have been omitted for reasons explained in Chapter 3.

As Davis (1990) and Chase (1983) point out, it is important to know how the treaty compensation money will be spent. Some types of expenditure have more backward linkages in the local economy than others and therefore have a larger local economic impact. For example, buying furniture from a local manufacturer is not the same as buying furniture from a warehouse which imports furniture in bulk. To capture the difference, the above expenditure by type data would have to be augmented with data indicating how much local income is generated from a

²⁰ The SNTC communities of Kamloops and North Thompson are left out of the results from this point forward for reasons to be discussed in the next chapter.

particular type of local purchase (Tiebout, 1962). Differentiating between types of expenditures improves the precision of any impact assessment.

It is interesting, therefore, to notice that the SNTC household expenditures on groceries range from 19% to 36% of their total monthly expenditure compared to only 16.8% for all B.C. households²¹. Or that the SNTC households spent between 1.2% and 1.8% of their monthly expenditure on health and personal care compared to a B.C. figure of 5.7%. Although these proportionate expenditures are likely to change in the post-treaty settlement environment, it is possible that treaty compensation would impact the sellers of groceries more than it would the suppliers of health and personal care products. Of course, the actual impact depends upon whether the money is spent locally or not, a subject which Table VI, below, addresses for each community.

²¹ This figure has been taken from Statistics Canada 62-555, 1992. Although the expenditures categories between the Shuswap household surveys and the Statistics Canada family expenditure survey do not match identically, the categories for food and health and personal expenditures seem to be exactly the same. The details of comparing these two surveys is discussed in greater detail in the next chapter.

Table VI Leakages by Expenditure Type and Community

| <u>Expenditure Type</u> | <u>Adams Lake</u> | <u>Bonap.</u> | <u>Canoe Creek</u> | <u>Neskon.</u> | <u>Skeetch</u> | <u>Spall.</u> | <u>W. Pines</u> |
|--------------------------|-------------------|---------------|--------------------|----------------|----------------|---------------|-----------------|
| Grocery | 100.00% | 100.00% | 74.65% | 98.86% | 77.28% | 98.01% | 100.00% |
| Tobacco | 44.95% | 62.30% | | 36.90% | 24.48% | 9.36% | 22.92% |
| Restaurants | 97.79% | 94.42% | 95.76% | 99.85% | 92.63% | 98.14% | 95.75% |
| Household Repairs | 99.17% | 96.09% | 100.00% | | 2.97% | 84.69% | 95.84% |
| Utilities | 67.45% | 65.82% | 88.49% | 69.43% | 69.74% | 70.10% | 100.00% |
| Housing | 6.40% | 21.55% | 25.00% | 26.65% | 65.02% | 14.90% | 56.31% |
| Gasoline | 68.22% | 98.23% | | 18.09% | 99.86% | 1.41% | 51.49% |
| Car Repairs | 88.67% | 95.40% | 34.41% | 91.72% | 87.04% | 75.98% | 100.00% |
| Transportation | 36.46% | 16.67% | 26.00% | 77.11% | 60.12% | 90.39% | 0.00% |
| Payments (loans) | 100.00% | 98.70% | 87.53% | 94.36% | 100.00% | 88.36% | 100.00% |
| Clothing | 99.49% | 98.76% | 96.44% | 100.00% | 100.00% | 96.68% | 100.00% |
| Health and personal care | 100.00% | 96.97% | 100.00% | 88.02% | 75.71% | 98.14% | 100.00% |
| Special Health | 100.00% | 100.00% | | 100.00% | 54.76% | 28.57% | 100.00% |
| Insurance | 100.00% | 100.00% | 87.67% | 100.00% | 81.16% | 97.30% | 100.00% |
| Daycare | 78.48% | 46.67% | 0.00% | 51.07% | 50.39% | 46.73% | 95.26% |
| Leisure | 59.25% | 100.00% | 71.00% | 74.07% | 92.79% | 80.09% | 100.00% |
| Culture | 68.30% | 100.00% | 100.00% | 35.29% | 95.82% | 28.02% | 100.00% |
| Recreation | 94.90% | 79.61% | 97.53% | 85.37% | 86.92% | 95.80% | 97.59% |
| Hunt/Fish | 84.19% | 83.45% | 73.92% | 50.35% | 69.49% | 75.31% | 97.56% |
| Education | 100.00% | 83.94% | 94.19% | 85.60% | 85.96% | 100.00% | 100.00% |
| Savings | 100.00% | 100.00% | 100.00% | 97.19% | 100.00% | 89.58% | 100.00% |
| Gifts & Donations | 98.57% | 81.38% | 81.53% | 98.61% | 71.37% | 84.19% | 100.00% |

From Tables V and VI a few observations can be drawn. First, the highest leakages in Table VI are from the big ticket items in Table V. Leakages for groceries range from 76% to 100%. For insurance, leakages range from 82% to 100%. Clearly there will be little on-reserve impact in these industries from treaty compensations, unless the increased household incomes from treaty settlement make on-reserve businesses in these industries more feasible.

To belabour this point, consider the impact of \$1 million paid into Neskonlith as compensation for treaty settlement. Assuming nothing has changed since this survey in 1992, we could predict that 30%²², of that \$1 million might be spent on groceries, (\$300,000) and of that grocery expenditure, 98% would be made off-reserve. A reasonable prediction is that the people of Neskonlith would contribute \$294,000 to the off-reserve grocery stores²³.

On the other hand, there are relatively small leakages for tobacco in all the Shuswap communities (9% to 45%) and gasoline (1.5% to 99%)²⁴. This, though, is not surprising in light of the Section 87 taxation exemption in the Indian Act.

For this overview of the First Nation economy what matters is that status First Nation persons do not pay any tax for items purchased on a reserve. The purchase becomes the personal

²² The estimate for off reserve expenditures in Neskonlith may have been overestimated since all housing expenditures were reported as on-reserve. Housing expenditures are slightly different in the on-reserve First Nation economy than they are in the non-First Nation economy. Because First Nation people can not easily borrow money (see Section 89 of the Indian Act) each year the First Nation government is allocated a number of houses to build for its citizens. The First Nation government then allocates these houses to its citizens and pays for them with long term Canadian Housing and Mortgage Corporation low interest loans to its citizens. These mortgage payments are often just a paper transfer from the social assistance budget of a First Nation to the housing budget, so in effect they are not strictly on-reserve expenditures.

²³ This assumes, perhaps fallaciously, that there exists for Shuswap households a linear type income to grocery shopping expansion curve.

²⁴ The 99% leakage for gasoline expenditures for Skeetchestn and Bonaparte has undoubtedly changed since the conduct of these surveys in 1992 since both of these communities now have on-reserve gasoline stations.

property of an Indian situated on a reserve. For products whose purchase price contains a significant "sin" tax component²⁵, cigarettes and gasoline, the savings are such that one would wonder why a rational First Nation person would ever buy cigarettes or gasoline off-reserve²⁶.

An extrapolated expenditure summary by location for 7 SNTC communities appears in Appendix D to conclude this detailed analysis of on-reserve household expenditure behaviour. It should be clear that Shuswap communities make a significant economic contribution to their neighbouring communities. On average, 78% of Shuswap expenditures are made outside of the reserve economy, despite the seemingly substantial competitive advantage offered by the Section 87 tax exemption. The combination of Tables IV through VI suggest conclusively that the Shuswap communities are highly dependent upon the off-reserve economy for their household goods and services.

2.313 Household Income

To appreciate the First Nation household economy, household expenditures are only half of the story. Where do they get their money to spend? For tractability, it will be assumed that the above expenditure profiles are relatively complete in scope, so that average household income

²⁵ To promote survey cooperation household expenditures on alcohol were not addressed.

²⁶ This is a vexing question. The household survey used may not have captured expenditures on other reserves, or perhaps rational First Nation persons were just victims of geography when their gas tanks read E or they craved a smoke.

magnitude has already been delineated by the average magnitude of household expenditures²⁷. Dividing the extrapolated aggregate community expenditures (see Appendix D) by the number of households in each community (see Chapter 3) produces the household income information presented in Table VII. In addition Table VII contains the percentage of UIC claimants per household, and persons per household for comparative purposes and as a prelude to Table VIII which presents income sources for the households in each community.

Table VII Income and UIC Statistics

| | Adams Lake | Bonap | Canoe Creek | Neskon | Skeet | Spall. | W. Pines | Kam City |
|-----------------------|------------|----------|-------------|----------|----------|----------|----------|--------------------|
| Persons Per Household | 4.2 | 3.5 | 4.2 | 3.7 | 3.4 | 3 | 3 | 2.75 |
| % UIC Claimants* | 30.3 | 28 | 49 | 34 | 29.5 | 44 | 36 | 8.7 (1990) |
| Mean HH Income** | \$22,500 | \$23,400 | \$14,000 | \$15,640 | \$21,000 | \$17,185 | \$22,787 | \$43,714 (1990) |

Source Shuswap household surveys.

* This was calculated by dividing the UIC claimants by the sum of all employed and UIC claimants in the sample²⁸. This is roughly equivalent to the Statistics Canada definition of unemployment.

** Mean household income for Shuswap communities is the annualized average household monthly expenditure. This expenditure proxy of income is discussed in the next chapter.

It is an understatement, and a topic well covered in many policy papers by the Royal Commission on Aboriginal Affairs, 1993, to observe that Shuswap households, like all First Nation households, are poorer and less employed than their neighbouring communities. Table

²⁷ As will be discussed in the next chapter, these expenditures may on one hand underestimate household income by not accounting for expenditures on household furnishings (1.4% of all expenditures according to Statistics Canada 62-555), and on the other hand these expenditures may overestimate household income by including some annual expenditures like insurance and/or saving in a monthly profile.

²⁸ By not including able bodied Shuswaps who receive social assistance these unemployment figures underestimate those commonly reported in the media.

VIII presents the sources of income for the SNTC communities. It is clear that the Shuswap communities are heavily dependent upon government income.

Table VIII Income Sources for 6 SNTC Communities (% of respondents)²⁹

| | Adams Lake | Bonaparte | Neskonlith | Skeetchestn | Spallum | W. Pines |
|-----------------|------------|-----------|------------|-------------|---------|----------|
| Employment | 48 | 47 | 45 | 40 | 52 | 38 |
| Self Employment | 2 | 7 | 1 | 2 | 12 | 18 |
| Leisure* | 6 | 3 | 3 | 7 | 1 | 5 |
| Recreation** | 0 | 6 | | 2 | | 1 |
| Government | 44 | 37 | 52 | 44 | 35 | 38 |

Source: Shuswap Household surveys

* Leisure primarily refers to income from bingo or other gambling activities.

** Recreation refers to income generated from athletic activities such as rodeos and ball tournaments.

Other than Spallumcheen, it would appear that the lower is a community's mean household income, the more dependent upon government income it is. The rank correlation coefficient between these variables ($n = 7$) is $-.75$.

2.32 On-reserve Shuswap Government

The First Nation government is the centre of the reserve economy. It is the chief employer. It distributes a substantial portion of funding (social assistance, post secondary education

²⁹ The figures in Table VIII were calculated by aggregating community income by source. Since government income, which represents transfer payments to households in the form of social assistance, or UIC, is considerably lower in magnitude than employment income, it may well be the case that the proportion of the population dependent upon government income is underestimated in Table VIII.

assistance, and housing) to its citizens. It sets the rules which those operating in the on-reserve economy must obey and in some cases, it even operates the on-reserve businesses.

An appreciation of the economic functions of a First Nation government is crucial for estimating what happens after treaty compensation monies are disbursed. One reason is that in many cases the First Nation government may take control of the treaty compensation money. How it spends the money will ultimately determine the impact on the local economy. A second reason is that the induced economic impacts from treaty compensation will depend upon the economic rules and institutional changes introduced by the First Nation government as a result of treaty settlement.

2.321 Shuswap Government Employment

Table IX is a brief employment profile of four SNTC government organizations which includes the SNTC, Skeetchestn, the Kamloops Shuswap, and the Secwepmíc Cultural Education Society.

Table IX Brief Employment Profile for the Selected SNTC Governments

| # Salaried Employees | # From SNTC Community | # Non-native | Other ³⁰ | #Employed in Admin. | #Employed in Operations | #Full time employees | #Part time |
|----------------------|-----------------------|--------------|---------------------|---------------------|-------------------------|----------------------|------------|
| 158 | 112 | 30 | 16 | 75 | 83 | 139 | 19 |

Source Shuswap government survey

Although this is a summary employment profile the following observations can be gleaned from this table:

- ▶ SNTC government organizations are the largest employers within the Shuswap Nation³¹.
- ▶ 71% of all salaried employees within these selected SNTC government organizations are members of SNTC communities.
- ▶ 19% of all salaried employees within these selected SNTC government organizations are non native
- ▶ 48% are employed in administration and 52 % are employed in operations
- ▶ 91% of the employees work more than 30 hours per week for more than 10 months a year (classified as full time)

³⁰ Other refers to individuals of aboriginal ancestry originating from communities from outside the SNTC.

³¹ This assertion is based on three observations: (1) the high rates of unemployment existing in SNTC communities (Table VII), (2) the demographics within the SNTC (Table II) suggest that there is a limited labour force between 15-64 years old and (3) Shuswap governments employ a lot of people (Table IX). It follows from these facts that since there is a limited number of officially employed Shuswaps, many of those working for income, must be employed by government organizations.

If it is assumed that these statistics are representative³², then two questions relevant to a First Nation government receiving treaty compensation can be discussed and a third requires more analysis.

First who will be hired? It appears that mainly local citizens will be hired. Will these be full-time or part-time jobs? Primarily they will be full time jobs. Most importantly, how many jobs will there be? The answer to this question depends upon how much of the First Nation government expenditures are devoted to employment. This issue is addressed in Table X below.

2.322 First Nation Government Expenditures

Table X reports the expenditure behaviour by type, magnitude and location for 11 Shuswap Government organizations³³. Given the nature of the First Nation government employment and expenditure survey, discussed in the next chapter, extra care was taken to ensure that the estimates were as conservative as possible.

³² That these statistics are representative is supported only by the author's observations of other First Nation governments.

³³ There was greater participation in this component of the Shuswap government survey than the employment section. It was possible therefore, to extrapolate expenditure estimates from other sources, so there are 11 organizations as opposed to only four for the employment component. Extrapolation methods are discussed elsewhere.

Table X Expenditure Estimates by Location for 11 Shuswap Governments

| Type of Expenditure | On-reserve | Kam City | Other | Total |
|--------------------------------|-------------|-------------|-----------|--------------|
| Stationary* | | \$350,000 | | \$350,000 |
| Printing | \$3,000 | \$97,000 | \$10,000 | \$110,000 |
| Furniture | | \$20,000 | | \$20,000 |
| Computer Costs | | \$240,000 | | \$240,000 |
| Copier Costs | | \$250,000 | | \$250,000 |
| Fax Costs | | \$270,000 | | \$270,000 |
| Phone Costs | | \$300,000 | | \$300,000 |
| Equipment Purchase | | \$80,000 | | \$80,000 |
| Plumbing Supplies | | \$40,000 | | \$40,000 |
| Janitorial Supplies | | \$60,000 | | \$60,000 |
| Construction** | | \$4,400,000 | | \$4,400,000 |
| Vehicles | | \$400,000 | | \$400,000 |
| Electricity | | \$420,000 | | \$420,000 |
| Travel | | \$400,000 | \$350,000 | \$750,000 |
| Postage | | \$25,000 | \$40,000 | \$65,000 |
| Institutional Care | \$60,000 | \$200,000 | \$50,000 | \$310,000 |
| Post Secondary | \$1,000,000 | \$150,000 | \$100,000 | \$1,250,000 |
| Insurance | | \$200,000 | | \$200,000 |
| Chief and Council Wages | \$500,000 | | | \$500,000 |
| Support Staff Wages | \$3,500,000 | | | \$3,500,000 |
| Oper. and Mainten. staff | \$1,800,000 | | | \$1,800,000 |
| Teacher/Instructor wages | \$490,000 | | | \$490,000 |
| Daycare salaries and operation | \$160,000 | | | \$160,000 |
| Accounting fees | \$70,000 | | | \$70,000 |
| Legal Counsel fees | | \$75,000 | \$250,000 | \$325,000 |
| Auditing fees | | \$150,000 | | \$150,000 |
| Pension Plan Contributions | \$550,000 | | | \$550,000 |
| Other Consultants*** | | \$200,000 | | \$200,000 |
| Totals | \$8,133,000 | \$8,127,000 | \$800,000 | \$17,060,000 |

These results are based on survey results from Skeetchestn, Kamloops, Whispering Pines, Bonaparte, and Canoe Creek governments, the Shuswap Nation Tribal Council and the Secwempmc Cultural Education Society, and on estimates from the Adams Lake, North Thompson, Spallumcheen, and Neskonlith governments.

* It is quite possible that there is some overlap and possible double counting between stationary and other expenditure categories.

** Construction includes expenditures on roads, community buildings, and housing.

*** Other consultants include fees paid to engineering, advertising, economists, public relations, and other professionals.

Statistically, Table X³⁴ contains the following highlights:

- ▶ 52% of all SNTC government organization expenditures are made off-reserve³⁵.
- ▶ 39% of SNTC governmental organization expenditures are paid directly to staff employees³⁶. This is an important estimate of the number of jobs which will be created by First Nation governments receiving treaty compensation.
- ▶ In light of the comparative advantages afforded by Section 87 of the Indian Act, and the potential savings from buying in bulk it is interesting that expenditures on items such as stationary (\$280,000), computers (\$180,000), and printing (\$71,000) are all made off-reserve³⁷.

Comparing total government expenditures to those by households reveals the extent of the First Nation bungee effect. To begin, suppose it was assumed that 48% ($\$8,133,000 \div \$17,060,000$)

³⁴ Table X does not correspond exactly to the survey discussed in the next chapter. All of the information in these slightly broader expenditure categories has been aggregated from the more detailed expenditures in the survey.

³⁵ This is calculated as follows: (Total exp - on-reserve exp.) \div total expenditure. It should be pointed out that conspicuously absent from Table XIV is social assistance expenditures. The expenditures on wages and salary for social assistance support staff are included but the monies transferred from the federal government to the First Nation government and then to First Nation households are not. This exclusion biases government leakages upward.

³⁶ This includes chief and councils, support and operations staff, and teacher/instruction and daycare staff.

³⁷ A principal reason for this apparent lack of cooperation is a deficiency of economic trust between Shuswap communities.

of all SNTC government organization expenditures went directly to on-reserve First Nation households. This would imply that 52% of all expenditures by Shuswap government organizations were imports. Further assume that 76% (derived in the next section) of all Shuswap government organization revenues were transfers from the Federal government. Multiplying .52 by .76 reveals that, under these assumptions, 39.5% of all Shuswap government organization expenditures simply flow through from the Federal government to some non-Shuswap recipient, and a portion of this expenditure would "bungee" back to the Federal government.

This bungee effect is magnified even further under the more plausible assumption that only 41% of SNTC government organization expenditures is made directly to Shuswap recipients. Consider first that 39% of all on-reserve expenditure are made on wages and salaries. The on-reserve wage and salary estimate (\$3,500,000), however, is assumed to be subject to the estimates presented in Table IX that 19% of all First Nation government employees are non-native and another 12% of the government employees are from non-SNTC communities. The estimate of actual on-reserve expenditures going to on-reserve households is, therefore, \$7,048,000 ($\$8,133,000 - (.31 \times \$3,500,000)$) or only 41% of all Shuswap government expenditures goes to Shuswap households. This estimate implies that

45% (.59 x .76) of all Federal transfers to Shuswap government organizations leaks away from Shuswap households³⁸ and eventually bungees back to the Federal government.

2.323 First Nation Government Revenues

If the Section 87 tax exemption implies that no status on-reserve residents pay taxes, then where does all the First Nation government money come from? A clue is found in a legal interpretation of the Section 87 tax exemption³⁹.

"The exemption from taxation is derived from the federal government's fiduciary obligation to ensure that lands and entitlements obtained by aboriginal people in exchange for acknowledgement of Crown sovereignty and the ceding of aboriginal rights are protected from market forces and government action, including taxation" (Brown and Strother, 1991, p. 5)

The primary source of funding for First Nation governments and affiliate organizations is the federal government. It is by no means, however, the only source of funding for First Nation government. Other sources include: lease revenue from non-First Nation users of reserve land, property taxes from non-First Nation lessees, First Nation community-owned businesses, grants

³⁸ The conservative nature of this estimate must be stressed since this calculation assumes that all on reserve non-wage and salary government expenditure are made to on reserve households. This is probably not the case.

³⁹ That the Section 87 tax exemption is a policy instrument which in theory recognizes a collective First Nation right of tax immunity, but in practice is often an individual tax exemption is the source of a great many misconceptions by both First Nations and non-First Nations persons.

and transfers from the provincial government, the extraction of resources from their reserve lands held in common, and occasionally from the sale of reserve land⁴⁰.

Among the Shuswap communities only Kamloops has access to significant revenues beyond those provided by the federal government. The government for the Kamloops Shuswaps has two principal own revenue sources, lease monies from non-native users of community land and property tax revenue from the businesses of the industrial park and two residential trailer parks⁴¹. For the Kamloops Shuswaps the average reliance on federal government transfers from 1977-1994 was 76% of all revenues⁴². Although this seems high, other Shuswap communities which are not as geographically advantaged as Kamloops, undoubtedly rely even more heavily on federal government revenue⁴³.

⁴⁰ It should also be mentioned that a number of First Nation communities view community owned and operated gaming establishments and casinos as a significant source of potential revenue.

⁴¹ A First Nation community only collects lease revenues from common property. Parcels of land held by individuals with certificates of possession yield lease revenues for those individuals and not the whole community.

⁴² This is calculated as the average over the period 1977-1994 of Kamloops Federal transfers/Total Kamloops Revenue. The data source was the Kamloops Shuswap audits from this period.

⁴³ At least 3 other Shuswap communities collect some property taxes, Skeetchestn, Neskonlith, and Bonaparte. None of these, however, has the same tax or lease revenue base that Kamloops has.

2.33 On-reserve Businesses

Assessing the impacts of treaty compensation for the on-reserve economy would be a dull affair if there were no on-reserve businesses. As table VI clearly indicates, without on-reserve businesses, leakages by definition would be 100%. For analytical ease it is best to divide these businesses along ownership lines. For most of the communities of the Shuswap Nation almost all of the on-reserve businesses are owned and operated by First Nation persons. Kamloops, though, is an exception since the overwhelming majority of the 120+ businesses in the Mount Paul Industrial Park on the Kamloops reserve are owned and operated by non First Nation persons. As is evident below, these distinctions are important.

2.331 Employment and Ownership

Businesses operated by First Nation persons on-reserve can have three basic forms of ownership, individual (family), community (band), or nation (tribal). Table XI reports the proportion of ownership and some employment statistics for a sample of 18 First Nation-owned businesses from Shuswap communities⁴⁴.

⁴⁴ The businesses for this sample were largely taken from the communities of Skeetchestn and Bonaparte. There is no Shuswap business directory so it is impossible to extrapolate this sample. The potential biases in this sample will be discussed in the next chapter.

Table XI Employment and Ownership for On-reserve First Nation Businesses

| <u>Type of ownership</u> | <u># in sample</u> | <u># of p.t. employees</u> | <u># of f.t. time employees</u> | <u># of community employees</u> |
|--------------------------|--------------------|----------------------------|---------------------------------|---------------------------------|
| Community owned | 6 | 23 | 6 | 25 |
| Individually owned | 10 | 19 | 4 | 22 |
| Nation owned | 2 | 0 | 12 | 11 |

Source: Shuswap on-reserve business survey

In this sample over 50% of the on-reserve First Nation businesses are individually owned. It would appear that the community-owned businesses generate more total employment (45%), and the Nation-owned businesses create the most full time employment (55%). Furthermore, the majority of the employment is part time (66%) and most of the employees are from the local reserve (90%). Therefore, it is safe to assert that at least a portion of the money spent at these businesses is converted into household income on the reserve.

The same though, can not be said for non-First Nation businesses on-reserve. Table XII reports the employment statistics for businesses from the Mount Paul Industrial Park on the Kamloops reserve⁴⁵.

⁴⁵ This data represents a sample of 25 businesses from the 124 businesses in the Mount Paul Industrial Park. With only a 20% response the representativeness of this sample may be questionable as will be discussed in the next chapter.

Table XII Employment Statistics for the Mount Paul Industrial Park

| | Full time | Part time | First Nation employees |
|--------------------------|-----------|-----------|------------------------|
| Percentage of Work Force | 66 | 34 | 3.1 |

Note: This information was taken from a sample of 25 businesses on the Mount Paul Industrial Park during the summer of 1992.

The proportion of full to part time employees for these non First Nation businesses is almost exactly the opposite of the First Nation business sample. More striking, however, is that only 3.1% of the employees in this sample are of First Nation origin, let alone from the local Shuswap community. Stated bluntly, money spent in the Mount Paul Industrial Park does not become income for on-reserve households.

This distinction is crucial. Returning to Figure 1 and assuming Economy A is the Kamloops reserve, there is little reason to suggest that money spent here becomes direct on-reserve household income. This leads to the question; how much of on-reserve expenditure does become income? This question is addressed in more detail in Chapter 4.

2.332 On-reserve Business Expenditures

Table XIII reports the expenditure behaviour of a sample of 18 on-reserve businesses. In recognition of the local on-reserve employment distinction between Kamloops and all other

Shuswap reserves, the expenditure portion of the on-reserve business differentiates between the Kamloops reserve and the other reserves.

Table XIII First Nation On-reserve Business Expenditures.

| <u>Expenditure Type</u> | <u>On Kamloops reserve</u> | <u>On Own Reserve</u> | <u>Kam City</u> | <u>Other</u> | <u>Total</u> |
|-------------------------|----------------------------|-----------------------|-----------------|--------------|--------------|
| Salaried Employees | \$0 | \$295,633 | \$1,000 | \$0 | \$296,633 |
| Professional Fees | \$0 | \$2,000 | \$2,035 | \$20,000 | \$24,035 |
| Consultants | \$0 | \$1,000 | \$0 | \$11,000 | \$12,000 |
| Equipment Purchases | \$0 | \$15,200 | \$119,500 | \$14,400 | \$149,100 |
| Equipment Repairs | \$5,000 | \$5,500 | \$14,760 | \$0 | \$25,260 |
| Supplies | \$96,000 | \$75,000 | \$267,250 | \$1,068,887 | \$1,507,137 |
| Transportation | \$1,000 | \$3,300 | \$0 | \$0 | \$4,300 |
| Office Supplies | \$0 | \$480 | \$7,500 | \$0 | \$7,980 |
| Advertising | \$1,000 | \$0 | \$10,500 | \$4,500 | \$16,000 |
| Shipping | \$0 | \$780 | \$500 | \$0 | \$1,280 |
| Receiving | \$0 | \$0 | \$0 | \$0 | \$0 |
| Utilities | \$0 | \$2,900 | \$16,900 | \$2,728 | \$22,528 |
| Property Taxes | \$0 | \$4,464 | \$0 | \$0 | \$4,464 |
| Sales Taxes | \$0 | \$0 | \$0 | \$13,912 | \$13,912 |
| Income Taxes | \$0 | \$0 | \$0 | \$3,550 | \$3,550 |
| Other exp. | \$184 | \$136,735 | \$0 | \$0 | \$136,919 |
| Totals | \$103,184 | \$542,992 | \$439,945 | \$1,138,977 | \$2,225,098 |

Note: These are the expenditures of the 18 on-reserve businesses mentioned earlier.

Assuming this sample of Shuswap businesses is representative of all on-reserve First Nation businesses⁴⁶, the following statistics are important for estimating the impact of a treaty compensation settlement in the on-reserve economy:

⁴⁶ The most common larger-sized businesses on a reserve are gas stations and convenience stores. This sample has a gas station and/or a convenience store from 3 Shuswap communities suggesting that it may be relatively representative. This hypothesis, however, can not be tested for reasons discussed in the next chapter.

- ▶ 13% of all business expenditures are on salaries. This is a useful proxy for the amount of on-reserve expenditures which will be converted to on-reserve household income.
- ▶ 70% of all on-reserve First Nation business expenditures are made off-reserve which becomes 76% when expenditures on the Kamloops reserve are not included.
- ▶ The significant amount of sales tax (\$13,912) paid off the reserve is interesting. This indicates shopping by non-First Nation persons at these on-reserve businesses.

These results can be compared to the extrapolated expenditures from the Mount Paul Industrial Park Businesses in Table XIV.

Table XIV Annual Expenditure for the Businesses of the Mount Paul Industrial Park

| <u>Expenditure Type</u> | <u>On Kamloops reserve</u> | <u>Kamloops City</u> | <u>Vancouver</u> | <u>Other</u> | <u>Total</u> |
|--------------------------|----------------------------|----------------------|------------------|--------------|---------------|
| Salaried Employees | \$672,000 | \$8,737,000 | \$0 | \$7,452,000 | \$16,861,000 |
| Professional Fees | \$0 | \$750,000 | \$0 | \$180,000 | \$930,000 |
| Consultants | \$0 | \$0 | \$0 | \$75,000 | \$75,000 |
| Equipment Purchases | \$405,000 | \$24,405,000 | \$960,000 | \$5,334,000 | \$31,104,000 |
| Equipment Repairs | \$525,000 | \$1,830,000 | \$195,000 | \$1,455,000 | \$4,005,000 |
| Equipment Maintenance | \$900,000 | \$550,000 | \$0 | \$300,000 | \$1,750,000 |
| R & D | \$0 | \$57,000 | \$300,000 | \$0 | \$357,000 |
| Utilities | \$15,000 | \$1,000,000 | \$0 | \$180,000 | \$1,195,000 |
| Advertising | \$0 | \$685,000 | \$15,000 | \$315,000 | \$1,015,000 |
| Shipping | \$0 | \$8,250 | \$0 | \$54,000 | \$62,250 |
| Office Supplies | \$0 | \$633,000 | | \$0 | \$633,000 |
| Freight on Raw Materials | \$263,000 | \$1,130,000 | \$690,000 | \$0 | \$2,083,000 |
| Production Materials | \$4,630,000 | \$2,100,000 | \$24,500,000 | \$12,000,000 | \$43,230,000 |
| Property Taxes | \$322,000 | \$0 | \$0 | | \$322,000 |
| Provincial taxes | \$0 | \$0 | \$0 | \$2,145,000 | \$2,145,000 |
| Federal Taxes | \$0 | \$0 | \$0 | 10,289,000 | \$10,209,000 |
| Totals | \$7,732,000 | \$41,885,250 | \$26,660,000 | \$27,023,000 | \$115,976,250 |

Source: Mount Paul Industrial Park Survey, 1992.

Notes: (1) This table represents the population extrapolations for all the businesses on the Mount Paul Industrial Park based on the sample of 21 businesses, i.e. the expenditure results from that sample were multiplied by 125/21 to estimate the expenditure behaviour for all the businesses of the Mount Paul Industrial Park.

(2) Lease payments from these businesses to the Kamloops Shuswap government were not included in the survey.

Once again assuming extrapolation from this sample is appropriate⁴⁷, the key highlights from this table are:

⁴⁷ To provide some validity for the extrapolation of this sample, consider that projected property tax revenue (\$322,000) from the extrapolated sample was nearly identical to actual property tax revenue collected from the businesses of the Mt. Paul Industrial Park (\$330,000), as provided by the tax collection department of the Kamloops Shuswap government. Clearly the margin of error is quite small. Also of comparative interest, 14.5% of the expenditures of these businesses are spent on salaries compared to 13.1% for the on-reserve business sample. Moreover, 3.9% of all wages

- ▶ Approximately 6.6% of Mount Paul business expenditures are made on the Kamloops reserve. As was mentioned previously, it is doubtful that much of this 6.6% becomes household income for Shuswaps.
- Roughly 36% of these expenditures are made in the city of Kamloops. An estimated 23% of the business expenditures are made in Vancouver and the remaining 34.4% of the expenditures are made in other locations. Therefore, when business improves in the Mount Paul Industrial Park, as it certainly might after the settlement of a treaty, it is likely that most of the benefits will be felt in many regions outside the on-reserve economy.
- ▶ Taxes (federal, provincial, and property) make up approximately 11% of expenditures for Mount Paul businesses⁴⁸.

and salaries are paid to on-reserve recipients and 3.1% of all employees are considered to First Nation (see Table XIII).

⁴⁸ It is interesting to note that nearly \$14 million of taxes are paid by these businesses, but only about \$320,000 (2.2%) goes to the Shuswap Kamloops in property taxes. It should be mentioned, however, that the Kamloops Shuswaps also receive lease revenue from these businesses each year.

These findings and the other results presented in Section 2.3 along with the upcoming discussion of the national (off-reserve) economy in Section 2.4 are summarized in Figure 3 following Section 2.4.

2.4 The First Nation Citizenship Economy (on and off-reserve)

Assume now that economy A from Figure 1 represents the citizenship model of First Nation jurisdiction. Such an economy would include at the First Nation community level the on-and off-reserve members (citizens) of that community, and at the tribal (national) level it would include all the citizens of a particular First Nation, regardless of their residence.

Section 2.3 captures, in detail, the on-reserve portion of the citizenship economy. This section is devoted to the off-reserve citizens. Mirroring Section 2.3 the critical questions are: Who are they? Where do they get their money from? How do they spend it? What are the off-reserve businesses?

A useful starting point is some insight into why these citizens are off the reserve in the first place. In a 1993 study on the Kamloops Urban Aboriginal population conducted for the Royal Commission on Aboriginal Peoples and the Interior Indian Friendship Centre⁴⁹ by myself and

⁴⁹ The Friendship Centre is the principal social and administrative organization for off-reserve persons. The Interior Indian Friendship Centre in Kamloops offers a social housing program, a

two other researchers, our sample of 52 households reported that their principal reasons for leaving the reserve were employment (28%), education (26%), second generation off-reserve (13%), and housing (11%)⁵⁰.

2.41 The Demographics

Table XV presents the Department of Indian and Northern Affairs on-and off-reserve population counts for the seven SNTC case study communities.

Table XV On and Off-reserve Populations

| Shuswap Community | On-reserve | Off-reserve | Total |
|-------------------|-------------|-------------|-------------|
| Adams Lake | 359 | 188 | 557 |
| Bonaparte | 202 | 398 | 619 |
| Canoe Creek | 197 | 306 | 528 |
| Neskonlith | 222 | 231 | 481 |
| Skeetchestn | 128 | 223 | 366 |
| Spallumcheen | 302 | 246 | 565 |
| Whispering Pines | 58 | 46 | 104 |
| Totals | 1468 | 1638 | 3220 |

Note: This source of this information is the Department of Indian and Northern Affairs (INAC) 1993 band membership tables by residency. In addition to on and off-reserve population figures, INAC estimates include First Nation community members living on-reserve (other band), on crown land (own band), on crown land (other band), or on crown land (no band). Thus, on + off-reserve populations do not necessarily equal the total citizenship of a particular First Nation community.

store front school, a variety of counselling, social and health services, and operates an arts and craft shop. Its raises funds from federal, provincial and its own sources.

⁵⁰ The survey was distributed to the households of the Kamloops Native Housing Society, the Friendship Society, the Health Centre and the Arts and Crafts store. All of these were identified as possible meeting places for the off-reserve population (a vexing question in itself). This particular survey question asked respondents to rank their top three reasons for leaving the reserve. As such a #3 was given 1 point a #2 was given 2 points and a #1 was given three points. Dividing the total points of each choice by the aggregate gives the percentage response reported. The methodology for this survey will be discussed further in the next chapter.

These numbers represent those individuals who are considered status Indians under the Indian Act (Chapter 1 sections 5 and 6, Hawley, 1993) and are affiliated with a First Nation community. From the Department of Indian Affairs perspective, these would be the citizens of a particular First Nation community. It must be stressed however, that this data does not include all those individuals who considered themselves of aboriginal descent, but only those who have received Department of Indian Affairs status cards. Therefore, these off-reserve numbers are markedly different from the Statistics Canada figures which allow self selection for ancestry. As a result of treaties a number of First Nations will make up their own code of citizenship to provide some clarity to this issue. As a first approximation, however, it is worth noting that for these SNTC communities approximately 51% (1638/3220) of their population lives off-reserve.

Despite its ambiguity, the completeness of the Department of Indian Affairs data for the province of B.C. provides an important opportunity to test the representativeness of the case study communities. This is accomplished by statistically comparing the on-reserve, off-reserve, and total populations from the case study communities, with the actual averages of these populations from all the First Nation communities in B.C.. Table XVI presents the test results for the null hypothesis that the case study (on, off, or total) mean populations are not significantly different from the population means for all B.C. First Nation communities, using a difference of means test (Maddala, 1988, p 29).

Table XVI Normality of Case Study Populations Test Results

| Population | Population mean | Sample mean | Critical Values | t - test statistic |
|-------------|-----------------|-------------|-----------------|--------------------|
| On-reserve | 238 | 209 (100.7) | ± 2.447 | -.75 |
| Off-reserve | 221 | 234 (107.2) | ± 2.447 | .36 |
| Total | 474 | 460 (176.3) | ± 2.447 | .20 |

Critical values are at the 5% level of confidence at 6 degrees of freedom.

Sample standard deviations are in brackets.

The null hypothesis is not rejected for any of the three population figures for the Shuswap communities. This means that the economic impact assessments based on the research in these SNTC communities may be representative of all B.C. First Nations, if it can be assumed that the economic infrastructure and geographic circumstances for the SNTC communities are representative of other B.C. First Nation communities - assumptions which could only be verified from further research.

What happens, however, to treaty compensation distributed to off-reserve households? This is a difficult question⁵¹. Unlike the on-reserve economy, little expenditure and employment research has been conducted for off-reserve Shuswaps or other First Nation populations⁵². To provide

⁵¹ On-reserve, the federal government is explicitly responsible for First Nations people, off-reserve the jurisdictional boundary is less clear. In some matters, notably education off-reserve First Nation persons are eligible for provincial, federal and First Nation government support. In other areas like social assistance no government seems willing to shoulder the burden. Most confusing of all are the political boundaries around off-reserve First Nation persons. Sometimes they can vote on-reserve (for example in the Charlottetown Accord Referendum) and other times they can not (provincial and municipal elections).

⁵² The 1991 Aboriginal Peoples Survey (Statistics Canada 89-534) does contain figures on whether an off-reserve person identifying her/himself as North American Indian, purchases a particular type of good or service from his/her community or neighbourhood. Unfortunately, no expenditure

some insight into this economy the only available data is a Statistics Canada customized sample drawn from persons reporting aboriginal ancestry in the 1986 census⁵³, and the previously mentioned 1993 Kamloops Urban Aboriginal study⁵⁴.

In the city of Kamloops there are approximately 3550⁵⁵ off-reserve First Nations people within the urban area. Within a 120 mile radius of Kamloops there are three major tribal groups: Shuswap, Thompson, and Okanagan. Table XVII reports the population by tribal association according to a 1991 Kamloops Community Futures⁵⁶ Survey and the 1993 Royal Commission study.

totals, and no definition of community or neighbourhood is provided, so this data is of little use in the context of this investigation.

⁵³ To allow for some comparison between the Indian Affairs off-reserve data, and the Statistics Canada customized tables, only those reporting solely aboriginal ancestry were taken from the Statistics Canada survey. It was assumed that those who had received status Indian cards would likely report only aboriginal descent while non-status persons would report other ancestries besides aboriginal.

⁵⁴ More recent data is available from the 1991 Statistics Canada Aboriginal Peoples Survey, but no data from the off-reserve aboriginal population in Kamloops was collected. Given the geographical scope of the case study it was felt that old data from the right area was better than new data from a different area (other urban aboriginal populations in Edmonton or Vancouver).

⁵⁵ This figure is arrived at by taking the 1985 Statistics Canada figure of 3,230 and increasing it by 10%, the measure of growth for Kamloops from 1985 - 1993. This figure may be an underestimate as the rate of birth among First Nations Peoples is 2.5 times that of the rest of the population, but it seems like a fair enough approximation.

⁵⁶ Community Futures is a federal government sponsored community economic development program. This 1991 survey covered the aboriginal population in the Nicola and Thompson valleys. It is included for comparison purposes only.

Table XVII Kamloops Off-reserve Tribal Association

| | Shuswap | Thompson | Metis | Okanagan | Chilcotin | Carrier | Other |
|-----------|---------|----------|-------|----------|-----------|---------|-------|
| CF - 1991 | 46.2% | 12% | 16% | 10% | 6% | 2% | 5.8% |
| RC - 1993 | 50.7% | 15.4% | 15.4% | 8.4% | 1.4% | 0 | 8.4% |

CF - Community Futures Survey

RC - Royal Commission Sample

Not surprisingly the largest number of off-reserve aboriginals in Kamloops are Shuswap. Furthermore, the First Nation association proportions from the Community Futures and the Royal Commission samples are in near agreement. Thus, assuming that about 48% of the Kamloops aboriginal population is Shuswap would imply that there are about 1700 Shuswaps living off-reserve in Kamloops. In ball park terms this accords with approximately 65% of all Indian Affairs official off-reserve Shuswaps from the nine SNTC communities, living in Kamloops⁵⁷ (1700/2630).

Table XVIII represents a cross section of the demographics for the Kamloops off-reserve population from the 1993 Royal Commission research and the 1986 Census⁵⁸.

⁵⁷ This is not an unreasonable estimate based on Shuswap government administrative interviews.

⁵⁸ These numbers represent a random sample of 100 households taken from 1100 housing applications at the Interior Indian Friendship Centre. These 1100 households with an average persons per household of 2.94 represent a significant proportion of all persons reporting aboriginal descent in Kamloops. It must be stressed that the source of this sample represents only those requesting social housing so the age and income data of those in it may be biased downward.

Table XVIII Kamloops Off-reserve Age-Sex Cohorts

| | 0-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-34 | 35-64 | 65+ |
|------------|--------|--------|--------|--------|--------|--------|--------|-------|
| Male - SC | 14.74% | 9.47% | 14.74% | 15.79% | 8.42% | 16.84% | 20.00% | 0.00% |
| Female- SC | 5.41% | 11.71% | 9.01% | 8.11% | 16.22% | 23.42% | 26.13% | 0.00% |
| Male - RC | 21.99% | 14.89% | 9.22% | 4.96% | 24.11% | 17.73% | 7.09% | 0.00% |
| Female- RC | 11.88% | 7.50% | 9.38% | 15.63% | 15.63% | 26.25% | 13.75% | 0.00% |

SC - represents the proportion of the Kamloops aboriginal population reporting only aboriginal ancestry in the 1986 Statistics Canada census.

RC - represents the sample drawn from the housing applications for the Kamloops Friendship society in the 1993 Royal Commission study.

It is evident in Table XVIII that the Royal Commission sample population has 67% of the Kamloops city aboriginal population under the age of twenty-five and the 1986 Statistics Canada data reports 57% of the same population under 25. Although there is clearly some divergence in these results, there can be little doubt that the Kamloops city off-reserve population is remarkably younger than the general off-reserve population. Moreover, the off-reserve population would seem to be even younger than the on-reserve population⁵⁹.

2.42 Off-reserve Income

From the 1986 customized Statistics Canada report for off-reserve aboriginal males in Kamloops, the income per capita for First Nations males living off-reserve is shockingly low.

⁵⁹ This is not particularly surprising. There is a shortage of housing on-reserves. New houses are usually awarded on the basis of waiting list seniority (among other criteria); i.e. older persons receive on-reserve houses before younger persons. Furthermore, younger people are more mobile (more likely to shift residences) than are older people.

The average personal income for off-reserve males *plus* one standard error is only 66% of the average male personal 1986 income in all of Kamloops *less* one standard error⁶⁰. That is to say, even at these allowances for margin of error the average income of the First Nations male is not even two-thirds of his non-First Nations counterpart. And from the admittedly biased information gathered from the housing applications, the average household income of persons applying for off-reserve First Nation housing between 1991-1993 plus one standard deviation, is 54% of the average household income less one standard deviation in Kamloops in 1986⁶¹.

The situation is even more bleak concerning employment for off-reserve citizens. Once more, drawing from the 1986 Kamloops off-reserve citizens custom table from Statistics Canada:

⁶⁰ From the 1986 Statistics Canada customized table for the Kamloops off-reserve population, the average male income was \$14,936 with a standard error of \$1,073 compared to the average male income for all of Kamloops of \$23,894 with a standard error of \$251. Dividing \$16,009 by \$24,145 is 66%. For females the similar calculation is 70%.

⁶¹ As mentioned, a potential bias exists because the sample from which the statistic was drawn were applicants for subsidized housing who may have felt it prudent to demonstrate economic need (low income) on a housing application. Furthermore, the housing application sample may not be perfectly representative. Regardless, there is still a significant difference in living standards between these housing applicants and the general Kamloops household. Here the average income plus one standard deviation per household is \$18,036 (1993 current \$) divided by average family income in Kamloops (1986) minus one standard deviation of \$33,450 (1985 current \$) equals approximately 54%.

- ▶ The unemployment rate for aboriginal males in Kamloops was 63.6% compared to 15.1% for all Kamloops males in 1986. The similar comparison between females was 60% to 16.9%⁶².

- ▶ The proportions of employed aboriginals of the total employed in Kamloops (1986) are 2.1% for males (340/15,540), 2.8% for females (320/11,405) and 2.5% in the aggregate (660/26,945)⁶³. Although small, these are important estimates of how much off-reserve expenditure becomes the income of a First Nation citizen.

- ▶ Perhaps most significant is that the Statistics Canada data indicated that there were no self employed aboriginals off-reserve in Kamloops, i.e. not a single business off-reserve owned by First Nation citizens⁶⁴. By comparison 6% of all the employed persons in Kamloops are self employed. The absence of First Nation owned off-reserve businesses, although apparently stark, is economically rational. The proprietors of on-reserve businesses would not pay income tax. In most circumstances, any off-reserve

⁶² Given that the #1 reason for leaving the reserve, according to the RCAP survey was employment, there must be even higher rates of unemployment on reserve.

⁶³ It should come as no surprise that the majority of the jobs for off-reserve males workers were classified as service (14.2% or 48/340) and manual (33% or 112/340) and for females residing off-reserve the top employment areas were service (32.5% or 104/320) and clerical (15% or 48/320).

⁶⁴ However, the author is aware of at least two arts and crafts stores, one owned by the Friendship Society, and the other by a First Nation individuals located within Kamloops city. Neither of these may have existed in 1985.

entrepreneur would sensibly do business on-reserve. This is particularly significant for the feedback loop to economy A in Figure 1.

2.43 Off-reserve Expenditures

As stated earlier, there have been no published studies of off-reserve aboriginal expenditure behaviour. This, however, is not as big a hindrance to estimating the impact from treaty compensation as it seems. First only a small portion of any expenditure in the off-reserve economy ends up in the hands of off-reserve citizens, anyway. Second, there are only a few on-reserve businesses to attract off-reserve customers to. For practical purposes, therefore, all that matters is whether the off-reserve household chooses to purchase a good or service on-reserve or off-reserve. In this regard, a perfectly reasonable and standard economic assumption can yield useful proxies. Specifically, assume off-reserve households are economically rational⁶⁵ so that they will only make expenditures on-reserve if the cost savings outweigh their transportation costs⁶⁶.

⁶⁵ "Rational" in economics generally means that households maximize their utility function subject to some budget constraint. For the purpose of the off-reserve citizen it means that these consumers when given a choice between the same good on and off-reserve will choose the lower-priced good.

⁶⁶ This is a common assumption in the spatial economic literature (see Paelinck and Nijkamp, 1975, chapter 3 for a review of this literature).

The Section 87 tax exemption implies that cost savings do exist on-reserves for all products where sales tax is applicable. For most products this could be as much as 14%⁶⁷. For two products where there are significant sin taxes applied, cigarettes and gasoline, this amounts to about 40% and 25% respectively⁶⁸. If it is assumed that off-reserve citizens spend roughly the same amount on gasoline and tobacco as do on-reserve residents⁶⁹, and that for reasons of availability they only purchase these two products on-reserve, it is possible to estimate how much income stays in the citizenship economy.

In particular the salient features of the off-reserve economy become:

1. The proportion of off-reserve expenditure made on-reserve (gasoline and tobacco) is approximately 6.8% according to figures from Table VII.

⁶⁷ As is evident from both the on-reserve business samples and the on-reserve household expenditure data, many of these products are not sold on-reserve.

⁶⁸ For a status Indian a carton of on-reserve cigarettes is about \$30 compared to \$50 off-reserve, and a litre of gasoline is about 45¢ on-reserve compared to 58¢ off in 1996.

⁶⁹ This assumption was widely supported in informal interviews with a number of off-reserve Shuswaps in Kamloops city.

2. All other expenditure is not pure leakage. A small proportion, approximately 2%, of all off-reserve workers are First Nation citizens⁷⁰. Thus a tiny portion of off-reserve expenditures ends up as income for First Nation citizens.

In summary, the off-reserve economy is much simpler than the on-reserve economy as there is primarily only one sector, households. In the citizenship model, the government is on-reserve, and there are few if any off-reserve businesses. Figure 3 on the next page presents the expenditure and income flows of the First Nation economy discussed in Sections 2.3 and 2.4.

This diagram emphasizes the three conclusions from Sections 2.3 and 2.4:

1. Most treaty compensation will be spent immediately into the non-First Nation economy.
2. Due to the lack of businesses there will only be a miniscule indirect effect and
3. Interregional feedbacks will be small except in selected industrial sectors such as gasoline and tobacco.

These conclusions form the basis of the treaty compensation impact assessment methodology discussed below.

⁷⁰ The figure is incorporated into the feedback loop of the treaty compensation impact assessment discussed in Chapter 4.

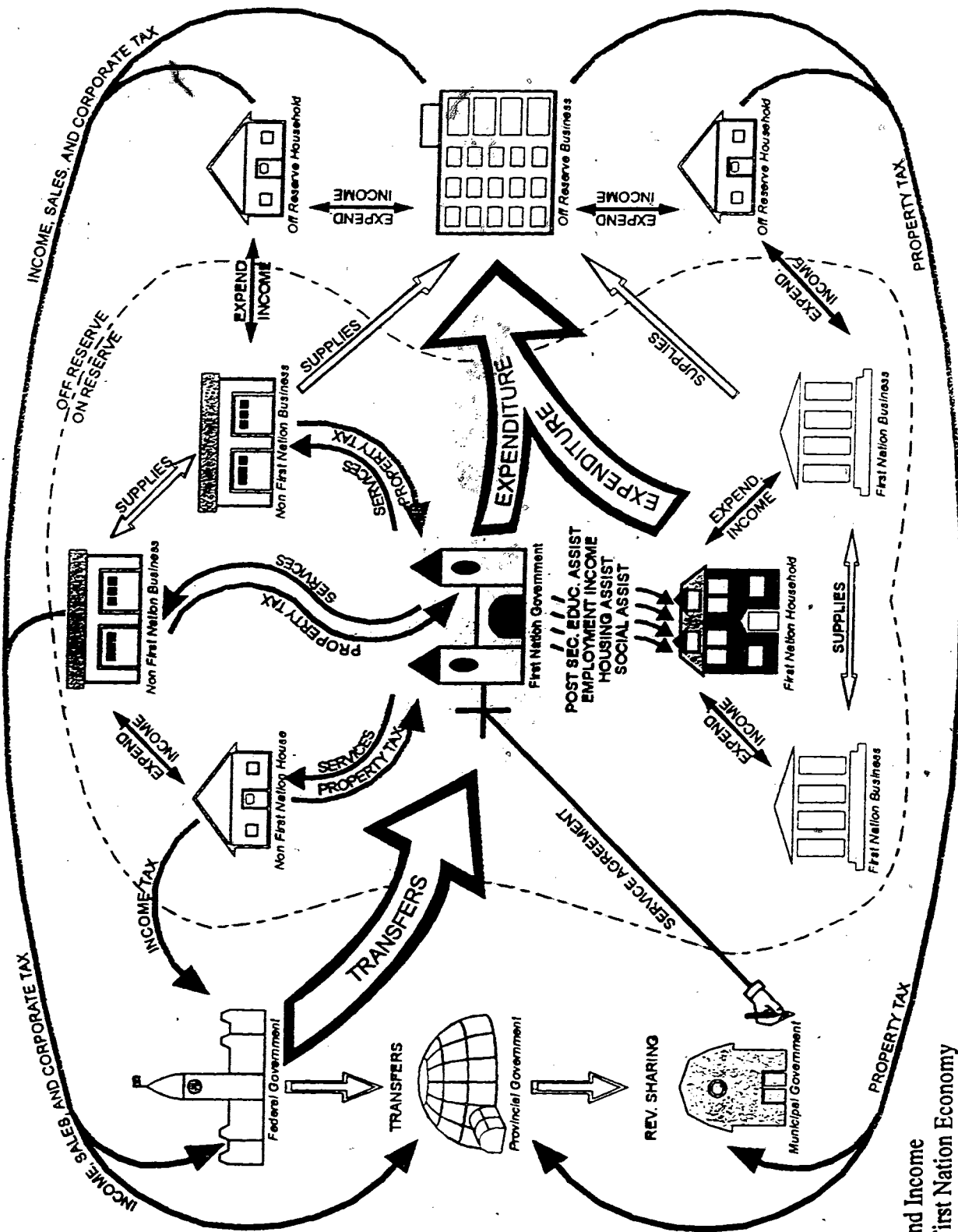


Figure 3
Expenditure and Income
Flows in the First Nation Economy

2.5 A Methodology for Estimating the Economic Impacts of Treaty Compensation

Treaty settlement can result in one of two models of First Nation government jurisdiction. The first is similar to provincial or municipal jurisdiction. In simple terms, jurisdiction is defined by the geographic boundaries of the First Nation economy. For simplicity, these boundaries are assumed to be the current on-reserve boundaries of First Nations⁷¹.

The second model assumes national jurisdiction for First Nations. Here, the boundary of the economy encompasses all the citizens of the First Nation regardless of their place of residency. Once again for tractability it is assumed to include all off and on-reserve members as currently defined by the Department of Indian and Northern Affairs⁷².

Within these two basic models of treaty jurisdiction, there are two ways of distributing treaty compensation; give it to the citizens (households) of the particular economy, or let the First Nation government invest it in community development projects⁷³. From these simplifications,

⁷¹ It could be easily expanded to include lands acquired either through treaty settlement or through the settlement of specific claims.

⁷² Treaty settlement could see these citizenship boundaries dramatically altered from those defined by Indian and Northern Affairs. Two areas of change could be a First Nation defined citizenship code, and the establishment of First Nation international boundaries (Canada and the United States) as is discussed in the Jay Treaty.

⁷³ It is of course possible to have a combination of these two scenarios which would be determined through a mechanism of public choice.

this implies that there are four main scenarios from treaty compensation which should be estimated.

1. A residency-based First Nation economy (on-reserve) where treaty compensation is distributed to the on-reserve households.
2. A residency-based First Nation economy where treaty compensation is controlled and invested by the on-reserve First Nation government.
3. A nation based First Nation economy (on and off-reserve citizens) where treaty compensation is distributed to all the citizens (households) of the economy.
4. A nation based First Nation economy where treaty compensation is controlled and invested by the on-reserve First Nation government.

2.51 Selecting the Appropriate Method

".. the income-expenditure approach is most appropriately applied to small scale regional economies whose intersectoral relationships are sufficiently simplistic " (Davis, 1990, p. 39).

Under the appropriate circumstances, the Keynesian income multiplier offers a suitable method for assessing the economic impact of a particular stimulus. Are the circumstances, however, appropriate for using income multipliers for First Nation treaty compensation?

Whether the boundaries of the First Nation economy are defined by citizenship or residency, it is clear that intersectoral relationships are simplistic. The case study Shuswap communities economies have been demonstrated to be primarily composed of large government (G) and consumption (C) sectors. There is a business sector but aside from exports (X) in a few areas, it mainly serves the local economy. Investment is primarily conducted by the government sector. Imports (M) measured as first round leakages from household, government and business expenditures for either the citizenship or the residency model are substantial. In the Keynesian tradition the multiplier (k) is derived for the following expenditure accounting identity where lower case letters are marginal propensities to consume and import from each sector of the economy (Armstrong and Taylor, 1986, p. 16):

$$Y = C + G + (X - M) \quad (1)$$

$$C = A + bY \quad (2)$$

$$M = M_s + m_c C + m_g G \quad (3)$$

$$k = 1 / (1 - b(1 - m_c)) \quad (4)$$

$$\Delta Y = k(1 - m_c)\Delta A \text{ or } \Delta Y = k(1 - m_g)\Delta G \quad (5)$$

2.52 The Criticisms

Regional economic simplicity alone, however, is an insufficient justification for the use of Keynesian methods. This is especially so when these methods have been largely dismissed by most neoclassical economists. The crux of this criticism concerns the saving behaviour of economic agents.

Friedman suggests that when households receive an economic stimulus, they view it as either temporary or permanent. If they view it as temporary, they are more likely to save a greater portion of the stimulus so as to maximize intertemporal consumption. The Keynesian marginal propensity to consume for a temporary stimulus is low and thus so is the multiplier. On the other hand, permanent impacts are treated as parallel shifts in a budget line and all future consumption (of normal goods) increases. The marginal propensity to consume for a permanent shift would necessarily be higher than for a temporary shift.

It follows that if treaty compensation is viewed as a permanent change, then the Keynesian approach is appropriate but if it is viewed by First Nation households as temporary then the ordinary marginal propensity to consume (b in equation 2) would overestimate the impact of treaty compensation. The hypothetical question then becomes, how will First Nation households view treaty compensation?

In the extreme, First Nations could view treaty compensation in a Ricardian equivalency type model. Anticipating future taxes to pay back their compensation, First Nation households would save all of it⁷⁴. Given the presence of the Section 87 tax exemption it is doubtful first, that First Nation households would even be aware of the inherent logic of Ricardian equivalence⁷⁵, and second since this is compensation for the actions of non-natives, that First Nation households would expect to pay it back. In the other extreme, First Nations households may behave like the recipients of a Lucas (1988) manna from heaven economy. Expecting similar compensation throughout their lives, First Nation households will rationally consume all of their compensation enhanced endowment. Neither extreme seems likely, so to err on the side of caution it is best to assume a range of possible compensation savings behaviour as a form of sensitivity analysis.

The next line of criticism focusses on the absence of supply constraints in the Keynesian model. Logically, when increased demand (read economic stimulus) bumps into a supply constraint most of the impact is reflected in higher prices. In a full-employment-neoclassical-economy the

⁷⁴ The Ricardian equivalency model is commonly demonstrated in the overlapping generations literature (McCandless and Wallace, 1991). The validity of the hypothesis is questionable as among other things it assumes pure lump sum taxes (which don't exist), identical interest rates for private and public borrowing (dubious) and infinitely lived individuals which even in its dynastic form can be shown to be ludicrous (Bernheim and Bagwell, 1988).

⁷⁵ Of all the economic agents to be impacted by treaty settlement, it is most likely that the Ricardian equivalency hypothesis applies to the non First Nation persons who are the recipients of the First Nation economic leakages. It is doubtful, however, if even in the extreme, these individuals would save all of the income received from First Nations persons in anticipation of higher taxes to pay for treaty settlements.

only way to increase income is to increase the amount the economy produces. In the Solow model, income increases when per capita capital increases which is directly dependent upon per capita savings. In this regard, the convergency aspects of a simplistic Solow growth model suggest that, ex ante, the concerns of First Nation people will be addressed from treaty compensation. The infusion of capital resulting from this compensation would "jump start" the First Nation's economy along the path of relative economic equity to the larger Canadian economy⁷⁶.

This so called convergency of growth rates and levels in the neoclassical theory is supported by authors such as Courchene, 1982 and Lee and Coulombe, 1995, who see a natural equilibrium of regional returns to capital and labour being forged through the free mobility of these two factors⁷⁷. Despite appreciating the intuition of the convergency hypothesis other neoclassical economists such as Lucas, 1987, Barro, 1991, and Grossman and Helpman, 1991 have not observed its predictions in world data. They, like Courchene, point to institutional (or human capital) constraints preventing convergence in situations like of B.C. First Nations. One such

⁷⁶ Consider a simple Solow type model where $sF(K,L) = \delta K$ indicates a steady state (F is constant returns to scale, s is a savings rate, and δ is the depreciation rate of capital). If self government and treaty settlement are assumed to shift the $sF(K,L)$ relationship upward then it follows from convergency that Y and K will rise, and along the path to the higher steady state the First Nation economy will grow relatively faster than that of Canada (*ceteris paribus*).

⁷⁷ Implicitly this hypothesis also assumes either the free mobility of technology between regions or identical technologies in each region.

possible institutional constraint for First Nations is that there are no on-reserve savings institutions of note, as is evidenced by the near 100% leakage of household savings in Table VI.

"Native groups (in the North) have obtained billions of dollars and vast land holdings from Ottawa ... in return for relinquishing land claims. ... (As such they have become) the hot new market for big banks and other companies courting investors." (Toronto Star, May 12, 1994, B1).

Perhaps, however, the most damning criticism of the Keynesian multiplier is its inability to answer the principal question - what will be the economic impact on the First Nation economy from treaty compensation distribution?

In the literal sense the phrase economic impact carries connotations of money crashing to the ground in a cloud of dust. An assessment of this collision with the earth would probably measure the aggregate displacement of dust from the original collision and its after-shocks. In many ways this is what a Keynesian multiplier estimates. It assumes that what happens today will happen tomorrow. Household, government, and business behaviour will continue to be the same before, during and after the impact. Specifically, the marginal propensity to consume and the leakage proportions are assumed to stay the same. In short the model lacks a dynamic component.

For the case study communities there is only one point in time for each survey. A multiplier estimate for these communities either individually or collectively, will ultimately only be relevant for the point in time that the data was collected. Although sensitivity analysis along the lines

suggested above concerning the hypotheses of Friedman and Modigliani and Miller can deflect some of this criticism, the lack of a complete dynamic story in the Keynesian model is a valid criticism.

This was one reason why the economic impacts from treaty settlement were broken into two components, compensation and institutional, in Chapter 1. The dynamic story of compensation is a little easier to justify in the Keynesian framework. Whoever gets the money (government or households) either spends it or saves it.

The dynamics of institutional changes resulting from treaty settlement is not quite so simple. Even within discussions of induced investments in the Keynesian model (Davis, 1990, p. 35) it is clear that long term dynamic economic impact from institutional changes are not comfortably addressed with a Keynesian income multiplier. Therefore, the economic dynamic for institutional changes are estimated using a completely different method in Chapter 5.

Keynesian multipliers are also often accused of being too general (Black, 1982). For example, a single estimate of b in equation (2), ignores the existence of many specific normal and inferior goods. To improve the precision of the multiplier estimate, the Engel curve slope (MPC) for each good and service should be identified. The estimations of these Engel curves will be addressed in a later chapter.

On a related issue, another criticism of the Keynesian income multiplier is that all local expenditure does not become local income (Tiebout, 1962). Only a portion of the money spent on a litre of gasoline for example becomes local income. Without accounting for this, the income multiplier would overestimate the economic impact. Table XIII illustrates that most expenditures by on-reserve businesses are made off-reserve. To be more accurate the income multiplier should consider the proportion of local expenditures which becomes local income (Davis, 1990). In this regard, there are two methods for estimating the local value added from local purchases. Clark, 1983 uses payroll to sales ratios for the 2 digit standard industrial classification industries in B.C. Another method is to use the aggregate ratio of wages and salaries to expenditures from Table XII. In keeping with the cautious approach to treaty compensation impact assessment, exhibited throughout this chapter, both methods will be used and compared.

Sinclair and Sutcliffe, 1978, point out that Keynesian income multipliers can be over estimated if the role of unemployment and other existing government transfers are not considered. If treaty compensation provides a job for an otherwise unemployed individual, then only the difference between the government unemployment insurance transfers (or other programs) and the employment salary is new income. Currently, the Canadian government unemployment insurance program pays out at 55% of the previous income level, up to a maximum, for the recipient.

Accordingly it is legitimate to assume that only 45% of the salary from a new job is actually new income⁷⁸.

Finally, in Figure 1 it is clear that some portion of the initial economic impact feeds back into the original economy from the other economies. By ignoring this, the Keynesian income multiplier would underestimate the true impact from treaty compensation. In this regard, the First Nation off-reserve citizens become important. In the provincial jurisdiction model the off-reserve citizenry become the persons most likely to spend money back on the reserve. In the national jurisdiction model the feedbacks work two ways. Some expenditures by on-reserve citizens become off-reserve citizen income and vice versa.

Although there are several criticisms of Keynesian multipliers, the multiplier formulas developed below attempt to respond to as many as possible. The appropriate magnitudes of the many parameters evident in the formulas below are discussed in the following two chapters.

⁷⁸

If a recipient of social assistance was provided employment as a result of treaty settlement, the growth in income would be closer to 60% according to expert opinion.

2.53 The Keynesian Income Multipliers

Based on the observations and conclusions developed in Sections 2.2-2.4, the four household income multiplier formulas below reflect only the direct effect plus the first round interregional feedback and induced effects, and the criticisms of the Keynesian multiplier in this section. These formulas follow from the simple Economy A - Economy B relationship expressed in the top half of Figure 1 where are extensions, at least in the first round, of the method used by Davis (1987) where:

1. The direct effect depends upon the specific multiplicand in each scenario. For households it is simply represented by the parameter Y (suitably adjusted in the citizenship model), but for First Nation governments it is represented by their expenditures which become household income (z). Although miniscule in magnitude the parameter x represent a type of indirect effect.
2. Induced effects take into account industry specific local expenditures (k_i) and the proportion of local expenditures which becomes local income (b) (Tiebout, 1962).
3. Feedback effects consider industry specific expenditures made outside the First Nation economy (d_i), taxes paid (t_s and t_d), the proportion of expenditures becoming income and the proportion of that which feeds back into the First Nation economy (h_i and e).

Scenario 1

This is a residency based First Nation economy (on-reserve) where treaty compensation is distributed to the on-reserve households, who as such are the multiplicands. Essentially, the multiplier below contains the direct (Y), induced ($\sum b_i k_i Y$), and feedback ($\sum b_i h_i (1-t_d) e b_i (1-t_d) d_i Y$) effects discussed above⁷⁹.

$$v_{hl} = (Y + \sum b_i k_i Y + \sum b_i h_i (1-t_d) e b_i (1-t_d) d_i Y) / Y \quad (6)$$

where:

v_{hl} = the income multiplier for on-reserve households in a residency model

Y = the treaty compensation received per household

b_i = income added to the local economy from the purchase of good i adjusted to reflect loss of unemployment insurance⁸⁰

k_i = the marginal propensity to consume local good i ⁸¹

d_i = the marginal propensity to consume foreign good i

⁷⁹ In one scenario, the First Nation government might buy more goods and services from on-reserve suppliers with its treaty compensation money. This would be a type of indirect effect. A type II Keynesian income multiplier is (direct + indirect + induced)÷direct, so this is not quite a type II multiplier since it does not capture the indirect institutional impacts from treaty settlement.

⁸⁰ This adjustment only occurs for one value of the parameter b . As is discussed in the next two chapters the parameter "b" takes on five possible values for on-reserve expenditures and only one of these are differentiated by specific expenditures, i.e. warranting the subscript "i". There are only three possible "b's" for off-reserve expenditures.

⁸¹ This term will be estimated using regression analysis on the cross section of monthly household expenditures for each expenditure type and for each Shuswap community as is discussed in the next two chapters. Moreover, should statistical tests demonstrate a significant difference, than this term will also be adjusted for income differences across each sample.

t_o = off-reserve sales tax paid⁸²

e = proportion of off-reserve citizens employed in off-reserve economy

t_d = direct taxes paid by off-reserve employees

h_i = estimate of proportionate feedback into on-reserve economy for good i

Scenario 2

This is a residency based First Nation economy where treaty compensation is controlled and invested by the on-reserve First Nation government (multiplicand). The recognition of the First Nation government as the primary recipient of the treaty compensation substantially complicates multiplier estimation.

When the government is the multiplicand, a number of possible indirect effects must be considered. For example, when the recipients of treaty compensation are only those First Nation community members located on-reserve, as is the case in this scenario, a significant incentive exists for off-reserve members to return to their home community. This potential influx of persons would likely lead to increased local construction investment by the First Nation

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First Nation persons, pay sales tax on most off-reserve purchases despite the tax exemption provisions concerning on-reserve delivery. *"It was (generally) felt that in most situations involving purchases of a value less than \$500, the additional effort and cost of delivery outweighed the GST (exemption) benefit"* (Brown and Strother, 1991, p. 119)

government⁸³. The possible nature of this indirect effect and its measurement is given more attention in Chapter 4.

The household income formula below has been divided into two parts. The first half captures the induced and feedback⁸⁴ ($xbY + \sum_i b_i h_i (1-t_d) e b_i (1-t_s) (1-x-z)Y$) effects from all non-local wage and salary expenditures by the First Nation government. The second half, beginning with zY , represents the direct, induced and feedback effects from First Nation government expenditures on local wages and salaries.

$$v_{g1} = (xbY + \sum_i b_i h_i (1-t_d) e b_i (1-t_s) (1-x-z)Y + zY + \sum_k b_k k_z Y + \sum_i b_i h_i (1-t_d) e b_i (1-t_s) d_i zY) / Y \quad (7)$$

where:

v_{g1} = the income multiplier for the First Nation government in a residency model

Y = the treaty compensation by the First Nation government

x = proportionate expenditure by the First Nation government on local good and/or services, excluding expenditures on wages and salaries.

b_i = income added to the local economy from the purchase of good i adjusted to reflect loss of unemployment insurance from on-reserve job creation

⁸³ In addition to this example of community infrastructure development, there are a variety of other indirect impacts which may occur in the areas of education, economic development, and resource management - all of which have occurred as a result of other treaty settlements between indigenous peoples and other governments (Government of B.C., 1995 and Government of B.C., 1996).

⁸⁴ The first term xbY represents type of indirect effect. Moreover, as will be evident in Chapter 4, the induced effect from non wage and salary on-reserve expenditure is trivial.

t_i = off-reserve sale tax paid

e = proportion of off-reserve citizens employed in off-reserve economy

t_d = direct taxes paid by off-reserve employees

h_i = estimate of proportionate feedback into on-reserve economy for good i

k_i = the marginal propensity to consume local good i

d_i = the marginal propensity to consume foreign good i

z = proportion of First Nation government expenditures spent directly on wages and salaries on-reserve

Scenario 3

This is a citizenship based First Nation economy (on and off-reserve citizens) where treaty compensation is distributed to all the citizens (households) of the economy. This multiplier is a little more complicated. First, the initial injection must be divided between on and off-reserve citizens. Second, the size of the First Nation economy has been expanded to include two additional impacts; 1) some off-reserve expenditure by on-reserve citizens becomes income for off-reserve citizens and 2) some of the compensation received by off-reserve citizens will be spent back on the reserve. More specifically, in order this formula captures 1) the direct on-reserve effect 2) the induced on-reserve effect 3) the feedback effect from on-reserve compensation 4) the direct off-reserve income effect from on-reserve compensation 5) the

direct off-reserve treaty compensation impact 6) the induced off-reserve income impact from off-reserve treaty compensation and 7) the on-reserve feedback from off-reserve compensation.

$$v_{h2} = (Y_j + \sum_i b_i k_i Y_j + \sum_i b_i h_i (1-t_d) e b_i (1-t_{si}) d_i Y_j + \sum_i (1-t_d) e (1-t_{si}) d_i Y_j + Y_k + \sum_i (1-t_d) e b_i (1-t_{si}) d_i Y_k + \sum_i b_i h_i Y_k) / (Y_j + Y_k) \quad (8)$$

where:

v_{h2} = multiplier for households as multiplicands in the citizenship economy

Y_j = the treaty compensation received per on-reserve citizen

Y_k = the treaty compensation received per off-reserve citizen⁸⁵

b_i = income added to the local economy from the purchase of good i adjusted to reflect loss of unemployment insurance (assumed to remain the same in the feedback round)

d_i = the marginal propensity to consume foreign good i ⁸⁶

t_{si} = off-reserve sale tax paid

e = proportion of off-reserve citizens employed in off-reserve economy

t_d = direct taxes paid by off-reserve employees

h_i = estimate of proportionate feedback into on-reserve economy for good i

⁸⁵ Y_j and Y_k reflect Indian and Northern Affairs of Canada on and off-reserve population estimates for each Shuswap community.

⁸⁶ It is assumed that off-reserve expenditure patterns by off-reserve residents are identical to on-reserve resident import patterns. If anything, this assumption underestimates off-reserve expenditures by off-reserve residents.

Scenario 4

This is a nation based First Nation economy where treaty compensation is controlled and invested by the on-reserve First Nation government. The significant change to this multiplier is that some of the off-reserve expenditures become First Nation citizen income and must be accounted for. The indirect effect considerations raised in scenario 2 must also be addressed in the estimation of this multiplier.

In order, this formula calculates 1) the induced on-reserve impact from on-reserve government expenditures on goods and services 2) the on-reserve feedback effect from off-reserve government expenditures on goods and services 3) the induced off-reserve income effect of off-reserve government expenditures on goods and services 4) the direct effect of government expenditures on the wages and salaries of its citizens 5) the on-reserve induced effect of these wage and salary changes 6) the on-reserve feedback effect of these wage and salary expenditures and 7) the off-reserve induced effect of these wage and salary expenditures

$$v_{g2} = (\sum_i x_i b_i Y + \sum_i b_i h_i (1-t_d) e b_i (1-t_{ai}) (1-x_i -z) Y + \sum_i (1-x_i) (1-t_d) e b_i (1-t_{ai}) (1-x_i -z) Y + z Y + \sum_i b_i k_i z Y + \sum_i b_i h_i (1-t_d) e b_i (1-t_{ai}) d_i z Y + \sum_i (1-t_d) e b_i (1-t_{ai}) d_i z Y) / Y \quad (9)$$

where:

v_{g2} = the multiplier for the First Nation government multiplicand in the citizenship model

Y = is the treaty compensation received by the First Nation government

b_i = income added to the local economy from the purchase of good i , adjusted to reflect loss of unemployment insurance from on-reserve job creation

k_i = is the marginal propensity to consume local on-reserve good i

d_i = the marginal propensity to consume foreign good i

h_i = estimate of proportionate feedback into on-reserve economy for good i

z = proportion of First Nation government expenditures spent directly on wages and salaries on-reserve

x = expenditure by the First Nation government on local goods and services excluding expenditures on wages and salaries.

t_{si} = off-reserve sale tax paid

e = proportion of off-reserve citizens employed in off-reserve economy

t_d = direct taxes paid by off-reserve employees

These four income multipliers form the basis for assessing the economic impact of treaty compensation on two possible types of First Nation economies. Great care has been taken to ensure that, despite the criticisms of the Keynesian techniques, these multipliers are as accurate as possible. It goes without saying, however, that the most important contributing factor to the

precision of these multipliers is the quality of the data. This subject is thoroughly addressed in the next chapter.

Chapter 3 A Review of Data Collection Methods

"The government are very keen on amassing statistics - they collect them, add them raise them to the nth power, take the cube root and prepare wonderful diagrams. But what you must never forget is that every one of those figures comes in the first instance from the village watchman, who just puts down what he damn pleases." (Stamp, 1929, as quoted in White, 1991)

Josiah Stamp's words of warning about data quality appear in some form or another in most Statistics textbooks (White, 1991, Kennedy, 1992). It would be difficult to imagine, however, a population segment where this wisdom is more apt than First Nations. A population more researched than other populations in Canada¹ yet, if the economic indicators in Chapter 2 are used as a metric for policy success, a population that is clearly not well understood.

When policy development research and policy results do not coincide at least one difficult question must be asked. Should we trust the data on First Nations people?

The first section of this Chapter investigates the information collection methodologies for the two principal federal sources of First Nation data, Statistics Canada and the Department of Indian and Northern Affairs. The results of this investigation and in particular the rather alarming differences in their data for the most basic of statistics, population counts for four communities in the Shuswap Nation, are meaningful for three reasons.

¹ From April to September 1991 the Kamloops Shuswap households were asked to complete the Statistics Canada Aboriginal People's Survey pretest, the June Census, a Department of Finance taxation Survey, a Community Future's Economic Development survey and the Aboriginal People's Survey. Many of the questions in these five separate surveys were similar.

First, the suspect quality of the data from these agencies justifies the significant original research conducted for this dissertation. Secondly, the substantial transactions costs incurred by these agencies in collecting information of dubious quality is an important anecdote in Chapter 5. Finally, in a secret policy document from the Department of Indian and Northern Affairs of Canada to the Assembly of First Nations, the Federal government indicated that there would be no discussion under First Nation self government of obtaining jurisdiction over statistical information collection.

In no way, however, does the suspicious quality of Statistics Canada and Department of Indian and Northern Affairs' data, imply that the information on the expenditures of Shuswap Nation households, businesses, and governments collected for this dissertation are any more reliable. Therefore, the second section of this Chapter presents the information collection methodologies, possible biases and adjustment procedures for the original data collected for this dissertation.

3.1 First Nations Data - An Overview

Table I reports the population counts of four Shuswap Nation communities, selected for demonstration purposes, as compiled by the Department of Indian and Northern Affairs and Statistics Canada in 1991. The figures below represent each agency's estimate of all persons living in the particular community. The most basic of all demographic data is the population count. Measurement error in population counts inevitably translates into errors

in other statistics.

Table I 1991 Population Counts for 4 Shuswap Communities

| | Bonaparte | North Thompson | Skeetchestn | Canoe Creek |
|------------------------|-----------|----------------|-------------|-------------|
| Stats Can ² | 197 | 246 | 154 | 201 |
| INAC | 130 | 222 | 128 | 108 |

Statistics Canada - Statistics Canada data compiled from series 95-384 of the 1991 census.

INAC - Department of Indian and Northern Affairs of Canada 1991 on-reserve band membership data

On the surface it would appear that these two government agencies do not agree on the number of people living in these relatively small Shuswap communities. This is rather perplexing since these are the two federal agencies mandated to collect this information.

Indian and Northern Affairs of Canada (INAC) are charged with the onerous task of administering the Indian Act. A major component of their job is to ensure that the federal Government meets its fiduciary responsibility to First Nations³. INAC needs to know how many status Indians there are and where they are located to fulfil its responsibility.

² It really is detective's work to match Statistics Canada data with First Nation communities. Most SNTC communities have two or three populated reserves. Stats Can 95-384 reports the population counts for each reserve. It is then incumbent upon the researcher to put the community back together by adding together the relevant reserves. Moreover some data from reserves is suppressed for reasons of confidentiality including Bonaparte (Upper Hat Creek), North Thompson (Louis Creek), and Canoe Creek (Canoe Creek 2 and Dog Creek 2).

³ This is the fiduciary responsibility that resulted historically from the special relationship between the Crown and aboriginal people, which in many respects is reflected as a trust in the 1763 Royal Proclamation.

INAC collects annual membership data from each First Nation community. The community submits the membership lists to INAC as of December 31 of the previous year. They verify the lists and send back an official population figure to the First Nation community in June of the following year. The figures in Table I were collected sometime in 1991 and reported in June, 1992.

The Government of Canada mandates Statistics Canada to enumerate the population of Canada every 5 years. Although it is seldom used, legislation exists that makes non-compliance with the Census an offence punishable with a fine. As the Government of Canada has a fiduciary responsibility for the First Nation reserves within Canada, it is important to enumerate all persons on lands reserved for Indians. Although Statistics Canada failed in 1981 and 1986 to enumerate the communities of the SNTC (because they did not wish to be enumerated), it achieved this objective in the 1991 census.

"We are committed to complete coverage in our census and other survey taking activities. To accomplish that end, we absolutely need First Nations' help in terms of participating in the 1991 Census and other surveys" (Report on the Joint Conference on a First Nations Data Base and the 1991 Census and Post-Censal Programs, 1990 p. 35).

Although the counting of First Nation heads is clearly fundamental to the mandates of these two Government agencies the accuracy of their population counts is rather suspect. In particular the Statistics Canada 1991 mean population from these four Shuswap communities is 199.5 compared to a 1991 Indian and Northern Affairs mean from the same four Shuswap communities of 147. With a pooled standard deviation of 44.7, the critical t-statistic for a difference of means test is 1.67 which fails at the 14% level of significance.

Although this may not seem serious, it must be remembered that these are not samples taken from the same population, these are actual global head counts of the same population (all probably fewer than 250 people) taken during the same year. Mean population counts differing by over 50 from the same relatively small populations by the two Government agencies whose mandate is to count these people seems rather high⁴.

Perhaps even more alarming is the Statistics Canada 1986-1991 percentage change in Bonaparte population counts⁵. In particular the 1991 population for Bonaparte reserve #3 fell by 4.7% and the population counts for the Lower Hat Creek reserve fell by 15.5%. Such decreases would seem impossible given the amount of new construction in these communities to accommodate community members whose Department of Indian and Northern Affairs, Indian status was reinstated as a result of Bill C-31.

A great deal of insight into the nature of First Nation information collection, the quality of the subsequent data, and transaction costs involved in First Nation information collection can be gleaned from delving into the Shuswap Nation information collection methodologies of Statistics Canada and the Department of Indian and Northern Affairs of Canada.

⁴ To appreciate the aggregated discrepancy which results from these community discrepancies consider that Statistics Canada 94-326 reports 189,325 on reserve First Nation persons in Canada in 1991 and the Department of Indian and Northern Affairs Basic Departmental 1991 data suggests that there are 357,953 First Nation persons (status Indians) living on reserves throughout Canada.

⁵ Although the communities of the SNTC did not officially participate in the 1986 census, census representatives did attempt to enumerate all the SNTC communities. A degree of success was obviously achieved in Bonaparte in 1986.

3.11 Statistics Canada

Statistics Canada made a concerted effort to increase the participation of First Nations in the 1991 Census Survey. The Assembly of First Nations and Statistics Canada developed a new post census⁶ survey on Aboriginal People. This addressed concerns that the Census information was not useful to First Nations. Statistics Canada also developed special aboriginal liaison positions in their regional offices (located in Vancouver for B.C.) to dispel concerns that First Nations were not sufficiently involved in the information collection process. In addition, some First Nations were allowed to help select and recommend appropriate persons for managing Census operations in First Nation communities.

The Shuswap Nation Tribal Council, through negotiations which arose from non-participation in the 1981 and 1986 Censuses, was one such pilot First Nation organization allowed to "manage" the collection of Census information in SNTC communities. Similar agreements were signed by Statistics Canada with the Assembly of Manitoba Chiefs and the Federation of Saskatchewan Indian Nations.

⁶ The Post Census or Aboriginal Peoples Survey took place after the Census in September 1991, and used as its population only those people living on or off reserve reporting aboriginal decent on the Census.

The main element of the SNTC arrangement was a trade of technical expertise from Statistics Canada to help develop the SNTC statistics department, for participation in the 1991 Census operation by the communities of the SNTC⁷. Other components of the agreement included a special census district comprised of SNTC communities, a special census enumeration supervisor nominated by the SNTC, and the appointment of SNTC selected census representatives to conduct the Census in SNTC communities⁸. As a lead up to the 1991 Census, the SNTC also participated in the development and pre-test of the post census survey⁹.

To conduct the 1991 Census, an SNTC-nominated area supervisor was hired. Her contact with Statistics Canada was through their B.C. interior native liaison. Immediately below her, two managers were hired to oversee survey collection within the SNTC communities. These three individuals were given a one week training course on the fundamentals of information collection, data handling, data management, personnel management, and Statistics Canada's policies and administration. Statistics Canada personnel provided the training.

⁷ The major point of disagreement was the ownership of the information. In the agreement the SNTC capitulated to the Statistics Canada argument concerning privacy of information. (Interview with Robert Manuel, April 1991)

⁸ All individuals nominated by the SNTC were subsequently subject to Statistics Canada standards.

⁹ It should be stressed that in the view of Robert Manuel, the Shuswap Nation Tribal Council executive director, that Statistics Canada has lived up to all aspects of the agreement (Robert Manuel interview, June, 1993).

These managers then hired persons from the SNTC communities¹⁰ to conduct the actual Census. These Census representatives also received one week of training on the importance of data confidentiality, understanding the value of the Census, and knowledge of one's Census area. Training was also given about methods for survey communication, form completion, Census information collection methods, and administration. Statistics Canada, and the SNTC nominated supervisor and managers provided the training.

Beginning June 4, 1991, for the first time in 15 years, each Census representative was sent into their particular SNTC community to collect survey information¹¹. Careful notes were kept about the response of each household. In the event of a non-response due to absence the census representative tried three times to contact the household. After this, the census representative registered an official non-response and left the survey for the household to complete and send back to Statistics Canada. Due to the agreement between Statistics Canada and SNTC, and the use of community persons in the information collection exercises, most SNTC communities were politically and administratively co-operative.

The numbers appearing in Table I are the results of the 1991 Census as found in Statistics Canada 95-384. Because the results were reported by reserves and not First Nation community, the population counts in Table I are the aggregation of these reassembled First

¹⁰ Two from the Kamloops Shuswap and one from each of the other SNTC communities.

¹¹ In September of 1991, Statistics Canada also conducted the Aboriginal Peoples Survey. It was intended to meet the information needs of both the Assembly of First Nations, and the Royal Commission on Aboriginal Peoples.

Nations. Each aggregation was done twice to ensure accuracy of reporting.

3.12 Indian and Northern Affairs of Canada

Until the mid 1970's, INAC was the administrative, and subsequently, the decision making unit for most First Nations. Ottawa was the headquarters with regional offices located in each province, and district offices located at the sub-regional level. Typically, policy would be developed at the regional or headquarters level and administered¹² through the Indian agents at the district office.

The flow of information was from the bottom up. The quality of the information was therefore dependent upon the diligence of the district Indian agent.

In the 70's, INAC began devolving district authority to the First Nations¹³. To administer the programs and policy of INAC, these fledgling First Nation administrative units required money. This funding was dependent upon the number of persons within the community. It was imperative, therefore, to keep track of each community's population.

Through several bureaucratic growing pains, an identifiable methodology has evolved to

¹² Generally this would involve the administration of social assistance and education funding to First Nation persons in need, and the administration of housing and capital projects within First Nation communities.

¹³ Not surprisingly, for political and administrative reasons, this sparked the evolution of tribal councils. The tribal council is not generally a First Nation cultural creation.

Keep track of the number of persons in First Nations communities.

Each First Nation¹⁴ has a membership clerk. INAC trains the clerk to fill out the administrative forms necessary for keeping track of population. These forms¹⁵ keep track of births, deaths, migration and C-31¹⁶ reinstatement. Each December these forms are tabulated, copied and sent to the regional offices of INAC on a membership list form.

The regional offices of INAC verify the list by cross referencing the membership list with lists of people receiving social assistance, or attending elementary, secondary, and post secondary institutions. Of course, there are a number of legitimate community members who might not appear on the verification lists. The existence and legitimacy of these "extra" persons would either have to be negotiated or substantiated with more documentation.

By June of the following year, INAC sends back a population figure for the First Nation community. Persons are divided into six categories:

1. Status Indians on the reserve who are members of that First Nation community.
2. Status Indians on the reserve who are members of another First Nation community.

¹⁴ INAC still administers membership for some First Nations.

¹⁵ The number of forms used by First Nation administrations is truly phenomenal. All the forms that could have to be completed for one individual produce a pile over 8 cm thick.

¹⁶ Bill C-31 was passed in 1985 to amend the Indian Act to clarify and expand the definition of status Indian in Canada (see section 6 (1) paragraphs a-f of the Indian Act).

3. Status Indians on Crown land who are members of that First Nation community.
4. Status Indians on Crown land who are members of another unspecified First Nation community.
5. Status Indians on Crown land who are members of a specific First Nation community.
6. Status Indians living off reserve who are members of that First Nation community.

The bureaucratic rules, though are only the surface of this story. The real show is in the funding game played between every First Nation and INAC.

There are a variety of strategies in this game with some being more successful (yielding more funding for the community) than others. Despite the obvious benefit to First Nations it is beyond the scope of this paper to evaluate the variety of strategies employed to secure greater funding from INAC by individual First Nations¹⁷. Suffice it to say that a First Nation community's population is directly linked to the amount of funding it receives and as such these numbers are subject to the game.

The rules of the game are simple. INAC wants a First Nation population to be as low as possible, and the First Nation wants its population to be as high as possible. On the INAC side are the checks and balances discussed above, and on the First Nation side are the skills, guile and strategy of their local administration.

¹⁷

After the money is secured by a particular First Nation the focus of the game switches to subterfuge. First Nations attempt to use the money for their own political or community needs and the Department of Indian and Northern Affairs seeks to ensure that the money is used in accordance with its bureaucratically defined intent. On efficiency grounds alone any one who has participated in this charade quickly appreciates the First Nation desire for self Government.

The game, however, is ongoing and the revelation of a specific community's strategy in a published document would be detrimental to its source. For the reader's enjoyment, however, a few anecdotal strategies follow.

From a strategic perspective, the real game is not played with the membership list submitted to INAC, it is played with the social assistance, and various education lists used to verify the membership list. The membership¹⁸ list, due to continual births, deaths, C-31 reinstatements, and migration, make it relatively easy to maximize the number of "band members". It is just a matter of waiting for the right time to report the largest population on the membership list¹⁹. The trick is to inflate the social assistance and education lists with as many ineligible individuals as possible. Verification and acceptance of the higher membership list by INAC is thus more likely. Interestingly enough, this particular strategy was developed by an employee of INAC and relayed to a "favourite" First Nation administrator.

Along a similar vein, one of the more interesting strategies for some First Nation communities is the employment of former INAC employees, especially former Indian Agents, as administrators. Their ability to manipulate the system is well known by most First Nations. Another strategy involves intimidating INAC by asserting that suspect

¹⁸ This is especially true for on-reserve populations because administrative and capital funding for the particular First Nation is based on population size.

¹⁹ An experienced administrator tracks the population count throughout the year and selects what they believe to be the peak.

population numbers are a product and proof of an inherent right to self government. Yet another strategy depends upon demonstrating fiscal competency and management skill, which somehow confers credibility in population numbers even if these are dubious from an empirical point of view.

Of course to each of these strategies INAC has a counter, the most significant of which is the final say on any dispute. Consequently, it is interesting to note that the INAC figures are lower than those of Statistics Canada in all but one of the Shuswap communities in Table I. This says nothing, however, about which figures are more accurate.

In summary, the principal problem with the reliability of both INAC and Statistics Canada data is one of trust. First Nation persons do not trust how the information is being used so they do not trust the information collectors. Both agencies' data are likely subject to systematic response error. This is the problem the information collected for this dissertation sought to address.

3.2 The Shuswap Information System

In February 1991, SNTC officially²⁰ launched its own Statistics Department. The need for the communities of the SNTC to develop methods for controlling information relevant to

²⁰

This was a culmination of eight years of political pressure and negotiations with Statistics Canada and the Department of Indian and Northern Affairs. In 1991, however, funding was levered from INAC to hire an information system coordinator.

them was seen as a cornerstone to a central goal of the SNTC, namely, the settlement of a "treaty on all matters of moment"²¹ within traditional Shuswap territory. In particular, not only would the SNTC Statistics Department provide credible information for the actual negotiations surrounding treaty settlement, but this new SNTC department would also help develop the necessary management capacity for treaty negotiation and post treaty settlement administration.

In interviews with former SNTC chairman Chief Ron Ignace, and former SNTC executive director Robert Manuel, it was clear that they recognized the value of Shuswap information both to themselves for treaty purposes²², and to Government agencies for policy and management purposes. It was possible, they reasoned, to have the Government pay them to collect the information they needed anyway. Their chief obstacle was a lack of information, management capacity.

Strategically, the SNTC's refusal to participate in the 1981 and 1986 census operations was as much a dispute over information control and relevance as it was a lever to develop Shuswap information management capacity. Add to this the suspect nature of Shuswap statistics and it is clear that the SNTC had placed itself in a superior bargaining position.

²¹ This was taken from the Shuswap Memorial, presented to Sir Wilfred Laurier, Premier of the Dominion of Canada from the Chiefs of the Shuswap, Okanagan, and Couteau Tribes of B.C., August 25, 1910. This document is the basis for most SNTC political strategies.

²² As stated earlier, the goal of the SNTC is to settle a treaty on all "matters of moment" with the Government of Canada. By observing treaty negotiations between other First Nations and the federal Government, the Chiefs of the SNTC had learned that borrowing money from the Canadian Government to collect information for the purpose of negotiating so that this borrowed money could then be subtracted from any final agreement was 1) a poor negotiating strategy and 2) possibly unnecessary.

Thus, the Shuswap Information System (SIS)²³ was conceived in May, 1991 to conduct survey research in the Shuswap Nation communities.

Over the next three years SIS, collected information from 429 Shuswap households, 11 Shuswap Governments, 21 Mt. Paul Industrial Park businesses, and 25 Shuswap businesses. Their survey response results appear in Table II below.

The accuracy and reliability of the survey information gathered by SIS was crucial for three reasons. First, it might be used in treaty negotiations or possible court proceedings between the Shuswaps and the Canadian Government. Secondly, the accuracy of the information, especially in relationship to other information sources (notably Indian and Northern Affairs and Statistics Canada among others) was important for securing Government funding for further SIS research. Finally and perhaps most importantly, the communities of the SNTC needed to rely on this information for local management and planning²⁴.

²³ The acronym is derived from the fact that, aside from its director, all original members of SIS were Shuswap women.

²⁴ In particular, this information, and the ability to utilize it, might form a pillar of First Nation self Government.

Table II Shuswap Information System Survey Results (1991-1994)

| Survey | Date of Survey | Instrument(s) | Dwell-ings | Respon-dents | Resp. Rate |
|--------------------------|--------------------------|--|------------|--------------|------------|
| Thompson Household | May 1991 | Household Expenditure and Human Resource | 75 | 45 | 60 |
| Canoe Creek Household | August 1991 | Household Expenditure and Human Resource | 49 | 34 | 69 |
| Kamloops Household | Sept. 1991 | Dept. of Finance Tax Study ²⁵ | 148 | 118 | 80 |
| Skeetchestn Household | May 1992 | Household Expenditure and Human Resource | 39 | 31 | 79 |
| Bonaparte Household | June 1992 | Household Expenditure and Human Resource | 54 | 35 | 65 |
| Adams Lake Household | July 1992 | Household Expenditure and Human Resource | 72 | 48 | 67 |
| Mt. Paul Ind. Pk. Survey | August, 1992 | Business Employ. and Expend Survey | 121 (bus) | 19 (bus) | 17% |
| Neskonlith Household | June 1993 | Household Expenditure and Human Resource | 54 | 41 | 76 |
| Whisp. Pines Household | June 1993 | Household Expenditure and Human Resource | 15 | 14 | 93 |
| Spallumcheen Household | July 1993 | Household Expenditure and Human Resource | 92 | 63 | 68 |
| Shuswap Gov. Survey | Feb, 1992 - August, 1993 | Band Government Employ. and Expend. | 11 (govts) | 6 (govts) | 56 |
| Shuswap Bus. Survey | January, 1994 | Shuswap Business Employ. and Expend | N/A | 25 | N/A |

The remainder of this Chapter is devoted to discussing the quality of the SIS data.

Specifically, the information collection methodology and possible statistical biases of every

²⁵ A different survey instrument was used in Kamloops for financial and political reasons. First, as will be discussed in Chapter 5, collecting this information was costly and the SNTC had to search among all sources, including the Department of Finance to find funding. Secondly, as will also be discussed in Chapter 5, the Kamloops Shuswaps wish to assert greater taxation powers and a Department of Finance study was seen as a component in that plan.

non Statistics Canada survey used in this dissertation will be presented. In addition, Appendix B contains a copy of all the survey instruments and Appendix C clarifies potentially confusing definitions for specific expenditure data fields.

3.21 The Household Survey

To estimate the treaty compensation impact parameters identified in the previous Chapter, this is the most important source of data. The Shuswap household surveys will provide estimates of the marginal propensity to consume 14 different local goods and services (k_i)²⁶, and the marginal propensity to consume 14 different imported goods and services (d_i) for 5 different Shuswap communities. These estimates form the foundation of the Keynesian multiplier technique and are used in all four treaty compensation scenarios discussed in Chapter 2. It is critical that the detailed expenditure data with which these estimates are made be reliable. The methodological review of the household surveys is therefore more rigorous than for the other survey instruments.

Perhaps the best approach to summarize the methodology employed by the SIS project team with the household surveys is to chronicle the experience with the term "economic leakage". Although the term is well understood by economists, the twisted faces and groans of disgust which the SIS project team emitted upon hearing the phrase suggested a connotation problem. After much discussion and evidence provided by the SIS project team

²⁶

The estimates of k_i will also be employed as proxies for one of the feedback effects (h_1).

the principal researcher finally consented to use more appropriate community sensitive terms in the survey exercises, such as "Community Economic Development Study."

In other words, information collection should be designed from the bottom up. The source of expertise in survey information is the respondent. Therefore, the structure of survey information collection should focus on those incentives which maximize the expert's sincerity.

"Two factors are generally very important in the client's estimate of the evidential significance of an expert's report: (1) the motivation for the expert to be sincere (to tell the truth as he sees it) and (2) the expert's motivation to invest the effort necessary to be accurate. These factors are, to some extent at least, subject to influence via the contractual reward structure" (Hirshliefer and Riley, 1992, p. 211).

In this regard, the SIS interviewers consistently emphasized the importance of the data for community economic and business development to appeal to the respondent sense of community. Coupled with constant reassurances of community information ownership and a conscientious effort to develop a draft report shortly after the survey (see Appendix B), the SIS project team hoped to optimize not only survey participation but also respondent accuracy.

As an illustration of the methodology employed, the following lengthy excerpt has been extracted from the Canoe Creek economic development study from August, 1991.

"The objective of the Shuswap Information System (SIS) is to help bands plan effectively by having access to timely, relevant, and accurate information. The underlying philosophy of the

SIS is to engender an appreciation for information among community members to ensure its collection and usage at the community level. Furthermore for this particular survey when community members can appreciate the relevancy of the information collected they are likely to provide accurate information (assuming of course, that important issues such as confidentiality and information ownership are given full consideration).

The first phase of this methodology is to secure administrative and community support. This was accomplished by:

- ▶ *Meeting with the Chief, Council and Administration to explain the survey (brochure and slide presentation)*
- *Attending an Elders gathering hosted by the band. This was attended to become familiar with the community location as well as meeting the elders of the community.*
- ▶ *Contacting and meeting with community clubs and organizations like Women's groups, Youth groups, club organizers and family representatives*

Obtaining the support of these vital community members was necessary before embarking on the implementation of the Economic Leakage survey. Camping within the community for 8 days the SIS team implemented the survey by:

- *Setting up a temporary work station in the band community hall*
- *Meeting with the administrator and securing a community map, phone list, and the number of households*
- ▶ *Having continuous slide presentations throughout the first two days and evenings. Answering and clarifying questions, and concerns about the study.*
- *Contacting and arranging a convenient time and place with each household from the temporary work station.*
- *Explaining the relevancy and importance of this survey to all respondents at the time of interviews."*

- (Le Dressay, and SIS, 1991)

The methods for communication and information collection would be varied slightly by the SIS project team as the needs and structure of the particular SNTC community under survey warranted. For example, in some communities elders would be asked to introduce the researchers into houses which were uncomfortable with the exercise, or information would be collected for each reserve in the community (much like Statistics Canada) as

opposed to the community as a whole²⁷.

The content of the survey was not significantly different from community to community²⁸.

The SIS project team, like Statistics Canada, kept detailed response records, and limited its number of call backs for each household to three²⁹. Most importantly, in each community the SIS project team stressed that the community had ownership of the information. For this reason only the communities of Adams Lake, Neskonlith, Skeetchestn, Bonaparte and Whispering Pines are used in the detailed multiplier analysis in the following Chapter since these are the only SNTC communities to give permission to use their detailed disaggregated household data for these purposes³⁰.

²⁷ The Neskonlith community wanted separate reports for its Chase and Salmon Arm reserves owing to geographical and political differences. For this dissertation though, Neskonlith has been statistically reconstructed.

²⁸ Each community had different concerns which the SIS project team would accommodate in their research. The basic survey, however, was not altered significantly between each community. This does not apply to the original survey used in North Thompson which had at least three expenditure categories less than later surveys, and the survey used in Kamloops which was designed and sponsored by the Department of Finance and was radically different from other surveys. Neither of these communities is included in formal multiplier estimates in the next Chapter.

²⁹ Training was also eventually standardized. Training for the initial researchers was conducted by the First Nations Resource Research Council in Alberta and by Statistics Canada. Through time, however, and given their familiarity with communities, SIS developed more community orientated approaches to information collection. These approaches appear in a SIS training guide developed for the Community Development Studies in the summer of 1992. The formal data definitions contained in Appendix C are taken from this guide. Moreover, only those communities surveyed after this guide was complete (Bonaparte, Whispering Pines, Skeetchestn, Adams' Lake and Neskonlith) are used in the treaty compensation impact assessment estimates in the next Chapter.

³⁰ Spallumcheen and Canoe Creek are no longer members of the SNTC. Although the expenditures from Canoe Creek are featured in aggregate form in the previous Chapter the protocol and data re-entry necessary for their disaggregated utilization was thought to be too laborious.

Statistics Canada (95-384) cites five types of errors that may occur in any survey exercise; processing errors, sampling errors, coverage errors, non-response errors, and response errors. Each of these will be reviewed separately with respect to the SIS household surveys³¹.

"Coverage errors occur when dwelling and/or individuals are missed, incorrectly included or double counted" (Statistics Canada 95-384, p. 248).

By directly involving the community leaders, the administration, and by developing a presence in the community the SIS project hoped to significantly reduce this form of bias. It is impossible to completely eliminate this form of bias, however, due to the nature of First Nation communities. Dwellings in First Nation communities are often difficult to find and access because they are dispersed. It is likely that if such errors did occur, they were omissions of dwellings and persons which would bias the SNTC and Statistics Canada population count results downwards. Table III indicates that perhaps Statistics Canada (95-384) was more vulnerable to this form of error than was the SNTC.

³¹ Since these surveys were intended to be global community samples there is no need to review sampling errors.

Table III Dwelling Counts for Selected SNTC Communities

| | Bonaparte | Canoe Creek | North Thompson ³² | Skeetchestn | Adams Lake |
|-------------------|-----------|-------------|------------------------------|-------------|-----------------|
| Statistics Canada | 45 | 40 | 70 | 40 | ? ³³ |
| SIS | 54 | 49 | 75 | 39 | 72 |

Statistics Canada data was collected in June 1991. There was no data available for the Adams Lake community, or the Upper Hat Creek reserve in the Bonaparte community in Statistics Canada 95-384. SIS data was collected in the summer of 1991 and 1992. Adjustments were made through personal communications with community administrations to reflect 1991 estimates.

Other than Skeetchestn, SIS consistently reports more dwellings than Statistics Canada. Such discrepancies in houses is hard to account for given the stationary nature of most dwellings. In fairness, however, Statistics Canada does not report dwelling counts for suppressed communities³⁴. If there is downward bias in the global sample estimate then the inability to access specific households could result in non-response bias.

"Non-response errors result when responses cannot be obtained from a small number of households and/or individuals because of extended absence or some other reason" (Statistics Canada 95-384, p. 248).

There are a variety of reasons for persons to be absent from First Nation communities

³² Canoe Creek and North Thompson are included as opposed to Neskonlith and Whispering Pines since the administrative research for this table was conducted in 1993 before the conduct of the Neskonlith and Whispering Pine research.

³³ No Statistics Canada Adams Lake estimates could be found, even under the traditional Shuswap language name of Cstélnec (people of Adams Lake). Moreover no reference to Adams Lake could be found in Statistics Canada 94-326, *Canada's Aboriginal Population by Census Subdivision and Census Metropolitan Areas* which seemed to contain reserves from all other Shuswap Nation communities. The apparent exclusion of Adams Lake is particularly surprising since this area was enumerated according to the Census area manager.

³⁴ This term refers to particular reserves whose population was too small to report for confidentiality reasons.

ranging from employment to education to cultural reasons. Since most of the household surveys were conducted in the summer, the potential for missing persons due to seasonal employment, hunting, and fishing exists. However, a number of students not normally on reserves may be present during this time so it is difficult to fully ascertain the direction of this bias. Therefore, as with all symptoms of statistical uncertainty, the prescription for the SNTC population counts is caution.

It is worth mentioning, however, that no significant difference existed between the mean SIS population estimate for Bonaparte, Skeetchestn, Canoe Creek and North Thompson and the Statistics Canada population estimates for these communities³⁵. The same, however, cannot be said for the SIS and INAC mean populations for these communities.

Regardless, SIS was still cognisant of the potential of non-response errors and sought innovative cost effective methods for gauging its impact. The following has been extracted from *Community Economic Development Summary Report for the Shuswap People of Neskonlith* (Le Dressay and SIS, 1993):

The SIS team tried to guess the socio-economic situation of the non-respondents by observing and comparing three types of assets in the non-respondents' and respondents' yards: the type of dwelling, the type and year of any vehicles, and if present the type and health of any pets. Although certainly not foolproof, there were no glaring economic differences in the nu

³⁵

It is interesting to note, however, that Statistics Canada indicates in its results if the non-response rate was over 5% or over 25%. No such indications were given for the community statistics appearing in Tables 1 and 3 of this Chapter.

*response population vs. the respondent population*³⁶. *The houses were about the same, the vehicles were similar, and their pets all had relatively similar nutritional levels.*"

A more difficult form of survey bias to evaluate is response bias.

"Response errors occur when the respondent, or sometimes the Census Representative, misunderstands a census question and records an incorrect response" (Statistics Canada 95-384, p. 248)

A primary objective of the SIS project team was to dramatically reduce respondent bias through more community orientated information collection techniques. The SIS team also tried to reduce its own interpretive bias by standardizing the SIS training manual in 1992. The surveys conducted in 1991, however, may contain bias as many of the questions in the surveys are subject to varying interviewer interpretations. For this reason none of the 1992 data is used for disaggregated treaty compensation impact assessment estimates.

It has also been previously discussed that many Shuswap (and likely many First Nation) communities were and are still suffering from survey fatigue. This might contribute to non-completion or haphazard completion of the important detailed expenditure question in the household survey³⁷. Furthermore, despite all the efforts to build trust, the questions on the survey may still have been interpreted as highly personal and were thus subject to response

³⁶ Given the general economic environment of Shuswap communities presented in the last Chapter this should come as little surprise. As further indication of the general equality consider the coefficient of variation (standard deviation/mean) for the total household monthly expenditures of 167 households was .62 and over 73% of this sample fell within one standard deviation of the mean.

³⁷ A specific response error which is evident in some SNTC data is the relatively low leakage for housing costs. Most on-reserve houses are Canadian Mortgage and Housing Corporation approved and sponsored so that whereas housing payments are made on reserve, these are really just paper transactions for an ultimate off-reserve recipient.

error³⁸.

Of particular concern in this regard, is the question concerning annual household income. This variable is crucial for estimating marginal propensities. Following Statistics Canada techniques, (Smith, 1994) for estimating the informal economy, therefore, the reported survey response to annual income is ignored and aggregate average monthly expenditure is used instead³⁹. This method is valid if the monthly expenditure categories are all encompassing⁴⁰. As is evident in Appendix C, this is clearly not the case with these surveys. In particular, three broad categories have been left out of the SIS survey which appear in the Statistics Canada Family Expenditure Survey - security, taxes, and household furnishings. For practical purposes security is inconsequential and Section 87 of the Indian

³⁸ Statistics Canada was also particularly vulnerable to response errors. Discussions with some respondents indicate that some persons within these 5 SNTC communities felt that the Census information might be used as a basis for future personal taxation. As such they felt compelled to underreport the number of employed persons in their household, or the level of employment. In this regard, the survey instrument is important in reducing response errors. In order to aggregate individual responses, Statistics Canada must standardize its census questionnaire. A number of First Nations persons maintain that this standardization does not reflect their unique socio-economic circumstances and cultural identity.

³⁹ In practical terms, this issue only arose in one of the three communities investigated to test this method. Specifically, the difference between these two measures of household income was not statistically significant at the 10% level of significance for Bonaparte or Whispering Pines but there was a significant difference in Skeetchestn. In Skeetchestn the monthly expenditure derived average income (removing outliers) was \$20,311 (n = 28) and the reported average household income average (corresponding outliers removed) was \$17,706 (n=28).

⁴⁰ To estimate the size of the informal economy, i.e. income which escapes the bureaucracy (Smith, 1994, p. 3.29) suggests "market based production of goods whether legal or illegal that escape detection in the official estimates" are more likely to be captured by tracking expenditures as opposed to incomes.

Act implies most on reserve households do not pay taxes⁴¹, so the only significant exclusion from this survey is household furnishings. This exclusion, when all household furnishings are imports, should bias the marginal propensities to consume locally upward, and the marginal propensities to import downward. These possible biases are discussed in the next Chapter.

"Processing errors can occur at various steps including: coding when 'write in' responses are transformed into numerical codes, data capture when responses are transferred from the ... questionnaire to computer ... and imputation when a 'valid', but not necessarily, correct response is inserted into a record by the computer to replace missing ... data" Statistics Canada, 94-325, p.263.

The SIS project team did not employ the same methodological rigour to this portion of data collection which Statistics Canada would. The data bases were designed and the data was entered usually by one or two SIS project team members. The data was then reviewed by the principal researcher to check for any flagrant errors. Certainly errors would occur. The bias direction is unknown.

Despite there being no formal tests for processing errors, a substantial degree of confidence is placed in the reliability of the SIS data. In particular, the community oriented information collection techniques employed by SIS are believed to generate lower response and

⁴¹

There are exceptions to this assumption that on reserve community members do not pay tax. When this assumption is violated, monthly expenditure totals would underestimate monthly income by 15.6% (Statistics Canada 13-216 direct tax rate for Thompson-Nicola region). The best guess is that this applies to 5% of the on reserve working population. Since taxes are all imports anyway the impact of excluding this expenditure for a few households would be to bias the marginal propensities to consume local goods upward and marginal propensity to consume imports downward.

coverage biases than the methods used by Statistics Canada and the Department of Indian and Northern Affairs. This assertion, though, is subject to further testing (Le Dressay, 1994, p. 68).

3.22 Band Government Employment and Expenditure Survey

Appendix B contains a copy of the Band⁴² Government and SNTC Affiliated Organizations Survey. The Shuswap Government employment and expenditure estimates will be used for estimating the parameters x and z in treaty impact scenarios 2 and 4. z represents the proportion of Shuswap Government wage and salary expenditures made to on reserve residents. x represents the proportion of non-wage and salary Shuswap Government expenditures made on-reserve - a type of indirect effect. $1 - x - z$ is therefore the proportion of non wage and salary expenditures made off-reserve. Since both z and x are proportionate parameters, no regression techniques are required but their accuracy is still dependent upon the biases inherent in the data collection procedure.

The Band Government and SNTC Affiliated Organizations Survey contains a number of detailed and rather confidential questions. Specifically, this survey consists of a band Government employment profile, and a detailed band Government expenditure characterization. The sensitive nature of this survey suggested that it was essential to

⁴² To some First Nation leaders the term band is offensive given its Indian Act origin. Since these forms were to be completed by Shuswap community Government administrators who are intimately familiar with the Indian Act, the term band was used to prevent any undue semantic confusion.

solicit a degree of trust in the information collectors, and the eventual information usage to ensure completion of the survey by the appropriate Shuswap Government personnel, i.e. to reduce response and non-response bias.

It was hypothesized that the completion of three on-reserve household expenditure studies before distributing the band Government survey would help demonstrate the reliability of the SIS team. Moreover, by conducting the Governmental study in conjunction with the household study it was hoped that issues of relevance and confidentiality could be addressed at the same time. Attention to these issues, however, proved to be a red herring as the real constraint to completing these surveys was time.

A trial survey was originally sent out in October, 1991 to selected SNTC communities. The final survey draft was sent out en masse to all SNTC communities in February, 1992. Ideally, the survey was intended for completion by the band administrator/manager. The SIS team made sure that these individuals received the survey and understood its value. Other concerns such as confidentiality, the meaning of specific questions and the projected completion date were also addressed during this communications phase. Despite the usage of these proven methods, survey participation by Shuswap Governments was not particularly enthusiastic.

By July, 1993 six Shuswap Government organizations (Whispering Pines, Skeetchestn, Kamloops, Bonaparte, Shuswap Nation Tribal Council and Secwempe Cultural Education

Society) had completed the detailed survey. To obtain a more complete analysis of the SNTC community Governments alternative data collection methods were employed. Specifically, the salient information from two other Shuswap Governments (Adams Lake and Canoe Creek) was obtained from some limited audit information⁴³, and one organization (Neskonlith) only answered questions concerning global budgets and community priorities.

On the basis of this information, Table X in Chapter 2 was developed. Specifically, the expenditure behaviour of Skeetchestn and Neskonlith were considered similar given their near identical (at that time) community priorities, their similarity in local economic infrastructure (both have a gas station and a convenience store), and their proximity to Kamloops⁴⁴. The Adams Lake and Canoe Creek data was extrapolated from their audits on the basis of the aggregate expenditure behaviour of the six reporting Shuswap Governments⁴⁵. For all intents and purposes, therefore, the estimation of x and z will be based on the expenditure proportions extracted from the six completed surveys.

These parameter estimates are adjusted, however, by the information contained in Table

⁴³ Each year First Nation Governments are audited in accordance with Indian and Northern Affairs of Canada policy.

⁴⁴ Along Highway #1 Neskonlith is about 50 km east of Kamloops and Skeetchestn is about 50 km west of Kamloops.

⁴⁵ Since Canoe Creek is more isolated and self sufficient this procedure might underestimate their actual on reserve Government expenditures, but the Adams Lake community has few on reserve businesses so this procedure probably overestimates their on reserve expenditures.

XVII concerning Shuswap Government employment. For example, z will be adjusted in treaty compensation scenario 2 to reflect the obvious literal response bias on the expenditure location of wages and salaries. Although the payment of these wages and salaries occurs on reserve, a significant proportion of First Nation Government employees clearly live off reserve. As is discussed in the next Chapter, z is adjusted by 60% in treaty compensation scenario 2 to reflect the employment of local persons, and by 81% in treaty compensation scenario 4 where only the proportional employment of non-natives is subtracted.

3.23 On-Reserve Business Study

Appendix B contains a copy of the Shuswap Nation business study instrument conducted between February and April 1994 by direct surveys and phone follow ups. Although a few businesses in the sample were drawn from Neskonlith and Kamloops, most of the sample was drawn from the Skeetchestn and Bonaparte communities. These surveys were intended to provide the necessary information for estimating b - the proportion of on reserve expenditure which would become on-reserve income.

Of all the Shuswap surveys, this turned out to be the most difficult to conduct. This was principally a result of there being no existing Shuswap business directory. Without knowing either the global population or at least the location of the global population it is difficult to conduct a proper statistical sample. Therefore, it is statistically impossible to determine

whether the sample results from this survey are representative of Shuswap businesses.

On reflection, however, this sample may not be unrepresentative. For reasons explained previously, the two most prevalent products sold on reserve are tobacco and gasoline. This survey captures the behaviour of three relatively important tobacco and gasoline retailers in Bonaparte, Skeetchestn and Neskonlith. Moreover, due to the small market size of reserves and the Section 87 tax exemption, most reserves contain a number of home based proprietorships⁴⁶ (baking, crafts, small scale construction, etc). The surveys conducted in Skeetchestn focussed on the expenditure behaviour of these smaller on reserve entrepreneurs⁴⁷.

Despite this apparent anecdotal support, the statistical reliability of the Shuswap business studies remains cloudy. Therefore, there are three principal estimates of b in Chapter 4. The first relies on wages and salaries as a proportion of total expenditure data collected in the Shuswap business studies. It is assumed to be the same for all on-reserve expenditures. The second estimate uses the national data in *Statistics Canada 62-214*. The retailers employee earnings field is divided by the total revenue field and the particular retail industry is matched with the appropriate expenditure category from the household survey. This gives

⁴⁶ Although outside the scope of this study it bears noting that a certain entrepreneurial spirit is developing within the Shuswap communities as evidenced by the on reserve popularity of the British Columbia Government's home based business program, and the All Nation Trust community lending circle project.

⁴⁷ This is in no small part a result of the person conducting the Skeetchestn business survey, Louella Jules, a well known and respected Skeetchestn resident and Simon Fraser University student.

more than one estimate of b , depending upon the particular industry. The third estimate uses the wages and salaries to expenditure ratio from the Mount Paul Industrial Park survey.

3.24 Mount Paul Industrial Park Survey

The results from this survey are used not only to provide one estimate of b , but also to adjust all of the b estimates to reflect the low levels of Shuswap employment in the Mount Paul Industrial Park. This adjustment is particularly appropriate because a number of on-reserve Shuswap Government and household expenditures could have been made at the Mount Paul Industrial Park. As was made clear in Chapter 2, there is a clear employment distinction between the Mount Paul businesses and the First Nation owned businesses - the former hiring nearly 97% non-native staff. This consideration necessitates two estimates of each principal b discussed above, one for expenditures made at a Shuswap business and one for expenditures made at a non-native Mount Paul Industrial Park type business. The result is five estimates of the parameter b . The various values of b ranging from low to high are partially intended to respond to the Friedmanian, Ricardian, and general neoclassical criticisms of the Keynesian methods used here, since lower parameter values for b will translate into lower multiplier estimates.

Appendix B contains a copy of the correspondence and the final survey sent to the businesses of the Mount Paul Industrial Park. The original correspondence was sent to these businesses on April 2, 1992 from Chief Manny Jules, representing the Shuswap people of

Kamloops⁴⁸. Survey design, pretesting, and modification took place between April and July 1992. The survey was hand delivered⁴⁹ to 121 businesses on the Kamloops Indian Reserve between July 16-July 20.

The original deadline for receipt of completed surveys was August 15, 1992. Poor response and concerns about the sensitive nature of the survey's questions resulted in a more intensive communications effort. Three separate phone follow ups to the 121 businesses were carried out between August 15 and September 30, 1992. As a result of this effort a 16% response rate was achieved (19 out of 121).

With such a substantial potential non-response error it is difficult to ascertain the representativeness of the 19 surveys. As mentioned in the previous Chapter, this concern is reduced somewhat by the near perfect correlation between the normalized property tax estimate and the actual property tax estimate.

3.25 Royal Commission on Aboriginal Peoples Household survey

Whereas a boundary and administrative system exists on reserve no such boundary or Government exists off-reserve. So similar to the Shuswap business study, no publicly

⁴⁸ The letter, at least in part, was intended to reduce non-response and response bias.

⁴⁹ Hand-delivery of surveys generally produces higher response rates than do survey mail-outs, but is far less effective than direct face to face survey completion. Although the third option is obviously the preferred choice, cost and time considerations resulted in the surveys being hand-delivered.

available global population data base by location exists for off-reserve Shuswaps⁵⁰.

The principal aim, therefore, of the off-reserve survey contained in Appendix B was to identify the members of the off-reserve community. After a pretest in June 1993, the survey was mailed out to the householders of the Kamloops Native Housing Society housing project in late June. The completed surveys were returned to the Friendship Society via the housing managers.

Surveys were also handed out at functions put on by the Friendship Society and given verbal endorsements at these functions to help reduce response and non-response bias. A number of surveys were also left at different locations in the Friendship Centre, the Art Shop, the Storefront School and the Health Centre. At each location there was an explanatory poster and a survey deposit box.

Approximately 300 surveys in total were distributed and 52 were returned by the end of July. It is of course impossible to estimate the direction or extent of the non-response bias.

A summary of the complete survey results are contained in Appendix B. These survey results are primarily used to support general assumptions about the feedback components

⁵⁰ Of course, records of off-reserve Shuswap citizens are kept by the Department of Indian and Northern Affairs but access to this information is restricted and, as discussed earlier, its reliability is suspect. To appreciate this last comment consider that Statistics Canada 94-326 reports 826,970 people of Aboriginal origin living off reserve in 1991 and the Department of Indian and Northern Affairs Basic Departmental Data from its Quantitative Analysis and Socio Demographic Research Brand reports 207,032 registered First Nation persons living off-reserve. Each has a different definition of aboriginal but for determination of the global off-reserve population this point is moot.

of the treaty compensation scenarios.

First, the lower incomes in these studies support the assumption that there is probably little feedback to the on-reserve economy from off-reserve residents. The feedback parameter h_i takes on two possible sets of values to reflect this observation. Secondly, the most common meeting place of the off-reserve First Nation community was at the place of employment⁵¹. Since the largest employer of First Nations people is on-reserve Governments it will be assumed for treaty compensation impact assessment Scenarios 3 and 4 that the parameter z will have to be raised so that only non-native Government employees are subtracted.

The remaining parameter for estimating the impact from treaty compensation will be drawn from Statistics Canada sources. In particular the parameter e will be the ratio of the total off-reserve aboriginal employment estimate (605) in the 1986 Statistics Canada customized report for the Kamloops off-reserve community and the total employment for all of Kamloops (30,565) in Statistics Canada 95-116. The resultant .02 ratio assumes:

- 1) All off-reserve expenditures are made in Kamloops (clearly false from Table X in Chapter 2) or, when expenditures are not made in Kamloops, off-reserve expenditures in other locations have similar aboriginal to total employment ratios.

⁵¹ Of the fifty-two respondents to the RCAP off-reserve survey 17.2% socialized with member of their own community at work compared to 13% at the Friendship Centre, among other choices.

- 2) Only First Nation persons spend money at on-reserve businesses⁵²
- 3) The aboriginal proportion of the Kamloops labour force has not changed in the last 10 years and
- 4) The Statistics Canada data is not subject to any of the collection biases discussed in this Chapter.

With all of the various data and parameter estimation caveats introduced in this Chapter in mind the next Chapter focusses on estimating the impact of treaty compensation settlement on First Nations economies.

⁵²

This assumption is obviously not true given the provincial Government's concern over tobacco tax revenue being lost because of on reserve sales to non-natives. An adjustment for the violation of this assumption is made to the second feedback parameter h_2 .

Chapter 4 - Bungee Economics

The Household Income and Federal and Provincial Taxation Multipliers

Bungee Economics: A phenomena where government resource transfers briefly enter a community or region and then bounce back as tax dollars towards their original source.

The Government of Canada will pay out over the next 20 years \$5 billion to First Nations to help achieve treaty settlement between themselves, the Government of B.C. and First Nations (Government of B.C., 1996, p. 2). To what extent will this infusion of money benefit the First Nation economy¹? Also, how much tax revenue will bounce back to Federal and Provincial revenues? These are the questions which this chapter seeks to address.

4.1 Parameterization

To estimate the economic impact of treaty compensation four possible Scenarios have been described. In addition to these four Scenarios there are six different First Nation communities², 22 different expenditure categories and eight estimated parameters. Alone this combination would yield at least four 9 x 23 tables of impact estimates. However, as a result of the information collection methodology discussed in the previous chapter, some of the parameters are subject to possible bias necessitating sensitivity analysis. In particular, six of the eight

¹ It is estimated that over the next 20 years of anticipated treaty settlements that the residents of B.C. will bear \$2 billion in costs and reap \$6 billion in benefits, primarily as a result of the large infusion of cash from outside sources, i.e. the Canadian Government and by proxy other Canadian tax payers (Government of B.C., 1996 p. 2). In many ways this sounds like a megaproject for the non-First Nation residents of B.C..

² This includes the aggregation of the five individual Shuswap communities used in this research.

parameters are not formally estimated by regression techniques. Of these six, three are particularly vulnerable to estimation bias. The remainder of this section discusses the parameterization which results from these estimation biases.

The parameter " b_i " which estimates the proportion of on-reserve sales that becomes on-reserve income is subject to the non-response bias inherent in both on-reserve business studies. This parameter also implicitly contains the proportionate Shuswap employment at on-reserve businesses. This was clearly demonstrated in Chapter 2 to be dependent upon the ownership of the business, Shuswap or non-Shuswap. As a result, and in an effort to introduce some sensitivity analysis, this parameter can have five possible values. Note that where it was not possible to distinguish between different expenditure categories the same value of b is used and the subscript i is omitted. This occurs in four of the five estimates of this parameter.

- b₁: This represents the wages and salary to total expenditure ratio from the aggregated 25 businesses in the Shuswap on-reserve business study. The value is .11 when all employees of Shuswap business are Shuswap residents.
- b_{i,2}: Since there was non response bias in the Shuswap on-reserve business study this parameter uses *Statistics Canada 63-223 1992 Annual Retail Trade* average employee earnings as a proportion of retail sales. Because these proportions have been divided into a number of different types of retailers, the estimate corresponds to a particular expenditure category in the Shuswap household expenditure survey³. For example, the

³

The ratio of wages and salaries/sales in *Statistics Canada 63-223* was relatively consistent. The Canadian average was .11 in 1988, 1989 and 1991, and even the more detailed

wages and salaries/sales ratio for grocery stores was .10 so for the groceries expenditure category this is the value of $b_{groceries}$ ². Where no type of retailer is appropriate the Canadian average of .11 is used.

- b3: This estimate uses the payroll-to-expenditure data from the Mount Paul Industrial Park survey. The resultant parameter is .14.
- b4: This parameter adjusts the average value of the parameters b1, b2 and b3 (.125) by the proportionate (3.15%) First Nation employment in the Mount Paul Industrial Park. The value of b4 is .00375. b4, however, only applies to direct on-reserve expenditures as the feedback "b's" are already adjusted for proportionate First Nation off-reserve employment by the parameter "e". This low estimate of sales becoming local income is included to embody some of the Friedman/Ricardian criticisms of the Keynesian methodology, i.e. this low value almost nullifies any multiplier effect. It also takes into account any First Nation initiatives which do not specify a target level of First Nation employment⁴.
- b5: This estimate adjusts the average value of b1, b2 and b3 (.125) by the estimated proportional difference between unemployment insurance and full time employment (Sinclair and Sutcliffe, 1978). The purpose of b5 is to account for the hypothesis that new employment will only generate income over and above what is already being received on unemployment insurance. Since there is also a high degree of reliance on

estimates for groceries stores and service stations were consistent from 1988 to 1992 at .10 and .08 respectively.

⁴ A recent land development initiative by the Kamloops Shuswap contains no targets for First Nation employment in the project.

social assistance within these Shuswap communities and social assistance payments are less than unemployment insurance, the average of value of b1, b2 and b3 is adjusted by .45⁵. The estimated value of this parameter is rounded to .06.

The parameter "z" represents the proportion of Shuswap Government expenditure on wages and salaries. It is adjusted to account for the response bias intrinsic in the on-reserve wages and salary estimate in Chapter 2. Only a proportion of Shuswap Government expenditures on wages and salaries actually becomes wages and salaries. In addition, the scope of treaty jurisdiction (resident or citizen) further impacts this estimate.

z1: This represents the amount of Shuswap Government wage and salary expenditures which actually becomes the income of on-reserve residents i.e. the direct household effect of Shuswap Government expenditure. From Table XII in Chapter 2, 44% of all Shuswap Government expenditures are made on-reserve⁶. The proportion of this expenditure which actually becomes on-reserve income is dependent upon the location of the Shuswap Government. For the Shuswap Governments in the Kamloops area only

⁵ Unemployment insurance is assumed to pay about 52% of past employment income and social assistance is assumed to pay about 40% of employment income. With slightly more recipients of social assistance than unemployment insurance it was weighted slightly higher.

⁶ This includes all on-reserve Shuswap Government expenditures except pension plan contributions, auditing fees, and institutional care which were thought to be subject to response bias. This explains the difference between the 48% on-reserve expenditure referred to in Chapter 2 and the 44% figure here.

44% of all wages and salaries goes to on-reserve residents⁷. The number of on-reserve residents is significantly higher, however, for Shuswap Governments outside Kamloops⁸. In the absence of more elaborate survey instruments, direct on-reserve Government expenditures (.44) is multiplied by an estimation of the proportion of on-reserve resident employees (.65) to develop a z1 estimate of .29.

- z2: For Scenarios 3 and 4 it is not necessary to distinguish between on and off-reserve residents so this parameter only adjusts for the proportion of non-native Shuswap wage and salary recipients (15%) as was reported in Chapter 2. Thus the estimate of z2 is $.85 \times .44 = .37$.

Because of the poor quality of the off-reserve data, the h_i feedback parameter for on-reserve expenditures by off-reserve persons is also assumed to take on two possible values.

- h_{i1} : Without off-reserve expenditure behaviour data the feedback to on-reserve businesses is assumed to be identical to the estimated on-reserve expenditure data. Under this assumption h_{i1} is equal to k_i for the particular community.
- h_{i2} : In keeping with the economic rationality assumption discussed in Chapter 2, h_{i2} is assumed to be equal to one for those commodities where there is distinct price

7

This figure was determined from what is believed to be a representative sample of 25 employees at the Chief Louis Center on Kamloops Shuswap reserve # 1. This survey found that 11 (44%) persons were resident on the reserve.

8

In Skeetchestn a similar sample of 10 Government employees found that 8 were on-reserve residents.

advantage for off-reserve consumers at on-reserve businesses, namely tobacco and gasoline⁹ and the rest are zero.

Table I contains the linear regression coefficients for the marginal propensities to consume good or service i locally (k_i), and the marginal propensity to import good and service i (d_i), estimated using the disaggregated household expenditure data discussed in Chapter 2. These parameter estimates were derived from the coefficients in the following OLS regressions¹⁰:

$$On_i = a + k_i Y + \varepsilon$$

$$Off_i = a + d_i Y + \varepsilon \text{ where}$$

On_i - On-reserve household expenditure on good i

Off_i - Off-reserve household expenditure on good i

Y - Total household expenditure as a proxy for total household income

Each parameter estimate in Table I represents a separate regression. Samples of these regression results appear in Appendix D. Coefficients insignificantly different from zero are considered as zeros in the multiplier estimation procedure¹¹. The final cumulative expenditure category

⁹ A value of one seems high given that many people don't smoke or drive. However, purposely overestimating this parameter captures some on-reserve feedback from non-natives which primarily takes place at tobacco and gasoline retailers.

¹⁰ The specification of these regressions as linear is based primarily on the theoretical form of the Keynesian consumption function. Alternative functional forms may have provided a better fit but any extra coefficient estimates would have doubled the number of multipliers for each Scenario and community. Further, linear income expansion paths follow from homothetic preferences.

¹¹ This was done for two reasons: 1) With just two explanatory variables (including the constant) an insignificant total expenditure coefficient is also associated with a poor linear

indicates the summation of all on-reserve or all off-reserve household expenditures regressed against total household expenditures for each community. The resultant parameter estimates from these regressions are simply k and d ¹². The community SNTC totals includes all five communities used in this study and thus encompasses the largest possible sample -168 households.

fit and 2) A number of the insignificant coefficients were also negative. Multiplier analysis with inferior goods results in negative multipliers which although feasible, were thought to be unlikely in these circumstances.

¹²

For the cumulative category only one regression was necessary since by construction $d = 1-k$ if all expenditures are included.

Table I Marginal Propensity to Consume and to Import Coefficients for SNTC Communities

| | W. Pines | | Nesk. | | Skeet. | | Adams Lake | | Bonap. | | SNTC | |
|------------------------|-------------|--------|---------|--------|---------|--------|---------------|---------|---------|--------|--------|--------|
| Expenditure Type | k_i | d_i | k_i | d_i | k_i | d_i | k_i | d_i | k_i | d_i | k_i | d_i |
| Groceries | 0 | 0.137 | -0.007* | 0.22 | 0.054 | 0.199 | 0 | 0.153 | 0 | 0.33 | .002* | 0.22 |
| Tobacco | -.008* | 0.017 | 0.008 | .005* | 0.017 | 0.005 | .006* | .007* | .037* | .002* | 0.005 | .005* |
| Restaurants | -.0014* | 0.054 | 0 | 0.047 | 0.002 | 0.027 | 0.0009* | 0.0148 | .0037* | 0.022 | .001* | 0.031 |
| House Repairs | -.0002* | 0.05 | 0 | 0.067 | 0.017 | 0.0051 | 0.027 | .012* | 0.003 | 0.14 | 0.012 | 0.071 |
| Utilities | 0 | 0.1 | 0.02 | 0.049 | 0.018 | 0.04 | -.002* | 0.034 | 0.054 | -.006* | 0.024 | 0.021 |
| Rent | .072* | 0.22 | 0.112 | .031* | 0.008 | 0.016 | 0.105 | 0 | .026* | -.008* | 0.047 | .016* |
| Gasoline | -.002* | .074* | 0.09 | -0.017 | 0.00096 | 0.07 | .0015* | 0.054 | .002* | 0.058 | .007* | 0.06 |
| Auto Repair | 0 | .017* | .0011* | 0.058 | 0 | 0.007 | -.0025* | 0.032 | .0025* | .009* | 0 | 0.031 |
| Public Transit | .003* | 0 | .005* | -.008* | 0.0054 | 0.013 | 0.002 | 0 | -.003* | -.007* | 0 | -.002* |
| Payments | 0 | -.005* | -.0003* | -.03* | 0 | 0.106 | 0 | 0.094 | -.0007* | 0.092 | .005* | 0.08 |
| Clothing | 0 | 0.065 | 0 | 0.04 | 0 | 0.0057 | -.0068* | 0.062 | .015* | 0.035 | -.007* | 0.045 |
| Health and Personal | 0 | .008* | -.0003* | 0.012 | 0.0043 | 0.017 | 0 | 0.016 | .0004* | .008* | .009* | 0.012 |
| Special Health | 0 | -.012* | 0 | .0012* | 0.0022 | 0.0049 | 0 | 0.008 | 0 | 0.01 | -.002* | 0.005 |
| Insurance | 0 | .04* | 0 | 0.06 | 0.0073 | 0.039 | 0 | 0.031 | 0 | 0.033 | -.007* | 0.037 |
| Daycare | -.0012* | .08* | 0.02 | 0.037 | 0.0075 | 0.016 | .0007* | 0.029 | -.005* | .004* | .001* | 0.02 |
| Leisure | 0 | .018* | 0.012 | 0.034 | 0.0029 | 0.04 | 0.032 | 0.07 | 0 | 0.034 | 0.008 | 0.037 |
| Culture | 0 | .0009* | 0.011 | .007* | 0.004 | 0.056 | -.006* | .0065* | -.02* | .005* | -.005* | 0.023 |
| Recreation | -.0002* | .06* | 0.011 | 0.022 | 0.0054 | 0.034 | -.0016* | 0.028 | .01* | 0.022 | 0.007 | 0.029 |
| Hunt/Fish | .00014* | .005* | 0.006 | .0007* | 0.0054 | 0.017 | -.0017* | 0.01 | .0007* | 0.006 | .002* | 0.006 |
| Education | 0 | .017* | 0 | .0049* | 0.002 | 0.014 | 0 | 0.012 | 0.003 | .007* | 0.002 | 0.001 |
| Savings | 0 | -.007* | 0 | .007* | 0 | 0.07 | 0 | 0.028 | 0 | .009* | 0 | 0.042 |
| Gifts and Don. | 0 | 0.03 | -.003 | 0.015 | 0.006 | 0.019 | .0001* | -.0026* | .0007* | -.006 | .002* | -.007* |
| Cumulative | .016* | 0.984 | 0.3 | 0.7 | 0.17 | 0.83 | 0.154 | 0.846 | 0.082 | 0.918 | 0.116 | 0.884 |

* - Insignificantly different from zero at the 5% level of significance with the appropriate degrees of freedom depending upon the sample sizes of the Shuswap communities. A sample of these regressions are presented in Appendix D.

As a result of these regressions it was obvious that all k_i 's for Whispering Pines were insignificant and so no multipliers are estimated for this community. Effectively the direct household' income

multipliers for Whispering Pines is assumed to be one¹³. Whispering Pine households are, however, included for the SNTC total multiplier estimates.

Whispering Pines aside, it is interesting to note that the k_i parameters are more often insignificantly different from zero than the d_i parameters. This may effectively lower the marginal propensities to consume locally and thus result in lower multiplier estimates. To demonstrate the effect of this assumption Table II contains the sum of the local marginal propensities for each good and service vs. the cumulative marginal propensities for aggregated on and off-reserve household expenditure.

Table II $\sum k_i$ and $\sum d_i$ vs Cumulative k and d

| | Neskonlith | | Skeetchestn | | Adams Lake | | Bonaparte | | SNTC | |
|------------|------------|-------|-------------|--------|------------|--------|-----------|-------|-------|--------|
| | k_i | d_i | k_i | d_i | k_i | d_i | k_i | d_i | k_i | d_i |
| Total | 0.29 | 0.678 | 0.16936 | 0.8207 | 0.166 | 0.6758 | 0.06 | 0.782 | 0.105 | 0.7715 |
| | k | d | k | d | k | d | k | d | k | d |
| Cumulative | 0.3 | 0.7 | 0.17 | 0.83 | 0.154 | 0.846 | 0.082 | 0.918 | 0.116 | 0.884 |

The elimination of insignificant marginal propensities clearly will impact the multiplier results as $\sum k_i \neq k$ so both cumulative and total multipliers are reported for each community and Scenario. Moreover, the insignificant coefficients mean that it is never the case that $\sum k_i + \sum d_i = 1$ for the total multipliers but this equality is always true for the cumulative multiplier.

It was suggested in Chapter 2 that marginal propensities to consume local goods (k_i) might be influenced by an on-reserve resident's level of income. The implication of a significant difference

¹³

This is not particularly surprising given that there are no on-reserve businesses in Whispering Pines.

in Engel curve slopes for different income groups would necessitate estimating treaty compensation impacts on the basis of income level. Testing this hypothesis captures some elements of the life cycle hypothesis where higher income recipients would save more and may have lower marginal propensities to consume local goods and services¹⁴.

The null hypothesis is that different income groups have statistically identical marginal propensities to consume local goods and services. Although this test obviously could have been conducted for each and every expenditure category and for each and every community, it was thought sufficient to test only for cumulative local consumption for each community.

Specifically, the data for each particular Shuswap community and the aggregate of the Shuswap communities, were each divided into subsamples using the mean monthly expenditure as the dividing line. The subsamples of aggregate monthly household local consumption were then regressed against aggregate monthly local expenditure and the two subsamples were then compared using a small-sample t test for parallelism (Kleinbaum and Kupper, 1978, p. 100) where:

$$T = (b_1 - b_2) / S_{b_1 - b_2}$$

b_1 - is the estimate of the low-income marginal propensity to consume locally

b_2 - is the estimate of the high-income marginal propensity to consume locally and

$S_{b_1 - b_2}$ - is the estimate of the standard deviation of the differences between the estimated slopes¹⁵

¹⁴

A full test of this hypothesis would measure and compare saving behaviour over the entire life cycle. Since it was impossible to form an expenditure by age cross tabulation of the data this test was not conducted.

Table III
Parallelism Between High and Low Income Marginal Propensities to Consume Locally

| | b_1 | N for b_1 | b_2 | N for b_2 | Pooled SE of $b_1 - b_2$ | T stat | Critical Values* |
|-------------|---------|-------------|---------|-------------|-----------------------------|--------|---------------------|
| Adams Lake | 0.259 | 24 | 0.277 | 22 | 0.1529622 | -0.117 | 2.021 |
| Bonaparte | -0.203 | 17 | 0.0637 | 15 | 0.43717 | -0.610 | 2.045 |
| Neskonlith | 0.4945 | 20 | 0.284 | 19 | 0.2685316 | 0.7838 | 2.03 |
| Skeetchestn | 0.213 | 28 | 0.17506 | 4 | 0.0617625 | 0.6142 | 2.048 |
| SNTC | 0.14877 | 94 | 0.08 | 69 | 0.0786683 | 0.8741 | 1.975 |

* Critical values are estimated at the 5% level of significance with (N of b_1 + N of b_2 - 4) degrees of freedom.

Since the t statistics are well within their critical values the null hypothesis is accepted for all of the communities. This is somewhat of a relief. A statistical difference between low and high income k_i 's¹⁶ would have doubled the number of multiplier estimates. As it is, with five "b's" and two h_i 's, there will be ten multiplier estimates for each expenditure category.

In addition to the above parameters, the parameter t_s indicates sales tax paid for off-reserve purchases. Its .14 value is derived from the combination of the Goods and Service tax and provincial sales tax which appears on many retail goods. The precise application of this parameter in the numerous tables below is based on the \$500 purchased rule discussed in

15

The estimate of this standard deviation involves a pooling and summing of the estimated variances of the slopes of the fitted regression lines. For the details of its calculation see Kleinbaum and Kupper (1978, pp. 100-101)

16

Similar statistical tests could have been performed on the d_i parameter as well but given the relatively insubstantial feedback component this was felt to be unnecessary. If this dissertation was more focused on the impacts of treaty compensation on the surrounding non-native communities then such a test would have been warranted.

Chapter 2 (Brown and Strother, 1991) and the various expenditure category application rules surrounding the Goods and Service and provincial sales tax.

Similarly, the parameter t_d is the direct income tax paid per dollar of personal income in the Thompson Nicola district according to Statistics Canada 13-216. It is applied to the employment income earned off-reserve by Shuswaps resulting from treaty compensation. The 1989 value is .1888.

Table IV below presents all the possible parameter values for the Skeetchestn community as would be necessary for estimation in Scenario 4. As this is the most comprehensive multiplier it includes all the possible parameter values. The parameter values for the other communities are included in Appendix E.

Table IV Skeetchestn Parameters

| Expenditure Type | ki | di | b1 | b2 | b3 | b4 | b5 | ts | td | h1 | h2 | s | z1 | z2 | e |
|---------------------|---------|--------|------|------|-------|---------|------|------|--------|---------|-------|-------|------|------|------|
| Groceries | 0.054 | 0.199 | 0.11 | 0.1 | 0.145 | 0.00375 | 0.06 | 0 | 0.1888 | 0.054 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Tobacco | 0.017 | 0.005 | 0.11 | 0.08 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.017 | 1 | 0.007 | 0.29 | 0.37 | 0.02 |
| Restaurants | 0.002 | 0.027 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.07 | 0.1888 | 0.002 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| House Repairs | 0.017 | 0.0051 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.017 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Utilities | 0.018 | 0.04 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.07 | 0.1888 | 0.018 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Rent | 0.008 | 0.016 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0 | 0.1888 | 0.008 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Gasoline | 0.00096 | 0.07 | 0.11 | 0.07 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.00096 | 1 | 0.007 | 0.29 | 0.37 | 0.02 |
| Auto Repair | 0 | 0.007 | 0.11 | 0.23 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Public Transit | 0.0054 | 0.013 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.0054 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Payments | 0 | 0.106 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Clothing | 0 | 0.0057 | 0.11 | 0.16 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Health and Personal | 0.0043 | 0.017 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.0043 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Special Health | 0.0022 | 0.0049 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.0022 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Insurance | 0.0073 | 0.039 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.07 | 0.1888 | 0.0073 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Daycare | 0.0075 | 0.016 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.07 | 0.1888 | 0.0075 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Leisure | 0.0029 | 0.04 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.0029 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Culture | 0.004 | 0.056 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.004 | 1 | 0.007 | 0.29 | 0.37 | 0.02 |
| Recreation | 0.0054 | 0.034 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.0054 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Hunt/Fish | 0.0054 | 0.017 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.0054 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Education | 0.002 | 0.014 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.07 | 0.1888 | 0.002 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Gifts and Don. | 0.006 | 0.019 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0 | 0.1888 | 0.006 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Cumulative | 0.17 | 0.83 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.17 | 0.081 | 0.007 | 0.29 | 0.37 | 0.02 |

4.2 Estimating the Impacts from Treaty Compensation

There are four treaty compensation Scenarios, 6 communities, 10 multipliers per community, 22 expenditure classes and anywhere between 8-10 parameters per multiplier. Obviously this

chapter could easily become inundated with 40 large dimension tables¹⁷. Therefore, most of the detailed community multiplier and parameter tables are contained in Appendix E. In each Scenario one community is presented in full detail while the remainder of the multiplier estimates are in a summary table.

4.21 Scenario 1

In Scenario 1 the First Nation economy encompasses the reserve and the First Nation community distributes any treaty compensation monies directly among its on-reserve citizens. The total impact of this hypothesized Scenario on household income is estimated by both:

$$1) \quad (Y + \sum_i b_k Y + \sum_i d_i b(1-t_{s_i})e(1-t_d)h_b Y)/Y \text{ and}$$

$$2) \quad (Y + b_k Y + d b(1-t_s)e(1-t_d)h_b Y)/Y$$

where 1) is delineated as the highly precise total multiplier (summation) in the multiplier tables below as developed in equation (6) of chapter 2, and 2) represents the more common cumulative multiplier.

Table V contains all the possible multiplier values for Neskonlith. Each multiplier is below one because it only represents the induced and feedback effects and ignores the direct effect. Adding

¹⁷

This calculation is based on the realization that for each Scenario each community would require two tables: one outlining its parameter values and another specifying its 10 multipliers in each individual expenditure category.

one to the values in Tables V and VI makes them equivalent to equations 1) and 2)¹⁸. For each expenditure type there are 10 possible household income multipliers since there are five possible values for b and two possible h values. In this regard, multiplier 1 corresponds to b_1h_1 , multiplier 2 is b_1h_2 , multiplier 3 is b_2h_1 , multiplier 4 is b_2h_2 , multiplier 5 is b_3h_1 , multiplier 6 is b_3h_2 , multiplier 7 is b_4h_1 , multiplier 8 is b_4h_2 , multiplier 9 is b_5h_1 and multiplier 10 is b_5h_2 .

Table V Scenario 1 Neskonlith Multipliers

| Expenditure Type | mult 1 | mult 2 | mult 3 | mult 4 | mult 5 | mult 6 | mult 7 | mult 8 | mult 9 | mult 10 |
|------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Groceries | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Tobacco | 8.80E-04 | 8.80E-04 | 6.40E-04 | 6.40E-04 | 1.16E-03 | 1.16E-03 | 3.00E-05 | 3.00E-05 | 4.80E-04 | 4.80E-04 |
| Restaurants | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| House Repair | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Utilities | 2.20E-03 | 2.20E-03 | 2.20E-03 | 2.20E-03 | 2.90E-03 | 2.90E-03 | 7.50E-05 | 7.50E-05 | 1.20E-03 | 1.20E-03 |
| Rent | 1.23E-02 | 1.23E-02 | 1.23E-02 | 1.23E-02 | 1.62E-02 | 1.62E-02 | 4.20E-04 | 4.20E-04 | 6.72E-03 | 6.72E-03 |
| Gasoline | 9.90E-03 | 9.90E-03 | 6.30E-03 | 6.30E-03 | 1.31E-02 | 1.31E-02 | 3.38E-04 | 3.38E-04 | 5.40E-03 | 5.40E-03 |
| Auto Repair | 1.21E-04 | 1.21E-04 | 2.53E-04 | 2.53E-04 | 1.60E-04 | 1.60E-04 | 4.13E-06 | 4.13E-06 | 6.60E-05 | 6.60E-05 |
| Public Transit | 5.50E-04 | 5.50E-04 | 5.50E-04 | 5.50E-04 | 7.25E-04 | 7.25E-04 | 1.88E-05 | 1.88E-05 | 3.00E-04 | 3.00E-04 |
| Payments | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Clothing | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| H. & Personal | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Spec. Health | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Insurance | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Daycare | 2.20E-03 | 2.20E-03 | 2.20E-03 | 2.20E-03 | 2.90E-03 | 2.90E-03 | 7.50E-05 | 7.50E-05 | 1.20E-03 | 1.20E-03 |
| Leisure | 1.32E-03 | 1.32E-03 | 1.32E-03 | 1.32E-03 | 1.74E-03 | 1.74E-03 | 4.50E-05 | 4.50E-05 | 7.20E-04 | 7.20E-04 |
| Culture | 1.21E-03 | 1.21E-03 | 1.21E-03 | 1.21E-03 | 1.60E-03 | 1.60E-03 | 4.13E-05 | 4.13E-05 | 6.60E-04 | 6.60E-04 |
| Recreation | 1.21E-03 | 1.21E-03 | 1.21E-03 | 1.21E-03 | 1.60E-03 | 1.60E-03 | 4.13E-05 | 4.13E-05 | 6.60E-04 | 6.60E-04 |
| Hunt/Fish | 6.60E-04 | 6.60E-04 | 6.60E-04 | 6.60E-04 | 8.70E-04 | 8.70E-04 | 2.25E-05 | 2.25E-05 | 3.60E-04 | 3.60E-04 |
| Education | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Gifts & Don. | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Total | 0.032572 | 0.03257 | 0.02886 | 0.028864 | 0.04293 | 0.042941 | 0.001110 | 0.00111 | 0.017766 | 0.017767 |
| Cumulative | 0.03303 | 0.03300 | 0.03303 | 0.03300 | 0.04356 | 0.04351 | 0.00112 | 0.001125 | 0.018010 | 0.018002 |

As an illustration, consider the value of .0131 in Table V under the column multiplier 5 and the row gasoline. This multiplier uses the parameter values of b_3 and h_1 . b_3 is the highest possible value of this parameter because it assumes all employees are local, unemployment income is non-

¹⁸

This could be considered a proxy for the shift in the household budget constraint which in the presence of convex preference orderings is like a measure of the change in household welfare.

existant, and that 14% of all on-reserve sales become on-reserve income. Although h1 and h2 assume different feedback behaviour they is not a substantive difference between multiplier estimates 5 and 6¹⁹. Thus, in the *best case* situation of multiplier 5 a one dollar compensation settlement to a Neskonlith household will raise the household income of Neskonlith gasoline industry workers by 1.31¢. In the worst case Scenario where all employees are not local and unemployment income matters (multipliers 7 and 8) the same one dollar treaty compensation settlement will raise the household income of gasoline industry employees by .000338¢²⁰. Similarly, each row and column pair in Table V represents the household income multiplier for that particular expenditure category and combination of estimated parameters.

It is evident that the multipliers for individual expenditure classes are miniscule and for discussion purposes all that matters are the total and cumulative multipliers. Appendix E contains detailed Scenario 1 multipliers for the other communities and Table VI presents a summary of the cumulative and total summary for each community.

¹⁹ Although not presented here, when the feedback and induced effects are separated the feedback effect is negligible.

²⁰ It is worth noting that most employees at the Neskolith gasoline station are First Nation in origin and mainly from the Neskonlith community so this estimate is likely irrelevant for this community.

Table VI Scenario 1 Summary Multiplier Table

| Multiplier type | Skeet'n | | Adams Lake | | Bonaparte | | SNTC | |
|-----------------|----------|----------|------------|----------|-----------|----------|----------|----------|
| | Total | Cumul | Total | Cumul | Total | Cumul | Total | Cumul |
| multiplier 1 | 0.018632 | 0.018724 | 0.018260 | 0.016962 | 0.006600 | 0.009033 | 0.011572 | 0.012777 |
| multiplier 2 | 0.018632 | 0.018711 | 0.018260 | 0.016952 | 0.006600 | 0.009033 | 0.011572 | 0.012772 |
| multiplier 3 | 0.017543 | 0.018724 | 0.018260 | 0.016962 | 0.006600 | 0.009033 | 0.011422 | 0.012777 |
| multiplier 4 | 0.017556 | 0.018711 | 0.018264 | 0.016952 | 0.006604 | 0.009033 | 0.011430 | 0.012772 |
| multiplier 5 | 0.024562 | 0.024691 | 0.024071 | 0.022368 | 0.008700 | 0.011912 | 0.015255 | 0.016850 |
| multiplier 6 | 0.024596 | 0.024670 | 0.024086 | 0.022350 | 0.008717 | 0.011912 | 0.015278 | 0.016841 |
| multiplier 7 | 0.000635 | 0.000638 | 0.000623 | 0.000578 | 0.000225 | 0.000308 | 0.000395 | 0.000435 |
| multiplier 8 | 0.000635 | 0.000638 | 0.000623 | 0.000578 | 0.000225 | 0.000308 | 0.000395 | 0.000435 |
| multiplier 9 | 0.010162 | 0.010207 | 0.009960 | 0.009247 | 0.003600 | 0.004924 | 0.006312 | 0.006965 |
| multiplier 10 | 0.010168 | 0.010203 | 0.009963 | 0.009243 | -0.003603 | 0.004924 | 0.006316 | 0.006964 |

The cumulative or total multiplier estimates answer the question posed in Chapter 2. What will be the impact on First Nation household income from treaty compensation settlement? For Skeetchestn the best case Scenario corresponds to multiplier 5 in the cumulative column²¹. Under this particular set of circumstances a \$1 million treaty compensation settlement distributed to the households is estimated to increase the household income of Skeetchestn by \$1,024,691, ceteris paribus. If multipliers 7 or 8 are more appropriate the same one million dollar settlement would represent an estimated \$1,000,305 rise in local household income. Assuming the Sinclair and Sutcliffe (1978) criticism concerning unemployment income is valid, and since almost all employment in Skeetchestn is local, the most probable multiplier estimate would be 9 and 10. Based on "expert"²² opinion, multipliers 9 and 10 are probably most appropriate for the other

²¹ The difference between the cumulative and total columns results from the divergence between the sum of the individual expenditure local marginal propensities and the cumulative local marginal propensities.

²² Over the three years in which this study was conducted I visited each SNTC community at least five times each. The term expert is used loosely.

Shuswap communities in this and all other Scenarios. The other multipliers may, however, be applicable to other non-SNTC First Nation communities and are included for their reference.

The magnitude of the multipliers in Tables V and VI when treaty compensation is given to the on-reserve households serves to reinforce the message of Chapter 2. Given the current economic infrastructure within these Shuswap Nation communities, most expenditures are made into the non-native economy which will be, if not the primary, at least an extremely strong secondary beneficiary from treaty settlement. More precisely, the ratio of local to total expenditure in Table VIII of Chapter 2 is .22. A \$1 million dollar treaty compensation settlement to First Nation households is therefore tantamount to an estimated \$780,000 injection into the non-native economy²³. It is little wonder that strategically the treaty negotiators for the province of B.C. and several political parties favour treaty compensation as opposed to institutional changes as a means to settle treaties²⁴.

Recent land claim agreements in the territories have included massive fee simple transfers of land In my opinion this obligation [to the aboriginal interest] could be discharged through cash compensation." (Smith, 1995, p. 267).

Given these multiplier magnitudes and the nature of treaty negotiations, it is probably not surprising that many First Nations which have previously settled treaties have opted to let their Governments control treaty compensation monies (Government of B.C., 1996). It seems that

²³ The possibility that several First Nation households may view treaty compensation as a temporary windfall and save most of it is captured in the lower values associated with multipliers 7 and 8.

²⁴ "The net financial benefit [to B.C from treaty settlement] is estimated at between \$3.9 and \$5.3 billion (in 1995 constant dollars)" (Government of B.C., 1996, p. 2).

many First Nation leaders and citizens believe that Government organizations are better able to promote economic growth than are individuals. Although the dynamics of the relationship between public institutions and economic growth is given more attention in the next chapter, that economic growth is a central impetus for treaty settlement is not contentious.

After-tax income per individual in Kamloops city is \$18,988²⁵ (Statistics Canada 95-387), and after tax individual income for on-reserve First Nation individuals in B.C. is \$12,427 (Statistics Canada 95-384). Given this difference, it would take First Nation individuals about 22 years to have equal after tax incomes as those of non-natives, assuming that First Nation economies could sustain a growth rate 2% points higher than the non-native economy²⁶ for each of the next 22 years.

This economic growth "catch up" calculation and the Scenario 1 multiplier estimates present a unique, if rather ad hoc, opportunity for policy analysis. Suppose it is the goal of the First Nation to increase their current multiplier by 2% per year for the next 22 years²⁷. For example, the

²⁵ The amount of income tax paid is assumed to be .1888 for the Thompson Nicola regional district (Statistics Canada 13-216). This number is misleading since the city of Kamloops has residents of First Nation descent who have an average individual after tax income of \$15,315 (Statistics Canada 95-384). Although household income would have been more appropriate for this estimate, no such estimates for disaggregated First Nation households were available in Statistics Canada 95-384.

²⁶ This estimate was derived from a number of simulations, using the following compound growth rate formula where g is non-native economic growth rate, n is the number of years and k is the ratio in income per capita (1.53):
 $(1 + g + 2/100)^n = k(1+g)^n$. Solving for n :
 $n = \log k / (\log(1 + 1/(100 + 100g)))$.

²⁷ In certain circumstances a 2% rise in the multiplier is the same as a 2% growth rate. Specifically, assume that the First Nation economy is entirely transfer driven, so that First Nation output is measured as $Y = \text{Multiplier}(X)$, where X is the size of the transfer and Y

cumulative Scenario 1 multiplier 10 estimate for the SNTC aggregate is 1.00696 and a 2% growth rate in year 1 would be 1.0271. Continuing this 2% annual increase in multiplier values for 22 years would eventually yield a multiplier of about 1.58.

The specific policy question each year would thus become, how would the First Nation Government organization have to change the Scenario 1 parameters to achieve its goal? There are a number of policies which the First Nation Government could pursue to achieve this objective. These policy options include among others, promoting local value added industries, engaging in import substitution²⁸, developing infrastructure, or improving local access to markets and technology. Quantitatively, the impact of these policies could be measured through their effect on the household income parameters for the local marginal propensity to consume (k), the subsequent propensity to import (d) and feedback effects (h) and the amount of local expenditure which becomes local income (b).

is the value of the First Nation output, that there is no growth in transfer payments, and that the economic growth rate is measured by $(Y_1 - Y_2)/Y_1$, then it follows algebraically that a 2% growth rate would occur if multiplier in period 1 is 1.02 time the multiplier in period 0. This would be a 2% difference in growth rates if the non-native economic growth rate was assumed to be zero, and population growth rates were assumed to be zero. Twenty two years later the First Nation would have the same income per capita as the non-native economy.

28

It is no coincidence that the justification for conducting the research on the employment and expenditures of Shuswap Governments was to identify Shuswap business investment opportunities which would lower the level of economic leakages (raise the x parameter) and provide sustainable employment raise the z parameter). The results from these Shuswap Government expenditure surveys provided the impetus for three on-reserve Shuswap businesses, Sun Travel (travel agency), All Nation Motor Cars (car dealership), and the Resource Integrated Information Management System (RI²MS) (an information management and computer business). Only RI²MS remains in operation.

Of course, it is unrealistic for most if not all First Nation communities to expect a 2% annual multiplier growth rate. A more plausible goal might be 2% multiplier magnitude growth over 5, 10 or even 20 years. Extending the 2% target's term, however, only serves to underline the long term economic development plight facing First Nations communities. This plight is placed in greater context by the 2% multiplier growth rate simulation analysis presented below

To simplify this simulation, change the parameters k, d, h and b for only the SNTC aggregate community parameters for the cumulative good in Scenario 1, where only one representative value for the income to sales parameter b and the feedback parameter h exists, and only the impact of these parameter changes on multiplier 10 is considered. The results from a few simulations are contained in Table VII below.

Table VII Parameter Simulations for SNTC Cumulative Good in Scenario 1

| k | d | b | h | Mult. 10 |
|-------|-------|------|-------|-------------|
| 0.116 | 0.884 | 0.06 | 0.116 | 0.006982201 |
| 0.2 | 0.8 | 0.11 | 0.2 | 0.022027012 |
| 0.25 | 0.75 | 0.11 | 0.25 | 0.02756331 |
| 0.275 | 0.725 | 0.11 | 0.275 | 0.0303112 |
| 0.3 | 0.7 | 0.11 | 0.3 | 0.033059089 |
| 0.15 | 0.85 | 0.15 | 0.15 | 0.022633422 |
| 0.15 | 0.85 | 0.2 | 0.15 | 0.030237195 |

The first row of Table VII presents the parameter values for the SNTC cumulative good as estimated in Table VI. The next four simulations begin by raising b to .11 (its pre-unemployment/social assistance adjustment value) and estimating the magnitude of multiplier 10 resulting from increases in the local marginal propensity to consume. To produce a 2% growth rate the SNTC community would have to more than double its local marginal propensity to

consume (.116 to .275). This could be accomplished if half of all SNTC groceries were purchased on-reserve ($k=.11$) and all gasoline was purchased on-reserve ($k=.06$). The last two simulations assume only a minor change in the parameter k and instead focus on the parameter b . By doubling the amount of local expenditure which becomes local income ($b=.11$ to $b=.2$), the SNTC community would achieve its target multiplier. Increasing local employment through education, training or hiring policy guidelines may be one method of raising the annual SNTC value of b , or the First Nation Government could support the development of a local industry with a higher value of b ²⁹.

Detailed analysis similar to that in Table VII could be performed for each of the 5 communities presented in this document. The economic policy conclusion for each, however, would lead to the same conclusion. To sustain long term economic growth and eventually catch up to the income levels of non-native communities, First Nation communities will have to either significantly expand their market size (the Keynesian demand driven argument) or significantly reduce their market size through out migration (the neoclassical real wage equilibrating argument). The long term impacts of treaty settlement are given more thorough treatment in the next chapter.

In light of the significant leakages from the First Nation economy, another interesting question is what is the real cost to the non-native Governments (federal and provincial) of treaty

²⁹

One such labour intensive, locally concentrated, high value added investment (high value of b) which a First Nation Government might pursue is a venture concentrating on marketable art projects where the material are locally and cheaply available.

compensation? How much treaty compensation is turned back into tax revenue, i.e. what are the taxation multipliers? This calculation is most easily accomplished in the Keynesian macroeconomic framework represented as follows where C is consumption, M is imports, X represents all exogenous final demand, t_s is sale tax, a is autonomous consumption, c is the marginal propensity to consume from disposable income which is assumed to take on three possible values below, m is the marginal propensity to import from disposable income, t_0 is autonomous taxation, and t_d is the direct income tax rate.

$$\begin{aligned} Y &= C + X - M \text{ and} \\ (1+t_s)C &= a + c(Y-T) \\ M &= m_0 + m(Y-T) \text{ and} \\ T &= t_0 + t_s C + t_d Y \end{aligned}$$

Solving this for ΔT in terms of ΔX produces a tax multiplier (K_{tax}) for the general economy that is:

$$K_{tax} = (ct_s + (1+t_s)t_d) / (1+t_s - c(1-t_s-t_d) + m(1-t_d)(1+t_s))$$

Assuming that the off-reserve injection from treaty compensation can be approximated with the parameter d for each community, and that a portion of this expenditure is sales taxable (assumed to be 60%) and a portion is income taxable, multiplying K_{tax} times d yields an³⁰ approximation for the federal and provincial sales and income tax from \$1 of treaty compensation. Table VIII

30

This is probably a conservative estimate for at least two reasons: 1) it ignores the off-reserve induced and indirect expenditures associated with on-reserve expenditures (local propensity to consume k) and 2) it ignores a great many non sales or income tax federal and provincial revenue sources (Boadway and Hobson, 1993, pp 61-66). On the other hand, the multiplicand d, however, may be too high since it ignores primary inputs and imports in the input-output process.

below contains three tax multipliers Tax mult 1, Tax mult 2 and Tax mult 3 corresponding to three different values of K_{tax} in the K_{tax} multiplied to d estimation below.

Tax multipliers are estimated using the parameters $t_d = .1888$, $t_s = .14$, $m = .52$ ³¹ and three possible values for c depending upon savings behaviour assumption. For K_{tax1} , $c = 1$ which assumes recipients of treaty compensation expenditures spend all of their new income. In K_{tax2} , $c = .96$. This is the resultant coefficient from the linear regression of real Canadian consumption expenditures on real Canadian disposable personal income for the sample period 1983-1994 as found in Cansim matrices 006628 and 006632 respectively, using 1986 constant dollar data. K_{tax3} assumes $c = 0$. This is a Ricardian equivalence type Scenario where recipients of treaty compensation expenditures save this income in anticipation of future treaty compensation tax liabilities. This simplifies the K_{tax3} to dt_d since only the off-reserve expenditure is taxed as income.

³¹

This is the result of a regression between annual real imports and annual real personable disposable income from 1983-1994, and is reported in Appendix D.

Table VIII Taxation Multipliers

| | Neskonlith | Skeetchestn | Adams Lake | Bonaparte | SNTC |
|------------|-------------|-------------|-------------|-------------|-------------|
| Tax mult 1 | 0.199268455 | 0.251647592 | 0.251647592 | 0.261326345 | 0.251647592 |
| Tax mult 2 | 0.191456847 | 0.227013119 | 0.231389275 | 0.25108198 | 0.241782647 |
| Tax mult 3 | 0.13216 | 0.156704 | 0.1597248 | 0.1733184 | 0.1668992 |

Ignoring the improbable Ricardian equivalence situation, these tax multipliers suggest that about 25 cents of every dollar of treaty compensation spent off reserve becomes tax revenue for the federal or provincial Governments. Depending upon how the federal Government allocates its share of the treaty compensation generated tax revenues it is possible, although unlikely, for the Government of B.C. to actually gain from treaty settlement.

To substantiate this claim, it is necessary to engage in speculative Government of B.C. public finance. On the plus side for the Government of B.C., suppose treaty compensation is \$1 billion and is entirely paid for by the Government of Canada.³² This compensation generates about \$250 million in tax revenues, of which about \$112 million is the Government of B.C.'s share³². Moreover, a portion of the federal share of the tax revenue will be transferred back to the province of B.C.. To fulfill its treaty obligations, however, the Government of B.C. will have to vacate some revenue raising jurisdictions (resource taxes and others) for the First Nation Government to occupy. Under the circumstances that the present value gain in Government of B.C. revenue from treaty compensation and future off-reserve expenditures, is greater than the

32

More formally, assume that most of the income and off-reserve expenditure will take place in B.C. where about 50% of the sales tax (30% of tax paid) goes to the province and about 44% of the personal income tax (70% of tax paid) is rebated to the province (Hobson and Boadway, 1993, p. 39). This would generate, assuming these are the only two taxes considered, about \$112 million in revenue for the province. If the federal Government transferred more than \$600 million of its treaty compensation generated tax revenue back into B.C. then a net gain would occur.

present value loss in future tax revenues, then the Government of B.C. may actually benefit from treaty settlement³³.

4.22 Scenario 2

Like Scenario 1, the jurisdiction of the First Nation Government in this Scenario is limited to the reserve, but unlike Scenario 1, the recipient of the treaty compensation is the First Nation Government instead of the household. As was discussed in Chapter 2, this creates a problem for estimating household income multipliers. How is the First Nation Government going to spend the treaty compensation money?

"Economics is the key to solving any human problem. Just as education is absolutely essential to any young person who is going to take his proper place in society. But there are as many different kinds of economic development as there are different kinds of education. Each (First Nation) community must find what is right for it" (McFarlane, 1993, p. 138).

Is the First Nation Government going to allocate treaty compensation to housing, to education, to business and infrastructure development³⁴ or will it just choose to invest the money for future generations to use? Ideally, for evaluation purposes, the returns on each of these First Nation

³³

A similar cost-benefit accounting exercise could be developed for the Government of Canada where the megaproject sized treaty expenditures today would have to be balanced against lower future First Nation transfer payments. For both the Government of Canada, and the Government of B.C., the implicit hope is that treaty settlement, or at least the institutional changes induced by treaty settlement, will produce the conditions for First Nation community's to sustain growth. This assumption is given much greater attention in the next chapter.

³⁴

These forms of investment correspond to investments made from previously settled treaties in Canada's north, New Zealand and Alaska (Government of B.C., 1995).

Government investments could be calculated and compared. This methodology, however, is beyond the data used for this study. Specifically, it is not possible to estimate how the parameters will change as a result of a particular First Nation Government action and it is thus difficult to evaluate different First Nation Government investment strategies³⁵.

As an alternative it is assumed the First Nation Government, upon receipt of the treaty compensation, maintains its pre-treaty compensation expenditure behaviour. For Shuswap Governments, this is the expenditure behaviour as reflected in Table X of Chapter 2.

Consider that in Scenario 2 First Nation jurisdiction stops at the reserve boundaries. An incentive could easily be created for off-reserve citizens to return to their reserve communities. Chief among these incentives could be the provision of more on-reserve housing as a result of the treaty compensation³⁶.

The ratio of wages to construction expenditures is .27 (Statistics Canada-64-201). The ratio of on-reserve salaries to expenditures for current Shuswap Nation Government expenditures is estimated at .29. Only under some relatively unrealistic assumptions (on-reserve housing

³⁵

It should be noted that the study completed by the KPMG group (Government of B.C., 1996) did form a composite estimate of different First Nation investment strategies and attempted to evaluate the impacts of treaty compensation for Scenario 2. Unfortunately the methodology was not included in the public copy of this report.

³⁶

Another reason for a First Nation Government to commit resources to on-reserve residential construction would be to relieve the backlog of housing demand from current on-reserve residents. This demand is not only reflected by housing requests in First Nation administrative offices but by overcrowding in existing on-reserve households (Neskonlith and Kamloops Shuswap administrations, 1996).

materials, and mainly on-reserve labour) would it be possible for the housing investment to generate the same magnitude of direct household income as it currently does. It is even possible, in the short run, that housing could be an inferior use of First Nation Government treaty compensation compared to its status quo³⁷ patterns of expenditure. A similar tale could be woven concerning First Nation Government investment in education, or business development³⁸.

Utilizing the hypothesis that known data is superior to speculation, the z_1 value and formula developed in Chapter 2 are assumed to represent the best guess of the short run Keynesian impacts of First Nation Government control of treaty compensation. In other words z_1 is a proxy for the myriad of possible investment strategies a First Nation Government might pursue. Table IX below contains the Scenario 2 summary multipliers for the SNTC communities, based on equation (7) in Chapter 2:

³⁷ In other words, the direct household income change, which is the source of the multiplier process, is assumed to be either identical in both circumstances or less for a First Nation focus on housing construction.

³⁸ Although the (Government of B.C., 1996) financial impact from treaty compensation document disagrees with the assumption that First Nation Governments will spend as they did before, the (Government of B.C., 1995) case study analysis of previous settlements would seem to concur with this assumption. In 5 of the 6 case studies, *"Settlements have provided long-term employment for many aboriginal individuals in administration, largely related to the running of settlement corporation structures."* (Government of B.C., 1995, p. 26) i.e. where First Nation Governments controlled treaty compensation they spent it largely as they did before.

Table IX Summary Multipliers for Scenario 2

| Community | Neskon. | | Adams Lake | | Bonap. | | SNTC | | Skeet'n | |
|-----------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | <u>Cuml.</u> | <u>Total</u> | <u>Cuml.</u> | <u>Total</u> | <u>Cuml.</u> | <u>Total</u> | <u>Cuml.</u> | <u>Total</u> | <u>Cuml.</u> | <u>Total</u> |
| mult 1 | 0.30073 | 0.30059 | 0.29571 | 0.29609 | 0.29340 | 0.29269 | 0.29448 | 0.29414 | 0.29622 | 0.29620 |
| mult 2 | 0.30069 | 0.30105 | 0.29570 | 0.29642 | 0.29340 | 0.29304 | 0.29448 | 0.29449 | 0.29621 | 0.29654 |
| mult 3 | 0.30073 | 0.29947 | 0.29571 | 0.29609 | 0.29340 | 0.29269 | 0.29448 | 0.29410 | 0.29622 | 0.29588 |
| mult 4 | 0.30069 | 0.29975 | 0.29570 | 0.29630 | 0.29340 | 0.29291 | 0.29448 | 0.29431 | 0.29621 | 0.29609 |
| mult 5 | 0.30409 | 0.30374 | 0.29751 | 0.29803 | 0.29449 | 0.29355 | 0.29592 | 0.29546 | 0.29819 | 0.29818 |
| mult 6 | 0.30417 | 0.30452 | 0.29753 | 0.29861 | 0.29449 | 0.29416 | 0.29592 | 0.29606 | 0.29821 | 0.29876 |
| mult 7 | 0.29036 | 0.29110 | 0.29019 | 0.29021 | 0.29012 | 0.29009 | 0.29015 | 0.29014 | 0.29021 | 0.29021 |
| mult 8 | 0.29036 | 0.29110 | 0.29019 | 0.29021 | 0.29012 | 0.29009 | 0.29015 | 0.29014 | 0.29021 | 0.29021 |
| mult 9 | 0.29584 | 0.29612 | 0.29311 | 0.29331 | 0.29185 | 0.29147 | 0.29244 | 0.29225 | 0.29339 | 0.29337 |
| mult 10 | 0.29582 | 0.29625 | 0.29310 | 0.29342 | 0.29185 | 0.29157 | 0.29244 | 0.29236 | 0.29338 | 0.29347 |

Appendix E contains more detailed multiplier estimates for the same expenditure categories presented in Scenario 1. The cells in the Appendix E tables, other than those in the bottom two rows, would be interpreted as the induced and feedback effects on a particular expenditure type resulting from the First Nation Government spending treaty compensation on wages and salaries for local residents, purchasing local goods, and spending treaty compensation off-reserve.

The total rows in Table IX sums the induced and feedback effects by columns in the appropriate section of Appendix E and adds the direct household income effect (z1) to this sum. The cumulative rows use aggregate parameter values for the local marginal propensity to consume (k) and the feedback parameter (h). The tiny difference between the total and cumulative

multiplier estimates is attributable to the summation of the local marginal propensities to consume for each commodity being less than the cumulative marginal propensity to consume³⁹. This means induced and feedback effects for h1 are slightly stronger in the cumulative multiplier estimate than the total multiplier estimate for all the odd numbered multipliers. In all the even numbered multipliers the feedback effects are stronger for the total row.

Reporting that the individual welfare gains as estimated by the Scenario 2 multipliers are substantially lower than those in Scenario 1 would be misleading, and would only reflect the short run bias in the chosen methodology (governments are exogenous in the Keynesian framework)⁴⁰ and perhaps in neoclassical economics⁴¹. A static multiplier analysis is not

³⁹ The cumulative total under multiplier 6 is noticeably larger owing to the 100% feedback assumption for tobacco.

⁴⁰ In no way, however, does this necessarily preclude distributing a portion or all of the treaty compensation to a Government. First, as has been previously mentioned the multiplier is a short run measurement and given its longevity a Government may be a superior manager of treaty compensation than are households. The KPMG report for the Government of B.C., 1996, even goes so far as to state that First Nation Government (community) control of treaty compensation monies and subsequent investments are economically superior to household consumption (Government of B.C., 1996, p. 13). Secondly, the philosophical nature of Government is still a matter of some controversy to those outside the rational public choice literature. Are Governments separate institutions whose expenditure behaviour, other than direct effects, is of little utility to households (Stretton and Orchard, 1994) or are Governments extensions of the households they represent, so that the Government expenditures are equivalent, in a utilitarian sense, to the expenditures of a representative household (Sen, 1985, Arrow, 1972)? The latter perspective, although largely unrecognized in contemporary economics literature, may be uniquely applicable to some First Nation communities. Although confined to this footnote in this document, this is hardly a trivial matter in economics. The essence of neoclassical microeconomics rests on the behavioral assumption of methodological individualism, i.e. economic decisions are made only by individuals and not collectives like Governments.

⁴¹ Government indirect investment in any particular area, distorts consumption behaviour and for an equivalent lump sum transfer is Pareto inferior (in the absence of perverse preferences).

suitable for estimating the longer term benefits that would accrue from a Government investment.

"As much as is practicable make payments direct to Indian people rather than to band leaders" (Smith, 1995, p. 269).

The relatively small magnitudes of the Scenario 2 multipliers, however, raise a crucial question. Why would so many First Nations which have settled treaties (Government of B.C., 1995) allow their Governments or community owned corporations control of treaty settlement compensation?⁴² Moreover why would the Government of B.C. (1996) support such action?⁴³

Perhaps they are confident that First Nation Governments will guide their communities to the greater prosperity - an issue addressed in considerable detail in the next chapter.

"the less cash spent on consumption and the more allocated to longer term investments such as local business and resource development, the better it will be for the economic development of First Nations and for the province as a whole" (Government of B.C., 1995, p. 13).

Before proceeding to the off-reserve jurisdiction contained in Scenario 3, it is worthwhile considering the taxation multipliers which result from First Nation Governments making expenditures off-reserve and making direct expenditures on local wages and salaries⁴⁴. The

⁴² Although no provisions are specified for the period after the compensation is paid, the Nisga'a Agreement in Principle allocates the compensation to the Nisga'a Government.

⁴³ It should be pointed out that the Government of B.C., 1996 study apparently has no method for comparing welfare improvement from one Scenario to another such as a household income multiplier.

⁴⁴ A provincial and municipal model of treaty settlement would imply that any tax revenue generated on-reserve would be either revenue only of the First Nation Government or a negotiated split between the First Nation, provincial and federal jurisdictions. Off-reserve tax revenue would still belong to the existing jurisdictions.

important components for estimating the First Nation Government taxation multiplier are the proportion of First Nation Government expenditures on wages and salaries spent off-reserve ($z1d$), and the First Nation Government expenditures made off-reserve ($1-x-z1$). The resultant tax multiplier formula is:

$$\text{Tax mult } i = K_{\text{tax}} ((1-x-z1) + (z1d))$$

Using the cumulative parameters contained in K_{tax} for each community discussed earlier, Table X presents the 3 taxation multipliers for the three values of c ⁴⁵.

Table X Taxation Multipliers for Scenario 2

| | <u>Neskonlith</u> | <u>Skeetchestn</u> | <u>Adams Lake</u> | <u>Bonaparte</u> | <u>SNTC</u> |
|------------|-------------------|--------------------|-------------------|------------------|-------------|
| Tax mult 1 | 0.254673801 | 0.265271154 | 0.266575444 | 0.272444748 | 0.269673132 |
| Tax mult 2 | 0.244775882 | 0.254961368 | 0.256214966 | 0.261856159 | 0.259192263 |
| Tax mult 3 | 0.1710528 | 0.17817056 | 0.179046592 | 0.182988736 | 0.181127168 |

The taxation multipliers in Scenario 2 are all higher than in Scenario 1. This is caused by the assumption that First Nation Governments will take a portion of the compensation and spend it directly into the off-reserve economy ($1-x-z$), i.e. there is no marginal propensity to save on about 50% of all First Nation Government expenditures. As a result, although it produces a higher multiplier when treaty compensation is distributed directly to the households, it might be more cost effective for provincial and federal Governments to distribute treaty compensation to the First Nation Governments. (Government of B.C., 1996).

⁴⁵

In Tax mult 1, $c = 1$. For Tax mult 2, $c = .96$ and for Tax mult 3, $c = 0$.

4.23 Scenario 3

Scenarios 3 and 4 arise when the treaty settlement results in First Nation sovereign jurisdiction over all its citizens regardless of residence. The First Nation economy encompasses proportions of both on and off-reserve households.

The inclusion of off-reserve households as part of the First Nation economy complicates the income multipliers in two ways. First, all income received by off-reserve households must be included as part of the household income multiplier. Secondly, the magnitude of the treaty compensation must be adjusted by the proportion of the on or off-reserve population (Y_j and Y_k) as was reported in Chapter 2.

Otherwise, Scenario 3 is similar in many ways to Scenario 1. The household income multiplier captures the direct, induced and feedback term on-reserve adjusted by the on-reserve population proportion (Y_j) and the direct, induced and feedback term for the off-reserve households adjusted by .36, the off-reserve population proportion for Adams Lake (Y_k)⁴⁶. The rest of the compensation is distributed to on-reserve households, Y_j . Table XI contains the Scenario 3 multipliers for Adams Lake.

⁴⁶

For review this multiplier is $vh2 = (Y_j + \sum b_k Y_j + \sum d_b(1-t_a)e(1-t_a)h_b Y_j + \sum d(1-t_a)e(1-t_a)Y_j + Y_k + \sum d(1-t_a)e(1-t_a)b Y_k + \sum h_b k Y_k) / (Y_j + Y_k)$.

Table XI Adams Lake Scenario 3

| Expenditure Type | mult 1 | mult 2 | mult 3 | mult 4 | mult 5 | mult 6 | mult 7 | mult 8 | mult 9 | mult 10 |
|--------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Groceries | 2.73E-04 | 2.73E-04 | 2.48E-04 | 2.48E-04 | 3.60E-04 | 3.60E-04 | 9.31E-06 | 9.31E-06 | 1.49E-04 | 1.49E-04 |
| Tobacco | 0.00E+0 | 3.96E-02 | 0.00E+0 | 2.88E-02 | 0.00E+0 | 5.22E-02 | 0.00E+0 | 1.35E-03 | 0.00E+0 | 2.16E-02 |
| • Restaurants | 2.46E-05 | 2.46E-05 | 2.46E-05 | 2.46E-05 | 3.24E-05 | 3.24E-05 | 8.37E-07 | 8.37E-07 | 1.34E-05 | 1.34E-05 |
| House Repairs | 2.97E-03 | 1.90E-03 | 2.97E-03 | 1.90E-03 | 3.92E-03 | 2.51E-03 | 1.01E-04 | 6.48E-05 | 1.62E-03 | 1.04E-03 |
| Utilities | 5.64E-05 | 5.64E-05 | 5.64E-05 | 5.64E-05 | 7.44E-05 | 7.44E-05 | 1.92E-06 | 1.92E-06 | 3.08E-05 | 3.08E-05 |
| Rent | 1.16E-02 | 7.39E-03 | 1.16E-02 | 7.39E-03 | 1.52E-02 | 9.74E-03 | 3.94E-04 | 2.52E-04 | 6.30E-03 | 4.03E-03 |
| Gasoline | 8.29E-05 | 3.97E-02 | 5.27E-05 | 2.53E-02 | 1.09E-04 | 5.23E-02 | 2.83E-06 | 1.35E-03 | 4.52E-05 | 2.16E-02 |
| Auto Repair | 4.91E-05 | 4.91E-05 | 1.03E-04 | 1.03E-04 | 6.47E-05 | 6.47E-05 | 1.67E-06 | 1.67E-06 | 2.68E-05 | 2.68E-05 |
| Public Transit | 2.20E-04 | 1.41E-04 | 2.20E-04 | 1.41E-04 | 2.90E-04 | 1.86E-04 | 7.50E-06 | 4.80E-06 | 1.20E-04 | 7.68E-05 |
| Payments | 1.44E-04 | 1.44E-04 | 1.44E-04 | 1.44E-04 | 1.90E-04 | 1.90E-04 | 4.92E-06 | 4.92E-06 | 7.87E-05 | 7.87E-05 |
| Clothing | 9.52E-05 | 9.52E-05 | 1.38E-04 | 1.38E-04 | 1.25E-04 | 1.25E-04 | 3.24E-06 | 3.24E-06 | 5.19E-05 | 5.19E-05 |
| Health and • Personal | 2.46E-05 | 2.46E-05 | 2.46E-05 | 2.46E-05 | 3.24E-05 | 3.24E-05 | 8.37E-07 | 8.37E-07 | 1.34E-05 | 1.34E-05 |
| Special Health | 1.23E-05 | 1.23E-05 | 1.23E-05 | 1.23E-05 | 1.62E-05 | 1.62E-05 | 4.19E-07 | 4.19E-07 | 6.70E-06 | 6.70E-06 |
| Insurance | 5.15E-05 | 5.15E-05 | 5.15E-05 | 5.15E-05 | 6.78E-05 | 6.78E-05 | 1.75E-06 | 1.75E-06 | 2.81E-05 | 2.81E-05 |
| Daycare | 4.81E-05 | 4.81E-05 | 4.81E-05 | 4.81E-05 | 6.34E-05 | 6.34E-05 | 1.64E-06 | 1.64E-06 | 2.63E-05 | 2.63E-05 |
| Leisure | 3.63E-03 | 2.36E-03 | 3.63E-03 | 2.36E-03 | 4.78E-03 | 3.11E-03 | 1.24E-04 | 8.05E-05 | 1.98E-03 | 1.29E-03 |
| Culture | 0.00E+0 | 3.96E-02 | 0.00E+0 | 3.96E-02 | 0.00E+0 | 5.22E-02 | 0.00E+0 | 1.35E-03 | 0.00E+0 | 2.16E-02 |
| • Recreation | 4.30E-05 | 4.30E-05 | 4.30E-05 | 4.30E-05 | 5.66E-05 | 5.66E-05 | 1.47E-06 | 1.47E-06 | 2.34E-05 | 2.34E-05 |
| Hunt/Fish | 1.53E-05 | 1.53E-05 | 1.53E-05 | 1.53E-05 | 2.02E-05 | 2.02E-05 | 5.23E-07 | 5.23E-07 | 8.37E-06 | 8.37E-06 |
| • Education | 1.99E-05 | 1.99E-05 | 1.99E-05 | 1.99E-05 | 2.63E-05 | 2.63E-05 | 6.79E-07 | 6.79E-07 | 1.09E-05 | 1.09E-05 |
| Gifts and Don. | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 |
| Total | 0.01825 | 0.01536 | 0.01825 | 0.01536 | 0.02407 | 0.02024 | 0.00062 | 0.00052 | 0.00995 | 0.00837 |
| Cumulative | 0.016962 | 0.01694 | 0.01696 | 0.016951 | 0.02236 | 0.022350 | 0.000577 | 0.000577 | 0.009246 | 0.009243 |

The interpretation of any cell in this table is the same as for the previous Scenarios. More noteworthy is that these Shuswap of Adams Lake multiplier values are virtually identical to those in Scenario 1, as reported in Appendix E. If the households of the Adams Lake Shuswap receive treaty compensation, the income of the community will rise by about the same amount regardless of the type of jurisdiction specified in the treaty.⁴⁷ Keeping this in mind, Table XII presents the Scenario 3 summary multipliers of the other Shuswap communities.

⁴⁷

Of course it matters to each particular household as Scenario 1 is preferred by on-reserve households and Scenario 3 is preferred by off-reserve households. This dissension by residence is by no means a trivial issue and has been exacerbated over recent years by the changes brought about by Bill C-31.

Table XII Summary Multipliers for Scenario 3

| Multiplier type | Skeetchestn | | Neskonlith | | Bonaparte | | SNTC | |
|-----------------|-------------|---------|------------|---------|-----------|--------|--------|--------|
| | Total | Cuml. | Total | Cuml. | Total | Cuml.* | Total | Cuml. |
| multiplier 1 | 0.01998 | 0.01872 | 0.03409 | 0.03304 | 0.0104 | 0.0090 | 0.0141 | 0.0128 |
| multiplier 2 | 0.01361 | 0.01870 | 0.02107 | 0.03300 | 0.0104 | 0.0090 | 0.0120 | 0.0128 |
| multiplier 3 | 0.01998 | 0.01872 | 0.03409 | 0.03304 | 0.0104 | 0.0090 | 0.0141 | 0.0128 |
| multiplier 4 | 0.01361 | 0.01871 | 0.02107 | 0.03301 | 0.0104 | 0.0090 | 0.0120 | 0.0128 |
| multiplier 5 | 0.02634 | 0.02469 | 0.04494 | 0.04356 | 0.0138 | 0.0119 | 0.0186 | 0.0169 |
| multiplier 6 | 0.01795 | 0.02467 | 0.02778 | 0.04352 | 0.0137 | 0.0119 | 0.0159 | 0.0168 |
| multiplier 7 | 0.00068 | 0.00064 | 0.00116 | 0.00113 | 0.0004 | 0.0003 | 0.0005 | 0.0004 |
| multiplier 8 | 0.00046 | 0.00064 | 0.00072 | 0.00113 | 0.0004 | 0.0003 | 0.0004 | 0.0004 |
| multiplier 9 | 0.01090 | 0.01021 | 0.01859 | 0.01801 | 0.0057 | 0.0049 | 0.0077 | 0.0070 |
| multiplier 10 | 0.00743 | 0.01020 | 0.01149 | 0.01800 | 0.0056 | 0.0049 | 0.0066 | 0.0070 |

The small values of the multipliers are not surprising given the leakages from the on-reserve economy, and the marginal economic position⁴⁸ of the off-reserve households in the off-reserve economy. Similar multipliers, especially in the cumulative rows of the Scenarios 1 and 3 multiplier tables, suggest that on the issue of the impact of treaty compensation, the First Nations households could be virtually indifferent between the two jurisdictional models⁴⁹.

The considerable fluctuation evident in the total and cumulative rows results from the importance of the on-reserve feedback term attributable to compensation given to off-reserve households in this multiplier. Additionally this feedback term ($h_i b_i k_i Y_k$) is particularly sensitive to changes in

⁴⁸ Marginal is admittedly a loaded term but the statistics presented in Chapter 2 seem to support this broad characterization.

⁴⁹ This assumes that there are no differences in individual utility between each Scenario which is probably not the case especially since the on-reserve households in Scenario 3 would receive less compensation than in Scenario 1.

the local income generated from on-reserve expenditure term b_i and the feedback term h_i .

Therefore, the feedback term is larger for multipliers 1-6 compared to multipliers 7-10. Also, the even numbered multipliers in the total row are generally lower since h_i is usually zero⁵⁰.

For these Shuswap communities, a strong case can be made that the lower even numbered multipliers are more appropriate. The Shuswap communities used in this investigation are at least 60 km away from the nearest significant off-reserve municipality, Kamloops. As was discussed in Chapter 2 and Chapter 3 most households leaving the reserve do so for reasons of employment, housing and education⁵¹. In this regard, Kamloops is the nearest centre for many migrant Shuswaps.

Assuming that most off-reserve Shuswaps are in Kamloops, it is unlikely that these households could economically rationalize any on-reserve purchases other than gasoline and tobacco. The expenditures of the off-reserve households in the non-First Nation economy are undoubtedly higher than those of the on-reserve households. Furthermore, it is also unlikely that the off-reserve citizens of any Shuswap community outside of Kamloops make up as much as 2% of the off-reserve labour force, as is assumed in the parameter "e". As such, the lower bound of the

⁵⁰

The odd numbered multipliers assume that the off-reserve households have the same marginal propensity to buy from First Nation businesses as do the on-reserve households. The even numbered multipliers assume that off-reserve households only purchase from First Nation businesses where there is a distinct pricing advantage resulting from the Section 87 of the Indian Act tax exemption.

⁵¹

This reasoning follows directly from human capital mobility theory, where the mover attempts to maximize the net present value of the difference between the benefits of moving and the costs of moving.

Scenario 3 multiplier values contained in the even-numbered multipliers may be more appropriate. In this event, Scenario 1 may be preferable to Scenario 3 on the basis of treaty compensation impacts.

Interestingly, such a conclusion may also be more cost-effective for the federal and provincial Governments. Although off-reserve residents may spend more of their compensation into the off-reserve economy than on-reserve residents, these expenditures would generate tax revenues which would be split between the First Nation and provincial Governments given the implicit expanded First Nation jurisdiction accompanying Scenario 3.⁵² These considerations have been captured in the taxation multipliers in Table XIII below which result from the following equation:

$$\text{Tax mult } i = K_{\text{tax}}(Y_i d_i + Y_j d_j) - e Y_j d_j t_d \quad \text{where}$$

d_i & d_j - indicate the different expenditure behaviours of on and off-reserve residents respectively⁵³

⁵²

The taxation jurisdiction in this Scenario is a little trickier because some of the off-reserve First Nation households' taxes may be the property of the First Nation Government and would have to be the subject of some type of tax treaty between the First Nation and other off-reserve taxing jurisdictions. It is subtracted from the taxation multiplier below.

⁵³

d_i = is as estimated for Scenarios 1 and 2, and d_j is $1 - (\text{expenditure on tobacco} + \text{gasoline}/\text{total expenditures})$ which = .919.

Table XIII Scenario 3 Income Tax Multipliers

| | Neskonlith | Skeetchestn | Adams Lake | Bonaparte | SNTC |
|------------|------------|-------------|------------|-----------|----------|
| Tax mult,1 | 0.228136 | 0.247316 | 0.243946 | 0.25591 | 0.251929 |
| Tax mult 2 | 0.219197 | 0.237617 | 0.234416 | 0.245874 | 0.242064 |
| Tax mult 3 | 0.154487 | 0.167626 | 0.164686 | 0.173445 | 0.170468 |

Comparing these values to those of Table VIII in Scenario 1 results in considerable ambiguity. The tax multiplier values are slightly higher in Scenario 1 for Bonaparte and Adams Lake and slightly higher in the other communities for Scenario 3. This occurs because of the lower propensities to consume on-reserve for Bonaparte and Adams Lake compared to the other communities. The margin of this difference, though, is hardly substantial. In most cases for these Shuswap communities, the net taxation benefit for the provincial and federal Government between the two Scenarios is less than one third of a penny per dollar of compensation⁵⁴. Regardless of the tax multiplier magnitude, these results suggest some support for the proposition that most parties, (First Nation and provincial and federal Governments) may prefer Scenario 1 to Scenario 3⁵⁵.

⁵⁴ This net benefit would be even lower if the off-reserve employment parameter "e" was reduced to reflect the minuscule First Nation representation in off-reserve employment of Shuswap communities outside Kamloops.

⁵⁵ This conclusion is valid even given the expanded First Nation taxation jurisdiction intrinsic in Scenario 3. Although the First Nation Government may receive more tax revenue, its increased jurisdiction would certainly entail greater costs of service delivery. Obviously, off-reserve First Nation citizens may not agree with this conclusion.

4.24 Scenario 4

In many ways Scenario 4 is identical to Scenario 2 and a detailed analysis is superfluous. First the multiplicand, the First Nation Government, is the same as in Scenario 2. Secondly, therefore, the principal conclusion in Scenario 2 is the same as in Scenario 4. The Keynesian methodology is inappropriate for analyzing whether First Nation Governments will effectively utilize treaty compensation to promote long term economic growth. An entirely different methodology, as is presented in Chapter 5 is necessary. Finally, it is as inappropriate to compare Scenario 4 to 3 as it was to compare Scenario 2 to 1.

The only difference between these two Scenarios is the scope of jurisdiction. In Scenario 2 it is resident based and in Scenario 4 it is citizen based. This difference in the two Scenarios is reflected in the direct impact catchment area for First Nation Government expenditures in the two Scenarios. Specifically, it is larger in Scenario 4 than in Scenario 2. This difference has been captured in the parameter z_2 , which is assumed to represent a host of investment options for First Nation Government ranging from education, to business development. The new value of z entails a number of additional feedback and induced effects. These are evident in the multiplier formula presented below:

$$vg_2 = \left(\sum_i x_i b_i Y + \sum_i (1-x-z) b_i (1-t_s) e (1-t_d) h_i b_i Y + \sum_i (1-x) b_i (1-t_s) e (1-t_d) Y + zY + \sum_i b_i k_i z Y \right. \\ \left. + \sum_i d_i b_i (1-t_s) e (1-t_d) h_i b_i z Y + \sum_i d_i (1-t_s) e (1-t_d) b_i z Y \right) / Y$$

Table XIV presents the Scenario 4 household summary income multipliers for the various Shuswap communities:

Table XIV Scenario 4 Summary Income Multipliers

| Community | Skeetch'na | | Adams Lake | | Neskon. | | SNTC | | Bonap. | |
|------------|------------|-----------|------------|-----------|-----------|-----------|-----------|-----------|--------|--------|
| Mult. type | Cumul. | Total | Cumul. | Total | Cumul. | Total | Cumul. | Total | Cumul. | Total |
| mult 1 | 0.3797216 | 0.3729040 | 0.3790762 | 0.3728365 | 0.3849649 | 0.3729108 | 0.3775355 | 0.3728771 | .37617 | .37290 |
| mult 2 | 0.3797021 | 0.3802763 | 0.3790601 | 0.3800682 | 0.3849186 | 0.3854126 | 0.3775353 | 0.3776475 | .37617 | .37584 |
| mult 3 | 0.3797216 | 0.3793694 | 0.3790762 | 0.3796082 | 0.3849649 | 0.3836098 | 0.3775355 | 0.3771081 | .37617 | .37532 |
| mult 4 | 0.3797021 | 0.3796708 | 0.3790601 | 0.3799029 | 0.3849186 | 0.3838899 | 0.3775353 | 0.3774163 | .37617 | .37564 |
| mult 5 | 0.3828306 | 0.3829274 | 0.3819783 | 0.3826578 | 0.3897531 | 0.3897453 | 0.3799408 | 0.3794447 | .37814 | .37705 |
| mult 6 | 0.3827968 | 0.3837605 | 0.3819503 | 0.3834840 | 0.3896771 | 0.3905281 | 0.3799404 | 0.3802939 | .37814 | .37791 |
| mult 7 | 0.3703301 | 0.3703329 | 0.3703083 | 0.3703260 | 0.3705080 | 0.3705083 | 0.3702562 | 0.3702434 | .37021 | .37018 |
| mult 8 | 0.3703301 | 0.3703335 | 0.3703082 | 0.3703265 | 0.3705080 | 0.3705088 | 0.3702562 | 0.3702439 | .37021 | .37018 |
| mult 9 | 0.3752934 | 0.3753359 | 0.3749422 | 0.3752247 | 0.3781469 | 0.3781478 | 0.3741057 | 0.3739 | .37336 | .37291 |
| mult 10 | 0.3752876 | 0.3754785 | 0.3749374 | 0.3753662 | 0.3781332 | 0.3782818 | 0.3741056 | 0.3740454 | .37336 | .37306 |

The higher multiplier values than Scenario 2 are entirely a result of the higher value of the direct expenditure on local wages and salaries which results from citizenship jurisdiction. There are some off-reserve citizens who would be hired by the First Nation Government in Scenario 4, who in Scenario 2 were considered outside the First Nation economy.

To provide some perspective for these multiplier values in relation to those in Scenario 2, consider that if a Type II multiplier ratio were used such as:

$$(\text{direct} + \text{induced} + \text{feedback})/\text{direct}$$

then the ratios would be almost identical because the induced and feedback effects are identical to those in Scenarios 1 and 3. The proportionate difference in the size of the direct effect (z1 vs. z2) would be eliminated with this type of multiplier. In this event, the principal conclusion from

this chapter would be the same for all Scenarios - the magnitude of on-reserve expenditures is small and therefore so are the multipliers.

A brief discussion of the taxation multipliers completes the analysis of Scenario 4. These are identical to Scenario 2 except the parameter z has a higher value and some first round tax revenue is now under First Nation jurisdiction.⁵⁶

Table XV Scenario 4 Taxation Multipliers

| | <u>Neskonlith</u> | <u>Skeetchestn</u> | <u>Adams Lake</u> | <u>Bonaparte</u> | <u>SNTC</u> |
|------------|-------------------|--------------------|-------------------|------------------|-------------|
| Tax mult 1 | 0.242933 | 0.256993 | 0.258724 | 0.266511 | 0.262834 |
| Tax mult 2 | 0.233363 | 0.246869 | 0.248532 | 0.256012 | 0.25248 |
| Tax mult 3 | 0.161865 | 0.168185 | 0.157507 | 0.169982 | 0.164882 |

All these taxation multipliers are slightly lower than those in Scenario 2. This difference can be accounted for by the lower direct off-reserve expenditures in Scenario 4 than in Scenario 2 $((1-x-z2) < (1-x-z1))$ and the expanded taxation jurisdiction inherent in Scenario 4. This difference in tax revenue might lead some First Nations to conclude that this form of jurisdiction is economically superior to the jurisdiction in Scenario 2. Such a conclusion, however, would be premature since the values in the taxation multipliers represent only the revenue from jurisdictional changes, and not the cost of such changes⁵⁷.

4.3 Summary

This chapter contained a substantial amount of statistical information which is summarized into six points for the reader's benefit below:

⁵⁶ Specifically the taxation multiplier for Scenario 4 = $K_{tax} ((1-x-z2) + (z2d)) - (e(1-x-z2)t_d)$.

⁵⁷ The administrative costs of off-reserve neighbors (one a First Nation citizen, the other not) complying with separate taxation jurisdictions could be substantial.

1. Because there were five estimates of the parameter which measured the proportion of expenditures that becomes household income, and two estimates of the parameter that measures the feedback effect, there were ten multiplier estimates per commodity for each community.
2. The local marginal propensities to consume were either low or insignificantly different from zero for all commodities and all communities. The highest local marginal propensity to consume was .07 for gasoline in Neskonlith.
3. There was no statistical differences in local marginal propensities to consume between the top income strata and the bottom income strata for all five communities.
4. The total and cumulative first round household income multipliers ((direct + induced + feedback)/direct)) for Scenarios 1 and 3 were all between 1.005 and 1.04 depending upon the community and the particular multiplier.
5. In all four Scenarios, for each dollar of treaty compensation spent off reserve (which is about 80¢ of each dollar of treaty compensation) between 20¢ and 25¢ of tax revenue will be generated for the Federal and Provincial Governments according to the taxation multipliers used in this Chapter.
6. On the basis of the household income multipliers, Scenarios 1 and 3 were superior to Scenarios 2 and 4. This does not imply, however, that First Nations should distribute treaty monies to households rather than their governments, since household income multipliers are not the only criterion for this decision.

Chapter 5
A Methodology for Estimating the Economic Impact of Institutional Changes
Resulting from Treaty Settlement

"Much of the economic ... (underdevelopment) in the world can be explained by a lack of mutual confidence" (Arrow 1972, p. 343).

Accepting Arrow's hypothesis, it follows that the economic "under-development" of the First Nation economy results from a lack of mutual confidence, more commonly referred to as trust. This chapter poses the question, "will the settlement of treaties generate the mutual confidence necessary for First Nation economic growth, and if so then how"?

Treaties will clarify, recognize, or at the very least change, property rights between First Nations and the federal and provincial governments. Recognized property rights will be manifested as new First Nation institutions. Is it possible, pre-treaty settlement, to assess the likelihood that these new First Nation institutions will enhance economic growth more than their predecessors? The purpose of this chapter is to develop an explicit dynamic between institutional change and economic growth so that an economic assessment of the property rights component of treaties is possible¹.

That institutions and economic growth are closely related is not contentious. This is evident in the public concern in B.C. about treaty settlement. As the previous chapters

¹ In the language of the previous chapters, how will First Nation governments change the economic environment for First Nations and the parties with which they interact? - or more succinctly "how will First Nation governments influence the magnitudes of the Keynesian multipliers?"

demonstrated, treaty compensation to First Nations may be costly to governments. Is the public concerned about the cost? Perhaps, but remember that most First Nation expenditures will be made into the local non-native economy which in turn will generate tax revenue to partially offset the cost of the treaty compensation and B.C. citizens would only be responsible for about 20% of the total cost of compensation. Admittedly, the whole cost of compensation will not be covered, but the return to government revenues will certainly be greater than say expenditure on military hardware from a foreign supplier.

The real concern of the general public is probably not the compensation component of treaty settlement. It is the specific institutional components of self government that have people worried².

How will First Nation governments manage resources on lands over which they have quasi provincial authority? What will First Nation governments do with expanded education authority? What will happen to the tax system on First Nation lands?

The B.C. government has attempted to allay these fears with the recent release of two studies. The first, by the ARA consulting group, utilizes six case studies of previously settled treaties, three of which were in Canada, to analyze, among other processes, the economic impact from treaty produced institutional changes. Their study concludes:

²

For some First Nation persons the lasting changes resulting from institutional changes might be more economically beneficial than the original cash settlement (Government of B.C., 1995, p. 10).

"land claim settlements in Australia, New Zealand, Alaska, Quebec and Canada's north had not caused the political or economic upheaval predicted by critics" (Vancouver Sun, January 26, 1996, p. A12).

The second study by KMPG concerning the financial impact of treaty settlement concludes that the increased certainty resulting from "quiet title" will spawn significant financial benefits for the First Nation people resident in B.C., and the citizens of B.C..

Both studies provide many insights into the impact of treaty settlement and will be referenced throughout this chapter, but both also leave many questions unanswered. First, although the ARA Consulting Group may be correct in suggesting that the economic upheaval³ arising from treaty settlement will be modest, the relationship between institutional change and economic growth is complex. Their use of case studies is a crucial first step in developing a methodology for modelling this relationship and eventually assessing the economic impact of institutional change⁴. Without a theoretical foundation, however, it is difficult to make any impact generalizations. Secondly, the KPMG study does not specify how increased certainty leads to economic growth.

³ The interpretation of upheaval as economic growth is for demonstration purposes and will not be repeated in this chapter.

⁴ For example, when treaty settlement and self government is equated with a significant technological change for First Nations, then David (1988), and Von Hippel (1990) concur with the case study approach as a first method for predicting economic impacts from institutional changes.

"... technological presbyopia ... sufferers lose a proper sense of the complexity and historical contingency of the process involved in technological change and the entanglement of the latter with economic, social, political and legal transformations. ... The easiest and probably most effective remedy I can recommend is to spend more time on backward looking pursuits seeking a deeper understanding of the actual historical experience ..." (David, 1988, p. 393).

The first section of this chapter presents two anecdotes from First Nation institutions which demonstrate the role of trust in institutions and its subsequent effect on economic growth as well raising a number of other questions in the institutional change economic growth dynamic. The second section of this chapter attempts to answer the questions about institutional change and economic impacts raised in the two anecdotes, the case studies discussed in the ARA report. A general methodology for predicting the economic impact from institutional changes is then presented in the third section of this chapter.

5.1 The Cost of Information Collection in Shuswap Country

As was discussed in Chapter 3, the SNTC, Statistics Canada, and the Department of Indian Affairs all engaged in the collection of some statistical information from the SNTC communities between 1991 and 1993. In many ways the information collected from the Shuswap households by Statistics Canada and the SNTC were similar: basic demographics and a human resource and household income profile. A useful demonstration of the potential economic impact from First Nation control of information collection - a possible institutional change resulting from treaty settlement - can be made by estimating the cost of these information collection exercises⁵. In this regard, it is well accepted that the cost of information acquisition is a transaction cost (Dietrich, 1994, Williamson, 1985).

⁵

Ideally the value of the information collected would be ascertained as well but given the divergent objectives of each information collection agency this is not possible.

Since 10 SNTC communities formed a special census area it is easiest to estimate the Statistics Canada cost of census information collection, processing, and product development for 10 SNTC communities rather than 5. Furthermore, the SNTC completed all of the community economic studies in the summer of 1993 so actual and projected costs are available for the 10 communities. Indian and Northern Affairs of Canada (INAC) costs can be easily extrapolated to 10 communities as well. It must be stressed that these estimates represent best guesses and should be treated with caution.

Table I provides an opportunity to compare the costs of information collection, and the type of information collected for that cost, between the Department of Indian and Northern Affairs (INAC), Statistics Canada (Stats Can) and the SNTC. Appendix F contains the details of the information collection costs estimates which are reported as total costs for 10 SNTC communities in Table I.

Table I Information Type and Cost Comparison

| | Pop Counts | Demographics | Human Resource and Labour | HH. Expend. | Costs |
|-----------|------------|--------------|---------------------------|-------------|-----------|
| SNTC | ✓ | ✓ | ✓ | ✓ | \$121,500 |
| INAC | ✓ | | | | \$30,600 |
| Stats Can | ✓ | ✓ | ✓* | | \$141,739 |

For sources and details see Appendix F.

* The Statistics Canada human resource and income profile was more thorough than that completed by the SNTC.

The most interesting observation in Table I, is that the SNTC produced detailed community specific reports full of statistics, analysis and suggestions for less cost than Statistics Canada spent to produce the SNTC community results in 95-384⁶. INAC produces a single page report on population counts at a rather significant cost. In fairness, further specific Statistics Canada reports for these SNTC communities can undoubtedly be produced - for a price.

Interestingly a substantial amount of Statistics Canada expenditures went towards marketing the census. If it could be shown that the SNTC spent less on marketing than Statistics Canada and collected at least as much information it could indicate that the SNTC could achieve lower transaction costs for information collection than Statistics Canada⁷, i.e. transferring information collection to the SNTC would entail a more efficient allocation of resources. Is this because the Shuswaps, from whom the information was collected, may have trusted the SNTC more than Statistics Canada as an information collector? The linkage between trust and lower transaction costs is well established in the literature and is discussed in more detail in section 5.3.

⁶ Some additional and more detailed demographic Statistics Canada data for the Kamloops Shuswap can be found in 92-320. Furthermore, much more detailed aggregated First Nation data can be found in 89-533 - 89-535, the Aboriginal Peoples Survey. This, however, was an entirely different and significantly more costly exercise than the Census.

⁷ It is perhaps ironic, however, that in its marketing of the 1991 census, Dr. Ivan Fellegi of Statistics Canada claimed the following: "Statistics Canada provides very large cost savings. Survey taking, in general, and Census taking in particular, are extremely expensive operations, the cost of which Statistics Canada normally assumes, at least in the case of the census. If AFN were to "go it alone", activities such as content development, questionnaire design, map preparation, computer systems and training would cost in the order of tens of millions of dollars - assuming the appropriate expertise could be found" (Report on the Joint Conference on a First Nations Data Base and the 1991 Census and Post-Census Programs, 1990 p. 31).

5.2 The Kamloops Shuswap and Taxation Jurisdiction

The main reserve for the Kamloops Shuswaps is located near the junction of the North and South Thompson Rivers across the river from the city of Kamloops. Not surprisingly the word for Kamloops was derived from the Shuswap word meaning "meeting of the waters". The Secwepmc people had wintered in this location⁸ for thousands of years before the arrival of the Hudson's Bay Company in the early 1800s.

Current reserve lands of the Kamloops Shuswap cover 33,000 acres and the population of the community is 799. Both in terms of land and population, the Kamloops Shuswaps are the largest community within the Shuswap Nation Tribal Council, an organization which comprises nine of the seventeen Shuswap community governments.

Beginning with the fur trade, and extending through the time of Chief Louis (1855-1915) until the present, the leaders of the Kamloops Shuswap have always been concerned with viable economic coexistence between their community and the surrounding non-Shuswap communities. It was this concern that led to the 1962 passage of a bylaw by the Chief and Council of the Kamloops Shuswap to formally establish the Mount Paul Industrial Park.

⁸ The common name for these pithouse winter homes is "kikiwili", but the Shuswap word is "sc7istkten". It would not be a great leap of anthropological faith to suggest that given its strategic location that the Secwepmc people (and other tribes) likely engaged in some trade at this location well before the arrival of European traders. The bounds of their economic growth from this trade were undoubtedly limited by geographical, technological and population factors.

The industrial park has grown from 11 original businesses to 126 today⁹.

In addition, the real expenditures for the Kamloops Shuswap government have grown at a rate of 11.8% per year over the last 28 years¹⁰ compared to 10.5% for the Department of Indian and Northern Affairs of Canada over the same time period. Employment in the Kamloops government has increased from 6 in 1974 to 141 in 1992¹¹. During the period 1972 to 1992 the Kamloops Shuswap have ostensibly maintained a balanced budget¹².

It is in this environment that the Kamloops Shuswap have been able to develop a major administrative and jurisdictional innovation for First Nations. Although the industrial park is a prime source of lease revenue for the Kamloops Shuswap government, its evolution, particularly in matters pertaining to taxation of its inhabitants has not been entirely smooth.

Specifically, taxes intended to provide services such as road maintenance, garbage disposal, water and sewer were collected by the provincial government, but the revenue was

⁹ The Kamloops Shuswaps voted on January 19, 1996 to designate about 1000 acres of reserve land to developers on the basis of 99 year leases. The developers and the Kamloops Shuswap have preliminarily estimated that the value of these proposed developments will be over \$600 million.

¹⁰ This was estimated using a standard log-linear regression of government expenditures on time and solving for the growth rate using the time coefficient. It should be noted that when the year, 1985 (a data anomaly) is removed from the sample the growth rates are not significantly different at the 5% level of confidence.

¹¹ Compare this to the Big Cove Micmac government in New Brunswick which employed 142 persons in 1992 and had a population of 2,031, three times greater than the Kamloops Shuswap (Augustine et al, 1993).

¹² If one includes long term debenture financing by municipalities as a form of a current budget deficit, First Nation governments are the only governments in Canada which do not regularly engage in some form of deficit financing (there are some First Nation exceptions to this).

transferred by the city of Kamloops which in no way felt obligated to provide these services on Kamloops Shuswap land. The Kamloops Shuswap government was subsequently forced to levy service charges on these businesses to provide services, upkeep and maintenance to the Mt. Paul Industrial Park. This incidence of double taxation made the Mt. Paul Industrial Park a rather unattractive business location. The cause of this problem was interpretive difficulties with Section 83 of the Indian Act which did not provide Indian governments with taxation authority over their own land.

The ensuing inevitable legal and political battle culminated in the 1988 passage of Bill C-115, known as the Kamloops Amendment to the Indian Act. As a result of this amendment, First Nation communities have the authority to levy taxes on the use and users of legally owned Indian land to the exclusion of the provincial government. The process of property tax collection from the businesses of the Mt. Paul Industrial Park has taken place since 1991. There is little doubt that this jurisdictional transfer would not have taken place had there not been significant cooperation between the Kamloops Shuswap, the Canadian government, the B.C. provincial government, the municipality of Kamloops, and the residential and business lease holders on Kamloops Shuswap land. As a result of this taxation innovation, the number of other First Nations collecting real property tax from non-native lease holders on their land has risen from three in 1991 to 52 in 1994¹³.

The Kamloops Shuswap, however are not satisfied with simple property taxation jurisdiction. The Chief and Council of the Kamloops Shuswap feel as an institution that

¹³

This information was obtained from the Indian Taxation Advisory Board.

they must venture into other taxation fields, notably sales and income tax, to ensure their long term sustainable development.

Their reasoning seems fiscally sound, given that on average 76% of their government revenues are transfers from the Department of Indian and Northern Affairs (see Chapter 2). The leaders of this community are also well aware that federal government transfers will fall as the Canadian government attempts to reduce its deficit. To maintain its current institutional capacity the Kamloops Shuswap feel they must expand their taxation jurisdiction¹⁴.

If the Kamloops Shuswaps were to assume taxation jurisdiction over all the sales, income, property, and corporate tax currently collected from economic activities on their land, it would amount to a conservatively estimated \$19 million annually (Le Dressay, 1993b, p. 239). Contrast this total with the 1993-1994 Kamloops Shuswap government expenditures of \$9 million and with the total estimated combined expenditures of the 10 Shuswap Nation Tribal Council community governments, \$22 million. It is quite possible, in this scenario, that self-government is fiscally feasible for the Kamloops Shuswaps¹⁵.

¹⁴ This view has been often expressed by Bob Manuel and Kamloops Shuswap Chief Manny Jules. From their perspective, all economic activity on treated land (the current reserves at least) should be subject to First Nation taxation and not the taxation of another government.

¹⁵ This estimate does not include any taxation provisions resulting from treaty settlements or any other taxation potential estimates for the other Shuswap communities. Appendix A contains a map of the traditional territory of the Shuswap Nation to provide a potential glance into the fiscal revenue potential under a possible treaty settlement. Courchene, 1992, estimates the per capita costs of self government in the Yukon to be \$13,500. With approximately 800 citizens (INAC on and off-reserve estimate) the Kamloops Shuswaps could expect the costs of governing their own people to be about \$10.8 million.

The proposition is not as radical as it first sounds. In March, 1993 the Canadian Department of Finance presented a working paper suggesting First Nations consider adopting a taxation system similar to or identical to the provincial taxation system in an effort to ensure tax harmony was maintained¹⁶. In this scenario the Kamloops Shuswap would receive about 50% of the total \$19 million presently leaving the reserve. An attendee at the 1993 Canadian Tax Foundation Annual meeting turned to me and whispered the phrase, "Scary"¹⁷ when he heard this news from an official of the Department of Finance.

The Kamloops Shuswap intend to pursue a fuller range of taxation jurisdiction but as the tax lawyers and tax accountants at the Canadian Taxation Foundation have said, this concept is scary. Does their fear reflect a lack of trust? Is this lack of trust directed towards the government of the Kamloops Shuswap justified? The answer to these question requires some analysis.

For simplicity assume that the Kamloops Shuswap government comprises the buildings, equipment, staff, and administrative structures. The legitimacy of this government is recognized in the Indian Act. In addition to the rather encompassing parameters of this Act, the staff of this government takes its direction from the duly elected Kamloops Shuswap

¹⁶ This follows directly from the umbrella agreement between the Canadian government and Council of Yukon Indian and is detailed in Courchene, 1992. Even the Canadian Department of Finance states "Indian governments should have access to all forms of direct taxation [provincial tax jurisdiction] for the purpose of raising revenue for First Nation purposes" (Department of Finance. 193, p. 24).

¹⁷ This particular self-government power of taxation is widely endorsed by First Nations, "The power to raise revenues through taxation within Traditional First Nation Territory is within exclusive jurisdiction of First Nations". (May 31, 1995 Assembly of First Nation position paper to the Ministers of Finance, Revenue and Indian Affairs)

Chief and Council¹⁸. The relationship between politics and administration, however, is much closer in First Nation communities than in the provincial or federal government. This tight relationship can have a dramatic economic impact.

In December 1992 the Shuswap People of Kamloops held an election for their council¹⁹. Of the seven elected council members, 4 were supported by one group of families²⁰ which had not held political office for several years, while 3 were supported by the incumbent group of families. This division represented a change in the political power base and a subsequent and expected shift in priorities. This, however, is where the normal non-First Nation democratic process ends.

On January 19, 1993 the lead article in the Kamloops Daily New stated that "Chief fears white purge as Indian Band Fires Non-Native Administrator"(p.1). The new government began in the political lingo, "cleaning house". The incumbent families, however, alleged that this was clearly a practice of "bad government" and was not in the best interest of the community. The ensuing internal power battle was carried on the front pages of the news for the next few days culminating in the January 21, 1993 headline "Rivals press Chief to

¹⁸ The sensitive nature of the information reported here would not have been possible were it not for the candid interviews of several Kamloops Shuswap citizens, and Kamloops Shuswap government personnel including Chief Jules, Barbara Stewart, Donnie Seymour, and Richard Jules.

¹⁹ Since the early 50's council elections have been held every two years as directed by the Department of Indian Affairs. The incumbent Chief of the Shuswap people of Kamloops, however, is elected for a four year term. It is important to note that although there are 8 elected representatives including the Chief, the Chief votes only in the event of a tie.

²⁰ The family politics of First Nation communities is undoubtedly a principal source of the instability inherent in First Nation governments. For an excellent related article on this phenomenon in Sicily see, Gambetta, (1988) "Mafia: The Price of Distrust".

quit" (p. 1). A publicity truce was called²¹ which exists until this day.

Throughout 1993 and 1994 the Kamloops Shuswap government divided along lines of family support. A First Nation government is principally composed of five departments, administration-finance, education, social development, housing, and citizenship. Two of these departments have physically moved into another building as a result of the standoff. Accusations ranging from file theft to phone line tapping were levelled by each side against the other. The relationship which had held the components of this institution together had been changed, and there were no existing enforceable mechanisms to mend it. Did these events generate mistrust and if so what were the economic impacts of this mistrust?

Assume that the external boundary of the Kamloops Shuswap is defined by the governments, businesses, and households with whom it interacts. Specifically let the external boundary refer to the lease holders and potential tax payers in the Mount Paul Industrial Park and the Canadian government.

It is impossible to know the role that trust played in the further development of the Mount Paul Industrial Park given all the other possible factors, lease cost, property taxes, site suitability, transportation access, and local services. Suffice it to say that the lack of trust

²¹ The history of mistrust in the Shuswap Nation can be traced to a number of sources including the breaking of promises (Shuswap Memorial, 1910), the forced isolation of Shuswap on unsustainable reserves, the failed residential school experiment (Haig-Brown, 1988), the policies and action of the Department of Indian and Northern Affairs, or a number of other specific factors but most Shuswap interviewees on this subject agree that the term colonization best summarizes the source of their mistrust. This anger, frustration and alienation felt by some Shuswaps is often turned inward to community as is evidenced here.

did not scare off any potential firms from 1962 until 1992. Between December 1992 and December 1994, however, no new lessees turned sod in the Mount Paul Industrial Park, despite the recent economic expansion in the Kamloops area²² and its having lower tax rates than the city of Kamloops, superior transportation access.

Similarly it is equally impossible to fully discern the particular funding game played between the Department of Indian and Northern Affairs and the Kamloops Shuswap, but the Kamloops Shuswap government budget fell by over \$2 million (22%) in the first fiscal year after the internal dispute and another \$1 million in the second year. Since lease and property tax revenues did not significantly change from fiscal year 1993 until fiscal year 1994 most of this revenue decline was a result of reduced transfers from the Department. Over the period from December 1992 to November 1994 Kamloops Shuswap government employment fell from 141 to 57²³.

In April, 1993 the Canadian Department of Finance expressed a willingness to consider proposals for First Nation taxation systems based on the provincial type jurisdiction parameters outlined in their March 1993 "Working Paper on Indian Government Taxation". Given the profile of the Kamloops Shuswaps in the area of taxation, it was expected to demonstrate leadership. How could it expect to collect sales taxes from the businesses of the Industrial Park, and perhaps income taxes from its tax paying government employees

²² The Kamloops Economic Development Corporation estimates that the unemployment rate has fallen by 2% in Kamloops over the last 2 years.

²³ These figures were provided from payroll documents borrowed from the accounting department of the Kamloops Shuswap government.

given its own internal stability? Chief Jules decided to wait until after the December 1994 community election to pursue this initiative²⁴.

In summary, instability led to less trade, less government funding, and a delay in taxation jurisdiction discussions. Why did a change in council cause such instability? Why were the resulting costs to the community so high? Is this why treaty settlement is so scary? What can be learned from this phase in Shuswap history to ensure institutional changes resulting from treaty settlement don't create economic chaos? Why in some circumstances can institutional change be economically beneficial, as in the first anecdote, and in others detrimental?

The remainder of this Chapter tries to answer these questions by investigating the relationship between institutional change and the economy. To this end this Chapter will utilize some of the tools for analyzing institutional change as contained in the New Institutional Economics literature²⁵ (Williamson, 1990, p. 183). Specifically, this emerging school of thought will be exploited in this Chapter to demonstrate that the likely institutional impact from treaty settlement will depend on the nature and level of trust existing within and towards the self governing institutions resulting from treaty settlement.

²⁴ In December, 1994, seven of the eight candidates from Chief Jules' slate were elected and Chief Jules proceeded with his initiative to expand First Nation taxation jurisdiction.

²⁵ Defining the research agenda of the New Institutional Economics literature is difficult. The proponents of this school of thought have trespassed into at least the literature on transaction costs, networks, principal agency, co-operative game theory, and endogenous technological change.

5.3 The Nature of Institutions

A public institution is broadly defined to be formal and/or informal structures by which groups of people act together (Klatt and Cornell, 1992, p 14, Angressano, 1992) to solve a social problem (Boland, 1992, p. 120). In the economics literature, the impetus for forming institutions has generally been accepted as the minimization of transaction costs (Coase, 1960, Williamson, 1985), where no distinction between private and public institutions is usually made. The impetus for forming self-governing First Nation institutions is treaties. The goal of these First Nation institutions is assumed to be the support of economic growth²⁶.

Therefore, although the impact on transactions costs of these new self governing institutions will play a crucial role in the impact assessment, a more fruitful starting point is the recent literature on economic growth and technological change. This literature has not only emphasized the role of institutions supporting long term economic growth (Lipsey, 1992, p. 16, Dudley, 1991, p. 42 and Rosenberg, and Birdzell, 1986, p. 113)²⁷ but also the dynamic yet stable nature of institutions in the economic growth process. To clarify the role played by institutions in economic growth, it is asserted that economic growth is primarily

²⁶ For analytical purposes this goal can be expressed as the First Nation institution maximizing the difference between the revenue and the expenditures involved in the delivery of a particular service. The more economic growth the institution is associated with the higher this institutional profit as is explained below.

²⁷ Even neoclassical economists concur that different types of institutions have impacts on economic growth (Barro, 1993, p. 296).

caused by trade (market expansion), and/or technological change²⁸.

Appropriate institutions enhance economic growth in supporting fashion and economic growth can render certain institutions redundant and create new ones. As an example, Rosenberg and Birdzell (1986) argue that the development of known and certain levels of taxation for merchants in England from 1600 until 1750 were a superior method of linking the state and commerce than was simple appropriation by the state as practiced in the Persian Empire during the same time period. Taxation certainty allowed English merchants to calculate their expected tax commitment with some confidence, while Persian traders would have to concern themselves with protecting their gains from trade from the state. Since trade was certainly a source of economic growth during this time period one institution helped to reinforce this growth, while the other inhibited it.

Focussing initially on the causal linkage between institutions and economic growth, historical evidence suggests institutions serve one of two basic roles in the economic growth process. First is the capacity of institutions to provide the stability, certainty and capacity for trade in goods, services, or information (Rosenberg and Birdzell, 1986, p. 119, Hicks, 1969, p. 18). The eighteenth century English merchants purchased insurance from Lloyds with the expectation that the company would pay on receipt of a claim. More relevant to this thesis, is the contention that the certainty arising from the First Nation self

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To support the assertion that economic growth results from technological change see Rosenberg and Birdzell (1986), Dudley (1991), or Womack, Jones and Ross (1990). The relationship between market expansion or trade and economic growth is supported in a number of introductory economics texts including at least Heilbroner (1970), Hicks (1969) and Stigletz and Boadway (1994).

governing institutions will lead to greater investment (Government of B.C., 1995, p. 10, Government of B.C., 1996, p. 4). A situation which has apparently occurred after the resolution of treaty type settlements in the Yukon, Inuvialuit (in the North West Territories) and New Zealand (Government of B.C., 1995, p. 15 and 16). For simplicity, this will be referred to as the certainty or stoic²⁹ relationship between institutions and long term growth.

In some cases, however, a stoic institution can be inappropriate for a particular growth process. Maintaining the medieval guilds in their pre-Industrial Revolution form would certainly have been detrimental to the economic growth experienced as a result of the Industrial Revolution. In order to survive, institutions can not be static and must constantly evolve to accommodate the circumstances and environment in which they exist. This capacity of institutions to innovate as new products, services, and innovations revolutionize the local (global, national) economy will be referred to as the dynamic relationship between institutions and growth³⁰. As Perez and Freeman put it (1988, p. 59);

"The downswing and depression of the long wave - is characterized by deep structural changes in the economy and such changes require an equally profound transformation of the institutional and social framework. The onset of prolonged recessionary trends indicate the increasing degree of mismatch between techno-economic sub-systems and the old socio-institutional framework."

²⁹ Stoic seems like the appropriate term for an institution that is impervious to the dynamics of its environment. Its stability and reliability is its strength.

³⁰ A useful economic construct for explaining the dynamics of institutions are network externalities (Harrald, 1994). Positive network externalities arise when the participation of one more individual benefits all other participants. Insurance schemes, banks, and lotteries are all examples of institutions which benefit from network externalities. The dynamics of many institutions, therefore, can be seen as a process towards the critical mass of acceptance which produces network externalities.

These stoic and dynamic relationships³¹, however, are not separable. An institution, or at least parts of the institution, must be capable of serving both roles if it hopes to pass the test of time. As such these relationships are united by the arrow of economic time. At some points in time the external factors acting upon an institution demand that it be stoic, and at others dynamic. The institution has little control over these forces of growth.

It will be useful to divide an institution along an internal and external boundary. The universe of the institution is determined by the external boundary. This universe is divided into two parts by the internal boundary. The institution exercises its greatest control over its internal boundary³². The internal boundary surrounds the institution and includes the structure, staff and working rules (Agressano, 1992) of the actual institution. For First Nations this would usually be their government administration buildings and the occupants of these buildings. In some instances, however, such as the collection of information, the internal boundary may include all the citizens of the First Nation within its jurisdiction, given that information is an input into the internal production function of the institution and its external politics.

The internal boundary is contrasted with an institution's external boundary. The external

³¹ Boland (1992) more formally divides institutions into consensus and concrete types. A consensus is formed on the basis of a political process and through time it is established as a social rule(s) in a concrete institution. In this manner, Boland's consensus institution corresponds to the dynamic relationship above and a concrete institution is stoic.

³² In specifying some determinants of national competitive advantage, Porter (1990) refers to this as how an institutions's internal organizational strategy influences its competitive advantage. This internal boundary is equivalent to that posited by Coase when he asked: "What are the factors which determine the internal boundaries of a firm (institution)?"

boundary encompasses the agents with whom that institution interacts. The external boundary is typically called the market since at the external boundary the public institution becomes a seller and the outside party is the buyer. For First Nation institutions this could include the provincial and federal government, third party interest groups such as environmental organizations, or outside business interests. In the provincial jurisdictional model outside (external) would be defined as off-reserve and internal would be on-reserve.

Along the internal boundary, the capacity of an institution to perform either a dynamic or a static role on demand is primarily determined by how the institution carries out its routines (Nelson and Winter, 1980, p.18). The transaction costs literature prefers the term governance structures (Williamson, 1990, p. 15). Regardless of terminology, a key question is "how do institutions persuade self-interested agents to co-operate within its internal boundary in the production and distribution of its output?"

5.31 Induced Cooperation and the Internal Boundary

Gambetta (1988) discusses how the Mafia in Sicily can sometimes "induce" cooperation from its members. In fact, Gambetta argues that the mafia, as an institution, has made a social science of inducing cooperation through mistrust. Although most institutions, especially public ones, produce substantially different outputs from the Mafia, they still must solve the issue of garnering cooperation from self interested individuals.

In this regard, the transaction cost and principal agent literature is particularly adept for

discussing induced co-operation. As Williamson, (1990, p. 13) phrases it: the goal of an institution is to

"align transactions (which differ in their attributes) with governance structures (which differ in their costs and competencies) in a transaction cost minimizing way"

When transaction costs are considered to include;

"ex ante transaction costs are the costs of drafting, negotiating, and safeguarding an agreement. Ex post transaction cost include: (1) the maladaptation costs incurred when transactions drift out of alignment with requirements, (2) the haggling costs incurred if bilateral efforts are made to correct ex post misalignments, (3) the set up and running costs associated with the governance structures (often not the courts) to which the disputes are referred and (4) the bonding costs of effecting secure commitments." (Dietrich, 1994, p. 21)

there can be little doubt that transaction costs, especially ex-ante transaction costs, are the costs of inducing cooperation or, as Arrow more eloquently phrases it (Sen, 1985), they are the costs of running the economic system.

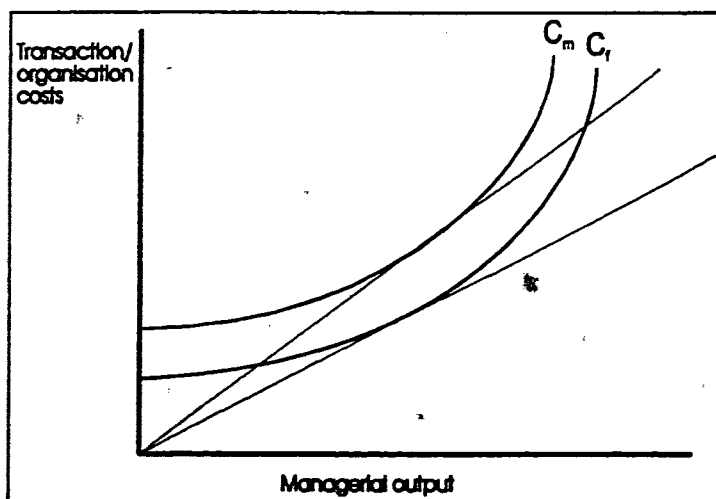


Figure 1 - Transaction Cost Minimization (Dietrich, 1994, p. 36).

The fundamental theory of transaction costs (Dietrich, 1994 and Williamson, 1990) is that because there is diminishing returns to management (inducing cooperation), the internal boundary of an institution is defined by the point where management is most efficient, or the point of the lowest

average transaction costs per managerial output. Figure 1 illustrates the fundamental theory

of transaction costs³³.

Given two methods of organizing itself, C_f and C_m , an institution would choose C_f since it has a lower average cost of managerial output, as reflected by the point of tangency of a ray from the origin to both curves, than does C_m . Phrased differently, the costs of inducing cooperation are lower for organizational strategy C_f than they are for C_m .

Although Figure 1 is an interesting demonstration tool, it provides little insight into the determination of transaction costs in the first place. An alternative, if predictable for an economist, model for solving this problem involves identifying the market where transaction costs are derived. Prices (or costs) in economics must always be tied to a commodity³⁴. In this case that commodity is cooperation, its price is the transaction costs involved in inducing cooperation, and the principal exogenous force in this market is the governance mechanism or routine of the institution.

If transaction costs are considered the costs of management (Dietrich, 1994, p. 48) and cooperation is a productive input in the institution's production function, a downward sloping input demand function follows from a few somewhat restrictive assumptions in

³³ Although Dietrich refers to the horizontal axis in Figure 1 as managerial output, a more quantifiable representation of this variable might be institutional output per manager. Viewed in this manner the shape of the relationship between managerial output and transaction costs in C_f and C_m reflects the eventual diminishing returns to management.

³⁴ There are no rules, that I am aware of, in economics concerning the boundaries of a commodity. It can be a good, service, an intangible dimension such as time (see the real interest rate), or even an imaginary troll. The factor which economists are concerned with is an identifiable market where it is exchanged and a value is determined.

neoclassical theory³⁵. Similarly, when cooperation is induced, it implies that someone is receiving an incentive to cooperate. If it is assumed that the workers receive this incentive³⁶, then an upward-sloping cooperation supply curve is feasible over some range³⁷.

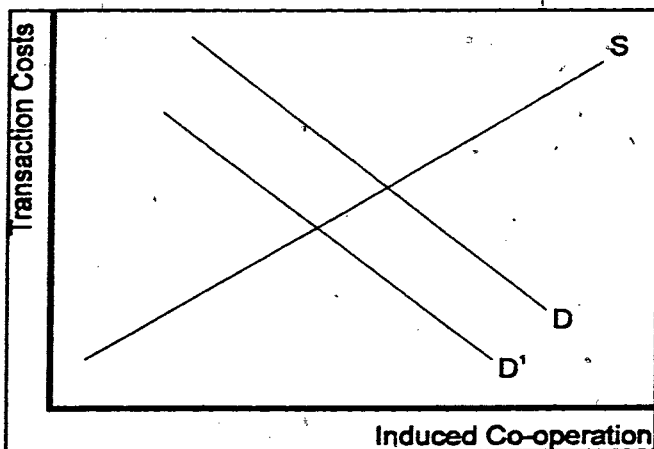


Figure 2 The Market for induced Cooperation

The result as illustrated in figure 2, if measurement problems are temporarily ignored³⁸, is the market which determines the quantity of induced cooperation and its transaction costs or price.

The transaction cost literature greatly

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To demonstrate this consider an indirect cost function with 2 productive inputs, x_1 , and x_2 , 2 input prices, w_1 , and w_2 and an output y . One of the productive inputs is induced cooperation (say x_2) and one of the input prices is the transaction cost for induced cooperation (w_2). In its indirect form the cost function would be: $C^* = w_1 x_1^*(w_1, w_2, y) + w_2 x_2^*(w_1, w_2, y)$. By the envelope theorem, and concavity of the cost function in w , the derivative $C^*_{w_1 w_1} = \delta x_1^* / \delta w_1 \leq 0$ and so when output is held constant, the input demand function for induced cooperation is downward sloping. Cost minimization at this internal boundary is consistent with the overall objective of the institution to maximize profits.

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The concept of paying for induced cooperation is particularly difficult to measure when one considers that the incentive for cooperation need not be a direct incentive like a wage rate. "Inducements of a personal, non-materialistic character are of greater importance to secure cooperative effort above the minimum material rewards essential to subsistence. The opportunities for distinction, prestige, personal power, and the attainment of dominating position are much more important than material rewards in the development of ... commercial organizations" Barnard, 1938, The Functions of the Executive, as quoted in Williamson, 1990, p.181-182.

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Of course such a curve is similar to the often debated labour supply curve when the substitute for induced cooperation is leisure, a topic much discussed in the principal agent literature (Hirshliefer, 1984). More importantly such an induced cooperation supply curve is strictly upward sloping when the income effect is ignored or at least the substitution effect dominates the income effect over some range. It is assumed here that the substitution effect dominates over some range as in most intermediate microeconomic textbooks (Eaton and Eaton, 1992) with regards to labour supply.

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One way of ignoring the measurement problem is to imagine two competing institutions requiring the exact same amount of induced cooperation.

expands this model and focusses on how different internal organization governance structures impact the transaction costs (Dietrich 1994, Regions 1991, Williamson, 1990, Groenwagón, 1990). Or in equilibrium stability analysis terminology, when governance is operationalized as an exogenous parameter³⁹, what is the sign of the derivative of transaction costs with respect to governance structures? An alternative governance structure is indicated by D^1 in Figure 2.

Most of these arguments are made taking the above induced cooperation supply curve as given. For example, recent literature on networks has claimed that this particular organizational method reduces transaction costs and is therefore supplanting the hierarchal organization more popular in the recent past (Johansson, 1991, Kamman, 1991)⁴⁰. In particular, networks are considered to be superior dynamic structures.

In terms of impact assessment, the transaction costs model in Figure 2, suggests that First Nation institutions will only have lower transactions costs than the existing institutions which the First Nation institutions may replace if they have superior methods of internal governance structures⁴¹. This, though, is only one half of the induced cooperation market.

³⁹ Obviously, this means that in addition to the traditional input price, and output parameters in the indirect cost function an addition parameter differentiating management inputs or management style is included.

⁴⁰ Using the above model as an explanation for the apparent network phenomena, network governance structures shift the induced cooperation demand function to the left thereby reducing the amount of induced cooperation and lowering the transaction costs. The smaller organizations involved in a network have less need for internal cooperation and the costs of maintaining the network structure are borne, not necessarily equally, by the networkers.

⁴¹ Utilizing this reasoning for the SNTC information collection anecdote, the lower transaction costs incurred by the SNTC would have to be an indication of a superior internal governance structure.

What are the factors affecting the supply side of the induced cooperation market?⁴²

5.32 Cooperation, Trust and the SNTC Information Collection Anecdote

Trust is an important element in economic development and institutions and has been recognized as such. For example, Rosenberg and Birdzell assert that trust formed through battling a common enemy led to an ability to trust each other in larger economic ventures such as the modern corporation.

"It is easy to imagine business enterprises formed among companions who learned to trust each other at war or at sea, for it happens often enough in our own times. The generation which fought the civil war in their twenties invented the epitome of enterprises not based on kinship, the modern corporation, in their forties." (Rosenburg and Birdzell, 1986, p. 123).

As an analytical tool, however, trust has been largely ignored in recent research. This is not surprising. What is economic trust? How is it formed? How does it influence the static and dynamic roles which institutions must play to enhance economic growth? Without these insights, little which is not purely subjective can be said about trust, institutions and its impact on transaction costs.

Trust, as an economic entity, is assumed to be a strong expectation of a specific future behaviour by an institution⁴³ (Dasgupta, 1988, p. 58). A common Canadian example might involve taxpayers avoiding the GST because they do not trust the government to reduce the

⁴² Additionally, this model fails to address why institutions change governance structures in the first place. *"Transaction cost economics requires an evolutionary dynamic, that is at present absent, if it is to provide a convincing analysis of the firm [institution] in its historical and institutional complexity"* (Dietrich, 1994, p. 181).

⁴³ There are several types of trust resulting from or based on a variety of social, biological, economic and political circumstances (Gambetta, 1988). This particular definition seems most appropriate for the tools of economic analysis.

deficit, or provide adequate income security for tomorrow's senior citizens.

A variety of informal solutions to the principal-agent problem which might be called trust. The most common is an implicit recognition of a common interest. The recognition of the results (never ending tit for tat) from an infinite horizon prisoner's dilemma is another example of an informal solution for building cooperation (Axlerod, 1984). The implicit trust between buyer and seller about the quality and contents of a particular package in a retail environment is the most obvious instance of this type of tacit cooperation⁴⁴. Any mechanisms for encouraging such tacit cooperation will be referred to here as trust building.

As a variable trust is often paired with its natural counterpart, cooperation. These two variables, however are not identical. Although co-operation may be a by-product of trust, the converse is not necessarily true. As was evident in the brief exposition above a great deal of resources are spent ensuring economic agents co-operate in situations that are unlikely to be labelled as trustworthy. Consider legal contracts, standards, measurements, hierarchal organizations, constitutions and other formal mechanisms to provide a solution to the principal - agent problem (Hirschleifer and Riley, 1992). Dasgupta (1988) refers to all such mechanisms which induce co-operation as a means to economize on trust. This implies that such means are more efficient than creating co-operation through trust.

This close relationship between trust and cooperation has been recognized in the transaction

⁴⁴ Incidents of moral hazard and adverse selection are excluded from this example.

cost literature.

"Familiarity here permits communication economies to be realized: Specialized language develops as experience accumulates and nuances are signalled and received in a sensitive way. Both institutional and personal trust relations evolve." (Williamson, 1985, p. 62).

Or as Dietrich, 1994, more bluntly puts it: trust reduces transaction costs. Without discussing the nuances and dynamics of communication economies, this conclusion follows directly from the internal market for induced cooperation when it is assumed that trust as a parameter has a direct relationship in the induced cooperation supply curve.

More specifically, consider once again the internal boundary of a First Nation public institution such as the one specified by the SNTC information collection anecdote. Like figure 2, there is a downward sloping input demand function with the input of interest being information. The output is government services, and the downward sloping demand

curve is a result of cost minimization⁴⁵.

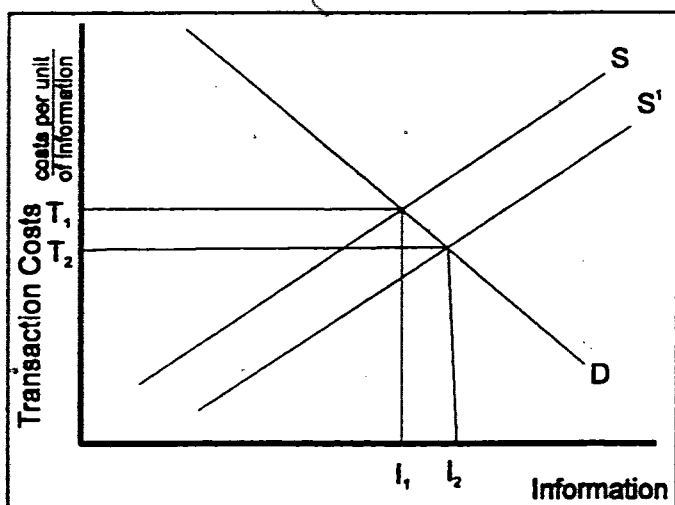


Figure 3 The Effect of Trust on Transaction Costs

The upward sloping information supply curve is analogous to a labour supply curve where the labour is the supply of information and the payment is the transaction costs (w). The full transaction cost has two components, a

⁴⁵

More formally the downward sloping demand curve is derived because the SNTC sought to minimize the cost of service delivery (C) with inputs x_1 (composite) and x_2 (information) which have prices (w_1, w_2) subject to a service delivery production function ($y = f(x_1, x_2)$). For the rest of this rationalization see footnote 35.

tangible transaction cost of inducing information supply, T , and an intangible exogenous parameter called trust, tr , which the "informant" has accumulated in the public institution. The vertical axis in figure 3 is the more measurable cost of inducing information participation T . As trust accumulates in a public institution, the informant is willing to provide more information at the marginal cost of information T .

Applying this model to the first anecdote, the supply curve S represents Statistics Canada and the supply curve S' represents the greater trust that the Shuswap citizens have for the SNTC, i.e. at T_2 , Shuswaps are willing to provide more information, I_2 to the SNTC than to Statistics Canada. As is evident by the equilibrium points, the SNTC can collect more information ($I_2 > I_1$) for a lower price ($T_2 < T_1$) than can Statistics Canada.

Theoretically, this a powerful argument in support of First Nation self governing institutions. The greater trust, presumably, which First Nations citizens would have of their own institutions could lead to more cost effective (lower transaction costs of governing) First Nation public institutions along the internal boundaries of these institutions.

Viewed in another manner creating mistrust generates higher transaction costs. This particular strategy has often been phrased in the less theoretical manner as "divide and rule" (Fischer, 1977, Assembly of First Nations, 1995).

It is hypothesized that the application of divide and rule may be most evident when two public institutions are competing over the same internal boundary such as the Department of Indian and Northern Affairs of Canada, and the local First Nation governments. In an

effort to raise the internal transaction costs for the other institution each may attempt to defame the reputation of the other and thereby create mistrust. If each institution even achieves some success in this strategy the net result would be higher transaction costs for both or as Arrow phrases it higher amounts of economic friction. Whereas such a hypothesis may indeed be a plausible explanation for the lack of economic development in the First Nation economy discussed in Chapter 2⁴⁶, it is beyond the scope of this inquiry.

Specifically, this hypothesis avoids the question of why institutions just don't increase trust to lower the transactions costs necessary for cooperation or generate sufficient mistrust in their rivals to make themselves more cost competitive? As will be evident in the trust dynamic exposition below such conspiracies must first assert significant control over the external boundary, or in other words, substantial market power.

Regardless of this reluctance to venture towards a more sociological explanation for the state of the First Nation economy, the model, inherent in figures 2 and 3, does encompass some useful comparative static results. In particular, the impact of treaty settlement on internal transactions costs depends upon the combined answers to two questions:

- A) Will First Nation institutional internal governance structures be more cost effective

⁴⁶ This hypothesis raises the issue of institutional racism as an explanation for relative economic under development on-reserves. It would be naive to ignore that for some First Nation public institutions (environment, taxation and others) trust from their constituents may be impacted by racial considerations. The existence of racism would raise transaction costs for First Nation institutions and they would ex ante be uncompetitive with existing public institutions. Although the racial issue is not discussed, its existence only reinforces the importance of trust building for the evolving First Nation institutions.

to those already existing, or which direction will the induced cooperation demand curve shift? and

- B) Will the inputs (workers) in the First Nation institution's productive process trust it more than the previous institution's productive process, or which way will the induced cooperation supply curve shift over time?

In a comparative static framework there are four possible internal transaction cost impacts from treaty settlement.

- 1) If the answers to A and B are both "yes" then First Nation institutions will have lower transaction costs along the internal boundary.
- 2) If the answers to A and B are both "no" then First Nation institutions will have higher internal transaction costs than those of existing institutions.
- 3) If the answer to A is "yes" and B is "no" then the new First Nation institutions will have an indeterminate effect on internal transaction costs.
- 4) Likewise if the answer to A is "no" and B is "yes" then an indeterminate impact on internal transaction costs will be realized.

The number of outcomes rises substantially, however, when a dynamic between the internal and external boundaries is established⁴⁷. This can be accomplished by analyzing the chief

⁴⁷ "The orthodox [of the transaction cost literature] ... states that outside boundaries of firms are competitors, while inside managers exercise authority: ... Recently, however, more sophisticated amendments to orthodox theory have recognized that the boundaries between markets and hierarchies are blurring." Grabher, 1991, p. 62.

dynamic element in this relationship, trust and its application to the Kamloops Shuswap anecdote.

5.33 The External Boundary and the Kamloops Shuswap Anecdote

If there is one dynamic concept which economists seem to understand it is the accumulation of capital. Capital can be either saved or spent depending upon its marginal valuation commonly known as the real interest rate. Capital accumulation occurs when stored capital from previous savings is augmented by current savings. This dynamic of accumulation, as discussed earlier, is the foundation of neoclassical growth theory.

If it is assumed that the type of trust under investigation here is formed by building a reputation over time⁴⁸, then trust is very similar to capital. First, trust can be either saved or spent. Secondly, the decision to "invest" in trust depends upon its intertemporal return⁴⁹.

⁴⁸ "The idea of reputation solely being in one's self interest is not really an adequate one, because the economic part only works in conjunction with the social one ... some kind of commercial morality" (Arrow as quoted in Swedberg, 1990, p. 139). Gary Becker concurs with Arrow "Economists ... assume that people's preferences are independent of what other people are doing. I personally don't accept that. ... People don't want to look out of line... For example, most economists stick to traditional problems because they don't want to look ridiculous and look like they are not doing the right thing." (Becker as quoted in Swedberg, 1990, p. 42). The reputation method of trust building implicitly assumes that a sufficient moral stock of trust exists, or appropriate social norms assure this sufficient stock. It is quite possible that where this stock does not exist, economies are subject to a development trap similar to when a sufficient stock of capital does not exist (Azaridis, 1993).

⁴⁹ In an attempt to operationalize trust in the neoclassical environment a two time period overlapping generations approach might be employed. Trust could be considered as one of a range of possible saving instruments when young offering a return when the agent is old. As long as there are some agents willing to borrow trust when other save it, simple arbitrage conditions would suggest that all saving instruments would have the same return - the real interest rate. In this extreme example trust would be identical to capital and a first order difference equation $Trust(t+1) = f(Trust(t))$

Finally, and like capital, the stock of past trust can be expanded by the accumulation of current trust⁵⁰.

As an example of why trust might be originally accumulated through time consider an institution choosing between a strategy of induced cooperation or trust building for its internal governance structure. The choice between building trust and inducing cooperation is simply a comparison of net present returns between the two broad classification of governance structures. This is an opinion accepted in the transaction cost literature:

"While opportunism and trustworthiness seem opposite, trustworthiness may well be a form of calculated long term self interest. If many people are untrustworthy, to be trustworthy makes one an attractive partner." (Nooteboom, 1993, p. 15)

A generalized method of trust accumulation in institutions is slightly more complicated. It involves an explicit dynamic linkage between the internal governance structure, the external market boundary and the accumulation of trust. Beginning with the internal boundary, Nelson and Winter state:

"it is nevertheless true that some sort of stable accommodation between the requirements of organizational functioning and the motivations of all organization members is a necessary concomitant of routine operation. What signals the existence of an accommodation is not the conformity of behaviour to standards of performance laid down by supervisors or codified in job descriptions, but that members are rarely surprised at each other's behaviour ..." (Nelson and Winter, 1980, p. 108).

could be developed (McGandless, 1993). Among the interesting comparative statics of such a model, assuming regular preference functions, is that more trust is "saved" as its rate of return rose, or $(\delta \text{ trust} / \delta \text{ rate or return}) \geq 0$.

⁵⁰

To further evolve this comparison between capital and trust consider the role trust plays in the determination of an interest rate. Specifically, Bish (1993, p. 4) suggests that the primary cost of First Nation administrative instability which generates mistrust would be reflected in a higher interest rate charged by a perspective lender. Unfortunately since First Nations are just beginning to engage in public deficit financing there has been no credit rating established and as such no measurement proxy for their relative amount of trust.

However, the manner by which cooperation was induced will have impacts on the internal structure of an institution. Where cooperation has been induced, institutions should have rigid structures maintained by the enforced rules which preserve the cooperation. This would be appropriate when an institution (or part of an institution) needed to be stoic. If cooperation has evolved through either the game theoretic reputation establishment method, or other informal mechanisms, institutions would probably have a form of internal trust-based cooperation and would be more flexible and dynamic. In either of these cases the value of the cooperation is simple the opportunity cost of building and maintaining it, i.e. the transaction costs⁵¹.

As mentioned earlier, the institution chooses its internal governance structure. It can either induce cooperation or build trust. The same is not true in most cases for the external boundary. For the institutions under investigation it is assumed that trust at the external boundary can not be internalized⁵². It has to be built. As an example, contemplate the reputation surrounding Swiss watches or Japanese electronic products. The external boundary is crucial because it is the source of the litmus test of institutional success. It is the visible hand of economic natural selection. A positive market response reinforces the internal governance structure, i.e. trust evolves.

⁵¹ Dasgupta, 1988, refers to these transaction costs as the opportunity cost of trust. For inducing cooperation internally, it may be the expenditure on contracts and management, or externally it could be the cost of marketing and public relations. For building trust, the most appropriate measure of cost, as discussed earlier, might be the real interest rate.

⁵² This assumption is not as restrictive as it appears. Not even the largest institutions such as the former Soviet Union or Chinese government can infinitely economize on trust at the external boundary.

"Indeed some amount of trust must be present in any complex economic system, and it is far from inconceivable that systems with a higher level of general trust could come about. It would be risky, however, to make higher levels of trust into a cornerstone of economic reform. We may hope that trust will come about as the by-product of a good economic system (and thus make the system even better)." (Elster and Moene quoted in Gambetta, 1988, p. 224) or

"Evidence of settlement benefits has, in virtually all cases, taken some time to become apparent ... for the non-aboriginal community ... the benefits from settlement also take time as conditions and rules for access to resources ... take time to develop" (Government of B.C., 1995., p. 10-11)

A negative external boundary response, however, can dismantle the internal governance structure. This would seem to be the theoretical explanation of the 1992-1994 Kamloops Shuswap.

To focus this explanation consider first the decrease in Department of Indian Northern Affairs transfer payments which followed the administrative changes in the Kamloops Shuswap government. The Department transfers monies at the beginning of the fiscal year to the Kamloops Shuswap government to provide services throughout the fiscal year. The Department, therefore, must trust, to some extent, the Kamloops Shuswap government to deliver these services. The Department "represents" the actual recipients of these services, the Kamloops Shuswap citizens, and as such is a representative consumer⁵³. The decline of transfer payments in 1992-1993 showed INAC to be surprisingly responsive to rapid changes in the Kamloops Shuswap Government.

The role of the Department as a proxy consumer represents the fundamental distinction

⁵³

To be fair to the Department, this situation is largely a result of the fiduciary obligation of the Canadian government to First Nations, and economic, geographical and political circumstances that make First Nation government fiscal self sufficiency improbable.

between the internal and external boundaries. At the external boundary, the roles are reversed. The public institution is the supplier (seller) of cooperation and the external party (consumer) is the buyer. In other words this is the market presented in introductory economics.

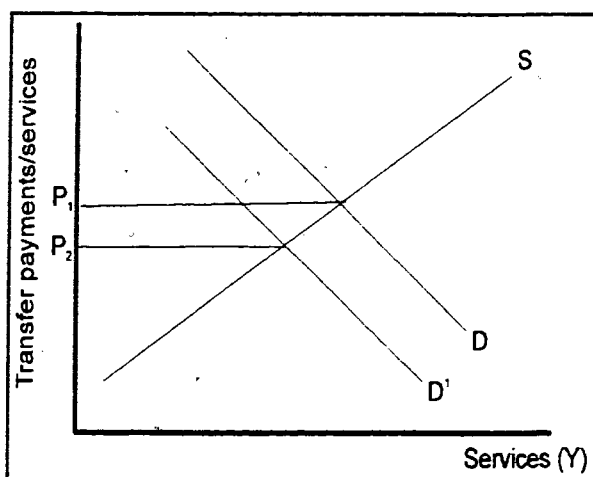


Figure 4 Trust and the External Boundary

Figure 4 presents a version of this model as it applies to the Kamloops Shuswap. Along the horizontal axis is the tangible proxy for co-operation, services (Y) as presented in the cost minimization model of Figure 3. The vertical axis is the transfer payment per unit of service (P).

The representative consumer, the Department of Indian and Northern Affairs gains utility from the service (Y) and the trust it has in the community (tr), and pays PY for the provision of these services. The objective of the Department is to maximize with respect to Y, $U(Y, tr) - PY$. Assuming diminishing marginal utility of Y a downward sloping demand curve results from the satisfaction of this objective. Furthermore, the less trust the Department has in the Kamloops Shuswap the lower the marginal utility it receives per unit of Y as reflected by the shift in the demand curve from D to D'.

On the supply side the public institution is a profit maximizer in that it seeks to maximize the difference between its revenue received per service and the cost per service. In

particular, the Kamloops Shuswaps have an upward sloping supply curve with respect to transfer payments per unit of service assuming that the second order condition for profit maximization is satisfied ($\delta Y/\delta P > 0$)⁵⁴.

As the Kamloops Shuswap Government accumulates the Department's trust it will receive more transfer payments per unit of service, and if the Kamloops Shuswaps accumulate mistrust then they will receive fewer transfer payments per unit of service⁵⁵. The latter is reflected by the shift of D to D' and the fall of transfer payments from P_1 to P_2 ⁵⁶.

The lack of new Mount Paul industrial park lessees for the Kamloops Shuswap between 1992-1994 is similarly explained by this model. The new lessees are consumers who will pay their leases and taxes in exchange for services. An inability to trust the Kamloops Shuswaps in this arrangement lowers the market demand curve for Mount Paul leases, and either forces the Kamloops Shuswap to lower their lease prices or accept lower sales at the previous price (in this case zero).

⁵⁴ Assuming that the Kamloops Shuswaps are profit maximizers is not as bizarre as it at first seems. When services (cooperation) is replaced with votes this becomes the simple the vote maximization assumption in public choice literature (Stretton and Orchard, 1994).

⁵⁵ The basis for these higher transfer payments as a result of trust accumulation is at the heart of the Klein and Leffler (1981) paper concerning quality adjusted pricing.

⁵⁶ To make this proposition a little more mathematically elaborate assume that there exists some equilibrium price called p^* , so that $K \equiv D(p^*, \text{trust}) - S(p^*) = 0$, and that Walrasian local stability exists ($D_p - S_p < 0$) in the neighbourhood of p^* . Further assuming there is a functional dependence between p^* and trust, the differentiation of K with respect to trust yields: $\delta p^*/\delta \text{trust} = -D_{\text{trust}}/D_p - S_p$. As long as the substitution effect dominates the income effect for trust (see previous overlapping generations literature references) so that $D_{\text{trust}} > 0$, the derivative of the equilibrium price with respect to trust is positive as is implied in Figure 4.

In both these cases, the negative external response to the Kamloops Shuswap "internal reorganization" following the 1992 election, further impacts their internal governance structure in a self fulfilling prophecy process. For example, the decrease in transfer payments, forces a reduction in the size of the public institution which creates sinking ship incentives for further untrustworthy behaviour which justifies further declines in transfer payments⁵⁷.

Of course, this prophecy process can also work in reverse. As an example of the reverse process consider tax payers choosing one public institution over another, such as the Catholic v. Public school system in Saskatchewan. Tax support for the public school system implicitly reinforce its system of internal governance as compared to the Catholic system. In this manner trust is built in the public school system and through time its external transactions costs with its constituents fall as the supply curve for cooperation shifts to the right. In this competitive model for public institutions, as trust is accumulated in one institution over another, its constituency grows and it could, given the appropriate type of long run cost curve, achieve economies of scale internally and something akin to economies of trust externally. Under these circumstances a stable monopoly in the public institutions market is not only feasible, it is likely⁵⁸.

⁵⁷ Transfer payments to the Kamloops Shuswap Government rose in 1994 and pending review of the audit will rise again in 1995. Furthermore, the Kamloops Shuswap Government has been actively negotiating a \$600 million commercial, recreational and residential on-reserve development. The period after 1994, however, is a subject of greater research.

⁵⁸ Such an occurrence could only exist permanently, however, in a vacuum, where no economic growth occurs as a result of technological change. The process preventing the permanence of these public institutional monopolies is Schumpeter's (1975) creative destruction. Creative destruction would manifest itself as the development of mistrust in the existing monopoly by a potential usurper, or another exogenous force such as technological change. Constituent mistrust in the public institution would lower, for example, the tax dollars per unit of service the monopoly public

5.34 Economic Growth and Internal Governance Structures

Figures 3 and 4 in the previous sections lay the foundation of a methodology for evaluating the economic impact of institutional change. A public institution is able to increase its profits (discretionary funds) by reducing costs and increasing revenues. For a public institution to achieve this objective it must generate trust internally and externally. Economic growth generates greater external trust and subsequently higher revenues per service. This section discusses the relationship between the internal organization of the public institution, economic growth and the accumulation of trust.

Dynamically successful public institutions support the elements of change in an economy, simplified here to be encompassed by technological change and trade (market expansion). Although trade and technological change often occur in a simultaneous and reinforcing fashion within an economy, it is useful at this point to view them as separate processes. In this manner it is possible to analyze the nature of the public institutions which support only technological change and those which support only trade.

In particular, Rosenberg and Birdzell theorize convincingly that the foundation for post 1750 economic growth in England was laid by the institutional advances made between 1500-1750. It is their theory (Hicks, 1969 also) that the expansion of trade requires a stable

institutions receives (see figure 4) and provide an opportunity for another public institution to begin the trust accumulation process towards monopoly. In politics, this rather messy process is known as democracy where one governance ideology for public institutions is replaced by another.

public institutional environment⁵⁹.

It is hypothesized, therefore, that where public institutions support long term stable trading relationships in an economy, public institutions internally governed by mechanisms which induce cooperation are superior to those which rely more on trust building⁶⁰. The justification for this preference towards "stoic institutions" would seem to be the maxim that one bird in hand is preferable to two in the bush. Apriori, trust in an economic trading relationship by definition entails uncertainty. Reduction of uncertainty, as would result from structures to induce cooperation, for risk averse agents is always preferred (Hirshliefer and Riely, 1992).

A more debatable hypothesis is that the most appropriate internal governance structure for an institution in an economic environment of technical change is one built on trust. This is the indirect contention of the recent "network" theorists most commonly associated with what Nooteboom (1993) calls the Industrial Marketing Purchasing group. Johansson (1991) calls a network, linkages and couplings between economic agents, and Kamaan (1991) describes a network as an economic relationship based on trust or co-opportunism (Williamson, 1985). With no, or small transactions costs, the market can

⁵⁹ This hypothesis is also supported in the work of Womack, Ross and Jones, 1990 and Dudley, 1991 and a number of historical examples such as the establishment of commercial laws between 1500-1750, chequing accounts, taxation as opposed to confiscation, double entry book keeping, insurance and others. The one common link between all these institution is that they increased the certainty of trade

⁶⁰ A more recent example might be the development of the mass production methods pioneered by Henry Ford. In this case new technology favoured a particular form of organization based on induced cooperation, it was reinforced in the marketplace and subsequently became more entrenched. Womack, Jones, and Ross (1990) suggest it was the dominant form of institutional organization method (at least in cars) from 1920-1970.

satisfy the role of the network. With huge transaction costs, large hierarchial firms are necessary. Informal networks for production purposes fill the continuum between these two extremes.

The specific type of transaction costs which networks seem to lower are those related to technological change. Arthur (1988) and others have argued that the adoption of one innovation over another is random. The likelihood for a larger hierarchal institution to lock in on one technological path is higher than for a network of smaller institutions. The flexibility inherent in a network of institutions is similar to pooling chances on the technological change lottery. Nooteboom (1993) calls this an economy of learning.

Grabher concludes that larger institutions must "resist the temptation to ... minimize [internal] transaction costs" (Grabher, 1990, p. 75). The role of the larger institutions is to coordinate the smaller contractors into an efficient production and learning web. A web whose links are most effectively constructed by building trust. Therefore, in an environment of technological change it is hypothesized that to avoid inappropriate technological lock in, institutions including public ones should be as flexible as possible. This requirement, given the limits of trust (Barber, 1983), generally favours smaller institution over larger ones⁶¹ and also favours co-operation built by trust rather than induced co-operation.

The main objective for policy intervention are to improve the external economies of the local system, strengthening the networks among firms based on cooperative links among local firms

⁶¹ The Cournot model similarly predicts that as the number of firms in an oligopolistic market increases the chances of collusion (voluntary co-operation) decrease (Eaton and Eaton, 1992).

[build on trust] rather than competitive relationships [induced cooperation]" (Garafoli, 1991, p. 135-136).

5.4 A Model for Assessing the Institutional Economic Impacts from Treaty Settlement

As a result of the exposition in section 5.3, it is possible to build a model of the economic impact of institutional change. To ensure clarity, the following six assumptions are the foundation of this model:

- A1 The economic objective of public institutions is to maximize "profits" defined as the difference between resources provided to deliver services by its clients inside the external boundary, and the input costs of providing those services inside the internal boundary.
- A2 Inside the internal boundary the greater the trust which the input have in the institution's governance policy, the lower will be the institutions costs of service delivery. (see Figure 3)
- A3 Along the external boundary, the more trust placed in the institution by its users, the greater will be the resources provided to the institution for the deliver of services. (see Figure 4). This external trust is accumulated as long as the public institution is able to support economic growth among its users.
- A4 Public institutions support economic growth by either providing certainty for trade or assisting the flexible dynamics of technological change⁶². It is further assumed that the principal source of economic growth which a public institution supports can

⁶²

This dissertation has clearly ignored capital accumulation as a source of economic growth. For simplicity it is assumed to be identical to trade.

be identified.

- A5 Induced cooperation is the preferred form of internal governance for a public institution supporting trade.
- A6 An internal governance structure built by trust is superior for a public institution supporting technological change.

These assumptions form the basis for a two stage institutional change impact assessment methodology:

1. Classify which of the two growth impetuses, trade or technological change, the public institution is more likely to support.
2. Analyze the suitability of the existing or proposed internal governance structure of the public institution.

Based on these results of these two evaluations of the particular public institution, it is possible to predict, which of two public institutions will likely have lower internal transaction costs (Figure 3) and higher external (Figure 4) payments for services. More succinctly, which of two institutions will be more profitable⁶³? When an institution has the prerequisite internal governance structure, it will be rewarded with more trust inside its external boundary (higher revenues) which will reinforce trust inside the internal boundary (lower transaction costs) and thus higher institutional profits. Pejovich (1995, p. 40) calls

⁶³

In the comparative static transaction cost model this asserts that for the superior institution the internal induced cooperation supply curve will shift to the right (lower transaction costs) as a result of the external cooperation demand shifting right (higher revenues).

this method of separating good institutions from bad ones adaptive efficiency⁶⁴. Figure 5 illustrates this model.

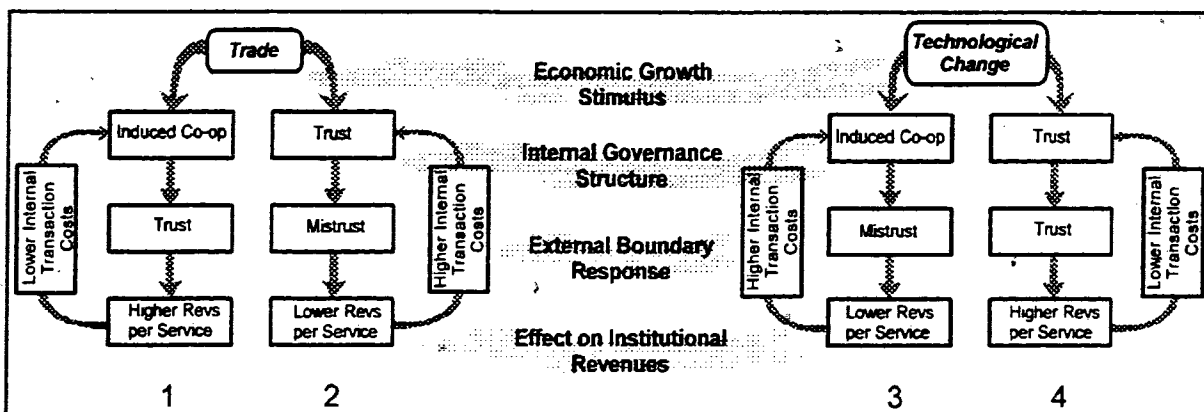


Figure 5 The Development of Institutional Trust

The top layer of each abovesent (tree) diagram specifies the particular dynamic economic growth stimulus which the public institution is intended to support, assuming these stimuli can be separated. The second level is the type of internal governance structure used by the institution. Layer three predicts the external (market) response based on the internal governance structure and the economic growth stimuli. The last level predicts whether the institution's resources/services will increase or decrease. Finally, based on the response along the external boundary, the institution's internal boundary is either reinforced, which would reduce transaction costs, or eroded which would raise transactions costs. All of this happens in a recursive fashion depending upon the path followed in Figure 5.

⁶⁴

There are of course many other models of institutional change (see for example Boland, 1992, or Pejovich, 1995) but this market driven model seems most appropriate for institutions created through social engineering (treaties) and then presumably left to fend for themselves against other institutions.

Dietrich, 1994, after analyzing the transactions costs in a number of institutional settings would seem to be suggesting precisely this type of model. To ensure clarity, brackets and a different font indicate my interpretation of his concluding theory presented below:

"In terms of our understanding of the economics of the firm (institution) we can suggest the following. Cyclical crises (trade as the dynamic force) will reinforce economizing behaviour (induced cooperation governance structures) and hence transaction cost explanations of institutional development. ... Shifts in governance structure benefits will tend to reinforce transaction cost economizing because of overall institutional stability. (the stability of induced cooperation governance structures is reinforced) Structural crises (technology as the dynamic force) imply fundamental shifts in institutional form with the implications of changes in organizational characteristics that are likely to dominate economizing and transaction cost effects (trust built governance is superior to induced cooperation governance)." (Dietrich, 1994, p. 180).

5.41 Assessing the Impact of Institutional Change from Treaty Settlement

For impact assessment purposes it is difficult to decipher which of the two economic stimuli in the first layer of Figure 5 an institution supports. First the impetus to economic growth can shift over time, a contention held by many analysts of the current "communication revolution" (David, 1991, Lipsey, 1992).⁶⁵ Secondly, as was mentioned previously, technological change is often a prerequisite of economic growth through market expansion. The only difference between these two stimuli is in their placement on the time line of economic growth, with technological change preceding market expansion. For private institutions this makes identifying suitable internal governance structures a difficult issue, because the institution may have to shift between types of governance structures or

⁶⁵

It should be noted that the particular growth impetus determines the appropriate institutional response. Whether a government, a university or other institution is dynamic or stoic to begin with is an insignificant issue as it is the growth factor which makes the initial choice and not the institution.

have two structures within one institution⁶⁶.

Fortunately, public institutions are not as complicated as private ones. Most public institutions, at least the ones which are being negotiated as part of the treaty process, are relatively easy to categorize as supporting trade or technological change.

At this early stage of the treaty negotiation process it is impossible to predict precisely which institutions will be effected and what will be the scope of their influence. Fortunately, however, the Department of Indian and Northern Affairs released a secret "Draft Policy Framework for Implementation of the Inherent Right and the Negotiation of Self Government" document to the Assembly of First Nation which has since been widely distributed among First Nations to the point of being essentially public. The document contains a detailed list of the self government powers (institutional changes) which the federal government is willing to negotiate⁶⁷.

Table II specifies many of these powers and uses a check mark to delineate whether the self government institutions associated with these powers are appropriate for supporting technological change or trade or both. The ad hoc designations contained in Table II are certainly debatable and more research should be conducted on the nature of each self

⁶⁶ The story of the Japanese lean production methods as told by Womack, Ross and Jones, 1990 is illustrative of this type of institution. This story and others may suggest an institutional trajectory passing from originally dynamic to long term stable. A similar path is implicated for technological paradigms in Freeman and Perez (1988) and in the transition of institutions from consensus to concrete in Boland (1992).

⁶⁷ These broad self-governing powers were subsequently approved by the Liberal cabinet in June, 1995 (Globe and Mail, August 11, p. A1).

government power. The purpose, here, though, is to evolve a methodology for assessing the economic impact resulting from institutional changes. In this light Table II should be considered an opening methodology discussion tool for more focussed research. The conclusions, therefore, flowing from Table II are admittedly weak.

Table II The Self Government Table

| Self Government Power | Public Govt. | Nation Govt. | Trade | Tech.change |
|---|--------------|--------------|-------|-------------|
| Citizenship | | ✓ | ✓ | |
| Marriage | ✓ | | ✓ | |
| Adoption and Child Welfare | ✓ | | ✓ | |
| Aboriginal Language and Culture | | ✓ | ✓ | |
| Education | ✓ | | ✓ | ✓ |
| Health | ✓ | | ✓ | ✓ |
| Social Services | ✓ | | ✓ | |
| Policing | ✓ | ✓ | ✓ | |
| Property rights, secessions and estates | ✓ | | ✓ | |
| Local land management | ✓ | | ✓ | |
| Natural resource management and agriculture | ✓ | | ✓ | |
| Hunting, fishing and trap. on aboriginal land | ✓ | | ✓ | |
| Housing | ✓ | | ✓ | |
| Labour | | ✓ | | ✓ |
| Penitentiaries and Parole | ✓ | | ✓ | |
| Some environmental management | ✓ | ✓ | ✓ | ✓ |
| Fisheries Co-Management | | ✓ | ✓ | |
| Gaming | ✓ | | ✓ | |
| Tax Powers | ✓ | ✓ | ✓ | |
| Broadcasting and Telecommunications* | | ✓ | | ✓ |
| Census and Statistics* | | ✓ | ✓ | ✓ |

* - The federal government is unwilling to negotiate these self government powers.

The task of institutional impact assessment, assuming these self government powers have

been matched up with the appropriate economic stimulus, now depends upon the internal governance structure of the First Nation self governing institution. This can not be accomplished at this time because table II is based on the speculation that the federal government will set the negotiating agenda for self government powers. Therefore, no one can be certain what specific changes treaties and self government will bring to First Nations let alone what will be the particular internal governance structure of any self governing institution.

As a more practical method, consider the evidence from the two First Nation institutions presented earlier. To begin, suppose information collection is viewed as an institution that supports technological change. Further assume on the basis of the discussion in Chapter 3, that the SNTC had a more flexible trust based internal governance structure for information collection than did Statistics Canada or the Department of Indian and Northern Affairs financially induced cooperation. On the basis of Figure 5, it could be predicted that SNTC would follow path 4 and would eventually become the information collection monopoly.

The story of the SNTC information collection services, however, has not unfolded, over the last 3 years in the manner predicted by Figure 5. In the fall of 1994, the SNTC information service staff was reduced, in 1995 this section of the SNTC was reorganized, and in 1996 instead of managing more aspects of the Census, Statistics Canada resumed full management responsibility.

There are a number of reasons why the SNTC did not follow the anticipated trajectory. First, it is possible that the adaptive efficiency model does not apply in this situation. The consumers of the information along the external boundary, Statistics Canada and others, were not willing to let efficiency guide the resource transfer decisions⁶⁸. David, 1991 calls this inability to transfer power from one institution to another, path dependency.

"We observe communities all over the world moving along inefficient paths even though aware of more efficient institutional structures elsewhere. [In these situations] There is no built in mechanism for more efficient rules to replace inefficient ones." (Pejovich, 1995, p. 42).

Secondly it is doubtful that information collection solely supports technological change, as it is also a component in the reduction of uncertainty for trade⁶⁹. For this reason, information collection (statistics) in Table I has a check in both the technological change and trade cells. Finally, the transaction costs calculations, although conservative, are subject to a margin of error that could falsify the conclusion that the SNTC had lower transaction costs than Statistics Canada⁷⁰.

Unlike the SNTC, the circumstances surrounding the Kamloops Shuswap would seem to

⁶⁸ It was my task to raise funds for the information management area of the SNTC. When an individual is good at this task, he is known in "Indian country" as a rainmaker. By 1994, I was considered the Shuswap Drip. This was certainly the direct cause of the SNTC information services restructuring.

⁶⁹ In this case, however, the role of the SNTC information management department was to facilitate the technological transfer of information management techniques to the Shuswap communities, so the probable economic growth stimulus which the SNTC was supporting was technological change. Therefore, an SNTC political change in 1993 which focussed more attention on administrative accountability may have been inappropriate for this institution.

⁷⁰ Such discussion is largely moot anyway as the federal government is unwilling to negotiate self government in the area of statistics and the census. Should this analysis, however, be supported with subsequent research this decision to not negotiate information collection as a self government power may be fiscally inefficient. (it may be still politically prudent, however, for Canada).

closely correspond to path 2 of Figure 5. The expected increase in trade through greater taxation jurisdiction favours a stoic institutional environment. However, without the mechanisms to maintain that stability the institution, that is the Kamloops Shuswap Government, was forced to rely on trust based cooperation which clearly was weak and tenuous. The creation of mistrust inside that Government was predictable, and as a result of the further breakdown in the internal structure of the institution, this mistrust was costly⁷¹.

This is not an anomalous occurrence within First Nation governments. Other interviews⁷² revealed nearly identical circumstances have existed in recent history in Neskonlith, Spallumcheen, Skeetchestn, and Westbank. After compiling a significant case study data base on American Indian reservation, Stephen Cornell and Joseph Klatt (1992), the principal investigators for the Harvard Study of Economic Development on American Indian reservations, concluded that internal political instability was a significant contributing factor to the failure of many economic development initiatives for American Indians. They suggest trustworthy third party dispute mechanisms and institutions which more closely match the particular First Nation culture will help to alleviate these problems, i.e. economizing on trust to engender cooperation and in the process create stability.

⁷¹ In 1994 Chief Jules and his slate of candidates were re-elected. Their platform was a promise to return stable, responsible government to the community (their opposition's promises were not published). Having been out of power from 1992-1994, negotiations for expanded Kamloops Shuswap taxation jurisdiction have resumed with the Department of Finance.

⁷² These interviewees include Robert Manuel, Chief Ron Ignace, Murray Ross, Verna Minniberriett, and Delphine Terbasket.

Since many of the self government institution up for grabs in Table I would seem to support trade, the advice of Cornell and Platt would appear to be sound. It is hoped, however, that the evidence in this Chapter have demonstrated that this need not always be the case. Institutions supporting technological change could be at a competitive disadvantage if they become stoic. Furthermore, an analysis of the conditions which build internal and external trust in an institution may be a useful tool for evaluating the potential economic impact of treaty induced institutional changes.

Chapter 6 - Conclusions

What will be the economic impact of self-government and treaty settlement? Will self-government and treaties have a permanent effect or merely a temporary one? The answer to this question depends upon the particular economic, social, environmental, or political aspects of the treaties and self-government in question, and upon the make up of the institutions (among other factors) which will participate in this dynamic.

The existence of this complex dynamic though, does not imply that the art of speculation should be avoided. If there are to be any generalized lessons gleaned from the multiplier analysis, institutional change model, and anecdotal evidence presented in this dissertation then it depends critically on the acceptance of at least the 16 underlying propositions made in this dissertation summarized below. These propositions have been divided in accordance with their appearance in this document:

Chapter 1

1. Based on the historical precedent of previous treaties and so called modern treaties (post 1973), treaties can be divided into institutional and compensation components. Treaty compensation is paid for the appropriation of any existing aboriginal title on claimed land and the institutional component is equivalent to the self governing jurisdictions accorded First Nations on unceded land. These powers were divided

into public (residency based) and national (citizenship based) models.

Chapter 2

2. To estimate the impact of the compensational element of treaties, the nature and size of the First Nation economy suggests that a Keynesian household income multiplier methodology is suitable. In this regard there are two possible multiplicands associated with the possible recipients of treaty compensation, the First Nation households, and the First Nation government. With two possible multiplicands and two possible models of self-government there are four different treaty-compensation scenarios.

3. Given the highly dependent nature of the First Nation economy, it is sufficient for the household income multipliers to account only for the first round direct, induced and feedback effects. Furthermore these income multipliers should be adjusted to reflect how much local expenditure actually becomes local income (the parameter b), and for the amount of new household income net of existing government transfers actually created.

Chapter 3

4. The data gathered to estimate the multipliers and the required parameters is reliable.

Chapter 4

5. The linear local and non-local consumption function is an acceptable functional form, and the subsequent regression estimates are acceptable (for the parameters k and d).
6. The sensitivity analysis conducted on the parameter b captures not only the difficulties in estimating this parameter, but also in some way responds to the criticism directed at the Keynesian consumption function by the life cycle and permanent income hypotheses.
7. The subsequent 10 multiplier estimates for each expenditure type and for each of the 5 Shuswap communities, and the subsequent total and cumulative multipliers which result from these estimates are reliable.
8. The 4 Shuswap communities and the 1 Shuswap aggregate used to estimate multipliers are representative of other First Nation communities in B.C..

Chapter 5

9. Public institutions seek to maximize their discretionary revenues or profits. This is accomplished by supporting and enhancing economic growth.

10. Public institutions have an internal and external boundary. The internal boundary surrounds the institution and encompasses the governance structure of how that institution produces and distributes its good or service, or addresses its goal. The external boundary surrounds the constituents who use that institution.
11. There are two broad types of internal-governance structures for public institutions, some based on induced cooperation and others based on trust accumulation.
12. For public institutions, transaction costs can be modelled as the price of induced cooperation inside the internal boundary (Figure 3 in Chapter 5).
13. Inside the external boundary the public institution is paid resources for its services from its users (Figure 4 in Chapter 5).
14. Reputation built trust lowers the transaction costs inside the internal boundary and raises the resources per service delivered inside the external boundary, thereby raising institutional profits. The dynamic of trust accumulation on the external boundary determines the fate of the institution.
15. Public institutions can support one or both of two general economic dynamic forces - trade and technological change.

16. For public institutions supporting trade an internal-governance structure based on induced cooperation is preferable to one based on trust, and vice versa for public institutions supporting the process of technological change. For public institutions supporting both, a hybrid internal-governance structure is appropriate. This process is reflected in Figure 5 of Chapter 5.

Accepting propositions 1 through 8 leads to the following conclusions:

- The low household income multiplier values for the Shuswap communities occur because reserves have few businesses. As a result, a strong secondary beneficiary from treaty compensation will be the surrounding non-native economies.
- ▶ The decision of how to distribute treaty compensation is one of First Nation public choice. Strict adherence to the assumption of rationality inherent in the public choice literature, however, suggests that distributing treaty compensation to households is always Pareto superior (assuming regularly shaped utility curves for First Nation households) to allowing the First Nation government to manage the compensation.
- First Nation government control of treaty compensation may be justified on long term economic grounds if it is used to plug the economic leakages in the on reserve economy, and/or it is almost spent entirely on local wages and salaries.

- ▶ Because of the complete lack of a First Nation economic presence off reserve, residency-based jurisdiction (public government) over current reserve lands leads to higher household income multipliers than does citizenship jurisdiction. For jurisdictional reasons in areas like taxation and education, this does not necessarily mean that this is preferable for First Nation communities.

- ▶ The federal and provincial governments will recover a portion of the tax dollars spent on treaty settlement because of the tax revenues created by the substantial off reserve expenditures by First Nation households. In particular, the less jurisdiction given to the First Nations, the greater will be the tax recovery by the federal and provincial governments.

Propositions 9-16 support the following two broad assertions concerning the economic impact of new First Nation institutions and one piece of advice for non First Nation institutions.

The internal foundation on which First Nation institutions are built is an important factor in identifying how they will respond to a source of economic growth. In particular where that growth favours a stoic institution, the internal governance structure should be maintained by a formal principal-agent mechanism (induced cooperation). The anecdote about the Kamloops Shuswap illustrates what happens when this solid foundation is not present.

This is particularly important because the Kamloops Shuswaps are widely considered to be one of the most economically advanced First Nation communities in Canada¹. In other words, while the Kamloops Shuswaps might have the resources to enforce the necessary cooperation, *average* First Nations may not have these resources. This could be serious because as Table II in Chapter 5 suggests a majority of self governing institutions will require a stable environment to foster economic growth through trade. The policy recommendation following from this conclusion for First Nations, and non-First Nation governments alike, is that for those institutions primarily supporting the orderly practice of commerce, rules should be clear, and internal-governance structures should have a stable, certain reputation maintained through induced cooperation.

This does not mean, however, that self-government is a poor idea. Cornell and Klatt (1992) and Newhouse et al (1993) after studying the factors which are present in First Nation economic winners agree that it is crucial that First Nations exercise their sovereignty. Those First Nations which have demonstrated the ability to build institutions which are culturally appropriate are more likely to maintain stability. Moreover, sovereignty forces First Nations to take responsibility of all spheres of their government including matters pertaining to the uncertainties of economic growth.

"Sovereignty without risk is no sovereignty at all." (Cornell and Klatt, 1992, p. 53)

¹

The Department of Finance (1993) suggest that this community is one of only 12 First Nation communities out of more than 600 which could sustain a government with tax revenue.

The second lesson from this study suggests that First Nations will experiment with their new found jurisdictions and powers. The intrinsic dynamic nature of smaller First Nation institutions built on unstable and informal principal and agent mechanisms provides fertile ground for trial and error. There will be ample opportunity to pick winners and losers. If Porter's (1990) analyses of the determinants of competitive advantages are correct, the increased domestic rivalry among smaller First Nation governments may prove to be an impetus for positive economic change. In times of rapid technological change, smaller, flexible First Nation institutions might even be at a strategic advantage. Such a conclusion would be even more probable if First Nations' institutions demonstrate a willingness to focus their increased powers from self-government and treaties on both their internal and external boundaries, i.e. the full process by which trust is accumulated.

"In all cases the [treaty] settlement process has increased communication between Aboriginal and non-Aboriginal communities... From a cultural perspective, settlement areas have demonstrated a sensitising toward aboriginal cultural issues from the non-Aboriginal community. New Zealand demonstrates the most notable example, where Maori culture has been incorporated (to a greater extent) in the collective culture of the country, facilitated in large part through the land claims movement." (Government of B.C, 1995, p. 11).

These two institutional assertions, however, do not just apply to First Nations. Facing a combination of fiscal pressure and technological change which seemingly favour dynamic institutions, many non-First Nation institutions are under increasing pressure to change. In this environment it is not hard to imagine a few stoic institutions following path 2 in Figure 5 of Chapter 5. The experiments of First Nations in developing effective smaller governments could be an invaluable stock of experimental information for larger governing institutions, and in the event that these institutions choose to learn from First Nations,

history might repeat itself.

"Technologies are only the tools through which we carry on our relationships with nature. The great accomplishments of Indian technology are almost all related to food, clothing, housing, and medicine. In the early days of colonization in North America there was a meeting of technologies - Indian and European.

Measured by the needs of the common man, the commodities of Indian nations had to offer in the greatest abundance were the ones Europeans most lacked. What the Europeans had to offer in consideration for having their basic needs met was the technology with which to do the same job better" (Manuel and Poslums, 1974, p. 13).

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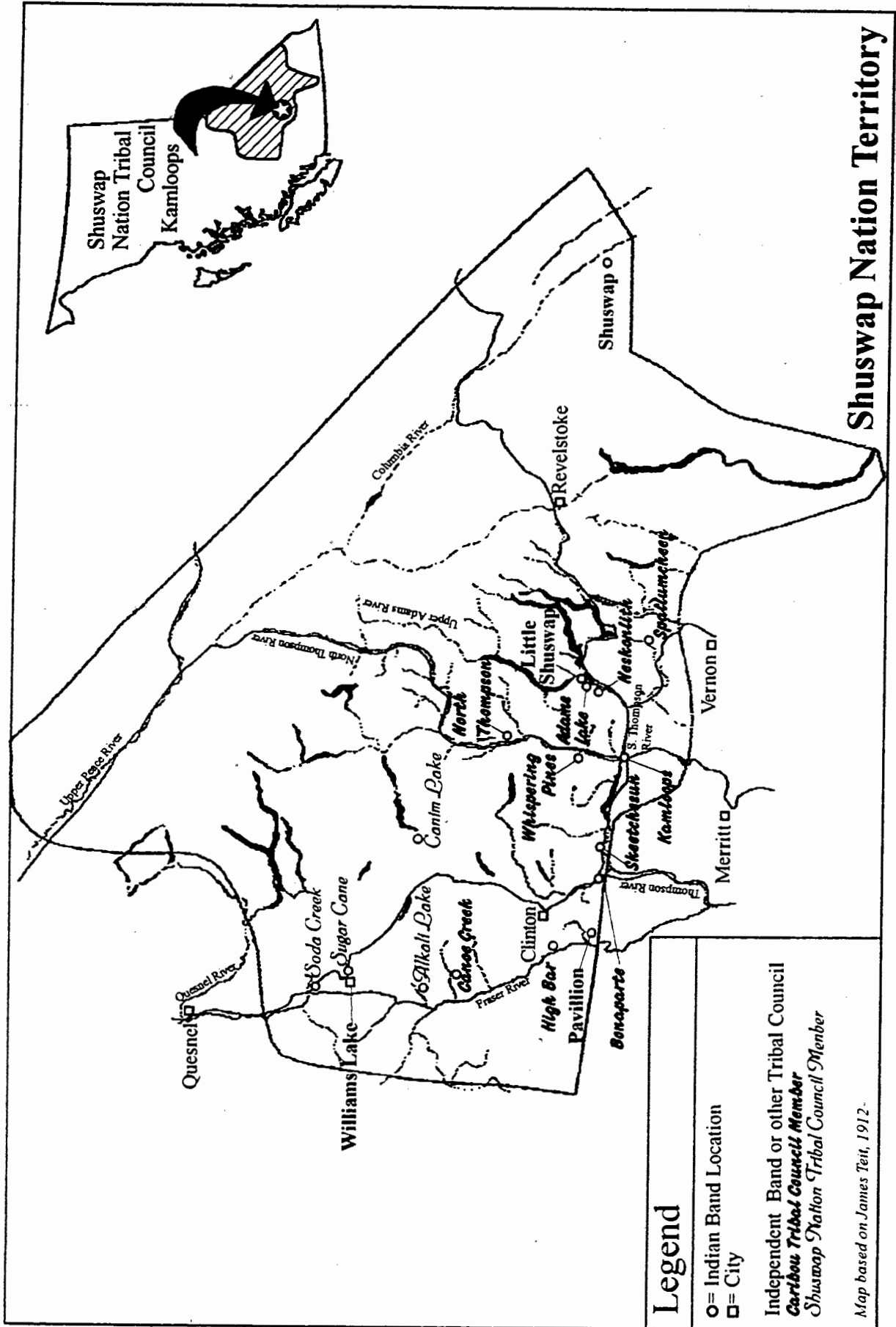
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Appendix A
A Map of the Shuswap Nation and its Communities



Shuswap Nation Territory

Legend

- = Indian Band Location
- = City
- Independent Band or other Tribal Council
Caribou Tribal Council Member
Shuswap Nation Tribal Council Member

Map based on James Teit, 1912.

Appendix B The Survey Instruments

In order this appendix contains:

1. Community Economic Development Study - Household Information and Personal Development and Resource Information
2. Band Government, SNTC and affiliated Organizations Economic Leakage Survey
3. An Economic Development Study for the Businesses on the Kamloops Indian Reserve and accompanying letters
4. An Economic Development Study for Shuswap Businesses
5. The Royal Commission Household Survey

Note: This survey has been edited from its original form to conform to the formatting requirements of a dissertation and to provide the reader with only the most pertinent portions of the survey. A copy of the original questionnaire is available from the author upon request.

Note to the Surveyor

When conducting the survey, read aloud to the person being surveying all portions written in **bold faced type**. Portions in regular type are surveyor instructions and are not to be read aloud. Be sure you are interviewing a member of the household who is knowledgeable about household expenses and incomes.

Part A: General Information

This will let the community know how many people live here and how old they are.

1. **What are the ages and genders of the people who normally live in this home?**

| Gender | 0-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+ | Total |
|---------|-----|-----|-------|-------|-------|-------|-------|-------|-------|-----|-------|
| Males | | | | | | | | | | | |
| Females | | | | | | | | | | | |

2) How many people live in this home, including those who are away temporarily?

Part B. Expenditure Information

This part of the survey will help the community know how much money people spend each month on different goods and services and whether the money is being spent here on the reserve or somewhere else.

3. Please give your best estimate of how much you spend on the following goods and services per month, and from where you usually buy them.

Household Expenditures Survey - Monthly Expenditures

| Expenditures | On reserve | Commun. 1 | Commun. 2 | Commun. 3 | Commun. 4 | Total Spent per month |
|---|------------|-----------|-----------|-----------|-----------|-----------------------|
| Grocery | | | | | | |
| Tobacco Products | | | | | | |
| Restaurant/Fast Food | | | | | | |
| Home Improvements | | | | | | |
| Utilities (Monthly average) | | | | | | |
| Housing costs (mortgage and rent) | | | | | | |
| Gas | | | | | | |
| Vehicle Maintenance | | | | | | |
| Public Transit (bus, cab, car pools) | | | | | | |
| Vehicle, boat or RV payments | | | | | | |
| Clothing | | | | | | |
| Health and Personal | | | | | | |
| Special Needs Health (elderly and disabled) | | | | | | |
| Insurance (vehicle, home, life and medical) | | | | | | |
| Child Daycare | | | | | | |
| Leisure (Bingo) | | | | | | |
| Cultural (Pow Wow) | | | | | | |
| Recreational (sports, rodeos) | | | | | | |
| Hunting/Fishing | | | | | | |
| Education (Supplies and Travel) | | | | | | |
| Savings | | | | | | |
| Gifts and Donations | | | | | | |

4. **How much money is earned each year from employment, government income (such as UIC, disability, Workmen's Compensation, Family Allowance, Canada Pension, Old Age Pension, Veteran's Benefits, Veteran's Pension, Orphan's Benefits, Widow(er) Benefits, Welfare, Child Tax Refund, Post-Secondary Student Loans, DIA Post-Secondary Student Allowance, Scholarships, or Foster Care Payments) self employment and other income, recreation income (rodeos and ball tournaments), and leisure income (gambling and bingo)?** Indicate with a number in the appropriate cell below:

| | Employment Income | Government Income | Self-employed and other income | Recreation income | Leisure Income |
|-------------|----------------------|----------------------|--------------------------------------|----------------------|-------------------|
| 0-5000 | | | | | |
| 5001-10000 | | | | | |
| 10001-15000 | | | | | |
| 15001-20000 | | | | | |
| 20001-25000 | | | | | |
| 25001-30000 | | | | | |
| 30001-35000 | | | | | |
| 35001-40000 | | | | | |
| 40001-45000 | | | | | |
| 45001+ | | | | | |

5. What is the approximate total household income? _____

**Band Government, SNTC and affiliated Organizations
Economic Leakage Survey**

The survey is intended to help band, the SNTC and organizations affiliated with Shuswap communities, identify potential economic development opportunities. Should a band or organization choose to participate then it should be completed by the administrator or accountant. The SNTC has already completed this survey as an example.

Part I Band Government Employees Information

As the largest on reserve employer, it is important for bands to keep data on the number and type of employees it has. The following questions may help with planning and lobbying.

1. How many salaried employees work for the band/organization? _____
2. How many employees are band or tribal council members? _____
3. How many employees are non-native? _____
4. How many employees work full time (all year long for an average of 30 hrs per week or more)?

5. How many employees work part time (non-full time)? _____

Part II Band Government Expenditure Information

This is the essence of the leakage study. It provides community decision makers with expenditure information by size, type and location. The results from this section of the survey will help identify and plan economic development opportunities.

For the expenditure categories below, it is suggested that the annual expenditure estimates (projections) be given to avoid seasonal fluctuations.

| Expenditure | On own reserve | On Kamloops reserve | Kamloops | Vancouver | Other community |
|---|----------------|---------------------|----------|-----------|-----------------|
| OFFICE SUPPLIES | | | | | |
| Stationary | | | | | |
| Printing | | | | | |
| OFFICE EQUIPMENT | | | | | |
| Furniture | | | | | |
| Computer equipment | | | | | |
| Copier lease and operating | | | | | |
| Fax operating and lease | | | | | |
| Phone lease and operating | | | | | |
| Other office equipment | | | | | |
| ROAD/LAND DEVELOPMENT AND MAINTENANCE | | | | | |
| Supplies (cement, gravel, tar) | | | | | |
| Equipment (trucks, tools, etc) | | | | | |
| HOUSING/BAND BUILDING AND MAINTENANCE | | | | | |
| General supplies (lumber, shingles, tools, etc) | | | | | |
| Appliances | | | | | |
| Plumbing supplies | | | | | |
| Heating supplies | | | | | |
| Janitorial services and supplies | | | | | |
| ADMINISTRATION AND BENEFITS | | | | | |
| Chief and Councillors | | | | | |
| Support Staff | | | | | |
| Operation and Maintenance | | | | | |
| Teachers and Instructors | | | | | |
| Daycare Staff | | | | | |
| Other | | | | | |

| Expenditure | On own reserve | On Kamloops reserve | Kamloops | Vancouver | Other community |
|----------------------------|----------------|---------------------|----------|-----------|-----------------|
| UTILITIES | | | | | |
| Heating (Gas, electricity) | | | | | |
| Water | | | | | |
| Electricity | | | | | |
| TRANS AND SHIPPING | | | | | |
| Travel | | | | | |
| Band vehicle operation | | | | | |
| Freight | | | | | |
| SOCIAL EXPENSES | | | | | |
| Cultural events | | | | | |
| Recreation and Sports | | | | | |
| Institutional care | | | | | |
| Funerals | | | | | |
| EDUCATION | | | | | |
| Skills Development | | | | | |
| Post-Secondary Education | | | | | |
| PROFESSIONAL | | | | | |
| Accounting | | | | | |
| Engineering | | | | | |
| Legal | | | | | |
| Advertising | | | | | |
| Accounting | | | | | |
| Others | | | | | |
| MISCELLANEOUS | | | | | |
| Insurance | | | | | |
| Interest on loans | | | | | |
| Other 1 | | | | | |
| Other 2 | | | | | |

An Economic Development Study for the Businesses on the Kamloops Indian Reserve

The intent of this survey is to gather information for evolving an economic development strategy for the mutual benefit of the Shuswap people of Kamloops, and the businesses which currently occupy its land. The study has been designed so as to minimize completion time by the manager, proprietor, or accountant of your business, while ensuring the confidentiality of the information. We are confident that your time and cooperation now will be justified by the useful information and historic opportunity it provides you.

Part I Type of Business

Please check the appropriate circle of your business (a list is attached to help clarify these broad categories):

- | | | |
|--|-------------------------------------|---------------------------------------|
| <input type="radio"/> Agriculture, Forestry and Fisheries | <input type="radio"/> Mining | <input type="radio"/> Construction |
| <input type="radio"/> Transportation, Communications Electric, Gas, and Sanitary Services | <input type="radio"/> Manufacturing | <input type="radio"/> Wholesale Trade |
| <input type="radio"/> Finance, Insurance, & Real Estate | <input type="radio"/> Retail Trade | <input type="radio"/> Services |

Part II Employment

It is hoped that a more cooperative and coordinated approach to filling employment opportunities within your businesses can be developed from the information you provide, below. More specifically, using the information you provide us on required qualifications for your employees, we hope to evolve educational and training mechanisms so that the Shuswap people of Kamloops can compete successfully for employment opportunities within your business. Ultimately, we would hope to provide you with a qualified pool of labour from our community. We appreciate that employment within your business may fluctuate so please provide estimates as of time of survey completion.

1. How many full time salaried employees do you have? _____
2. How many part time salaried employees do you have? _____
3. How many employees do you have with a high school diploma? _____
4. How many employees do you have with technical certificates? _____
5. What type of technical training do these employees have (list technical certificates, degrees, or courses taken)

6. How many employees do you have with professional training (university degree or equivalent experience)?

7. What type of university degree or experience do these employees have? _____

8. How many natives does your business currently employ? _____

Part III Sales and Revenues

This part of the survey is intended to provide us with important indicators of the business community's health. Such information is not only relevant for monitoring the success of our eventual joint economic development strategy, but also it is an important advertising tool for attracting future businesses to the Mount Paul Industrial Park. Please provide ball park annual estimates where appropriate.

1. What percentage of the goods and/or services sold by your business is to:

_____ Other Businesses _____ Consumers _____ Government

2. How much annual revenue do you receive from the sales of your good(s)/services?

(_____
—

Part IV Expenditures

The information from this section of the survey will provide both us and you with important economic development information, while identifying potential business and cost saving opportunities. To clarify this point, suppose we found that aggregate expenditures from the business community on the reserve for bolts manufactured in Vancouver was \$2 million. It would obviously be in both our interests to try and attract a bolt distributor or manufacturer to the reserve, whether it be for potential transportation cost savings to you, or increased lease revenue for us.

As a generic study for all the businesses on the reserve, it is difficult for us to ask you about specific expenditures and still maintain some survey standardization. As such we urge you to be as specific as possible about the type, location, and estimated annual expenditures in the table below. For example in the box for raw materials (3) under Vancouver you may put "\$300,000 Bolts 'R Us", which would imply that you spent \$300,000 on bolts at a distributor in Vancouver called Bolts 'R Us. A bolded example marked with an "X" for each type of expenditure is provided to assist you in completing this section

Brief Summary of Business Expenditures by size and location

| Expenditure | Kamloops Reserve | Kamloops | Vancouver | Other |
|-------------------------|-------------------------------|---|--|-----------------------------|
| Labour | | | | |
| X - Salaried Employees | \$1.2 million/yr paid on site | | | |
| Salaried Employees | | | | |
| X - Professional Fees | | \$4 million on Lawyer | \$2 million on economist | |
| Professional Fees | | | | |
| X - Consultants | | \$10,000 on AB Engineers | | \$50 on accountant in Chase |
| Consultants | | | | |
| Others | | | | |
| Production | | | | |
| X - Equipment purchases | | \$300,000 on trucks at Bob's Chevy-Ford | \$1.4 million on bolt cleaner from CD Tec. | |
| Equipment purchases | | | | |
| Equipment repairs | | | | |
| Equipment maintenance | | | | |
| Equip. oper. costs | | | | |
| X Raw Material (1) | | \$1 million on Sawdust from C-Saw Mill | | |
| Raw Material(1) | | | | |
| X Raw Material (2) | | | \$200,000 on salt from Chuck's Quarry | |
| Raw Material (2) | | | | |
| X Raw Material (3) | | | \$300,000 on bolts from Bolts 'R Us | |
| Raw Material (3) | | | | |

| Expenditure | On Reserve | Kamloops | Vancouver | Other |
|---------------------------------|--------------------------|--|--|--|
| X - Freight on Raw Materials | | | \$300,000 to Tamils Trucking | |
| Freight on Raw Materials | | | | |
| Warehousing Costs (storage) | | | | |
| Administration | | | | |
| Office Supplies | | | | |
| X - Advertising | | | | \$10,000 on Jenny's Adverts in Calgary |
| Advertising | | | | |
| Shipping handling costs | | | | |
| Receiving handling costs | | | | |
| X - Utilities | | \$200,000 B.C. Hydro \$300,000 B.C. Tel | | |
| Utilities | | | | |
| X - Federal Taxes | | | | \$60 in Corporate, GST, and income tax |
| Federal Taxes | | | | |
| X Provincial Taxes | | | | \$75 in PST, Income Tax and licenses |
| Provincial Taxes | | | | |
| X Property Tax | \$5 in real property tax | | | |
| Property Tax | | | | |
| X Research and Development | | | \$20 million on Laser bolt maker research with I.R.A.Q | |
| Research and Development | | | | |
| Other expenditures (list below) | | | | |

Part V Comments and Recommendations

This section asks for your suggestions, and recommendations concerning economic development and other aspects of government which may be relevant to you. We hope that by providing you with useful information, and evolving a strong consultative process that we will be able to develop the best possible governmental mechanisms to meet the needs of your business in the future.

1. What government services and/or information does your business currently use from the federal govt?

2. What government services and/or information does your business currently use from the prov. govt?

3. What government services and/or information would you like to receive for your business?

4. Please list in order of importance the top three factors which you feel are most important in attracting businesses to Kamloops.

A. _____

B. _____

C. _____

5. Please list in order of importance your top two concerns with the Mount Paul Industrial Park:

A. _____

B. _____

Thank you for your valuable time in completing this survey.

An Economic Development Study for Shuswap Businesses

The intent of this survey is to gather information which will help meet the needs of your business while hopefully identifying more business opportunities for Shuswap entrepreneurs like yourself. We will be presenting the results of this study with the result of the other economic leakage studies conducted over the last three years at a Shuswap Economic Development conference planned for May of this year. You represent the success stories of Shuswap economic development, so your input is crucial for this conference and for future Shuswap economic development. Your patience and co-operation with this survey is greatly appreciated.

Part I Type of Business

1. Please check the appropriate circle of your business (a list is attached to help clarify these broad categories):

- | | | |
|--|-------------------------------------|---------------------------------------|
| <input type="radio"/> Agriculture, Forestry and Fisheries | <input type="radio"/> Mining | <input type="radio"/> Construction |
| <input type="radio"/> Transportation, Communications Electric, Gas, and Sanitary Services | <input type="radio"/> Manufacturing | <input type="radio"/> Wholesale Trade |
| <input type="radio"/> Finance, Insurance, & Real Estate | <input type="radio"/> Retail Trade | <input type="radio"/> Services |

2. Who owns the business? Community (band) owned Individually (family) owned
 Nation owned

Part II Employment

It is hoped that a more cooperative and coordinated approach to filling employment opportunities within your businesses can be developed from the information you provide, below. We appreciate that employment within your business may fluctuate so please provide estimates as of time of survey completion.

1. How many full time salaried employees do you have? _____
2. How many part time salaried employees do you have? _____
3. How many employees do you have with a high school diploma? _____
4. How many employees do you have with technical certificates? _____
5. What type of technical training do these employees have (list technical certificates, degrees, or courses taken)

6. How many employees do you have with professional training (university degree or equivalent experience)?

7. What type of university degree or experience do these employees have? _____

8. How many of your employees are from the local community? _____

Part III Expenditures

The information from this section of the survey will provide both us and you with important economic development information, while identifying potential business and cost saving opportunities. To clarify this point, suppose we found that aggregate expenditures from all the local grocery stores in Shuswap communities on produce was \$150,000. Then this would indicate that a market garden opportunity might exist for a Shuswap individual or a Shuswap community.

To make this part of the survey easier, we have included many bolded examples in the table below, please provide annual estimates.

Brief Summary of Business Expenditures by size and location

| Expenditure | On Reserve | Kamloops reserve | Kamloops | Other |
|--------------------------------|--------------------------------------|--|---|------------------------------------|
| Labour | | | | |
| X - Salaried Employees | \$1.2 million/yr paid on site | | | |
| Salaried Employees | | | | |
| X - Professional Fees | | | \$5.4 million on Lawyer | \$5.2 million on economist |
| Professional Fees | | | | |
| X - Consultants | | \$10,000 on AB Engineers | | \$50 on accountant in Chase |
| Consultants | | | | |
| Others | | | | |
| Production | | | | |
| X - Equipment purchases | | \$300,000 on trucks at Bob's Chevy-Ford | \$1.4 million on bolt cleaner from CD Tec. | |
| Equipment purchases | | | | |
| Equipment repairs | | | | |
| Supplies | | | | |
| X Supplies (1) | | | \$100,000 on produce from Sheila's farm | |
| Supplies (1) | | | | |

| Expenditure | On reserve | Kamloops reserve | Kamloops | Other |
|---------------------------------|------------|------------------|--|--|
| Supplies (2) | | | | \$200,000 on clothes from Vancouver |
| Supplies (2) | | | | |
| X Supplies (3) | | | \$300,000 gas from Esso | |
| Supplies (3) | | | | |
| Supplies (4) | | | | |
| Transportation costs | | | | |
| Administration | | | | |
| Office Supplies | | | | |
| X - Advertising | | | | \$10,000 on Jenny's Adverts in Calgary |
| Advertising | | | | |
| Shipping handling costs | | | | |
| Receiving handling costs | | | \$200,000 B.C. Hydro \$300,000 B.C. Tel | |
| X - Utilities | | | | |
| Utilities | | | | |
| Property Taxes | | | | |
| Sales Taxes | | | | \$500,000 in GST remitted to Feds. |
| Sales Taxes | | | | |
| Income Taxes | | | | |
| Other expenditures (list below) | | | | |
| | | | | |
| | | | | |

Part IV Sales and Revenues

This part of the survey is intended to provide us with important indicators of the business community's health. Please provide ball park annual estimates where appropriate.

1. What percentage of the goods and/or services sold by your business is to:

_____ Other Businesses _____ Consumers, _____ Government

2. How much annual revenue do you receive from the sales of your good(s)/services?

Part V Shuswap Business Assessment Checklist

This section of questions will hopefully provide insight into the strength and weaknesses of your business. This information will help us identify speakers for the Shuswap Economic Development Conference planned for May, who are capable of helping you address your business weaknesses. This information will also provide other Shuswap entrepreneurs with a source of invaluable advice based on your experiences.

For example suppose your business had a problem like:

The demand for your products have grown rapidly and the business needs money to upgrades its production and distribution capacities. You need new technology and you need to hire more people. You view this as an urgent problem.

At the proposed conference you might then be interested in:

Learning about all the sources of loans, or learning about available business technology, or about course available to improve the productivity of your workers, or perhaps you need more information about expanding your business. As a result of the conference specialized training courses and/or business packages may be developed to help you specifically.

Another example of a problem might be:

Repeated production crisis, time pressures, and role conflicts have started to take away the fun of operating the business. Turn over of staff is increasing because morale is declining.

At the proposed conference you might learn:

How to find the root cause of the crisis and possible solutions for dealing with it.

Still another example of a problem might be:

For the past three months you have not been able to prepare your cash flow analysis. Perhaps you are too busy, or perhaps you do not have the funds to hire the appropriate help.

At the proposed conference you might learn to:

Prepare the cash flow analysis yourself. Perhaps you might realize at the conference that other Shuswap businesses are having the same problem. By pooling some resources with other businesses at the conference you might be able to collectively purchase the services of an expert to do everyone's cash flow analysis. Who knows, perhaps you could all employ a Shuswap accountant.

So as you can see, your answers to this question could be very beneficial to your business. As such, for each of the areas identified, choose the most accurate of the following five possible descriptions of your business operations by placing the right number or a check mark in the appropriate box.

Explanation of rankings

Major Strength - priority level 5 (place a number 5 in the appropriate box)

This is one of the major strengths of your business operations. The business has been highly successful in this particular area. The business has always been proud and competent in this area.

High Function - priority level 4 (place a number 4 in the appropriate box)

The business has functioned higher than the acceptable standards. The business has performed well in all aspects of this area.

Normal - priority level 3 (place a number 3 in the appropriate box)

The business functions normally in this area. There have been some fluctuations above and below acceptable standards, but in general this area is dependable.

Urgent - priority level 2 (place a number 2 in the appropriate box)

The business has problems in this area which are inhibiting its ability to function well. These problems deserve early attention.

Survival Threshold - priority level 1 (place a number 1 in the appropriate box)

The business has serious problems in this area. The survival of the business may be at stake if these problems are not resolved immediately.

The Royal Commission Study Household Survey Results and Methods

On a question by question basis this section contains the summary results of the mailed out household surveys, and the summary results of the random sample selected from the housing applications at the Kamloops Native Housing Society.

Part I The Household Survey Methods

After a pretest in June, the survey was mailed out to the householders of the Kamloops Native Housing Society housing project in late June. The completed surveys were returned to the Friendship Society via the housing managers.

Surveys were also handed out at functions put on by the Friendship Society and given verbal endorsements at these functions. A number of surveys were also left at different locations in the Friendship Centre, the Art Shop, the Storefront School and the Health Centre. At each location there was an explanatory poster and completed survey deposit box.

Approximately 300 surveys in total were distributed and 52 were returned by the end of July. The results of this sample compare similarly to other surveys (Community Futures 1992) implying the possibility of a normal distribution. The gaping information gaps, however, concerning the off reserve aboriginal population as discussed in this report, prevent any definitive comment about the normality of this sample. The pending release of the Aboriginal Peoples Survey results from 1991 will be used for more rigorous statistical testing in the final draft of this report.

Part II The Household Survey Results

1. Where do you live? 40 off reserve 11 on reserve
2. Do you live in a native housing project? 7 live in housing project 45 do not
3. With what aboriginal nation do you and your household most closely associate with? (choose as many as you like)

| | | | | |
|------------|-------------|-------------|--------------|------------|
| 36 Shuswap | 11 Metis | 11 Thompson | 7 non-status | |
| | | | | 6 Okanagan |
| 6 other | 1 Chilcotin | | | |
4. Are you a band member? 35 band members 17 not band members
5. How would you classify your household? 16 Common law 13 married

| | | |
|------------------|-----------------|----------|
| 11 Single Mother | 3 Single Father | 5 Single |
|------------------|-----------------|----------|
6. Why did you leave your home community (reserve)? Rank the top three reasons. For ease of data base translation the top ranked selection counted 3, the second ranked selection counted 2 and the #3 reason counted 1. Where only one choice was made, it was given a value of 3 and if check marks were used instead of numbers each received a value of two.

| | | | |
|---------------|--------------|-----------------------|---------|
| 64 Employment | 58 Education | 30 Always off reserve | |
| 25 Housing | 14 Lifestyle | 12 Personal Healing | |
| 7 Politics | 7 Marriage | 7 Health | 1 other |

7. Have you ever considered improving your economic situation in any of the following ways? (choose as many as you like)

| | | | |
|----------------------|-----------------------------|----------------------|---------|
| 23 upgrade education | 15 post secondary education | 15 start up business | |
| 9 skills training | 9 career change | 6 moving | 3 other |

8. What do you think are three most important concerns for your current community? Rank the top three.

| | | | | |
|--------------------------|------------|---------------------------|-----------|---------|
| 52 Employment | 45 Housing | 37 Drug and Alcohol Abuse | 3 | 2 |
| | | | Education | |
| 24 Child Welfare | 21 Health | 16 Aboriginal Languages | 1 | 1 |
| | | | Taxation | |
| 11 Aboriginal Businesses | | 10 Culture | | 3 Other |

9. Where do you socialize with members of your community? Rank the top three. See attached graph.

| | | | |
|-----------|-----------------------|-------------------|-----------|
| 50 Work | 46 Own community | 39 Pow wows | 31 clubs |
| 28 School | 25 Friendship society | 24 bingos | 15 rodeos |
| 12 Church | 10 Housing Projects | 8 Don't socialize | 4 other |

10. Do you or anyone in your family use the programs or services provided by any of following organizations: (choose as many as you like)

| | | | |
|-----------------------|--------|----------------------|------------------|
| 32 Friendship society | 28 UCC | 17 own band | 15 Kamloops city |
| 15 Native outreach | 15 KIB | 14 Housing society | 12 INAC |
| 10 SCES | 6 SFU | 6 Min. of Abor. Aff. | 5 SNTC |
| 5 ANTCO | 3 CEIC | 1 KEDCO | |

11. Have you ever applied for assistance or funding from any of the following organizations: (choose as many as you like)

| | | | |
|-------------|----------------------|-------|-------|
| 18 own band | 8 Friendship Society | 8 UCC | 7 KIB |
|-------------|----------------------|-------|-------|

Appendix C

Comparing the Shuswap and Statistics Canada Household Expenditure Categories

The household survey expenditure categories for the Shuswap study were loosely based on the Statistics Canada Family Expenditure Survey. The table below contains a general category and an average proportionate expenditure comparison between Shuswap and Statistics Canada survey instruments.

To further clarify the specific household expenditures considered in the Shuswap survey the pertinent sections of the 1992 Shuswap Information System training manual have been attached below as well.

2

Survey Category Comparison Table

| Statistics Canada Categories and classifications | Stats Can % of total expenditure** | Corresponding Shuswap categories | Shuswap % of total expenditure*** |
|---|------------------------------------|---|-----------------------------------|
| Food (1000-1532) Household Operations (2240-2250) | 17.3 | Groceries Restaurants | 25.1 |
| Shelter (2000-2131)* Household Furnishings (2300-2498) | 22 | Housing Home Improvements | 13.8 |
| Shelter (2090-2096) Household Operations (2200-2204) | 5.8 | Utilities | 7.9 |
| Household Operations (2210-2220) | 7.25 | Daycare Special Health Care | 3.9 |
| Clothing (2500-2879) | 6.2 | Clothing | 9.4 |
| Transportation (2900-2949) | 15.5 | Vehicle Operation Gasoline Payments Transportation | 17.1 |
| Health Care (3000-3063) Personal Care (3100-3153) | 4.8 | Health and Personal Care | 1.5 |
| Recreation (3200-3370) | 6.5 | Leisure Culture Recreation Hunt/Fish | 7.6 |
| Education (3390-3400) | 1.2 | Education | 1.1 |
| Reading (3380-3386) | .63 | No corresponding category | 0 |
| Tobacco and Alcohol (3600-3612) | 4.8 | Tobacco | 1.9 |
| Miscellaneous | 3.7 | No corresponding category | 0 |
| Security | 6.3 | Insurance Savings | 9.1 |
| Gifts and Contributions (3720 - 3724) | 4 | Gifts and Donations | 1.5 |

Taxes were subtracted from Statistics Canada data since these were not applicable to the Shuswap surveys.

Rounding errors may lead to proportions not summing to one

* Statistics Canada proportions based on average household expenditures as reported in Table 1 in 62-555

** Shuswap proportions based on aggregated data in Table 8 in Chapter 2.

*** Expenditures on utilities (Statistics Canada categories 2200-2204) have been subtracted

Household Survey Training Guide - The Expenditure Definitions

The following represents an excerpt from the SIS Training Guide. A complete copy of the training guide is available upon request.

Household Expenditure Question

This section of the study is the longest and most difficult for the interviewer and the person being interviewed. This is an important section. The simplest and quickest way to complete this question is to go through each category with the person being interviewed.

Groceries - Remember to refer back to PART B: EXPENDITURE INFORMATION - QUESTION 2 as a guide to double-check with the person being interviewed the best estimate for grocery cost per month. This category includes all cleaning supplies and household staples along with food.

Tobacco products - The person being interviewed may calculate the estimated number of tobacco products used within the household on a daily basis. The interviewer can assist the person by calculating the monthly expenditure. The tobacco expenditure includes all household members.

Restaurant/Fast Food - Not everyone will remember monthly restaurant expenses. To help the interviewee, the interviewer may prompt questions such as "how many times did you eat out last month or week" and then calculate monthly expenditures on this category?

Home Improvements - This category tries to capture home improvements and new furnishing. The interviewer may want to work backwards from annual estimates:

Utilities - Monthly expenditures on telephone, electricity, natural gas, heating and water. The interviewer should be careful to get an average monthly cost for the year.

Housing - Most homes have some type of mortgage or rental arrangement. CMHC will be considered on-reserve.

Gasoline - For all household vehicles per month

Vehicle Operation and Main. - Includes oil changes and repairs to all household vehicles.

Public Transportation - All expenditure on transportation other than the interviewees own vehicle.

Payments - This is the monthly average of past and current payments and leases from the last year.

Clothing - Monthly average

Health and Personal Care - Haircuts, grooming, and medical products not covered by B.C. Medical.

Special Need Health - Medical expenses for a handicapped or elderly person in the household.

Insurance (Vehicle, home, life, health) - Since these expenses usually occur on an annual or semi-annually basis they should be translated to a monthly average.

Child Daycare - Cost of daycare incurred by the household.

Leisure - Expenditures per month on bingo.

Cultural - All costs incurred in the making of traditional clothing, dance entry fees, pow-wow admission fees and other cultural expenditures.

Recreation - Cost of sports (equipment and registration) for family members and cost of movies and other videos per month.

Hunting/Fishing - Average costs of hunting and fishing equipment, supplies, licences and fees per month.

Education - Average monthly cost of supplies and travel for educational purposes.

Savings - Bank deposits for the purpose of saving and contributions to RRSP per month or averaged out per month.

Gifts and Donations - Monthly average expenditures on gifts given to family and friends and charitable contributions.

Appendix D
Selected Regression Results

Two Shazam generated regressions from each community for the parameters k_i and d_i are presented below. All the regression results are available upon request.

Whispering Pines

$k_{\text{cumulative}}$

Genr com1=com+clor+hpr+snr+inr+dayr+leir+cult+recr+hfr+educr+savr+gdr

ols com1 tot

REQUIRED MEMORY IS PAR= 8 CURRENT PAR= 390

OLS ESTIMATION

16 OBSERVATIONS DEPENDENT VARIABLE = COM1

...NOTE...SAMPLE RANGE SET TO: 1, 16

R-SQUARE = .0245 R-SQUARE ADJUSTED = -.0451
 VARIANCE OF THE ESTIMATE-SIGMA**2 = 96560.
 STANDARD ERROR OF THE ESTIMATE-SIGMA = 310.74
 SUM OF SQUARED ERRORS-SSE= .13518E+07
 MEAN OF DEPENDENT VARIABLE = 237.98
 LOG OF THE LIKELIHOOD FUNCTION = -113.458

| VARIABLE NAME | ESTIMATED COEFFICIENT | STANDARD ERROR | T-RATIO | P-VALUE | PARTIAL CORR | STANDARDIZED | ELASTICITY AT MEANS |
|---------------|-----------------------|----------------|---------|---------|--------------|--------------|---------------------|
| TOT | .061547 | .1037 | .5936 | .719 | .157 | .1567 | .5108 |
| CONSTANT | 116.43 | 219.0 | .5315 | .698 | .141 | .0000 | .4892 |

k_{gas}

|_ols gasr tot

REQUIRED MEMORY IS PAR= 8 CURRENT PAR= 390

OLS ESTIMATION

16 OBSERVATIONS DEPENDENT VARIABLE = GASR

...NOTE...SAMPLE RANGE SET TO: 1, 16

R-SQUARE : .0001 R-SQUARE ADJUSTED = -.0713
 VARIANCE OF THE ESTIMATE-SIGMA**2 = 35051.
 STANDARD ERROR OF THE ESTIMATE-SIGMA = 187.22

SUM OF SQUARED ERRORS-SSE= .49071E+06
 MEAN OF DEPENDENT VARIABLE = 81.250
 LOG OF THE LIKELIHOOD FUNCTION = -105.351

| VARIABLE NAME | ESTIMATED COEFFICIENT | STANDARD ERROR | T-RATIO | P-VALUE | PARTIAL CORR | STANDARDIZED COEFFICIENT | ELASTICITY AT MEANS |
|---------------|-----------------------|----------------|---------|---------|--------------|--------------------------|---------------------|
| TOT | -.0026498 | .06247 | -.04241 | .483 | -.011 | -.0113 | -.0644 |
| CONSTANT | 86.483 | 132.0 | .6553 | .739 | .173 | .0000 | 1.0644 |

Skeetchestn

$k_{\text{groceries}}$

_ols grocr tot

REQUIRED MEMORY IS PAR= 14 CURRENT PAR= 390
 OLS ESTIMATION

32 OBSERVATIONS DEPENDENT VARIABLE = GROCR
 ...NOTE...SAMPLE RANGE SET TO: 1, 32

R-SQUARE = .9611 R-SQUARE ADJUSTED = .9598
 VARIANCE OF THE ESTIMATE-SIGMA**2 = 9196.4
 STANDARD ERROR OF THE ESTIMATE-SIGMA = 95.898
 SUM OF SQUARED ERRORS-SSE= .27589E+06
 MEAN OF DEPENDENT VARIABLE = 172.81
 LOG OF THE LIKELIHOOD FUNCTION = -190.398

| VARIABLE NAME | ESTIMATED COEFFICIENT | STANDARD ERROR | T-RATIO | P-VALUE | PARTIAL CORR | STANDARDIZED COEFFICIENT | ELASTICITY AT MEANS |
|---------------|-----------------------|----------------|---------|---------|--------------|--------------------------|---------------------|
| TOT | .054629 | .002006 | 27.24 | 1.000 | .980 | .9804 | 1.0103 |
| CONSTANT | -1.7866 | 18.12 | -.09857 | .461 | -.018 | .0000 | -.0103 |

d_{utilites}

_ols utilm tot

REQUIRED MEMORY IS PAR= 14 CURRENT PAR= 390
 OLS ESTIMATION

32 OBSERVATIONS DEPENDENT VARIABLE = UTILM
 ...NOTE...SAMPLE RANGE SET TO: 1, 32

R-SQUARE = .9475 R-SQUARE ADJUSTED = .9457
 VARIANCE OF THE ESTIMATE-SIGMA**2 = 7527.1
 STANDARD ERROR OF THE ESTIMATE-SIGMA = 86.759
 SUM OF SQUARED ERRORS-SSE= .22581E+06

MEAN OF DEPENDENT VARIABLE = 132.81
 LOG OF THE LIKELIHOOD FUNCTION = -187.194

| VARIABLE NAME | ESTIMATED COEFFICIENT | STANDARD ERROR | T-RATIO 30 DF | P-VALUE | PARTIAL CORR | STANDARDIZED COEFFICIENT | ELASTICITY AT MEANS |
|------------------|--------------------------|-------------------|------------------|---------|-----------------|-----------------------------|------------------------|
| TOT | .042213 | .001815 | 23.26 | 1.000 | .973 | .9734 | 1.0159 |
| CONSTANT | -2.1052 | 16.40 | -1.284 | .449 | -.023 | .0000 | -.0159 |

Bonaparte

$k_{cumulative}$

_ols com1 tot

REQUIRED MEMORY IS PAR= 15 CURRENT PAR= 390

OLS ESTIMATION

32 OBSERVATIONS DEPENDENT VARIABLE = COM1

...NOTE...SAMPLE RANGE SET TO: 1, 32

R-SQUARE = .1302 R-SQUARE ADJUSTED = .1012
 VARIANCE OF THE ESTIMATE-SIGMA**2 = .12013E+06
 STANDARD ERROR OF THE ESTIMATE-SIGMA = 346.60
 SUM OF SQUARED ERRORS-SSE= .36039E+07
 MEAN OF DEPENDENT VARIABLE = 288.35
 LOG OF THE LIKELIHOOD FUNCTION = -231.515

| VARIABLE NAME | ESTIMATED COEFFICIENT | STANDARD ERROR | T-RATIO 30 DF | P-VALUE | PARTIAL CORR | STANDARDIZED COEFFICIENT | ELASTICITY AT MEANS |
|------------------|--------------------------|-------------------|------------------|---------|-----------------|-----------------------------|------------------------|
| TOT | .082425 | .03890 | 2.119 | .979 | .361 | .3608 | .6218 |
| CONSTANT | 109.06 | 104.5 | 1.044 | .848 | .187 | .0000 | .3782 |

$d_{clothing}$

ols clom tot

REQUIRED MEMORY IS PAR= 14 CURRENT PAR= 390

OLS ESTIMATION

32 OBSERVATIONS DEPENDENT VARIABLE = CLOM

...NOTE...SAMPLE RANGE SET TO: 1, 32

R-SQUARE = .2492 R-SQUARE ADJUSTED = .2241
 VARIANCE OF THE ESTIMATE-SIGMA**2 = 9727.2
 STANDARD ERROR OF THE ESTIMATE-SIGMA = 98.626
 SUM OF SQUARED ERRORS-SSE= .29181E+06

MEAN OF DEPENDENT VARIABLE = 119.32
 LOG OF THE LIKELIHOOD FUNCTION = -191.296

| VARIABLE NAME | ESTIMATED COEFFICIENT | STANDARD ERROR | T-RATIO 30 DF | P-VALUE | PARTIAL CORR | STANDARDIZED COEFFICIENT | ELASTICITY AT MEANS |
|---------------|-----------------------|----------------|---------------|---------|--------------|--------------------------|---------------------|
| TOT | .34923E-01 | .01107 | 3.155 | .998 | .499 | .4992 | .6366 |
| CONSTANT | 43.358 | 29.73 | 1.459 | .922 | .257 | .0000 | .3634 |

Adams Lake

$k_{leisure}$

_ols leir tot

REQUIRED MEMORY IS PAR= 20 CURRENT PAR= 390
 OLS ESTIMATION
 46 OBSERVATIONS DEPENDENT VARIABLE = LEIR
 ...NOTE...SAMPLE RANGE SET TO: 1, 46

R-SQUARE = .0939 R-SQUARE ADJUSTED = .0733
 VARIANCE OF THE ESTIMATE-SIGMA**2 = 9569.2
 STANDARD ERROR OF THE ESTIMATE-SIGMA = 97.822
 SUM OF SQUARED ERRORS-SSE= .42104E+06
 MEAN OF DEPENDENT VARIABLE = 51.957
 LOG OF THE LIKELIHOOD FUNCTION = -275.074

| VARIABLE NAME | ESTIMATED COEFFICIENT | STANDARD ERROR | T-RATIO 44 DF | P-VALUE | PARTIAL CORR | STANDARDIZED COEFFICIENT | ELASTICITY AT MEANS |
|---------------|-----------------------|----------------|---------------|---------|--------------|--------------------------|---------------------|
| TOT | .32780E-01 | .1535E-01 | 2.135 | .981 | .306 | .3064 | 1.1285 |
| CONSTANT | -6.6772 | 31.02 | -2.153 | .415 | -.032 | .0000 | -.1285 |

$d_{leisure}$

_ols leim tot

REQUIRED MEMORY IS PAR= 20 CURRENT PAR= 390
 OLS ESTIMATION
 46 OBSERVATIONS DEPENDENT VARIABLE = LEIM
 ...NOTE...SAMPLE RANGE SET TO: 1, 46

R-SQUARE = .1849 R-SQUARE ADJUSTED = .1664
 VARIANCE OF THE ESTIMATE-SIGMA**2 = 21075.
 STANDARD ERROR OF THE ESTIMATE-SIGMA = 145.17
 SUM OF SQUARED ERRORS-SSE= .92729E+06

MEAN OF DEPENDENT VARIABLE = 78.696
 LOG OF THE LIKELIHOOD FUNCTION = -293.233

| VARIABLE NAME | ESTIMATED COEFFICIENT | STANDARD ERROR | T-RATIO 44 DF | P-VALUE | PARTIAL CORR. | STANDARDIZED COEFFICIENT | ELASTICITY AT MEANS |
|------------------|--------------------------|-------------------|------------------|---------|------------------|-----------------------------|------------------------|
| TOT | .71981E-01 | .2278E-01 | 3.160 | .999 | .430 | .4300 | 1.6361 |
| CONSTANT | -50.059 | 46.03 | -1.088 | .141 | -.162 | .0000 | -.6361 |

Neskonlith

$d_{\text{restaurant}}$

|_ols restm tot

REQUIRED MEMORY IS PAR= 17 CURRENT PAR= 390
 OLS ESTIMATION

39 OBSERVATIONS DEPENDENT VARIABLE = RESTM
 ...NOTE...SAMPLE RANGE SET TO: 1, 39

R-SQUARE = .4262 R-SQUARE ADJUSTED = .4107
 VARIANCE OF THE ESTIMATE-SIGMA**2 = 1968.0
 STANDARD ERROR OF THE ESTIMATE-SIGMA = 44.362
 SUM OF SQUARED ERRORS-SSE= 72815.
 MEAN OF DEPENDENT VARIABLE = 50.308
 LOG OF THE LIKELIHOOD FUNCTION = -202.215

| VARIABLE NAME | ESTIMATED COEFFICIENT | STANDARD ERROR | T-RATIO 37 DF | P-VALUE | PARTIAL CORR. | STANDARDIZED COEFFICIENT | ELASTICITY AT MEANS |
|------------------|--------------------------|-------------------|------------------|---------|------------------|-----------------------------|------------------------|
| TOT | .46895E-01 | .8946E-02 | 5.242 | 1.000 | .653 | .6528 | 1.2877 |
| CONSTANT | -14.471 | 14.25 | -1.015 | .158 | -.165 | .0000 | -.2877 |

k_{savings}

|_ols savr tot

REQUIRED MEMORY IS PAR= 17 CURRENT PAR= 390
 OLS ESTIMATION

39 OBSERVATIONS DEPENDENT VARIABLE = SAVR
 ...NOTE...SAMPLE RANGE SET TO: 1, 39

R-SQUARE = .0000 R-SQUARE ADJUSTED = -.0270
 VARIANCE OF THE ESTIMATE-SIGMA**2 = 16.459
 STANDARD ERROR OF THE ESTIMATE-SIGMA = 4.0569
 SUM OF SQUARED ERRORS-SSE= 608.97

MEAN OF DEPENDENT VARIABLE = .64103
 LOG OF THE LIKELIHOOD FUNCTION = -108.929

| VARIABLE NAME | ESTIMATED COEFFICIENT | STANDARD ERROR | T-RATIO 37 DF | P-VALUE | PARTIAL CORR. | STANDARDIZED COEFFICIENT | ELASTICITY AT MEANS |
|------------------|--------------------------|-------------------|------------------|---------|------------------|-----------------------------|------------------------|
| TOT | -.14603E-04 | .8181E-03 | -.01785 | .493 | -.003 | -.0029 | -.0315 |
| CONSTANT | .66120 | 1.304 | .5072 | .692 | .083 | .0000 | 1.0315 |

SNTC

$k_{groceries}$

_ols grocr tot

REQUIRED MEMORY IS PAR= 64 CURRENT PAR= 390

OLS ESTIMATION

163 OBSERVATIONS DEPENDENT VARIABLE = GROCR

...NOTE...SAMPLE RANGE SET TO: 1, 163

R-SQUARE = .0000 R-SQUARE ADJUSTED = -.0062

VARIANCE OF THE ESTIMATE-SIGMA**2 = 2255.0

STANDARD ERROR OF THE ESTIMATE-SIGMA = 47.487

SUM OF SQUARED ERRORS-SSE= .36305E+06

MEAN OF DEPENDENT VARIABLE = 17.301

LOG OF THE LIKELIHOOD FUNCTION = -859.534

| VARIABLE NAME | ESTIMATED COEFFICIENT | STANDARD ERROR | T-RATIO 161 DF | P-VALUE | PARTIAL CORR. | STANDARDIZED COEFFICIENT | ELASTICITY AT MEANS |
|------------------|--------------------------|-------------------|-------------------|---------|------------------|-----------------------------|------------------------|
| TOT | -.19352E-03 | .00327 | -.0592 | .476 | -.005 | -.0047 | -.0198 |
| CONSTANT | 17.642 | 6.869 | 2.568 | .994 | .198 | .0000 | 1.0198 |

$k_{cumulative}$

_ols com1 tot

REQUIRED MEMORY IS PAR= 67 CURRENT PAR= 390

OLS ESTIMATION

163 OBSERVATIONS DEPENDENT VARIABLE = COM1

...NOTE...SAMPLE RANGE SET TO: 1, 163

R-SQUARE = .1777 R-SQUARE ADJUSTED = .1726

VARIANCE OF THE ESTIMATE-SIGMA**2 = 82472.

STANDARD ERROR OF THE ESTIMATE-SIGMA = 287.18

SUM OF SQUARED ERRORS-SSE= .13278E+08
 MEAN OF DEPENDENT VARIABLE = 332.85
 LOG OF THE LIKELIHOOD FUNCTION = -1152.88

| VARIABLE NAME | ESTIMATED COEFFICIENT | STANDARD ERROR | T-RATIO 161 DF | P-VALUE | PARTIAL CORR. | STANDARDIZED COEFFICIENT | ELASTICITY AT MEANS |
|------------------|--------------------------|-------------------|-------------------|---------|------------------|-----------------------------|------------------------|
| TOT | .11666 | .1978E-01 | 5.899 | 1.000 | .422 | .4216 | .6189 |
| CONSTANT | 126.85 | 41.54 | 3.054 | .999 | .234 | .0000 | .3811 |

Tax Multiplier Parameter Estimates for c and m

ols consump yd

REQUIRED MEMORY IS PAR= 2 CURRENT PAR= 390
 OLS ESTIMATION

12 OBSERVATIONS DEPENDENT VARIABLE = CONSUMP
 NOTE..SAMPLE RANGE SET TO: 1, 12

R-SQUARE = .9963 R-SQUARE ADJUSTED = .9960
 VARIANCE OF THE ESTIMATE-SIGMA**2 = .23284E+08
 STANDARD ERROR OF THE ESTIMATE-SIGMA = 4825.4
 SUM OF SQUARED ERRORS-SSE= .23284E+09
 MEAN OF DEPENDENT VARIABLE = .35249E+06
 LOG OF THE LIKELIHOOD FUNCTION = -117.713

| VARIABLE NAME | ESTIMATED COEFF. | STANDARD ERROR | T-RATIO 10 DF | P-VALUE | PARTIAL CORR. | STAN. COEFF. | ELASTICITY AT MEANS |
|------------------|---------------------|-------------------|------------------|---------|------------------|-----------------|------------------------|
| YD | .96059 | .01846 | 52.04 | 1.000 | .998 | .9982 | 1.0913 |
| CONSTANT | -32191. | 7522. | -4.279 | .001 | -.804 | .0000 | -.0913 |

Ols imports yd

REQUIRED MEMORY IS PAR= 2 CURRENT PAR= 390
 12 OBSERVATIONS DEPENDENT VARIABLE = IMPORTS
 ...NOTE..SAMPLE RANGE SET TO: 1, 12

R-SQUARE = .8927 R-SQUARE ADJUSTED = .8820
 VARIANCE OF THE ESTIMATE-SIGMA**2 = .22134E+09
 STANDARD ERROR OF THE ESTIMATE-SIGMA = 14877.
 SUM OF SQUARED ERRORS-SSE= .22134E+10
 MEAN OF DEPENDENT VARIABLE = .15898E+06
 LOG OF THE LIKELIHOOD FUNCTION = -131.225

| VARIABLE NAME | EST. COEF. | STAN. ERROR | T-RATIO 10 DF | P-VALUE | PART CORR. | STAND. COEF. | ELASTICITY AT MEANS |
|------------------|---------------|----------------|------------------|---------|---------------|-----------------|------------------------|
| YD | .51921 | .05691 | 9.123 | 1.000 | .945 | .9448 | 1.3079 |
| CONSTANT | -48948. | .2319E+05 | -2.111 | .030 | -.555 | .0000 | -.3079 |

Appendix E

Detailed Parameter and Multiplier Estimates

This appendix contains in order the following tables of summaries, parameter and multiplier estimates:

- ▶ Skeetchestn and Adams Lake Monthly Expenditure Profile
- ▶ Whispering Pines and Neskonlith Monthly Expenditure Profile
- ▶ Bonaparte Monthly Expenditure Profile
- ▶ Expenditure Summary for 7 SNTC Communities

- ▶ Scenario 4 Neskonlith Parameters
- ▶ Scenario 4 Adams Lake Parameters
- ▶ Scenario 4 Bonaparte Parameters
- ▶ Scenario 4 SNTC Parameters

- ▶ Scenario 1 Skeetchestn Multipliers
- ▶ Scenario 1 Adams Lake Multipliers
- ▶ Scenario 1 Bonaparte Multipliers
- ▶ Scenario 1 SNTC Multipliers

- ▶ Scenario 2 Skeetchestn Multipliers
- ▶ Scenario 2 Adams Lake Multipliers
- ▶ Scenario 2 Bonaparte Multipliers
- ▶ Scenario 2 SNTC Multipliers

- ▶ Scenario 3 Neskonlith Multipliers
- ▶ Scenario 3 Skeetchestn Multipliers
- ▶ Scenario 3 Bonaparte Multipliers
- ▶ Scenario 3 SNTC Multipliers

- ▶ Scenario 4 Neskonlith Multipliers
- ▶ Scenario 4 Skeetchestn Multipliers
- ▶ Scenario 4 Adams Lake Multipliers
- ▶ Scenario 4 Bonaparte Multipliers

Skeetchestn Monthly Expenditure Profile

| Expenditure Type | ON RESERVE | SAYONA | KARLOOPS | Other | Total |
|--------------------------|--------------------|-------------------|--------------------|-------------------|--------------------|
| GROCERY | \$2,765.00 | \$875.00 | \$8,085.00 | \$445.00 | \$12,320.00 |
| TOBACCO | \$860.80 | \$87.00 | \$172.00 | \$20.00 | \$1,139.00 |
| RESTAURANTS | \$110.00 | \$165.00 | \$1,037.00 | \$180.00 | \$1,492.00 |
| HOUSEHOLD REPAIRS | \$8,320.00 | \$0.00 | \$205.00 | \$50.00 | \$8,575.00 |
| UTILITIES | \$922.00 | \$0.00 | \$1,960.00 | \$165.00 | \$3,047.00 |
| HOUSING | \$425.00 | \$0.00 | \$790.00 | \$0.00 | \$1,215.00 |
| GASOLINE | \$5.00 | \$1,273.00 | \$1,940.00 | \$245.00 | \$3,463.00 |
| CAR REPAIRS | \$270.00 | \$823.00 | \$895.00 | \$95.00 | \$300.00 |
| TRANSPORTATION | \$270.00 | \$0.00 | \$311.00 | \$96.00 | \$647.00 |
| PAYMENTS (LOANS) | \$0.00 | \$50.00 | \$4,967.00 | \$256.80 | \$5,274.04 |
| CLOTHING | \$0.00 | \$0.00 | \$2,153.00 | \$100.00 | \$2,253.00 |
| HEALTH AND PERSONAL CARE | \$215.00 | \$70.00 | \$580.00 | \$20.00 | \$885.00 |
| SPECIAL HEALTH | \$114.00 | \$10.00 | \$128.00 | \$0.00 | \$252.00 |
| INSURANCE | \$374.66 | \$94.00 | \$1,486.00 | \$34.00 | \$1,989.09 |
| DAYCARE | \$379.00 | \$0.00 | \$385.00 | \$0.00 | \$720.00 |
| LEISURE | \$145.00 | \$475.00 | \$1,315.00 | \$75.00 | \$2,010.00 |
| CULTURE | \$200.00 | \$200.00 | \$1,935.00 | \$443.00 | \$2,778.00 |
| RECREATION | \$270.00 | \$20.00 | \$760.00 | \$655.00 | \$1,705.00 |
| OUTDOOR REC | \$270.00 | \$10.00 | \$575.00 | \$30.00 | \$875.00 |
| EDUCATION | \$100.00 | \$0.00 | \$272.00 | \$340.00 | \$712.00 |
| SAVINGS | \$0.00 | \$300.00 | \$3,103.00 | \$0.00 | \$3,403.00 |
| GIFTS & DONATIONS | \$302.00 | \$100.00 | \$548.00 | \$105.00 | \$964.00 |
| Total | \$16,317.46 | \$4,552.00 | \$33,602.00 | \$3,354.80 | \$56,018.13 |

Note: If this data is assumed to be representative of the Skeetchestn population, then these figures should be multiplied by 1.25 to obtain estimates for the whole community population (31 out of 39 households responded)

Adams Lake Monthly Expenditure Profile

| Expenditure Type | ON RESERVE | CHASE | KARLOOPS | SALMON ARM | Other | Total |
|--------------------------|--------------------|--------------------|--------------------|--------------------|-------------------|--------------------|
| GROCERY | \$0.00 | \$7,492.00 | \$5,760.00 | \$5,690.00 | \$2,974.00 | \$22,516.00 |
| TOBACCO | \$866.00 | \$403.00 | \$100.00 | \$54.00 | \$150.00 | \$1,563.00 |
| RESTAURANTS | \$70.00 | \$1,062.00 | \$1,423.00 | \$452.00 | \$160.00 | \$3,225.00 |
| HOUSEHOLD REPAIRS | \$10.00 | \$325.00 | \$360.00 | \$514.83 | \$0.00 | \$1,209.83 |
| UTILITIES | \$1,909.16 | \$2,969.00 | \$687.00 | \$0.00 | \$300.00 | \$5,865.16 |
| HOUSING | \$10,236.50 | \$0.00 | \$700.00 | \$0.00 | \$0.00 | \$10,496.50 |
| GASOLINE | \$2,189.83 | \$1,980.00 | \$330.00 | \$80.00 | \$2,310.00 | \$6,759.83 |
| CAR REPAIRS | \$270.00 | \$823.00 | \$895.00 | \$95.00 | \$300.00 | \$2,380.00 |
| TRANSPORTATION | \$315.50 | \$45.00 | \$46.00 | \$0.00 | \$90.00 | \$539.50 |
| PAYMENTS (LOANS) | \$0.00 | \$2,280.91 | \$4,346.00 | \$0.00 | \$0.00 | \$5,981.00 |
| CLOTHING | \$20.00 | \$430.00 | \$2,360.00 | \$636.66 | \$486.66 | \$3,833.32 |
| HEALTH AND PERSONAL CARE | \$0.00 | \$788.00 | \$235.00 | \$64.00 | \$0.00 | \$1,053.00 |
| SPECIAL HEALTH | \$0.00 | \$60.00 | \$0.00 | \$20.00 | \$125.00 | \$254.00 |
| INSURANCE | \$0.00 | \$2,337.00 | \$692.00 | \$1,489.38 | \$187.00 | \$3,987.38 |
| DAYCARE | \$410.00 | \$1,420.00 | \$75.00 | \$0.00 | \$0.00 | \$1,905.00 |
| LEISURE | \$2,490.00 | \$660.00 | \$2,880.00 | \$0.00 | \$80.00 | \$5,990.00 |
| CULTURE | \$394.99 | \$60.00 | \$21.00 | \$0.00 | \$770.00 | \$1,272.99 |
| RECREATION | \$65.00 | \$112.00 | \$514.00 | \$87.00 | \$497.00 | \$1,174.00 |
| HUNT/FISH | \$95.00 | \$145.00 | \$22.00 | \$80.00 | \$259.00 | \$601.00 |
| EDUCATION | \$0.00 | \$168.00 | \$140.00 | \$20.00 | \$45.00 | \$473.00 |
| SAVINGS | \$0.00 | \$723.00 | \$0.00 | \$701.00 | \$0.00 | \$1,424.00 |
| GIFTS & DONATIONS | \$25.00 | \$436.00 | \$642.00 | \$140.00 | \$505.00 | \$1,818.00 |
| Total | \$19,366.98 | \$24,718.91 | \$22,228.00 | \$10,123.87 | \$9,238.66 | \$84,321.51 |

Note: If this data is assumed to be representative of the Adams Lake population, then these figures should be multiplied by 1.5 to obtain estimates for the whole community population (48 out of 72 households responded)

Whispering Pines Household Monthly Expenditure Profile

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| EXPENDITURE TYPE | ON RESERVE | Kamloops | WESTSYDE | KIB | Other | Total |
|--------------------------|-------------------|--------------------|-----------------|-----------------|-----------------|--------------------|
| GROCERY | \$0.00 | \$5,200.20 | \$160.50 | \$0.00 | \$0.00 | \$5,360.70 |
| Tobacco | \$647.62 | \$192.60 | \$0.00 | \$0.00 | \$0.00 | \$840.22 |
| RESTAURANTS | \$58.85 | \$1,244.41 | \$0.00 | \$0.00 | \$80.25 | \$1,383.51 |
| Housing REPAIRS | \$21.40 | \$332.77 | \$0.00 | \$160.50 | \$0.00 | \$514.67 |
| Utilities | \$0.00 | \$2,036.21 | \$0.00 | \$0.00 | \$0.00 | \$2,036.21 |
| Housing | \$1,765.50 | \$2,275.89 | \$0.00 | \$0.00 | \$0.00 | \$4,041.39 |
| GASOLINE | \$1,391.00 | \$1,294.70 | \$0.00 | \$128.40 | \$53.50 | \$2,867.60 |
| CAR REPAIRS | \$0.00 | \$1,226.93 | \$0.00 | \$0.00 | \$0.00 | \$1,226.93 |
| TRANSPORTATION | \$53.50 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$53.50 |
| PAYMENTS (loans) | \$0.00 | \$2,428.90 | \$0.00 | \$0.00 | \$0.00 | \$2,428.90 |
| Clothing | \$0.00 | \$1,468.04 | \$0.00 | \$0.00 | \$0.00 | \$1,468.04 |
| Health and personal CARE | \$0.00 | \$505.04 | \$0.00 | \$0.00 | \$23.54 | \$528.58 |
| Special Health | \$0.00 | \$111.28 | \$0.00 | \$0.00 | \$53.50 | \$164.78 |
| INSURANCE | \$0.00 | \$1,768.16 | \$0.00 | \$133.75 | \$0.00 | \$1,901.91 |
| DAYCARE | \$90.95 | \$1,578.25 | \$0.00 | \$251.45 | \$0.00 | \$1,920.65 |
| LEISURE | \$0.00 | \$828.18 | \$0.00 | \$0.00 | \$0.00 | \$828.18 |
| Culture | \$0.00 | \$64.20 | \$0.00 | \$0.00 | \$0.00 | \$64.20 |
| RECREATION | \$34.78 | \$1,407.59 | \$0.00 | \$0.00 | \$0.00 | \$1,442.36 |
| HUNT/Fish | \$10.70 | \$428.00 | \$0.00 | \$0.00 | \$0.00 | \$438.70 |
| EDUCATION | \$0.00 | \$903.65 | \$0.00 | \$0.00 | \$0.00 | \$903.65 |
| SAVINGS | \$0.00 | \$915.31 | \$0.00 | \$0.00 | \$0.00 | \$915.31 |
| Gifts & DONATIONS | \$0.00 | \$557.82 | \$0.00 | \$0.00 | \$299.60 | \$857.42 |
| Total | \$4,074.29 | \$26,768.13 | \$160.50 | \$674.10 | \$510.39 | \$32,187.41 |

Note: This is aggregated sample data by a factor of 1.07 and thus assumed to estimate expenditure behaviour for the entire on reserve population.

Neskonlith Household Monthly Expenditure Profile

| EXPENDITURE TYPE | ON RESERVE | CHASE | Kamloops | Salmon Arm | VERNON | Total |
|--------------------------|-------------------|--------------------|-----------------|-------------------|-------------------|--------------------|
| GROCERY | \$28.03 | \$435.93 | \$0.00 | \$210.26 | \$0.00 | \$674.22 |
| Tobacco | \$0.00 | \$2,667.44 | \$0.00 | \$0.00 | \$0.00 | \$2,667.44 |
| RESTAURANTS | \$2,312.81 | \$2,981.42 | \$0.00 | \$0.00 | \$0.00 | \$5,294.22 |
| Housing COSTS | \$1,822.21 | \$1,696.06 | \$0.00 | \$168.20 | \$70.09 | \$3,756.56 |
| Utilities | \$0.00 | \$1,607.27 | \$0.00 | \$0.00 | \$0.00 | \$1,607.27 |
| GASOLINE | \$70.09 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$70.09 |
| CAR REPAIRS | \$0.00 | \$3,181.86 | \$0.00 | \$0.00 | \$0.00 | \$3,181.86 |
| TRANSPORTATION | \$0.00 | \$1,923.13 | \$0.00 | \$0.00 | \$0.00 | \$1,923.13 |
| PAYMENTS (loans) | \$0.00 | \$661.60 | \$0.00 | \$0.00 | \$30.84 | \$692.44 |
| Clothing | \$0.00 | \$145.78 | \$0.00 | \$0.00 | \$70.09 | \$215.86 |
| Health and personal CARE | \$0.00 | \$2,316.30 | \$0.00 | \$175.21 | \$0.00 | \$2,491.51 |
| Special Health | \$119.14 | \$2,067.51 | \$0.00 | \$329.40 | \$0.00 | \$2,516.05 |
| INSURANCE | \$0.00 | \$1,084.92 | \$0.00 | \$0.00 | \$0.00 | \$1,084.92 |
| DAYCARE | \$0.00 | \$84.10 | \$0.00 | \$0.00 | \$0.00 | \$84.10 |
| LEISURE | \$45.56 | \$1,843.94 | \$0.00 | \$0.00 | \$0.00 | \$1,889.49 |
| Culture | \$14.02 | \$560.68 | \$0.00 | \$0.00 | \$0.00 | \$574.70 |
| RECREATION | \$0.00 | \$1,183.78 | \$0.00 | \$0.00 | \$0.00 | \$1,183.78 |
| HUNT/Fish | \$0.00 | \$1,199.06 | \$0.00 | \$0.00 | \$0.00 | \$1,199.06 |
| EDUCATION | \$0.00 | \$730.75 | \$0.00 | \$0.00 | \$392.48 | \$1,123.22 |
| SAVINGS | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 |
| Gifts & DONATIONS | \$5,337.32 | \$35,066.24 | \$210.26 | \$883.07 | \$668.61 | \$42,165.50 |
| Total | \$9,749.17 | \$61,437.74 | \$210.26 | \$1,766.14 | \$1,232.09 | \$74,395.41 |

Note: This is aggregated sample data by a factor of 1.31 and thus assumed to estimate expenditure behaviour for the entire on reserve population.

Bonaparte Monthly Expenditure Profile

| EXPENDITURE TYPE | ON RESERVE | CACHE CREEK | ASHCROFT | KAMLOOPS | OTHER | TOTAL |
|--------------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| GROCERY | \$0.00 | \$4,285.00 | \$11,110.00 | \$8,470.00 | \$700.00 | \$24,565.00 |
| TOBACCO | \$830.00 | \$415.00 | \$177.00 | \$488.50 | \$291.00 | \$2,202.00 |
| RESTAURANTS | \$165.00 | \$925.00 | \$265.00 | \$975.00 | \$625.00 | \$2,995.00 |
| HOUSEHOLD REPAIRS | \$150.00 | \$1,650.00 | \$790.00 | \$1,050.00 | \$200.00 | \$3,640.00 |
| UTILITIES | \$2,027.76 | \$2,252.00 | \$1,123.00 | \$40.00 | \$489.00 | \$5,581.76 |
| HOUSING | \$3,003.00 | \$0.00 | \$250.00 | \$0.00 | \$575.00 | \$4,059.43 |
| GASOLINE | \$100.00 | \$2,355.00 | \$765.00 | \$1,426.00 | \$1,010.00 | \$5,656.00 |
| CAR REPAIRS | 127.5 | \$295.00 | \$50.00 | \$1,120.00 | \$1,180.00 | \$2,772.50 |
| TRANSPORTATION | \$200.00 | \$20.00 | \$20.00 | \$0.00 | \$0.00 | \$240.00 |
| PAYMENTS (LOANS) | \$54.00 | \$200.00 | \$372.00 | \$3,268.00 | \$250.00 | \$4,210.66 |
| CLOTHING | \$50.00 | \$50.00 | \$1,190.00 | \$1,938.00 | \$810.00 | \$3,988.00 |
| HEALTH AND PERSONAL CARE | \$40.00 | \$119.00 | \$548.00 | \$345.00 | \$270.00 | \$1,322.00 |
| SPECIAL HEALTH | \$0.00 | \$0.00 | \$80.00 | \$337.00 | \$100.00 | \$517.00 |
| INSURANCE | \$0.00 | \$817.99 | \$1,045.58 | \$526.00 | \$1,921.66 | \$4,311.23 |
| DAYCARE | \$400.00 | \$200.00 | \$0.00 | \$0.00 | \$150.00 | \$750.00 |
| LEISURE | \$0.00 | \$0.00 | \$345.00 | \$425.00 | \$1,500.00 | \$2,270.00 |
| CULTURE | \$0.00 | \$60.00 | \$21.00 | \$0.00 | \$770.00 | \$1,272.99 |
| RECREATION | \$515.00 | \$235.00 | \$479.25 | \$615.00 | \$681.00 | \$2,525.25 |
| HUNT/FISH | \$90.00 | \$40.00 | \$132.00 | \$130.00 | \$151.66 | \$529.66 |
| EDUCATION | \$110.00 | \$65.00 | \$130.00 | \$80.00 | \$300.00 | \$685.00 |
| SAVINGS | \$0.00 | \$58.00 | \$148.09 | \$1,600.00 | \$4,000.00 | \$6,906.09 |
| GIFTS & DONATIONS | \$275.00 | \$50.00 | \$230.00 | \$685.00 | \$236.66 | \$1,476.66 |
| TOTAL | \$8,137.26 | \$14,091.99 | \$19,270.92 | \$23,518.50 | \$16,210.98 | \$82,476.23 |

Note: If this data is assumed to be representative of the Bonaparte population, then these figures should be multiplied by 1.54 to obtain estimates for the whole community population (35 out of 54 households responded)

Expenditure Summary for 7 SNTC Communities

| Expenditure Type | On-reserve | Ashcrof. | Williams Lake | Chase | Salmon Arm | Kam City | Other | Total |
|-------------------|------------|----------|---------------|----------|------------|-----------|-----------|-----------|
| Grocery | \$9,895 | \$11,110 | \$11,545 | \$17,293 | \$16,356 | \$49,598 | \$44,611 | \$160,407 |
| Tobacco | \$9,112 | \$273 | | \$915 | \$278 | \$1,525 | \$1,851 | \$13,952 |
| Restaurants | \$2,922 | \$408 | \$1,799 | \$2,329 | \$1,359 | \$10,092 | \$9,366 | \$28,276 |
| HH Repairs | \$11,672 | \$1,217 | \$58 | \$488 | \$772 | \$3,661 | \$6,112 | \$23,979 |
| Utilities | \$13,788 | \$1,729 | \$2,742 | \$6,003 | \$811 | \$19,592 | \$14,829 | \$59,495 |
| Housing | \$65,049 | \$385 | \$638 | \$764 | \$1,121 | \$5,551 | \$6,086 | \$79,595 |
| Gasoline | \$11,520 | \$1,178 | | \$4,640 | \$227 | \$8,052 | \$10,685 | \$36,303 |
| Car Repairs | \$7,891 | \$77 | \$587 | \$1,445 | \$483 | \$13,580 | \$9,044 | \$33,108 |
| Transportation | \$3,415 | \$31 | \$131 | \$919 | \$739 | \$4,209 | \$2,866 | \$12,309 |
| Payments (loans) | \$2,635 | \$573 | \$2,036 | \$4,067 | \$645 | \$26,916 | \$10,053 | \$46,924 |
| Clothing | \$2,404 | \$1,833 | \$1,682 | \$1,208 | \$994 | \$53,441 | \$9,406 | \$70,968 |
| Health & personal | \$617 | \$844 | \$525 | \$1,385 | \$129 | \$4,985 | \$2,890 | \$11,375 |
| Special Health | \$434 | \$123 | | \$1,408 | \$783 | \$1,468 | \$4,390 | \$8,606 |
| Insurance | \$2,665 | \$1,610 | \$2,310 | \$4,357 | \$2,634 | \$8,014 | \$14,357 | \$35,946 |
| Daycare | \$9,492 | \$0 | \$0 | \$2,877 | \$707 | \$2,571 | \$4,937 | \$20,584 |
| Leisure | \$5,477 | \$531 | \$291 | \$1,252 | \$26 | \$10,990 | \$7,058 | \$25,626 |
| Culture | \$2,681 | \$32 | \$290 | \$411 | \$223 | \$3,061 | \$4,470 | \$11,168 |
| Recreation | \$1,228 | \$738 | \$189 | \$319 | \$170 | \$4,847 | \$7,360 | \$14,850 |
| Hunt/Fish | \$686 | \$203 | \$537 | \$375 | \$212 | \$1,908 | \$1,846 | \$5,766 |
| Education | \$293 | \$200 | \$667 | \$1,385 | \$30 | \$1,822 | \$4,302 | \$8,698 |
| Savings | \$159 | \$228 | \$667 | \$1,601 | \$1,340 | \$20,057 | \$8,499 | \$32,551 |
| Gifts & Donations | \$1,766 | \$354 | \$160 | \$654 | \$210 | \$4,295 | \$3,498 | \$10,936 |
| Total | \$165,797 | \$23,678 | \$26,853 | \$56,094 | \$30,248 | \$260,235 | \$188,516 | \$751,421 |

Note: These represent the extrapolated expenditures for the Shuswap households of Adams Lake, Bonaparte, Canoe Creek, Neskonlith, Skeetchestn, Spallumcheen and Whispering Pines. Extrapolation was based on the assumption that the household sample from each community was representative of the household population. Extrapolation factors for each community are thus households per community ÷ households in sample.

Scenario 4 Neskonlith Parameters

| Expenditure Type | h1 | d1 | b11 | b12 | b3 | b4 | b5 | Ta | Td | h11 | h12 | ε | ε1 | ε2 | ε |
|---------------------|--------|-------|------|------|-------|---------|------|------|--------|--------|-------|-------|------|------|------|
| Groceries | 0 | 0.22 | 0.11 | 0.1 | 0.145 | 0.00375 | 0.06 | 0 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Tobacco | 0.008 | 0.005 | 0.11 | 0.08 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.008 | 1 | 0.007 | 0.29 | 0.37 | 0.02 |
| Restaurants | 0 | 0.047 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.07 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| House Repairs | 0 | 0.067 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Utilities | 0.02 | 0.049 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.07 | 0.1888 | 0.02 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Rent | 0.112 | 0.031 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0 | 0.1888 | 0.112 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Gasoline | 0.09 | 0.017 | 0.11 | 0.07 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.09 | 1 | 0.007 | 0.29 | 0.37 | 0.02 |
| Auto Repair | 0.0011 | 0.058 | 0.11 | 0.23 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.0011 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Public Transit | 0.005 | 0 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.005 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Payments | 0 | 0 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Clothing | 0 | 0.04 | 0.11 | 0.16 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Health and Personal | 0 | 0.012 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Special Health | 0 | 0 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Insurance | 0 | 0.06 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.07 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Daycare | 0.02 | 0.037 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.07 | 0.1888 | 0.02 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Leisure | 0.012 | 0.034 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.012 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Culture | 0.011 | 0 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.011 | 1 | 0.007 | 0.29 | 0.37 | 0.02 |
| Recreation | 0.011 | 0.022 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.011 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Hunt/Fish | 0.006 | 0 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.006 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Education | 0 | 0 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.07 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Gifts and Don. | 0 | 0.015 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Cumulative | 0.3 | 0.7 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.3 | 0.081 | 0.007 | 0.29 | 0.37 | 0.02 |

Scenario 4 Adams Lake Parameters

| Expenditure Type | h1 | d1 | b11 | b12 | b3 | b4 | b5 | Ta | Td | h11 | h12 | ε | ε1 | ε2 | ε |
|---------------------|-------|--------|------|------|-------|---------|------|------|--------|-------|-------|-------|------|------|------|
| Groceries | 0 | 0.153 | 0.11 | 0.1 | 0.145 | 0.00375 | 0.06 | 0 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Tobacco | 0 | 0 | 0.11 | 0.08 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 1 | 0.007 | 0.29 | 0.37 | 0.02 |
| Restaurants | 0 | 0.0148 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.07 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| House Repairs | 0.027 | 0 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.027 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Utilities | 0 | 0.034 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.07 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Rent | 0.105 | 0 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0 | 0.1888 | 0.105 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Gasoline | 0 | 0.054 | 0.11 | 0.07 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 1 | 0.007 | 0.29 | 0.37 | 0.02 |
| Auto Repair | 0 | 0.032 | 0.11 | 0.23 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Public Transit | 0.002 | 0 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.002 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Payments | 0 | 0.094 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Clothing | 0 | 0.062 | 0.11 | 0.16 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Health and Personal | 0 | 0.016 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Special Health | 0 | 0.008 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Insurance | 0 | 0.031 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.07 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Daycare | 0 | 0.029 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.07 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Leisure | 0.032 | 0.07 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.032 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Culture | 0 | 0 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 1 | 0.007 | 0.29 | 0.37 | 0.02 |
| Recreation | 0 | 0.028 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Hunt/Fish | 0 | 0.01 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Education | 0 | 0.012 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.07 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Gifts and Don. | 0 | 0 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Cumulative | 0.154 | 0.846 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.154 | 0.081 | 0.007 | 0.29 | 0.37 | 0.02 |

Scenario 4 Bonaparte Parameters

| Expenditure Type | h1 | d1 | b1 | b2 | b3 | b4 | b5 | T1 | Td | h11 | h2 | z | z1 | z2 | e |
|---------------------|-------|-------|------|------|-------|---------|------|------|--------|-------|-------|-------|------|------|------|
| Groceries | 0 | 0.33 | 0.11 | 0.1 | 0.145 | 0.00375 | 0.06 | 0 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Tobacco | 0 | 0 | 0.11 | 0.08 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 1 | 0.007 | 0.29 | 0.37 | 0.02 |
| Restaurants | 0 | 0.022 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.07 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| House Repairs | 0.003 | 0.14 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.003 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Utilities | 0.054 | 0 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.07 | 0.1888 | 0.054 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Rent | 0 | 0 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Gasoline | 0 | 0.058 | 0.11 | 0.07 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 1 | 0.007 | 0.29 | 0.37 | 0.02 |
| Auto Repair | 0 | 0 | 0.11 | 0.23 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Public Transit | 0 | 0 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Payments | 0 | 0.092 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Clothing | 0 | 0.035 | 0.11 | 0.16 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Health and Personal | 0 | 0 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Special Health | 0 | 0.01 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Insurance | 0 | 0.033 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.07 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Daycare | 0 | 0 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.07 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Leisure | 0 | 0.034 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Culture | 0 | 0 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 1 | 0.007 | 0.29 | 0.37 | 0.02 |
| Recreation | 0 | 0.022 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Hunt/Fish | 0 | 0.006 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Education | 0.003 | 0 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.07 | 0.1888 | 0.003 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Gifts and Don. | 0 | -0.06 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Cumulative | 0.082 | 0.918 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.082 | 0.081 | 0.007 | 0.29 | 0.37 | 0.02 |

Scenario 4 SNTC Parameters

| Expenditure Type | h1 | d1 | b1 | b2 | b3 | b4 | b5 | T1 | Td | h11 | h2 | z | z1 | z2 | e |
|---------------------|--------|--------|------|------|-------|---------|------|------|--------|--------|-------|-------|------|------|------|
| Groceries | 0 | 0.22 | 0.11 | 0.1 | 0.145 | 0.00375 | 0.06 | 0 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Tobacco | 0.005 | 0 | 0.11 | 0.08 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.005 | 1 | 0.007 | 0.29 | 0.37 | 0.02 |
| Restaurants | 0 | 0.031 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.07 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| House Repairs | 0.012 | 0.071 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.012 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Utilities | 0.024 | 0.021 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.07 | 0.1888 | 0.024 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Rent | 0.047 | 0 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0 | 0.1888 | 0.047 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Gasoline | 0 | 0.06 | 0.11 | 0.07 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 1 | 0.007 | 0.29 | 0.37 | 0.02 |
| Auto Repair | 0 | 0.031 | 0.11 | 0.23 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Public Transit | 0 | 0 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Payments | 0 | 0.08 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Clothing | 0 | 0.045 | 0.11 | 0.16 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Health and Personal | 0 | 0.012 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Special Health | 0 | 0.005 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Insurance | 0 | 0.037 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.07 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Daycare | 0 | 0.02 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.07 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Leisure | 0.008 | 0.037 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.008 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Culture | 0 | 0.023 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 1 | 0.007 | 0.29 | 0.37 | 0.02 |
| Recreation | 0.007 | 0.029 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.007 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Hunt/Fish | 0 | 0.0065 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Education | 0.0022 | 0.001 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.07 | 0.1888 | 0.0022 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Gifts and Don. | 0 | 0 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0 | 0.1888 | 0 | 0 | 0.007 | 0.29 | 0.37 | 0.02 |
| Cumulative | 0.115 | 0.884 | 0.11 | 0.11 | 0.145 | 0.00375 | 0.06 | 0.14 | 0.1888 | 0.082 | 0.081 | 0.007 | 0.29 | 0.37 | 0.02 |

Scenario 1 Skatcheestn Multipliers

| Expenditure Type | multiplier 1 | multiplier 2 | multiplier 3 | multiplier 4 | multiplier 5 | multiplier 6 | multiplier 7 | multiplier 8 | multiplier 9 | multiplier 10 |
|---------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|
| Groceries | 5.94E-03 | 5.94E-03 | 5.40E-03 | 5.40E-03 | 7.83E-03 | 7.83E-03 | 2.03E-04 | 2.03E-04 | 3.24E-03 | 3.24E-03 |
| Tobacco | 1.87E-03 | 1.87E-03 | 1.36E-03 | 1.36E-03 | 2.47E-03 | 2.47E-03 | 6.38E-05 | 6.38E-05 | 1.02E-03 | 1.02E-03 |
| Restaurants | 2.20E-04 | 2.20E-04 | 2.20E-04 | 2.20E-04 | 2.90E-04 | 2.90E-04 | 7.50E-06 | 7.50E-06 | 1.20E-04 | 1.20E-04 |
| Home Repairs | 1.87E-03 | 1.87E-03 | 1.87E-03 | 1.87E-03 | 2.47E-03 | 2.47E-03 | 6.38E-05 | 6.38E-05 | 1.02E-03 | 1.02E-03 |
| Utilities | 1.98E-03 | 1.98E-03 | 1.98E-03 | 1.98E-03 | 2.61E-03 | 2.61E-03 | 6.75E-05 | 6.75E-05 | 1.08E-03 | 1.08E-03 |
| Rent | 8.80E-04 | 8.80E-04 | 8.80E-04 | 8.80E-04 | 1.16E-03 | 1.16E-03 | 3.00E-05 | 3.00E-05 | 4.80E-04 | 4.80E-04 |
| Gasoline | 1.06E-04 | 1.06E-04 | 6.72E-05 | 7.20E-05 | 1.39E-04 | 1.60E-04 | 3.60E-06 | 3.61E-06 | 5.76E-05 | 6.11E-05 |
| Auto Repair | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Public Transit | 5.94E-04 | 5.94E-04 | 5.94E-04 | 5.94E-04 | 7.83E-04 | 7.83E-04 | 2.03E-05 | 2.03E-05 | 3.24E-04 | 3.24E-04 |
| Phycials | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Clothing | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Health and Personal | 4.73E-04 | 4.73E-04 | 4.73E-04 | 4.73E-04 | 6.24E-04 | 6.24E-04 | 1.61E-05 | 1.61E-05 | 2.58E-04 | 2.58E-04 |
| Special Health | 2.42E-04 | 2.42E-04 | 2.42E-04 | 2.42E-04 | 3.19E-04 | 3.19E-04 | 8.25E-06 | 8.25E-06 | 1.32E-04 | 1.32E-04 |
| Insurance | 8.03E-04 | 8.03E-04 | 8.03E-04 | 8.03E-04 | 1.06E-03 | 1.06E-03 | 2.74E-05 | 2.74E-05 | 4.38E-04 | 4.38E-04 |
| Daycare | 8.25E-04 | 8.25E-04 | 8.25E-04 | 8.25E-04 | 1.09E-03 | 1.09E-03 | 2.81E-05 | 2.81E-05 | 4.50E-04 | 4.50E-04 |
| Leisure | 3.19E-04 | 3.19E-04 | 3.19E-04 | 3.19E-04 | 4.21E-04 | 4.21E-04 | 1.09E-05 | 1.09E-05 | 1.74E-04 | 1.74E-04 |
| Culture | 4.40E-04 | 4.40E-04 | 4.40E-04 | 4.49E-04 | 5.80E-04 | 5.96E-04 | 1.50E-05 | 1.50E-05 | 2.40E-04 | 2.43E-04 |
| Recreation | 5.94E-04 | 5.94E-04 | 5.94E-04 | 5.94E-04 | 7.83E-04 | 7.83E-04 | 2.03E-05 | 2.03E-05 | 3.24E-04 | 3.24E-04 |
| Hunt/Fish | 5.94E-04 | 5.94E-04 | 5.94E-04 | 5.94E-04 | 7.83E-04 | 7.83E-04 | 2.03E-05 | 2.03E-05 | 3.24E-04 | 3.24E-04 |
| Education | 2.20E-04 | 2.20E-04 | 2.20E-04 | 2.20E-04 | 2.90E-04 | 2.90E-04 | 7.50E-06 | 7.50E-06 | 1.20E-04 | 1.20E-04 |
| Gifts and Don. | 6.60E-04 | 6.60E-04 | 6.60E-04 | 6.60E-04 | 8.70E-04 | 8.70E-04 | 2.25E-05 | 2.25E-05 | 3.60E-04 | 3.60E-04 |
| Total | 0.018632132 | 0.018632148 | 0.017543348 | 0.017555287 | 0.024561627 | 0.02459563 | 0.000635103 | 0.000635126 | 0.010162358 | 0.01016818 |
| Cumulative | 0.018723821 | 0.01871135 | 0.018723821 | 0.01871135 | 0.024691392 | 0.02466972 | 0.000637528 | 0.000637513 | 0.010207087 | 0.010203377 |

Scenario 1 Adams Lake Multipliers

| Expenditure Type | multiplier 1 | multiplier 2 | multiplier 3 | multiplier 4 | multiplier 5 | multiplier 6 | multiplier 7 | multiplier 8 | multiplier 9 | multiplier 10 |
|---------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|
| Groceries | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Tobacco | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Restaurants | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Home Repairs | 2.97E-03 | 2.97E-03 | 2.97E-03 | 2.97E-03 | 3.92E-03 | 3.92E-03 | 1.01E-04 | 1.01E-04 | 1.62E-03 | 1.62E-03 |
| Utilities | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Rent | 1.16E-02 | 1.16E-02 | 1.16E-02 | 1.16E-02 | 1.52E-02 | 1.52E-02 | 3.94E-04 | 3.94E-04 | 6.30E-03 | 6.30E-03 |
| Gasoline | 0.00E+00 | 0.00E+00 | 0.00E+00 | 3.69E-06 | 0.00E+00 | 1.58E-05 | 0.00E+00 | 1.06E-08 | 0.00E+00 | 2.71E-06 |
| Auto Repair | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Public Transit | 2.20E-04 | 2.20E-04 | 2.20E-04 | 2.20E-04 | 2.90E-04 | 2.90E-04 | 7.50E-06 | 7.50E-06 | 1.20E-04 | 1.20E-04 |
| Phycials | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Clothing | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Health and Personal | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Special Health | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Insurance | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Daycare | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Leisure | 3.52E-03 | 3.52E-03 | 3.52E-03 | 3.52E-03 | 4.64E-03 | 4.64E-03 | 1.20E-04 | 1.20E-04 | 1.92E-03 | 1.92E-03 |
| Culture | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Recreation | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Hunt/Fish | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Education | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Gifts and Don. | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Total | 0.018260378 | 0.018260378 | 0.018260378 | 0.018263492 | 0.024070657 | 0.02408584 | 0.0006225 | 0.000622511 | 0.009960113 | 0.009962712 |
| Cumulative | 0.016961995 | 0.016951569 | 0.016961995 | 0.016951569 | 0.022248219 | 0.02213501 | 0.000577526 | 0.000577513 | 0.009246544 | 0.009243442 |

Scenario 1 Bonaparte Multipliers

| Expenditure Type | multiplier 1 | multiplier 2 | multiplier 3 | multiplier 4 | multiplier 5 | multiplier 6 | multiplier 7 | multiplier 8 | multiplier 9 | multiplier 10 |
|---------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|
| Groceries | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Tobacco | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Restaurants | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Home Repairs | 3.30E-04 | 3.30E-04 | 3.30E-04 | 3.30E-04 | 4.35E-04 | 4.35E-04 | 1.13E-05 | 1.13E-05 | 1.80E-04 | 1.80E-04 |
| Utilities | 5.94E-03 | 5.94E-03 | 5.94E-03 | 5.94E-03 | 7.83E-03 | 7.83E-03 | 2.03E-04 | 2.03E-04 | 3.24E-03 | 3.24E-03 |
| Rent | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Gasoline | 0.00E+00 | 0.00E+00 | 0.00E+00 | 3.97E-06 | 0.00E+00 | 1.70E-05 | 0.00E+00 | 1.14E-08 | 0.00E+00 | 2.91E-06 |
| Auto Repair | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Public Transit | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Physicians | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Clothing | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Health and Personal | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Special Health | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Insurance | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Daycare | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Leisure | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Culture | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Recreation | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Hunt/Fish | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Education | 3.30E-04 | 3.30E-04 | 3.30E-04 | 3.30E-04 | 4.35E-04 | 4.35E-04 | 1.13E-05 | 1.13E-05 | 1.80E-04 | 1.80E-04 |
| Gifts and Don. | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Total | 0.00660071 | 0.00660071 | 0.00660071 | 0.006603965 | 0.008700123 | 0.00871781 | 0.000225 | 0.000225011 | 0.003600021 | 0.003602913 |
| Cumulative | 0.009032709 | 0.009032554 | 0.009032709 | 0.009032709 | 0.011912083 | 0.01191181 | 0.000307515 | 0.000307515 | 0.004923781 | 0.004923735 |

Scenario 1 SNTC Multipliers

| Expenditure Type | multiplier 1 | multiplier 2 | multiplier 3 | multiplier 4 | multiplier 5 | multiplier 6 | multiplier 7 | multiplier 8 | multiplier 9 | multiplier 10 |
|---------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|
| Groceries | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Tobacco | 5.50E-04 | 5.50E-04 | 4.00E-04 | 4.00E-04 | 7.25E-04 | 7.25E-04 | 1.88E-05 | 1.88E-05 | 3.00E-04 | 3.00E-04 |
| Restaurants | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Home Repairs | 1.32E-03 | 1.32E-03 | 1.32E-03 | 1.32E-03 | 1.74E-03 | 1.74E-03 | 4.50E-05 | 4.50E-05 | 7.20E-04 | 7.20E-04 |
| Utilities | 2.64E-03 | 2.64E-03 | 2.64E-03 | 2.64E-03 | 3.48E-03 | 3.48E-03 | 9.00E-05 | 9.00E-05 | 1.44E-03 | 1.44E-03 |
| Rent | 5.17E-03 | 5.17E-03 | 5.17E-03 | 5.17E-03 | 6.82E-03 | 6.82E-03 | 1.76E-04 | 1.76E-04 | 2.82E-03 | 2.82E-03 |
| Gasoline | 0.00E+00 | 0.00E+00 | 0.00E+00 | 4.10E-06 | 0.00E+00 | 1.76E-05 | 0.00E+00 | 1.18E-08 | 0.00E+00 | 3.01E-06 |
| Auto Repair | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Public Transit | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Physicians | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Clothing | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Health and Personal | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Special Health | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Insurance | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Daycare | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Leisure | 8.80E-04 | 8.80E-04 | 8.80E-04 | 8.80E-04 | 1.16E-03 | 1.16E-03 | 3.00E-05 | 3.00E-05 | 4.80E-04 | 4.80E-04 |
| Culture | 0.00E+00 | 0.00E+00 | 0.00E+00 | 3.88E-06 | 0.00E+00 | 6.75E-06 | 0.00E+00 | 4.51E-09 | 0.00E+00 | 1.16E-06 |
| Recreation | 7.70E-04 | 7.70E-04 | 7.70E-04 | 7.70E-04 | 1.02E-03 | 1.02E-03 | 2.63E-05 | 2.63E-05 | 4.20E-04 | 4.20E-04 |
| Hunt/Fish | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Education | 2.42E-04 | 2.42E-04 | 2.42E-04 | 2.42E-04 | 3.19E-04 | 3.19E-04 | 8.25E-06 | 8.25E-06 | 1.32E-04 | 1.32E-04 |
| Gifts and Don. | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Total | 0.011572321 | 0.011572321 | 0.011422321 | 0.011429985 | 0.015254557 | 0.01527835 | 0.0003945 | 0.000394516 | 0.006312895 | 0.006316169 |
| Cumulative | 0.012797311 | 0.012797311 | 0.012797311 | 0.012797311 | 0.016884831 | 0.01688483 | 0.000435843 | 0.000435843 | 0.012797311 | 0.012797311 |

Scenario 2 Skeetchestn Multipliers

| Expenditure Type | mult1 | mult2 | mult3 | mult4 | mult5 | mult6 | mult7 | mult8 | mult9 | mult10 |
|---------------------|-------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Groceries | 1.73E-03 | 1.72E-03 | 1.57E-03 | 1.57E-03 | 2.28E-03 | 2.27E-03 | 5.87E-05 | 5.87E-05 | 9.42E-04 | 9.40E-04 |
| Tobacco | 5.44E-04 | 6.61E-04 | 3.95E-04 | 4.57E-04 | 7.18E-04 | 9.21E-04 | 1.85E-05 | 1.86E-05 | 2.96E-04 | 3.31E-04 |
| Restaurants | 6.41E-05 | 6.38E-05 | 6.41E-05 | 6.38E-05 | 8.46E-05 | 8.41E-05 | 2.18E-06 | 2.18E-06 | 3.49E-05 | 3.48E-05 |
| House Repair | 5.44E-04 | 5.42E-04 | 5.44E-04 | 5.42E-04 | 7.18E-04 | 7.15E-04 | 1.85E-05 | 1.85E-05 | 2.96E-04 | 2.96E-04 |
| Utilities | 5.77E-04 | 5.74E-04 | 5.77E-04 | 5.74E-04 | 7.61E-04 | 7.57E-04 | 1.96E-05 | 1.96E-05 | 3.14E-04 | 3.13E-04 |
| Rent | 2.56E-04 | 2.55E-04 | 2.56E-04 | 2.55E-04 | 3.38E-04 | 3.36E-04 | 8.70E-06 | 8.70E-06 | 1.40E-04 | 1.39E-04 |
| Gasoline | 3.07E-05 | 1.53E-04 | 1.95E-05 | 6.89E-05 | 4.06E-05 | 2.47E-04 | 1.04E-06 | 1.19E-06 | 1.67E-05 | 5.30E-05 |
| Auto Repair | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Public Transit | 1.73E-04 | 1.72E-04 | 1.73E-04 | 1.72E-04 | 2.28E-04 | 2.27E-04 | 5.87E-06 | 5.87E-06 | 9.42E-05 | 9.40E-05 |
| Payments | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Clothing | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Health and Personal | 1.38E-04 | 1.37E-04 | 1.38E-04 | 1.37E-04 | 1.82E-04 | 1.81E-04 | 4.68E-06 | 4.68E-06 | 7.50E-05 | 7.48E-05 |
| Special Health | 7.04E-05 | 7.02E-05 | 7.04E-05 | 7.02E-05 | 9.30E-05 | 9.25E-05 | 2.39E-06 | 2.39E-06 | 3.84E-05 | 3.83E-05 |
| Insurance | 2.34E-04 | 2.33E-04 | 2.34E-04 | 2.33E-04 | 3.09E-04 | 3.07E-04 | 7.94E-06 | 7.94E-06 | 1.27E-04 | 1.27E-04 |
| Daycare | 2.40E-04 | 2.39E-04 | 2.40E-04 | 2.39E-04 | 3.17E-04 | 3.15E-04 | 8.16E-06 | 8.16E-06 | 1.31E-04 | 1.31E-04 |
| Leisure | 9.29E-05 | 9.25E-05 | 9.29E-05 | 9.25E-05 | 1.23E-04 | 1.22E-04 | 3.15E-06 | 3.15E-06 | 5.06E-05 | 5.05E-05 |
| Culture | 1.28E-04 | 2.49E-04 | 1.28E-04 | 2.49E-04 | 1.69E-04 | 3.74E-04 | 4.35E-06 | 4.49E-06 | 6.97E-05 | 1.06E-04 |
| Recreation | 1.73E-04 | 1.72E-04 | 1.73E-04 | 1.72E-04 | 2.28E-04 | 2.27E-04 | 5.87E-06 | 5.87E-06 | 9.42E-05 | 9.40E-05 |
| Hunt/Fish | 1.73E-04 | 1.72E-04 | 1.73E-04 | 1.72E-04 | 2.28E-04 | 2.27E-04 | 5.87E-06 | 5.87E-06 | 9.42E-05 | 9.40E-05 |
| Education | 6.41E-05 | 6.38E-05 | 6.41E-05 | 6.38E-05 | 8.45E-05 | 8.41E-05 | 2.18E-06 | 2.18E-06 | 3.49E-05 | 3.48E-05 |
| Gifts and Don. | 1.92E-04 | 1.91E-04 | 1.92E-04 | 1.91E-04 | 2.54E-04 | 2.52E-04 | 6.53E-06 | 6.53E-06 | 1.05E-04 | 1.04E-04 |
| Cumulative | 0.296220085 | 0.29620591 | 0.29622008 | 0.29620591 | 0.29818592 | 0.29821056 | 0.29021116 | 0.29021114 | 0.29338606 | 0.29338184 |
| Summation | 0.296185093 | 0.29653505 | 0.29587703 | 0.29609073 | 0.2981757 | 0.29875656 | 0.29021046 | 0.29021085 | 0.29337356 | 0.29347471 |

Scenario 2 Adams Lake Multipliers

| Expenditure Type | multiplier 1 | multiplier 2 | multiplier 3 | multiplier 4 | multiplier 5 | multiplier 6 | multiplier 7 | multiplier 8 | multiplier 9 | multiplier 10 |
|---------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|
| Groceries | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Tobacco | 0.00E+00 | 1.19E-04 | 0.00E+00 | 6.28E-05 | 0.00E+00 | 2.06E-04 | 0.00E+00 | 1.38E-07 | 0.00E+00 | 3.53E-05 |
| Restaurants | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| House Repair | 8.65E-04 | 8.61E-04 | 8.65E-04 | 8.61E-04 | 1.14E-03 | 1.14E-03 | 2.94E-05 | 2.94E-05 | 4.71E-04 | 4.70E-04 |
| Utilities | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Rent | 3.36E-03 | 3.35E-03 | 3.36E-03 | 3.35E-03 | 4.44E-03 | 4.42E-03 | 1.14E-04 | 1.14E-04 | 1.83E-03 | 1.83E-03 |
| Gasoline | 0.00E+00 | 1.21E-04 | 0.00E+00 | 4.91E-05 | 0.00E+00 | 2.06E-04 | 0.00E+00 | 1.41E-07 | 0.00E+00 | 3.61E-05 |
| Auto Repair | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Public Transit | 6.40E-05 | 6.38E-05 | 6.40E-05 | 6.38E-05 | 8.45E-05 | 8.41E-05 | 2.18E-06 | 2.18E-06 | 3.49E-05 | 3.48E-05 |
| Payments | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Clothing | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Health and Personal | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Special Health | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Insurance | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Daycare | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Leisure | 1.02E-03 | 1.02E-03 | 1.02E-03 | 1.02E-03 | 1.35E-03 | 1.35E-03 | 3.48E-05 | 3.48E-05 | 5.58E-04 | 5.57E-04 |
| Culture | 0.00E+00 | 1.19E-04 | 0.00E+00 | 1.19E-04 | 0.00E+00 | 2.06E-04 | 0.00E+00 | 1.38E-07 | 0.00E+00 | 3.53E-05 |
| Recreation | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Hunt/Fish | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Education | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Gifts and Don. | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Cumulative | 0.296707254 | 0.29568557 | 0.29570724 | 0.29568557 | 0.29761323 | 0.29763354 | 0.29019376 | 0.29019374 | 0.29310694 | 0.29310346 |
| Summation | 0.29607724 | 0.2964241 | 0.29607724 | 0.29629699 | 0.29803325 | 0.29861417 | 0.2902068 | 0.29020719 | 0.2933148 | 0.29341512 |

Scenario 2 Bonaparte Multipliers

| Expenditure Type | multiplier 1 | multiplier 2 | multiplier 3 | multiplier 4 | multiplier 5 | multiplier 6 | multiplier 7 | multiplier 8 | multiplier 9 | multiplier 1 |
|---------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Groceries | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Tobacco | 0.00E+00 | 1.19E-04 | 0.00E+00 | 6.28E-05 | 0.00E+00 | 2.06E-04 | 0.00E+00 | 1.38E-07 | 0.00E+00 | 3.53E-05 |
| Restaurants | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| House Repairs | 9.61E-05 | 9.57E-05 | 9.61E-05 | 9.57E-05 | 1.27E-04 | 1.26E-04 | 3.26E-06 | 3.26E-06 | 5.23E-05 | 5.22E-05 |
| Utilities | 1.73E-03 | 1.72E-03 | 1.73E-03 | 1.72E-03 | 2.28E-03 | 2.27E-03 | 5.87E-05 | 5.87E-05 | 9.42E-04 | 9.40E-04 |
| Rent | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Gasoline | 0.00E+00 | 1.22E-04 | 0.00E+00 | 4.92E-05 | 0.00E+00 | 2.06E-04 | 0.00E+00 | 1.41E-07 | 0.00E+00 | 3.62E-05 |
| Auto Repair | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Public Transit | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Payments | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Clothing | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Health and Personal | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Special Health | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Insurance | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Daycare | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Leisure | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Culture | 0.00E+00 | 1.19E-04 | 0.00E+00 | 1.19E-04 | 0.00E+00 | 2.06E-04 | 0.00E+00 | 1.38E-07 | 0.00E+00 | 3.53E-05 |
| Recreation | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Hunt/Fish | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Education | 9.61E-05 | 9.57E-05 | 9.61E-05 | 9.57E-05 | 1.27E-04 | 1.26E-04 | 3.26E-06 | 3.26E-06 | 5.23E-05 | 5.22E-05 |
| Gifts and Don. | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Cumulative | 0.293389218 | 0.29339905 | 0.29339922 | 0.29339905 | 0.29448813 | 0.29448841 | 0.29011544 | 0.29011544 | 0.29185079 | 0.29185074 |
| Summation | 0.292691692 | 0.2930429 | 0.29269168 | 0.29291487 | 0.29355137 | 0.29415672 | 0.29009151 | 0.29009192 | 0.29148829 | 0.29157078 |

Scenario 2 SNTC Multipliers

| Expenditure Type | multiplier 1 | multiplier 2 | multiplier 3 | multiplier 4 | multiplier 5 | multiplier 6 | multiplier 7 | multiplier 8 | multiplier 9 | multiplier 1 |
|---------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Groceries | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Tobacco | 1.60E-04 | 2.78E-04 | 1.16E-04 | 1.79E-04 | 2.11E-04 | 4.16E-04 | 5.44E-06 | 5.58E-06 | 8.72E-05 | 1.22E-04 |
| Restaurants | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| House Repairs | 3.84E-04 | 3.83E-04 | 3.84E-04 | 3.83E-04 | 5.07E-04 | 5.05E-04 | 1.31E-05 | 1.31E-05 | 2.09E-04 | 2.09E-04 |
| Utilities | 7.69E-04 | 7.66E-04 | 7.69E-04 | 7.66E-04 | 1.01E-03 | 1.01E-03 | 2.61E-05 | 2.61E-05 | 4.19E-04 | 4.18E-04 |
| Rent | 1.51E-03 | 1.50E-03 | 1.51E-03 | 1.50E-03 | 1.99E-03 | 1.98E-03 | 5.11E-05 | 5.11E-05 | 8.20E-04 | 8.18E-04 |
| Gasoline | 0.00E+00 | 1.22E-04 | 0.00E+00 | 4.93E-05 | 0.00E+00 | 2.06E-04 | 0.00E+00 | 1.41E-07 | 0.00E+00 | 3.62E-05 |
| Auto Repair | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Public Transit | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Payments | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Clothing | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Health and Personal | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Special Health | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Insurance | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Daycare | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Leisure | 2.56E-04 | 2.55E-04 | 2.56E-04 | 2.55E-04 | 3.38E-04 | 3.36E-04 | 8.70E-06 | 8.70E-06 | 1.39E-04 | 1.39E-04 |
| Culture | 0.00E+00 | 1.20E-04 | 0.00E+00 | 1.20E-04 | 0.00E+00 | 2.06E-04 | 0.00E+00 | 1.39E-07 | 0.00E+00 | 3.56E-05 |
| Recreation | 2.24E-04 | 2.23E-04 | 2.24E-04 | 2.23E-04 | 2.96E-04 | 2.94E-04 | 7.61E-06 | 7.61E-06 | 1.22E-04 | 1.22E-04 |
| Hunt/Fish | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Education | 7.05E-05 | 7.02E-05 | 7.05E-05 | 7.02E-05 | 9.30E-05 | 9.25E-05 | 2.39E-06 | 2.39E-06 | 3.84E-05 | 3.83E-05 |
| Gifts and Don. | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Cumulative | 0.294483681 | 0.29448352 | 0.29448368 | 0.29448352 | 0.29591568 | 0.29591588 | 0.29015242 | 0.29015242 | 0.29244235 | 0.2924423 |
| Summation | 0.29413982 | 0.294486 | 0.29409584 | 0.29431422 | 0.29548253 | 0.29605751 | 0.29014067 | 0.29014107 | 0.29225457 | 0.29235762 |

Scenario 3 Neakonlith Multipliers

| Expenditure Type | multiplier 1 | multiplier 2 | multiplier 3 | multiplier 4 | multiplier 5 | multiplier 6 | multiplier 7 | multiplier 8 | multiplier 9 | multiplier 10 |
|---------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|
| Groceries | 3.93E-04 | 3.93E-04 | 3.57E-04 | 3.57E-04 | 5.18E-04 | 5.18E-04 | 1.34E-05 | 1.34E-05 | 2.14E-04 | 2.14E-04 |
| Tobacco | 8.84E-04 | 5.98E-02 | 6.46E-04 | 4.35E-02 | 1.17E-03 | 7.88E-02 | 3.03E-05 | 2.04E-03 | 4.84E-04 | 3.26E-02 |
| Restaurants | 7.80E-05 | 7.80E-05 | 7.80E-05 | 7.80E-05 | 1.03E-04 | 1.03E-04 | 2.66E-06 | 2.66E-06 | 4.25E-05 | 4.25E-05 |
| House Repairs | 1.03E-04 | 1.03E-04 | 1.03E-04 | 1.03E-04 | 1.36E-04 | 1.36E-04 | 3.51E-06 | 3.51E-06 | 5.61E-05 | 5.61E-05 |
| Utilities | 2.28E-03 | 1.09E-03 | 2.28E-03 | 1.09E-03 | 3.01E-03 | 1.44E-03 | 7.78E-05 | 3.73E-05 | 1.24E-03 | 5.96E-04 |
| Rent | 1.24E-02 | 5.72E-03 | 1.24E-02 | 5.72E-03 | 1.63E-02 | 7.54E-03 | 4.22E-04 | 1.95E-04 | 6.75E-03 | 3.12E-03 |
| Gasoline | 9.93E-03 | 6.40E-02 | 6.32E-03 | 4.07E-02 | 1.31E-02 | 8.43E-02 | 3.38E-04 | 2.18E-03 | 5.41E-03 | 3.49E-02 |
| Auto Repair | 2.10E-04 | 1.45E-04 | 4.39E-04 | 3.03E-04 | 2.77E-04 | 1.91E-04 | 7.16E-06 | 4.93E-06 | 1.15E-04 | 7.89E-05 |
| Public Transit | 5.50E-04 | 2.53E-04 | 5.50E-04 | 2.53E-04 | 7.25E-04 | 3.34E-04 | 1.88E-05 | 8.63E-06 | 3.00E-04 | 1.38E-04 |
| Payments | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Clothing | 6.14E-05 | 6.14E-05 | 8.93E-05 | 8.93E-05 | 8.09E-05 | 8.09E-05 | 2.09E-06 | 2.09E-06 | 3.35E-05 | 3.35E-05 |
| Health and Personal | 1.84E-05 | 1.84E-05 | 1.84E-05 | 1.84E-05 | 2.43E-05 | 2.43E-05 | 6.28E-07 | 6.28E-07 | 1.00E-05 | 1.00E-05 |
| Special Health | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Insurance | 9.96E-05 | 9.96E-05 | 9.96E-05 | 9.96E-05 | 1.31E-04 | 1.31E-04 | 3.39E-06 | 3.39E-06 | 5.43E-05 | 5.43E-05 |
| Daycare | 2.26E-03 | 1.07E-03 | 2.26E-03 | 1.07E-03 | 2.98E-03 | 1.41E-03 | 7.71E-05 | 3.66E-05 | 1.23E-03 | 5.85E-04 |
| Leisure | 1.37E-03 | 6.59E-04 | 1.37E-03 | 6.59E-04 | 1.81E-03 | 8.69E-04 | 4.68E-05 | 2.25E-05 | 7.48E-04 | 3.60E-04 |
| Culture | 1.21E-03 | 6.00E-02 | 1.21E-03 | 6.00E-02 | 1.60E-03 | 7.90E-02 | 4.13E-05 | 2.04E-03 | 6.60E-04 | 3.27E-02 |
| Recreation | 1.24E-03 | 5.90E-04 | 1.24E-03 | 5.90E-04 | 1.64E-03 | 7.78E-04 | 4.24E-05 | 2.01E-05 | 6.78E-04 | 3.22E-04 |
| Hunt/Fish | 6.60E-04 | 3.04E-04 | 6.60E-04 | 3.04E-04 | 8.70E-04 | 4.00E-04 | 2.25E-05 | 1.04E-05 | 3.60E-04 | 1.66E-04 |
| Education | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Gifts and Don. | 2.68E-05 | 2.68E-05 | 2.68E-05 | 2.68E-05 | 3.53E-05 | 3.53E-05 | 9.13E-07 | 9.13E-07 | 1.46E-05 | 1.46E-05 |
| Summation | 0.03489 | 0.02187 | 0.03489 | 0.02187 | 0.04494 | 0.02778 | 0.00116 | 0.00072 | 0.01859 | 0.01149 |
| Cumulative | 0.03304 | 0.03300 | 0.03304 | 0.03301 | 0.04356 | 0.04352 | 0.00113 | 0.00113 | 0.01801 | 0.01800 |

Scenario 3 Skeetchestn Multipliers

| Expenditure Type | multiplier 1 | multiplier 2 | multiplier 3 | multiplier 4 | multiplier 5 | multiplier 6 | multiplier 7 | multiplier 8 | multiplier 9 | multiplier 10 |
|---------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|
| Groceries | 6.30E-03 | 2.43E-03 | 5.72E-03 | 2.21E-03 | 8.30E-03 | 3.21E-03 | 2.15E-04 | 8.30E-05 | 3.43E-03 | 1.33E-03 |
| Tobacco | 1.88E-03 | 7.22E-02 | 1.37E-03 | 5.25E-02 | 2.48E-03 | 9.51E-02 | 6.40E-05 | 2.46E-03 | 1.02E-03 | 3.94E-02 |
| Restaurants | 2.65E-04 | 1.22E-04 | 2.65E-04 | 1.22E-04 | 3.49E-04 | 1.61E-04 | 9.03E-06 | 4.15E-06 | 1.44E-04 | 6.64E-05 |
| House Repairs | 1.88E-03 | 6.62E-04 | 1.88E-03 | 6.62E-04 | 2.48E-03 | 8.73E-04 | 6.40E-05 | 2.26E-05 | 1.02E-03 | 3.61E-04 |
| Utilities | 2.05E-03 | 7.59E-04 | 2.05E-03 | 7.59E-04 | 2.70E-03 | 1.00E-03 | 6.98E-05 | 2.59E-05 | 1.12E-03 | 4.14E-04 |
| Rent | 9.09E-04 | 3.37E-04 | 9.09E-04 | 3.37E-04 | 1.28E-03 | 4.44E-04 | 3.10E-05 | 1.15E-05 | 4.96E-04 | 1.84E-04 |
| Gasoline | 2.13E-04 | 7.16E-02 | 1.36E-04 | 4.56E-02 | 2.81E-04 | 9.44E-02 | 7.26E-06 | 2.44E-03 | 1.16E-04 | 3.91E-02 |
| Auto Repair | 1.07E-05 | 1.07E-05 | 2.25E-05 | 2.25E-05 | 1.42E-05 | 1.42E-05 | 3.66E-07 | 3.66E-07 | 5.86E-06 | 5.86E-06 |
| Public Transit | 6.14E-04 | 2.28E-04 | 6.14E-04 | 2.28E-04 | 8.09E-04 | 3.00E-04 | 2.09E-05 | 7.77E-06 | 3.35E-04 | 1.24E-04 |
| Payments | 1.63E-04 | 1.63E-04 | 1.63E-04 | 1.63E-04 | 2.14E-04 | 2.14E-04 | 5.55E-06 | 5.55E-06 | 8.87E-05 | 8.87E-05 |
| Clothing | 8.75E-06 | 8.75E-06 | 1.27E-05 | 1.27E-05 | 1.15E-05 | 1.15E-05 | 2.98E-07 | 2.98E-07 | 4.77E-06 | 4.77E-06 |
| Health and Personal | 4.99E-04 | 1.92E-04 | 4.99E-04 | 1.92E-04 | 6.58E-04 | 2.53E-04 | 1.70E-05 | 6.53E-06 | 2.72E-04 | 1.05E-04 |
| Special Health | 2.50E-04 | 9.22E-05 | 2.50E-04 | 9.22E-05 | 3.29E-04 | 1.22E-04 | 8.51E-06 | 3.14E-06 | 1.36E-04 | 5.03E-05 |
| Insurance | 8.68E-04 | 3.46E-04 | 8.68E-04 | 3.46E-04 | 1.14E-03 | 4.56E-04 | 2.96E-05 | 1.18E-05 | 4.73E-04 | 1.89E-04 |
| Daycare | 8.52E-04 | 3.15E-04 | 8.52E-04 | 3.15E-04 | 1.12E-03 | 4.16E-04 | 2.90E-05 | 1.07E-05 | 4.64E-04 | 1.72E-04 |
| Leisure | 3.80E-04 | 1.73E-04 | 3.80E-04 | 1.73E-04 | 5.01E-04 | 2.28E-04 | 1.30E-05 | 5.90E-06 | 2.07E-04 | 9.44E-05 |
| Culture | 5.26E-04 | 7.17E-02 | 5.26E-04 | 7.17E-02 | 6.93E-04 | 9.46E-02 | 1.79E-05 | 2.45E-03 | 2.87E-04 | 3.91E-02 |
| Recreation | 6.46E-04 | 2.60E-04 | 6.46E-04 | 2.60E-04 | 8.52E-04 | 3.43E-04 | 2.20E-05 | 8.87E-06 | 3.52E-04 | 1.42E-04 |
| Hunt/Fish | 6.20E-04 | 2.34E-04 | 6.20E-04 | 2.34E-04 | 8.17E-04 | 3.08E-04 | 2.11E-05 | 7.98E-06 | 3.38E-04 | 1.28E-04 |
| Education | 2.43E-04 | 1.00E-04 | 2.43E-04 | 1.00E-04 | 3.21E-04 | 1.32E-04 | 8.29E-06 | 3.42E-06 | 1.33E-04 | 5.47E-05 |
| Gifts and Don. | 6.94E-04 | 2.65E-04 | 6.94E-04 | 2.65E-04 | 9.15E-04 | 3.49E-04 | 2.37E-05 | 9.03E-06 | 3.78E-04 | 1.44E-04 |
| Summation | 0.01998 | 0.01361 | 0.01998 | 0.01361 | 0.02634 | 0.01795 | 0.00068 | 0.00046 | 0.01090 | 0.00743 |
| Cumulative | 0.01872382 | 0.01870232 | 0.01872382 | 0.01871135 | 0.024691392 | 0.024669722 | 0.000637528 | 0.000637513 | 0.010207087 | 0.010203377 |

Scenario 3 Bonaparte Multipliers

| Expenditure Type | multiplier 1 | multiplier 2 | multiplier 3 | multiplier 4 | multiplier 5 | multiplier 6 | multiplier 7 | multiplier 8 | multiplier 9 | multiplier 10 |
|---------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|
| Groceries | 5.89E-04 | 5.89E-04 | 5.35E-04 | 5.35E-04 | 7.76E-04 | 7.76E-04 | 2.01E-05 | 2.01E-05 | 3.21E-04 | 3.21E-04 |
| Tobacco | 0.00E+00 | 7.37E-02 | 0.00E+00 | 5.36E-02 | 0.00E+00 | 9.72E-02 | 0.00E+00 | 2.51E-03 | 0.00E+00 | 4.02E-02 |
| Restaurants | 3.65E-05 | 3.65E-05 | 3.65E-05 | 3.65E-05 | 4.81E-05 | 4.81E-05 | 1.24E-06 | 1.24E-06 | 1.99E-05 | 1.99E-05 |
| House Repairs | 5.45E-04 | 3.24E-04 | 5.45E-04 | 3.24E-04 | 7.18E-04 | 4.27E-04 | 1.86E-05 | 1.10E-05 | 2.97E-04 | 1.77E-04 |
| Utilities | 5.94E-03 | 1.96E-03 | 5.94E-03 | 1.96E-03 | 7.83E-03 | 2.58E-03 | 2.03E-04 | 6.68E-05 | 3.24E-03 | 1.07E-03 |
| Rent | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Gasoline | 8.90E-05 | 7.38E-02 | 5.66E-05 | 4.70E-02 | 1.17E-04 | 9.73E-02 | 3.03E-06 | 2.52E-03 | 4.86E-05 | 4.02E-02 |
| Auto Repair | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Public Transit | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Payments | 1.41E-04 | 1.41E-04 | 1.41E-04 | 1.41E-04 | 1.86E-04 | 1.86E-04 | 4.81E-06 | 4.81E-06 | 7.70E-05 | 7.70E-05 |
| Clothing | 5.37E-05 | 5.37E-05 | 7.81E-05 | 7.81E-05 | 7.08E-05 | 7.08E-05 | 1.83E-06 | 1.83E-06 | 2.93E-05 | 2.93E-05 |
| Health and Personal | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Special Health | 1.53E-05 | 1.53E-05 | 1.53E-05 | 1.53E-05 | 2.02E-05 | 2.02E-05 | 5.23E-07 | 5.23E-07 | 8.37E-06 | 8.37E-06 |
| Insurance | 5.48E-05 | 5.48E-05 | 5.48E-05 | 5.48E-05 | 7.22E-05 | 7.22E-05 | 1.87E-06 | 1.87E-06 | 2.99E-05 | 2.99E-05 |
| Daycare | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Leisure | 5.22E-05 | 5.22E-05 | 5.22E-05 | 5.22E-05 | 6.88E-05 | 6.88E-05 | 1.78E-06 | 1.78E-06 | 2.85E-05 | 2.85E-05 |
| Culture | 0.00E+00 | 7.37E-02 | 0.00E+00 | 7.37E-02 | 0.00E+00 | 9.72E-02 | 0.00E+00 | 2.51E-03 | 0.00E+00 | 4.02E-02 |
| Recreation | 3.38E-05 | 3.38E-05 | 3.38E-05 | 3.38E-05 | 4.45E-05 | 4.45E-05 | 1.15E-06 | 1.15E-06 | 1.84E-05 | 1.84E-05 |
| Hunt/Fish | 9.21E-06 | 9.21E-06 | 9.21E-06 | 9.21E-06 | 1.21E-05 | 1.21E-05 | 3.14E-07 | 3.14E-07 | 5.02E-06 | 5.02E-06 |
| Education | 3.30E-04 | 1.09E-04 | 3.30E-04 | 1.09E-04 | 4.35E-04 | 1.44E-04 | 1.13E-05 | 3.71E-06 | 1.80E-04 | 5.94E-05 |
| Gifts and Don. | -1.07E-05 | -1.07E-05 | -1.07E-05 | -1.07E-05 | -1.41E-05 | -1.41E-05 | -3.65E-07 | -3.65E-07 | -5.84E-06 | -5.84E-06 |
| Summation | 0.01043 | 0.01036 | 0.01043 | 0.01036 | 0.01375 | 0.01366 | 0.00036 | 0.00035 | 0.00569 | 0.00565 |
| Cumulative | 0.00903271 | 0.00902112 | 0.009032709 | 0.009032554 | 0.011912083 | 0.011911813 | 0.000307515 | 0.000307515 | 0.004923781 | 0.004923735 |

Scenario 3 SNTC Multipliers

| Expenditure Type | multiplier 1 | multiplier 2 | multiplier 3 | multiplier 4 | multiplier 5 | multiplier 6 | multiplier 7 | multiplier 8 | multiplier 9 | multiplier 10 |
|---------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|
| Groceries | 3.93E-04 | 3.93E-04 | 3.57E-04 | 3.57E-04 | 5.18E-04 | 5.18E-04 | 1.34E-05 | 1.34E-05 | 2.14E-04 | 2.14E-04 |
| Tobacco | 5.50E-04 | 5.97E-02 | 4.00E-04 | 4.34E-02 | 7.25E-04 | 7.86E-02 | 1.88E-05 | 2.03E-03 | 3.00E-04 | 3.25E-02 |
| Restaurants | 5.15E-05 | 5.15E-05 | 5.15E-05 | 5.15E-05 | 6.78E-05 | 6.78E-05 | 1.75E-06 | 1.75E-06 | 2.81E-05 | 2.81E-05 |
| House Repairs | 1.43E-03 | 7.16E-04 | 1.43E-03 | 7.16E-04 | 1.88E-03 | 9.44E-04 | 4.87E-05 | 2.44E-05 | 7.79E-04 | 3.91E-04 |
| Utilities | 2.67E-03 | 1.25E-03 | 2.67E-03 | 1.25E-03 | 3.53E-03 | 1.65E-03 | 9.12E-05 | 4.26E-05 | 1.46E-03 | 6.81E-04 |
| Rent | 5.17E-03 | 2.38E-03 | 5.17E-03 | 2.38E-03 | 6.82E-03 | 3.13E-03 | 1.76E-04 | 8.11E-05 | 2.82E-03 | 1.30E-03 |
| Gasoline | 9.21E-05 | 5.95E-02 | 5.86E-05 | 3.79E-02 | 1.21E-04 | 7.84E-02 | 3.14E-06 | 2.03E-03 | 5.02E-05 | 3.25E-02 |
| Auto Repair | 4.76E-05 | 4.76E-05 | 9.95E-05 | 9.95E-05 | 6.27E-05 | 6.27E-05 | 1.62E-06 | 1.62E-06 | 2.60E-05 | 2.60E-05 |
| Public Transit | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Payments | 1.23E-04 | 1.23E-04 | 1.23E-04 | 1.23E-04 | 1.62E-04 | 1.62E-04 | 4.19E-06 | 4.19E-06 | 6.70E-05 | 6.70E-05 |
| Clothing | 6.91E-05 | 6.91E-05 | 1.00E-04 | 1.00E-04 | 9.10E-05 | 9.10E-05 | 2.35E-06 | 2.35E-06 | 3.77E-05 | 3.77E-05 |
| Health and Personal | 1.84E-05 | 1.84E-05 | 1.84E-05 | 1.84E-05 | 2.43E-05 | 2.43E-05 | 6.28E-07 | 6.28E-07 | 1.00E-05 | 1.00E-05 |
| Special Health | 7.67E-06 | 7.67E-06 | 7.67E-06 | 7.67E-06 | 1.01E-05 | 1.01E-05 | 2.62E-07 | 2.62E-07 | 4.19E-06 | 4.19E-06 |
| Insurance | 6.14E-05 | 6.14E-05 | 6.14E-05 | 6.14E-05 | 8.09E-05 | 8.09E-05 | 2.09E-06 | 2.09E-06 | 3.35E-05 | 3.35E-05 |
| Daycare | 3.32E-05 | 3.32E-05 | 3.32E-05 | 3.32E-05 | 4.38E-05 | 4.38E-05 | 1.13E-06 | 1.13E-06 | 1.81E-05 | 1.81E-05 |
| Leisure | 9.37E-04 | 4.62E-04 | 9.37E-04 | 4.62E-04 | 1.23E-03 | 6.08E-04 | 3.19E-05 | 1.57E-05 | 5.11E-04 | 2.52E-04 |
| Culture | 3.53E-05 | 5.94E-02 | 3.53E-05 | 5.94E-02 | 4.65E-05 | 7.83E-02 | 1.20E-06 | 2.03E-03 | 1.93E-05 | 3.24E-02 |
| Recreation | 8.15E-04 | 3.99E-04 | 8.15E-04 | 3.99E-04 | 1.07E-03 | 5.26E-04 | 2.78E-05 | 1.36E-05 | 4.44E-04 | 2.17E-04 |
| Hunt/Fish | 9.98E-06 | 9.98E-06 | 9.98E-06 | 9.98E-06 | 1.32E-05 | 1.32E-05 | 3.40E-07 | 3.40E-07 | 5.44E-06 | 5.44E-06 |
| Education | 2.44E-04 | 1.13E-04 | 2.44E-04 | 1.13E-04 | 3.21E-04 | 1.49E-04 | 8.31E-06 | 3.85E-06 | 1.33E-04 | 6.16E-05 |
| Gifts and Don. | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Summation | 0.01412 | 0.01204 | 0.01412 | 0.01204 | 0.01862 | 0.01583 | 0.00043 | 0.00041 | 0.00770 | 0.00657 |
| Cumulative | 0.01277731 | 0.01276159 | 0.012777312 | 0.012772039 | 0.016350032 | 0.016341005 | 0.00043502 | 0.000435014 | 0.006965151 | 0.006963597 |

Scenario 4 Neskonlith Multipliers

| Expenditure Type | multiplier 1 | multiplier 2 | multiplier 3 | multiplier 4 | multiplier 5 | multiplier 6 | multiplier 7 | multiplier 8 | multiplier 9 | multiplier 1 |
|---------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Groceries | 1.45E-04 | 1.45E-04 | 1.32E-04 | 1.32E-04 | 1.91E-04 | 1.91E-04 | 4.95E-06 | 4.95E-06 | 7.92E-05 | 7.92E-05 |
| Tobacco | 4.18E-06 | 4.96E-04 | 2.40E-04 | 3.28E-04 | 4.35E-04 | 7.25E-04 | 1.12E-05 | 1.14E-05 | 1.80E-04 | 2.29E-04 |
| Restaurants | 2.89E-05 | 2.89E-05 | 2.89E-05 | 2.89E-05 | 3.80E-05 | 3.80E-05 | 9.84E-07 | 9.84E-07 | 1.57E-05 | 1.57E-05 |
| House Repairs | 3.80E-05 | 3.80E-05 | 3.80E-05 | 3.80E-05 | 5.02E-05 | 5.02E-05 | 1.30E-06 | 1.30E-06 | 2.08E-05 | 2.08E-05 |
| Utilities | 3.38E-05 | 8.44E-04 | 8.48E-04 | 8.44E-04 | 1.12E-03 | 1.11E-03 | 2.88E-05 | 2.88E-05 | 4.62E-04 | 4.60E-04 |
| Rent | 4.26E-05 | 4.58E-03 | 4.60E-03 | 4.58E-03 | 6.07E-03 | 6.04E-03 | 1.56E-04 | 1.56E-04 | 2.50E-03 | 2.50E-03 |
| Gasoline | 2.48E-05 | 3.84E-03 | 2.34E-03 | 2.41E-03 | 4.87E-03 | 5.13E-03 | 1.25E-04 | 1.25E-04 | 2.01E-03 | 2.05E-03 |
| Auto Repair | 3.31E-05 | 7.77E-05 | 1.63E-04 | 1.62E-04 | 1.03E-04 | 1.02E-04 | 2.65E-06 | 2.65E-06 | 4.24E-05 | 4.24E-05 |
| Public Transit | 8.38E-07 | 2.04E-04 | 2.04E-04 | 2.04E-04 | 2.70E-04 | 2.68E-04 | 6.94E-06 | 6.94E-06 | 1.11E-04 | 1.11E-04 |
| Payments | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Clothing | 2.27E-05 | 2.27E-05 | 3.30E-05 | 3.30E-05 | 2.99E-05 | 2.99E-05 | 7.74E-07 | 7.74E-07 | 1.24E-05 | 1.24E-05 |
| Health and Personal | 6.81E-06 | 6.81E-06 | 6.81E-06 | 6.81E-06 | 8.98E-06 | 8.98E-06 | 2.32E-07 | 2.32E-07 | 3.72E-06 | 3.72E-06 |
| Special Health | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Insurance | 3.68E-05 | 3.68E-05 | 3.68E-05 | 3.68E-05 | 4.86E-05 | 4.86E-05 | 1.26E-06 | 1.26E-06 | 2.01E-05 | 2.01E-05 |
| Daycare | 2.64E-05 | 8.37E-04 | 8.40E-04 | 8.37E-04 | 1.11E-03 | 1.10E-03 | 2.85E-05 | 2.85E-05 | 4.57E-04 | 4.56E-04 |
| Leisure | 2.13E-05 | 5.08E-04 | 5.10E-04 | 5.08E-04 | 6.73E-04 | 6.69E-04 | 1.73E-05 | 1.73E-05 | 2.78E-04 | 2.77E-04 |
| Culture | 1.84E-06 | 6.15E-04 | 4.50E-04 | 6.15E-04 | 5.93E-04 | 8.81E-04 | 1.53E-05 | 1.55E-05 | 2.43E-04 | 2.94E-04 |
| Recreation | 1.44E-05 | 4.60E-04 | 4.62E-04 | 4.60E-04 | 6.10E-04 | 6.07E-04 | 1.57E-05 | 1.57E-05 | 2.52E-04 | 2.51E-04 |
| Hunt/Fish | 1.01E-06 | 2.44E-04 | 2.45E-04 | 2.44E-04 | 3.24E-04 | 3.22E-04 | 8.33E-06 | 8.33E-06 | 1.33E-04 | 1.33E-04 |
| Education | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Gifts and Don. | 9.90E-06 | 9.90E-06 | 9.90E-06 | 9.90E-06 | 1.31E-05 | 1.31E-05 | 3.38E-07 | 3.38E-07 | 5.40E-06 | 5.40E-06 |
| Cumulative | 0.38496 | 0.38492 | 0.38496 | 0.38492 | 0.38975 | 0.38967 | 0.37051 | 0.37051 | 0.37815 | 0.37813 |
| Summation | 0.37291 | 0.38541 | 0.38361 | 0.38389 | 0.38975 | 0.39053 | 0.37051 | 0.37051 | 0.37815 | 0.37828 |

Scenario 4 Skeetchestn Multipliers

| Expenditure Type | multiplier 1 | multiplier 2 | multiplier 3 | multiplier 4 | multiplier 5 | multiplier 6 | multiplier 7 | multiplier 8 | multiplier 9 | multiplier 1 |
|---------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Groceries | 1.43E-04 | 2.33E-03 | 2.13E-03 | 2.12E-03 | 3.09E-03 | 3.07E-03 | 7.94E-05 | 7.94E-05 | 1.27E-03 | 1.27E-03 |
| Tobacco | 5.69E-06 | 8.63E-04 | 5.07E-04 | 5.94E-04 | 9.21E-04 | 1.21E-03 | 2.37E-05 | 2.39E-05 | 3.80E-04 | 4.29E-04 |
| Restaurants | 1.69E-05 | 9.80E-05 | 9.83E-05 | 9.80E-05 | 1.30E-04 | 1.29E-04 | 3.34E-06 | 3.34E-06 | 5.36E-05 | 5.34E-05 |
| House Repairs | 5.75E-06 | 6.95E-04 | 6.98E-04 | 6.95E-04 | 9.21E-04 | 9.16E-04 | 2.37E-05 | 2.37E-05 | 3.80E-04 | 3.79E-04 |
| Utilities | 2.79E-05 | 7.57E-04 | 7.60E-04 | 7.57E-04 | 1.00E-03 | 9.98E-04 | 2.58E-05 | 2.58E-05 | 4.14E-04 | 4.13E-04 |
| Rent | 1.21E-05 | 3.36E-04 | 3.38E-04 | 3.36E-04 | 4.46E-04 | 4.43E-04 | 1.15E-05 | 1.15E-05 | 1.84E-04 | 1.83E-04 |
| Gasoline | 3.99E-05 | 2.51E-04 | 5.02E-05 | 1.20E-04 | 1.04E-04 | 4.03E-04 | 2.69E-06 | 2.89E-06 | 4.30E-05 | 9.42E-05 |
| Auto Repair | 3.98E-06 | 3.98E-06 | 8.31E-06 | 8.31E-06 | 5.24E-06 | 5.24E-06 | 1.36E-07 | 1.36E-07 | 2.17E-06 | 2.17E-06 |
| Public Transit | 8.29E-06 | 2.27E-04 | 2.28E-04 | 2.27E-04 | 3.01E-04 | 2.99E-04 | 7.75E-06 | 7.74E-06 | 1.24E-04 | 1.24E-04 |
| Payments | 6.02E-05 | 6.02E-05 | 6.02E-05 | 6.02E-05 | 7.93E-05 | 7.93E-05 | 2.05E-06 | 2.05E-06 | 3.28E-05 | 3.28E-05 |
| Clothing | 3.24E-06 | 3.24E-06 | 4.71E-06 | 4.71E-06 | 4.27E-06 | 4.27E-06 | 1.10E-07 | 1.10E-07 | 1.77E-06 | 1.77E-06 |
| Health and Personal | 1.04E-05 | 1.85E-04 | 1.85E-04 | 1.85E-04 | 2.45E-04 | 2.43E-04 | 6.30E-06 | 6.30E-06 | 1.01E-04 | 1.01E-04 |
| Special Health | 3.15E-06 | 9.23E-05 | 9.27E-05 | 9.23E-05 | 1.22E-04 | 1.22E-04 | 3.15E-06 | 3.15E-06 | 5.05E-05 | 5.04E-05 |
| Insurance | 2.53E-05 | 3.21E-04 | 3.22E-04 | 3.21E-04 | 4.26E-04 | 4.23E-04 | 1.09E-05 | 1.09E-05 | 1.76E-04 | 1.75E-04 |
| Daycare | 1.12E-05 | 3.15E-04 | 3.16E-04 | 3.15E-04 | 4.18E-04 | 4.15E-04 | 1.07E-05 | 1.07E-05 | 1.72E-04 | 1.72E-04 |
| Leisure | 2.32E-05 | 1.41E-04 | 1.41E-04 | 1.41E-04 | 1.86E-04 | 1.86E-04 | 4.80E-06 | 4.80E-06 | 7.69E-05 | 7.68E-05 |
| Culture | 3.25E-05 | 3.66E-04 | 1.95E-04 | 3.66E-04 | 2.58E-04 | 5.54E-04 | 6.63E-06 | 6.83E-06 | 1.06E-04 | 1.57E-04 |
| Recreation | 2.02E-05 | 2.39E-04 | 2.40E-04 | 2.39E-04 | 3.17E-04 | 3.15E-04 | 8.15E-06 | 8.15E-06 | 1.31E-04 | 1.30E-04 |
| Hunt/Fish | 1.06E-05 | 2.29E-04 | 2.30E-04 | 2.29E-04 | 3.04E-04 | 3.02E-04 | 7.82E-06 | 7.82E-06 | 1.25E-04 | 1.25E-04 |
| Education | 8.96E-06 | 9.00E-05 | 9.04E-05 | 9.00E-05 | 1.19E-04 | 1.19E-04 | 3.07E-06 | 3.07E-06 | 4.92E-05 | 4.91E-05 |
| Gifts and Don. | 1.37E-05 | 2.57E-04 | 2.58E-04 | 2.57E-04 | 3.40E-04 | 3.38E-04 | 8.75E-06 | 8.75E-06 | 1.40E-04 | 1.40E-04 |
| Cumulative | 0.37972 | 0.37970 | 0.37972 | 0.37970 | 0.38283 | 0.38280 | 0.37833 | 0.37833 | 0.37529 | 0.37529 |
| Summation | 0.57290 | 0.38028 | 0.37937 | 0.37967 | 0.38293 | 0.38376 | 0.37033 | 0.37033 | 0.37534 | 0.37548 |

Scenario 4 Adams Lake Multipliers

| Expenditure Type | multiplier 1 | multiplier 2 | multiplier 3 | multiplier 4 | multiplier 5 | multiplier 6 | multiplier 7 | multiplier 8 | multiplier 9 | multiplier 1 |
|---------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Groceries | 1.01E-04 | 1.01E-04 | 9.18E-05 | 9.18E-05 | 1.33E-04 | 1.33E-04 | 3.44E-06 | 3.44E-06 | 5.51E-05 | 5.51E-05 |
| Tobacco | 0.00E+00 | 1.68E-04 | 0.00E+00 | 8.87E-05 | 0.00E+00 | 2.91E-04 | 0.00E+00 | 1.95E-07 | 0.00E+00 | 4.99E-05 |
| Restaurants | 9.09E-06 | 9.09E-06 | 9.09E-06 | 9.09E-06 | 1.20E-05 | 1.20E-05 | 3.10E-07 | 3.10E-07 | 4.96E-06 | 4.96E-06 |
| House Repairs | 4.53E-06 | 1.10E-03 | 1.10E-03 | 1.10E-03 | 1.46E-03 | 1.45E-03 | 3.75E-05 | 3.75E-05 | 6.01E-04 | 5.99E-04 |
| Utilities | 2.09E-05 | 2.09E-05 | 2.09E-05 | 2.09E-05 | 2.75E-05 | 2.75E-05 | 7.12E-07 | 7.12E-07 | 1.14E-05 | 1.14E-05 |
| Rent | 2.05E-05 | 4.27E-03 | 4.29E-03 | 4.27E-03 | 5.67E-03 | 5.63E-03 | 1.46E-04 | 1.46E-04 | 2.34E-03 | 2.33E-03 |
| Gasoline | 3.07E-05 | 2.02E-04 | 1.95E-05 | 8.88E-05 | 4.04E-05 | 3.38E-04 | 1.05E-06 | 1.24E-06 | 1.67E-05 | 6.76E-05 |
| Auto Repair | 1.82E-05 | 1.82E-05 | 3.80E-05 | 3.80E-05 | 2.40E-05 | 2.40E-05 | 6.19E-07 | 6.19E-07 | 9.91E-06 | 9.91E-06 |
| Public Transit | 3.35E-07 | 8.14E-05 | 8.17E-05 | 8.14E-05 | 1.08E-04 | 1.07E-04 | 2.78E-06 | 2.78E-06 | 4.45E-05 | 4.44E-05 |
| Payments | 5.34E-05 | 5.34E-05 | 5.34E-05 | 5.34E-05 | 7.04E-05 | 7.04E-05 | 1.82E-06 | 1.82E-06 | 2.91E-05 | 2.91E-05 |
| Clothing | 3.52E-05 | 3.52E-05 | 5.12E-05 | 5.12E-05 | 4.64E-05 | 4.64E-05 | 1.20E-06 | 1.20E-06 | 1.92E-05 | 1.92E-05 |
| Health and Personal | 9.09E-06 | 9.09E-06 | 9.09E-06 | 9.09E-06 | 1.20E-05 | 1.20E-05 | 3.10E-07 | 3.10E-07 | 4.96E-06 | 4.96E-06 |
| Special Health | 4.54E-06 | 4.54E-06 | 4.54E-06 | 4.54E-06 | 5.99E-06 | 5.99E-06 | 1.55E-07 | 1.55E-07 | 2.48E-06 | 2.48E-06 |
| Insurance | 1.90E-05 | 1.90E-05 | 1.90E-05 | 1.90E-05 | 2.51E-05 | 2.51E-05 | 6.49E-07 | 6.49E-07 | 1.04E-05 | 1.04E-05 |
| Daycare | 1.78E-05 | 1.78E-05 | 1.78E-05 | 1.78E-05 | 2.35E-05 | 2.35E-05 | 6.07E-07 | 6.07E-07 | 9.71E-06 | 9.71E-06 |
| Leisure | 4.53E-05 | 1.34E-03 | 1.35E-03 | 1.34E-03 | 1.78E-03 | 1.77E-03 | 4.58E-05 | 4.58E-05 | 7.34E-04 | 7.32E-04 |
| Culture | 0.00E+00 | 1.68E-04 | 0.00E+00 | 1.68E-04 | 0.00E+00 | 2.91E-04 | 0.00E+00 | 1.95E-07 | 0.00E+00 | 4.99E-05 |
| Recreation | 1.59E-05 | 1.59E-05 | 1.59E-05 | 1.59E-05 | 2.10E-05 | 2.10E-05 | 5.42E-07 | 5.42E-07 | 8.67E-06 | 8.67E-06 |
| Hunt/Fish | 5.68E-06 | 5.68E-06 | 5.68E-06 | 5.68E-06 | 7.49E-06 | 7.49E-06 | 1.94E-07 | 1.94E-07 | 3.10E-06 | 3.10E-06 |
| Education | 7.37E-06 | 7.37E-06 | 7.37E-06 | 7.37E-06 | 9.71E-06 | 9.71E-06 | 2.51E-07 | 2.51E-07 | 4.02E-06 | 4.02E-06 |
| Gifts and Don. | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Cumulative | 0.37903 | 0.37906 | 0.37903 | 0.37906 | 0.38198 | 0.38195 | 0.37831 | 0.37831 | 0.37494 | 0.37494 |
| Summation | 0.37284 | 0.38007 | 0.37961 | 0.37990 | 0.38266 | 0.38348 | 0.37833 | 0.37833 | 0.37522 | 0.37537 |

Scenario 4 Bonaparte Multipliers

| Expenditure Type | multiplier 1 | multiplier 2 | multiplier 3 | multiplier 4 | multiplier 5 | multiplier 6 | multiplier 7 | multiplier 8 | multiplier 9 | multiplier 1 |
|---------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Groceries | 2.18E-04 | 2.18E-04 | 1.98E-04 | 1.98E-04 | 2.87E-04 | 2.87E-04 | 7.43E-06 | 7.43E-06 | 1.19E-04 | 1.19E-04 |
| Tobacco | 0.00E+00 | 1.68E-04 | 0.00E+00 | 8.87E-05 | 0.00E+00 | 2.91E-04 | 0.00E+00 | 1.95E-07 | 0.00E+00 | 4.99E-05 |
| Restaurants | 1.35E-05 | 1.35E-05 | 1.35E-05 | 1.35E-05 | 1.78E-05 | 1.78E-05 | 4.61E-07 | 4.61E-07 | 7.37E-06 | 7.37E-06 |
| House Repairs | 8.00E-05 | 2.02E-04 | 2.02E-04 | 2.02E-04 | 2.67E-04 | 2.66E-04 | 6.87E-06 | 6.87E-06 | 1.10E-04 | 1.10E-04 |
| Utilities | 9.79E-06 | 2.20E-03 | 2.21E-03 | 2.20E-03 | 2.91E-03 | 2.90E-03 | 7.49E-05 | 7.49E-05 | 1.20E-03 | 1.20E-03 |
| Rent | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Gasoline | 3.29E-05 | 2.04E-04 | 2.10E-05 | 9.03E-05 | 4.34E-05 | 3.41E-04 | 1.12E-06 | 1.32E-06 | 1.80E-05 | 6.89E-05 |
| Auto Repair | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Public Transit | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Payments | 5.22E-05 | 5.22E-05 | 5.22E-05 | 5.22E-05 | 6.89E-05 | 6.89E-05 | 1.78E-06 | 1.78E-06 | 2.85E-05 | 2.85E-05 |
| Clothing | 1.99E-05 | 1.99E-05 | 2.89E-05 | 2.89E-05 | 2.62E-05 | 2.62E-05 | 6.78E-07 | 6.78E-07 | 1.08E-05 | 1.08E-05 |
| Health and Personal | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Special Health | 5.68E-06 | 5.68E-06 | 5.68E-06 | 5.68E-06 | 7.49E-06 | 7.49E-06 | 1.94E-07 | 1.94E-07 | 3.10E-06 | 3.10E-06 |
| Insurance | 2.03E-05 | 2.03E-05 | 2.03E-05 | 2.03E-05 | 2.67E-05 | 2.67E-05 | 6.91E-07 | 6.91E-07 | 1.11E-05 | 1.11E-05 |
| Daycare | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Leisure | 1.93E-05 | 1.93E-05 | 1.93E-05 | 1.93E-05 | 2.55E-05 | 2.55E-05 | 6.58E-07 | 6.58E-07 | 1.05E-05 | 1.05E-05 |
| Culture | 0.00E+00 | 1.68E-04 | 0.00E+00 | 1.68E-04 | 0.00E+00 | 2.91E-04 | 0.00E+00 | 1.95E-07 | 0.00E+00 | 4.99E-05 |
| Recreation | 1.25E-05 | 1.25E-05 | 1.25E-05 | 1.25E-05 | 1.65E-05 | 1.65E-05 | 4.26E-07 | 4.26E-07 | 6.81E-06 | 6.81E-06 |
| Hunt/Fish | 3.41E-06 | 3.41E-06 | 3.41E-06 | 3.41E-06 | 4.49E-06 | 4.49E-06 | 1.16E-07 | 1.16E-07 | 1.86E-06 | 1.86E-06 |
| Education | 5.44E-07 | 1.22E-04 | 1.23E-04 | 1.22E-04 | 1.62E-04 | 1.61E-04 | 4.16E-06 | 4.16E-06 | 6.68E-05 | 6.66E-05 |
| Gifts and Don. | -3.96E-06 | -3.96E-06 | -3.96E-06 | -3.96E-06 | -5.22E-06 | -5.22E-06 | -1.35E-07 | -1.35E-07 | -2.16E-06 | -2.16E-06 |
| Cumulative | 0.37617 | 0.37617 | 0.37617 | 0.37617 | 0.37814 | 0.37814 | 0.37821 | 0.37821 | 0.37336 | 0.37336 |
| Summation | 0.37290 | 0.37584 | 0.37532 | 0.37564 | 0.37785 | 0.37791 | 0.37818 | 0.37818 | 0.37291 | 0.37306 |

Appendix F Information Collection Cost Details

Statistics Canada

Three types of costs are estimated for Statistics Canada in the census exercise¹ for the 10 SNTC communities - marketing, data collection, and processing and output production. The most conservative estimates were used.

Marketing

| | |
|--|----------|
| Letter of Agreement Develop. - Travel (to Kamloops) and personnel ² | \$ 4,500 |
| Post-Census discussion in Kamloops (bill sent Stats Can. from SNTC) | \$ 4,500 |
| B.C. regional liaison staff (travel and personnel time) ³ | \$ 6,900 |
| Post-Census pre-test (SNTC staff, training, and Ottawa personnel) ⁴ | \$ 4,800 |
| Overhead @ 10% of total | \$ 2,300 |
| | ----- |
| Subtotal for marketing | \$23,000 |

Census collection

| | |
|---|----------|
| 3 manager @ \$2000 per month for 3½ months | \$21,000 |
| 11 census representatives @ 1500 per person | \$16,500 |
| Travel @ 20% of wages | \$ 7,500 |
| Overhead @ 10% of total | \$ 4,400 |
| | ----- |
| Subtotal for collection | \$48,400 |

The cost of the entire 1991 Census (First Nation and non First Nation) was estimated at \$250 million (Report on the Joint Conference on a First Nations Data Base and the 1991 Census and Post-Censal Programs) (1990) p. 8.

It is assumed that a round trip and accommodation to Kamloops from Ottawa costs \$2,000, and that a \$50,000/year employee spent 5% of their time on this agreement.

A native liaison for the interior of B.C. was hired on a one year contract to facilitate the conduct of the 1991 census within the Shuswap Nation. This figure assumes this individual received a salary of \$30,000, and that 15% of his time and 6 trips to Kamloops @\$400 per trip were made in the course of his job.

This was a "perk" given to the SNTC for participating in the 1991 Census. It involved 4 SIS team members (\$700 per week), and at least one person from Ottawa (just cost of trip included).

Output Production

| | |
|---|-----------------------|
| Budget for Statistics Canada (Public Accounts 1989-90) ⁵ | \$245 mill. |
| Expenditure per capita @ 26 million persons | \$ 9.42 |
| Population of 10 SNTC communities (INAC estimates 1992) | 2489 |
| Cost per year for product development | \$23,446 ⁶ |
| # of years including census year to develop product | 3 |
| | ----- |
| Cost for product development | \$70,339 |
| Total cost estimate for Statistics Canada | \$141,739 |

Indian and Northern Affairs of Canada

| | |
|--|-----------------------|
| Average cost of membership clerk per community (expert opinion) | \$1,500 |
| # of communities | 10 |
| Total membership clerk salary | \$15,000 |
| Avg. salary of 3 employees at B.C. regional office to process (assump.) | \$35,000 |
| % of B.C. on reserve aboriginal population for SNTC communities (guess)10% | |
| Estimated cost for SNTC membership processing | \$10,500 |
| Administration 20% of cost (many forms to complete and Ottawa cost) | \$5,100 |
| | ----- |
| Total cost for SNTC population estimates for INAC | \$30,600 ⁷ |

⁵ 1989 was a non-census year so this is assumed to be a proxy for the cost of product development for all Statistics Canada data (First Nation and non-First Nation). No account for inflation was made to make this estimate more conservative.

⁶ Although the \$245 million was spent on other non-census activities, its usage in this proxy still represents a conservative estimate. First, in Chapter 3 it was made evident that Statistics Canada consistently counted more people on Shuswap reserves than did the Department of Indian Affairs. Secondly to present data comparable to that of the SNTC, Statistics Canada also had to conduct, process and present the Post Census on Aboriginal People, a separate \$10 million data collection exercise. Finally, as was discussed in Chapter 3, Statistics Canada had data collection biases in the Shuswap communities which undoubtedly required costly data smoothing techniques.

⁷ For this amount of money INAC only produces population counts in six categories.

SNTC

The community economic development studies required funding from a variety of sources listed below. This is all the funding which the SNTC had received to complete all 10 of the community economic development studies by the fall of 1993.

| | |
|---|------------------|
| Cost of funding pursuit (admin and salary) ⁸ | \$12,000 |
| ISTC (Research program) | \$48,000 |
| Department of Finance (taxation study) | \$10,000 |
| Department of Indian and Northern Affairs | \$15,000 |
| SFU Co-Op program | \$ 5,000 |
| SNTC contributions | \$15,000 |
| B.C. Provincial government | \$ 9,500 |
| Employment and Immigration Canada | \$ 7,000 |
| | ----- |
| Total for SNTC community economic development studies | \$121,500 |

⁸ This assumes 2 months of a \$36,000/year salary, \$5,000 in travel, and \$1,000 in overhead in the pursuit of funding for these projects