Institutional Change on Canadian First Nations Reserves: Adoption of the Framework Agreement on First Nation Land Management

by

Mary Kathryn Doidge

A Thesis

presented to

The University of Guelph

In partial fulfilment of requirements

for the degree of

Master of Science

in

Food, Agricultural, and Resource Economics

Guelph, Ontario, Canada

© Mary Doidge, May 2013

ABSTRACT

Institutional Change on Canadian First Nation Reserves: Adoption of the

Framework Agreement on First Nation Land Management

Mary Kathryn Doidge   Advisor:

University of Guelph, 2013   Professor B. J. Deaton

This thesis examines institutional change on Canadian First Nation reserves. Specifically, it looks at the factors that may affect a First Nation's decision to adopt the Framework Agreement on First Nation Land Management, which allows First Nations to opt out of the 34 land code provisions of the Indian Act and develop individual land codes. The Framework Agreement is promoted as a way for First Nations to gain greater autonomy over their lands and to promote economic development. Using data from First Nation reserves and populations, a probit model was used to determine the effects of certain characteristics on the probability a First Nation will adopt the Framework Agreement. The results of this study indicate that proximity to an urban centre positively affects the probability that a First Nation will adopt the Framework Agreement.

Acknowledgements

I would like to thank my advisor, Professor Brady Deaton, for his guidance, patience, and encouragement throughout this process. His help in the development and completion of this thesis has been invaluable. I am grateful to the members of my committee, Professors Getu Hailu and Alan Ker, and to my external examiner, Professor Alfons Weersink, for their constructive suggestions and feedback. I would also like to thank the faculty and staff in the department of Food, Agricultural and Resource Economics for making my time in here such an interesting and enjoyable one.

I would like to thank the Ontario Ministry of Agriculture, Food, and Rural Affairs (OMAFRA) whose funding supported this work.

Thank you to my friends and family, and especially my parents, for their continual support. And finally, thank you to the members of my FARE family (especially Effie, Johanna, Tor, and K^2), without whose support and encouragement I may not have completed this thesis, and without whom the past two years would not have been nearly as fun.

Table of Contents

List of Figures

List of Tables

Chapter 1: Introduction

The level of economic development on Canadian First Nation reserves is much lower than in the rest of the country, causing some to compare the conditions on reserves to those in developing countries[1]. Though issues surrounding First Nations land have existed in Canada for decades, they have once again come to the forefront of Canadian consciousness. The recent movement dubbed "Idle No More" began, in part, as a response to the Canadian Government's proposed changes to the Indian Act that would affect how reserve land is administered[2].

The ways in which First Nations land is governed are different from those regulating non-reserve land. For owners of non-reserve land, rights are typically held by fee-simple ownership[3]. In contrast, the title of First Nations reserves remains with the Crown rather than belonging to the First Nations themselves. According to section 18(1) of the Indian Act, "reserves are held by Her Majesty for the use and benefit of the respective bands for which they were set apart." The same section goes on to state that the Governor General "may determine whether any purpose for which lands in a reserve are used…is for the use and benefit of the band."

The property rights institutions governing the administration of reserve land use are determined by the Indian Act, and they too differ from those governing non-reserve land. Personal property rights are determined in three main ways (customary tenure, certificates of possession, and leases). Customary land tenure rights are determined by

---

[1] See, for example, recent media reports of the Attawapiskat First Nation in northern Ontario.
[2] Changes that would allow First Nations to approve votes with a lower proportion of band members present in order to surrender portions of their reserves to be leased by the federal government on the First Nation's behalf, and that were proposed without consulting with First Nations groups.
[3] A system in which the title of land is held by an individual (or group of individuals) but it is still subject to laws and regulations of various levels (municipal, provincial, or federal) of government.

the First Nation band, and do not appear in the Indian Act; they are therefore not legally recognised. However, transactions involving certificates of possession or leases (either by the band or individual members of the First Nation) must be approved by the band and the federal government before they become official. This requirement for federal government involvement often translates to additional time and monetary costs involved in reserve land transactions, and may constrain economic growth on reserves.

The importance of property rights and institutions have been widely discussed and researched in the economic development literature. There have been some attempts to apply these concepts to First Nation reserves in Canada and use them to explain the low levels of economic development seen there[4]. However, there have been very few empirical studies that examine the issue in this light.

Within Canada, there are some examples of First Nations gaining more autonomy over their land administration. The Nisga'a in British Columbia, for example, has negotiated treaties that grant them greater control of their lands, no longer necessitating federal government involvement. Other First Nations have negotiated self-governing agreements with the government. These examples, however, have been for individual First Nations only and are on a rather small scale.

In contrast, the Framework Agreement on First Nations Land Management attempts to provide an opportunity for all Canadian First Nations to gain greater control over their reserves. The Framework Agreement was developed by 14 First Nations in the mid-1990s, and allows First Nations who adopt it (which is done on a voluntary basis) to opt out of the 34 sections of the Indian Act that govern land use and develop individual land codes. The First Nations Land Management Act (FNLMA) officially ratified the

---

[4] See, for example, Alcantara (2007) and Flanagan, Alcantara, and Le Dressay (2010).

2

Framework Agreement, and was passed by the federal government in 1999. Since then, over 70 First Nations have become signatory to the FNLMA, with 37 currently operating under their own land codes. Interest in the Framework Agreement has grown since its inception, with approximately one in six of Canada's 617 First Nations expressing interest in adopting it[5].

The Framework Agreement is promoted by the federal government and the Lands Advisory Board (an organisation that assists First Nations with Framework Agreement adoption and land code development) as a way for First Nations to gain control over their land and to promote economic development on reserves. Without involvement of the federal government, First Nations are said to be able to respond more quickly to business opportunities and generate economic activity on their reserves.

As mentioned previously, despite the substantial literature on the relationship between institutions and economic development in developing countries there has been little research examining their role in the context of Canadian First Nations. Alcantara (2007) has studied the extent to which Framework Agreement adoption is able to strengthen personal property rights and reduce transaction costs associated with the transfer of property rights on reserves. However, his analysis was limited to a comparison of two Canadian reserves and may have limited applicability in the broader Canadian environment.

Although several First Nations have taken actions to gain greater control over reserve land by adopting the Framework Agreement, it is not known whether certain factors influence the decision of a First Nation to adopt the Framework Agreement. This thesis examines institutional change, in the form of Framework Agreement adoption, on

---

[5] Robert Louie FARE Talk podcast, September 13th, 2012.

Canadian First Nation reserves. Specifically, it looks at the characteristics of reserves that may be associated with a First Nation's decision to adopt the Framework Agreement and operate under their own land code.

Organisation of Thesis

The remainder of this thesis is organised as follows: Chapter 2 presents a more comprehensive background on the issues of First Nations land use in Canada and the Framework Agreement on First Nations Land management, and provides a more detailed description of the process by which it is adopted. It also introduces concepts used to examine institutional change on First Nations' reserves. In Chapter 3 I review the institutional change literature and apply it to the context of Framework Agreement adoption. The conceptual framework used to motivate this study, as well as my hypotheses, are also presented in Chapter 3. Chapter 4 describes the data used in this study and the methods used to conduct my analysis. The empirical model is also proposed in Chapter 4. I present the results of the analysis in Chapter 5. Finally, in Chapter 6 I discuss the implications of my results for First Nations in Canada, and propose areas for further study.

Chapter 2: Background

In this section I will review the institutional background for land use on First Nation reserves in Canada in order to better understand the motivation for institutional reform. Using the framework presented in Alchian and Demsetz (1973), I will organise the beginning of this chapter to answer the three questions posed by the authors: what is the existing structure of property rights, how did this structure come into being, and what are the economic consequences of the property rights structure? I will subsequently introduce the Framework Agreement and the First Nations Land Management Act and the ways in which they seek to address the perceived negative consequences of the existing property rights structures.

2.1 First Nations Property Rights under the Indian Act

Until the Framework Agreement and the First Nations Land Management Act were developed in the 1990s, the property rights structures on the vast majority of First Nation reserves were determined by the Indian Act. The Indian Act was first passed by the Canadian government in 1876 and has since undergone several revisions and amendments. Despite the changes made to the Indian Act, however, several sections remain essentially as they appeared in the original document.

The Indian Act was developed to combine several pieces of legislation that had previously governed Canadian Aboriginal populations. The Indian Act determines who is legally recognised as an Indian[6], and who is therefore subject to the contents of the Act.

---

[6] The terms Indian, Aboriginal, Native, and First Nation are all used in the literature to refer to Canada's indigenous populations. The term Indian is used most widely in official documents. The term First Nations encompasses Canadian indigenous groups that are not Inuit or Métis, and will be the dominant term used in this thesis.

It also defines what is meant by reserve land, and ways in which reserves are to be governed.

Under the Indian Act, reserves remain the property of the Crown, "held by Her Majesty for the use and benefit of the respective bands for which they were set apart" (Section 18(1)). Laws governing the ownership, transfer, and use of land on Canadian First Nation reserves differ from those governing non-reserve land. For reserves, these laws are laid out in the Indian Act (Alcantara, 2007). Decisions regarding the use of reserve land are ultimately up to elected band councils and the federal Minister of Aboriginal Affairs. Property rights structures may differ between reserves, but are determined in three main ways: customary tenure, certificates of possession, and leases.

Customary Land Tenure

Customary land tenure is established by the First Nation's band council. Holders of customary rights are informal rights to use band council land. The nature of these rights may vary from First Nation to First Nation (for example, some First Nations may allow these rights to be sold to other First Nation members while others may not) (Flanagan et al, 2010). Though a record of these rights may exist within the band council, customary rights are not accounted for in the Indian Act or recognised in federal or provincial courts (Flanagan et al, 2010). They are therefore difficult to establish formally, and customary land use on reserves provides the weakest form of personal property rights. Land held by customary tenure may be more at risk of expropriation by the band council or the federal government (Flanagan et al, 2010).

Certificates of possession (CPs) provide the strongest individual property rights of the three systems, allowing holders of these certificates to build houses and establish businesses on land (Alcantara, 2003). CPs can be leased by holders of the certificates, and they can also be bought and sold. However, as outlined in the Indian Act, the sale of these rights is restricted to members of the same First Nation and requires the approval of the band council as well as the federal Minister.

Certificates of possession provide the holder (or holders, as CPs can be held jointly) with exclusive rights to use the specified piece of reserve land, though the title of the land is always held by the Crown. CPs can be transferred in the event of death of the original holder, much like title to land held under fee simple ownership. The Indian Act does not provide guidance for how property should be divided when a marriage dissolves, however, leaving much to be decided by federal courts (Alcantara, 2003). Additionally, land held by CPs cannot be legally seized due to default of debt repayment, restricting the ability of CP holders to obtain mortgages to finance housing. Some arrangements between banks and individual First Nations have been developed as a way for CP holders to obtain mortgages. See Alcantara (2005) for a detailed description of such programs in Ontario.

Leases

Leases to reserve land can be operated by individuals who hold CPs. Land controlled by the band can also be leased, but these leases must be operated by the Canadian government rather than by the band (as the title to reserve land remains with the Crown). Under this arrangement, reserve land is surrendered to the federal

government (under section 37-41 or 53 of the Indian Act) and then leased by the Crown on behalf of the First Nation (Land Management Manual).

If the tract of land has been allotted to an individual member of the First Nation under section 20 of the Indian Act (which dictates possession of reserve land), he or she may then lease the land to another member of the First Nation. For leases to be held by non-band members (third parties), the land to be leased must first be surrendered to the Canadian government, who then leases it to the third party (LMM). Unlike certificates of possession, leases can be used as collateral to obtain mortgages[7].

2.2 Institutions, Transaction Costs, and Economic Development

Institutions are what North (1990) referred to as "the rules of the game" (p. 3); they determine the constraints on human behaviour. Institutions dictate ways in which people interact with each other and determine the ways in which property is exchanged among individuals and groups (such as governments and firms) (North, 1990). They can be either formal (official rules and laws) or informal (including cultural norms and traditions) (North, 1990, Williamson and Kerkes, 2011). As explained by North (1990), institutions "provide the structure for exchange that…determines the cost of transact[ing]..." (p. 34).

These costs of transacting are what is referred to as transaction costs. Transaction costs are simply the costs of engaging in economic transactions that are not accounted for in the transaction itself (North, 1990). Costs exist for every economic transaction; even in competitive markets, individuals must obtain information on prices of different goods, the specific attributes of goods, etc., before deciding whether or not to engage in trade.

---

[7] Except in the province of Quebec, in which leases can only be used by the person to whom they are issued

The costs associated with transactions often determine whether or not a transaction takes place. When the benefits of making a transaction are greater than the costs, the transaction will take place and gains from trade will be realised; when the costs outweigh the benefits, the two parties will not engage in the transaction.

The role of institutions (including property rights) and transaction costs in development has been widely discussed in the economic literature. The prevailing wisdom is that well-defined and enforceable property rights are essential for economic growth. Strong property rights reduce the costs associated with transactions, allowing for more efficient exchange of resources. This in turn allows resources to be put to their most valued use, allowing those who value them most to acquire the rights to use them.

In his seminal paper, Harold Demsetz (1967) discussed the role of property rights in economic development, and also the conditions under which well-defined personal property rights evolve. Using the example of Canadian Aboriginals and the fur trade after the arrival of Europeans, Demsetz explains how secure property rights were established when the benefits of doing so overcame their costs. As the commercial value of furs traded to Western settlers increased, rights to hunting grounds were established for Aboriginal hunters, who now had greater economic incentives to manage the resource more efficiently.

A society's institutions also determine the transaction costs associated with economic exchange, which affect the extent to which resources can be put to their most valued use (Alchian and Demsetz, 1973). People who own rights to a resource have an economic incentive to use it in such a way that maximises its value. If another person values the land more highly he or she may trade with the original owner to obtain rights

to the land, benefitting both the original and new owner. However, reorganisation of resource rights is determined by the transaction costs, the presence of which may prevent any trade from taking place (Alchian and Demsetz, 1973). If transaction costs are high enough to prevent trade, the potential benefits will go unrealised.

2.3 Consequences of the Existing Property Rights Structure

North (1990) states that historically, institutions have evolved to reduce transaction costs, allowing gains from trade to be realised and markets to expand. In the case of First Nations in Canada, however, the laws outlined in the Indian Act have prevented such institutions from evolving. Some transactions are prevented outright, such as granting certain rights to reserve land to non-First Nations members, while the costs of others may be prohibitively high. (For example, it is sometimes necessary for a tract of reserve land to be officially surveyed before a certificate of possession can be issued, increasing the cost of transacting as well as the time necessary for such a transaction to take place (Alcantara, 2005)). In either case, transactions that may otherwise provide gains to both parties do not take place, resulting in unrealised potential for economic gain.

As previously mentioned, engaging in transactions for reserve land can be a long and costly process, involving approval of the band council and the federal Minister of Aboriginal Affairs. The requirement for approval from multiple levels of government can significantly increase the time required for such transfers to be made, imposing transaction costs on the parties that may wish to engage in trade. Though extensive empirical data do not exist, anecdotal evidence of is described by Alcantara (2003). Due

to the increased regulations regarding land transactions on First Nations reserves, the time required for land to change hands (in the form of certificates of possession) can take three to four months. This time is increased for band members who wish to subdivide their land and issue multiple certificates of possession, as the land must be surveyed by Aboriginal Affairs and Northern Development Canada (AANDC)[8] (Alcantara, 2005).

The increased time required for land transactions to be finalised may act as deterrents for such exchanges. Non-band members who wish to do business or establish residences on First Nations land may be prevented from doing so due to the high transaction costs. If the costs are higher than the expected benefits of acquiring rights to use First Nations land, people will not enter into agreements, resulting in a lack of economic development on First Nations reserves. The economic benefits of such exchanges, to both parties, may thus go unrealised as a result of high transaction costs.

2.4 The Framework Agreement and the First Nations Land Management Act

Reforms to the ways in which reserve land is administered have been adopted by some Canadian First Nations. The Framework Agreement on First Nations Land Management[9] of 1996 was developed by 14 First Nations in an effort to give First Nations greater control of land use decisions previously determined by the Canadian government under the Indian Act. The Framework Agreement allows First Nations to opt out of the 34 land provisions[10] in the Indian Act and develop their own individual land codes (Alcantara, 2007). These reforms grant First Nations greater control over land

---

[8] Previously named the Department of Indian Affairs, the Department of Indian and Northern Development (DIAND), Indian and Northern Affairs Canada (INAC). For consistency, it will be referred to as Aboriginal Affairs or AANDC for the remainder of this thesis.
[9] Referred to as the Framework Agreement for the remainder of this thesis.
[10] Sections 18-20, 22-28, 30-35, 34-41, 49, 50(4), 53-60, 66, 69, 71, and 93.

ownership and land use decisions. The First Nations Land Management Act (FNLMA) was passed by the Government of Canada in 1999, ratifying the Framework Agreement.

While the Framework Agreement allows for diversity in the land codes developed by individual First Nations, it does specify certain elements that must be included in the land codes. These include rules and procedures for the use, occupancy, and transfer of reserve land, as well as division of use and occupancy rights in the case of the breakdown of a marriage, something that is absent from the Indian Act.

Though in effect since 1999, the Framework Agreement has been adopted by relatively few First Nations. Seventy seven of the 617 First Nations recognised in Canada were signatory to the FNLMA as of April 16th 2013[11]. The majority of reserves that have adopted the Act are in British Columbia, followed by Ontario and Saskatchewan. The number of First Nations that have adopted the Framework Agreement each year is depicted graphically in Figure 2.1. Figure 2.2 shows a timeline of First Nations operational under their individual land codes.

2.4.1 Transaction Costs under the Framework Agreement

Though the land codes developed by individual First Nations may differ from one another, they have an overarching common element: reserves operating under the Framework Agreement no longer require approval of the Minister of Aboriginal Affairs and Northern Development for changes in land use. As a result of reduced federal involvement, transaction costs associated with land transactions are likely to be reduced.

Alcantara (2007) has specifically studied the Framework Agreement and the FNLMA in the context of their potential to reduce transaction costs. His analysis was

---

[11] The most recent version of the FNLMA.

limited to a comparison of two Canadian reserves, though, rather than a survey of several First Nations that have adopted the Framework Agreement. He conducted his study to determine the effect of the Framework Agreement (and the associated individual land codes) on individual property rights and transaction costs for First Nations that have adopted the legislation. Though adopting the Framework Agreement was not found to necessarily strengthen individual property rights on reserves, his analysis showed evidence of a reduction of transaction costs associated with land exchanges. This was largely due to First Nations no longer requiring the approval of the federal Minister for exchanges of land rights, as is required under the Indian Act.

2.4.2 Adopting the Framework Agreement

To adopt the Framework Agreement, a First Nation must first pass a band council resolution to seek entrance into the FNLMA. This band council resolution is submitted to the Lands Advisory Board, who discusses adoption further with the First Nation. If the First Nation still wishes to adopt the Framework Agreement, a second band council resolution must be passed, committing the band to the community approval process. If the First Nation meets certain criteria and funds are available to assist the First Nation with Framework Agreement adoption, the Lands Advisory Board makes a recommendation to AANDC. The First Nation is then added to the schedule of the FNLMA.

Once it has been added to the schedule of the FNLMA, the First Nation enters the community approval process. During this process, the First Nation (together with the Lands Advisory Board) develops its own individual land code, as well as the individual

agreement to be approved by the First Nation and AANDC. Once both have been developed, a community vote must be held. All members of the band over the age of 18 are eligible to vote, whether they live on or off a reserve. At least 50% of eligible band members must vote for the results to be valid. If the land code and the individual agreement are approved by the band (that is, 50% plus one of the votes are in favour of adopting the land code), the administration of land and resources are transferred from AANDC to the First Nation.

Throughout this process, an independent verifier appointed by the First Nation and AANDC is present to ensure that the vote(s) is (are) conducted in accordance with the Framework Agreement. The verifier's responsibilities also include dispute resolution in the voting process (LAB, 2011). Once the land code, individual agreement, and vote have been certified by the verifier, the land code becomes effective (as per section 10.7 of the Framework Agreement).

Of the 77 First Nations who are signatory to the FNLMA, 39 are currently operational under the Framework Agreement and 30 are in the developmental stages of adopting. Forty nine First Nations have held votes for land code and individual agreement adoption and are not operational. Of those 49, 39 (79.6%) voted for adoption and are currently operating under their own land codes[12], while 10 (20.4%) of the First Nations did not vote to adopt the individual land codes[13]. Of First Nations who voted to adopt, six (15.4%) required multiple votes for adoption of the land code to be approved.

---

[12] Or have subsequently negotiated treaties or self-governing agreements with the federal government.
[13] It is not known whether votes did not pass because First Nations did not have sufficient participation in the vote (at least 50% of eligible band members) or if too few people voted in favour of adoption.
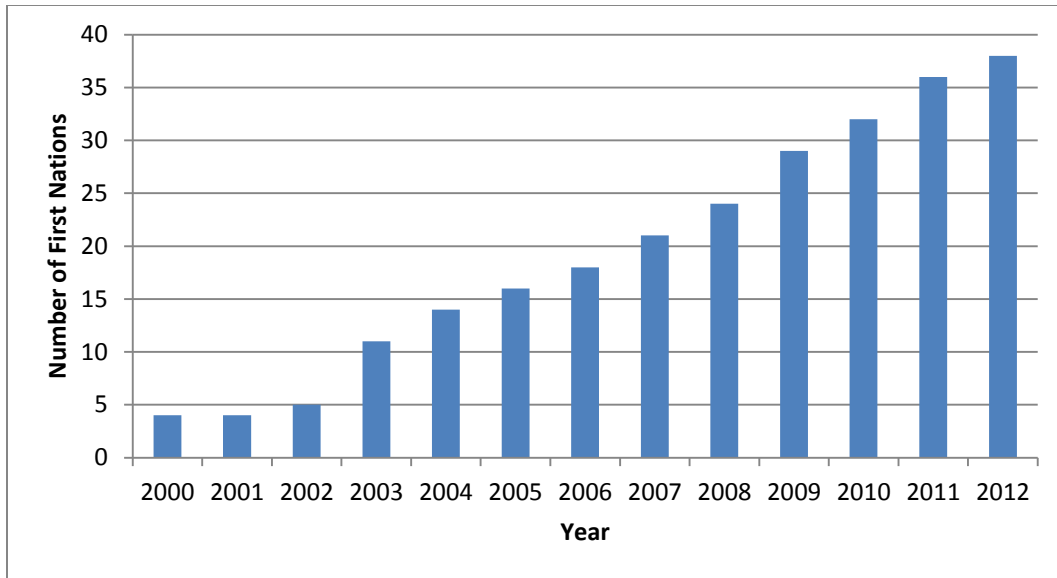
Figure 2.1. Number of First Nations operational under the Framework Agreement by year.

Newly

Operational:

Georgina Island

Framework   Scugog Island   Sliammon   Matsqui   Chemawawin

Agreement signed   Muskoday   Opaskwayak   Ts'kw'aylaxw   Tzeachten   Skawahlook   We Wai Kum

by 14 First Nations   Lheidli T'enneh   Cree   Kinistin   T'Sou-ke   Whitefish Lake   Swan Lake   Musqueam

Skxqha:y Village

1997   1999   2001   2003   2005   2007   2009   2011

1996   1998   2000   2002   2004   2006   2008   2010   2012

FNLMA passed by   McLeod Lake   Muskeg Lake   Tsawout   Seabird Island   Songhees

the Canadian   Nipissing   Kitselas   Tseil-waututh   Leqamel   Anishinaabeg of

government   Westbank   Squiala   Mississauga   Naongashiing

ratifying the   Beecher Bay   We Wai Kai   Nanoose

Framework   Whitecap Dakota   Henvey Inlet

Agreement   Tsawwassen

Figure 2.2. Timeline of First Nations operational under the Framework Agreement with individual land codes by year.

Chapter 3: Conceptual Framework

This chapter presents a model of institutional change and relates it to adoption of

the Framework Agreement and property rights structures on First Nation reserves.

Specifically, I build on the approach developed by Demsetz (1967) and further advanced

by North (1990), which predicts that new property rights will emerge when the benefits

of adopting these rights exceed the costs. This chapter will also explore the main

criticisms of the Demsetz/North approach. I will introduce the median voter model as a

method by which institutional change is adopted, and then discuss these concepts in the

context of First Nations and adoption of the Framework Agreement. Finally, I will

conclude by introducing and discussing the hypothesis investigated in this study.

3.1 Institutional Change

The traditional model of institutional change examines the relative economic costs

and benefits of differing institutional arrangements. This concept was first presented by

Coase (1960), who stated that, taking transaction costs[14] into account, institutions can be

expected to change when "…the increase in the value of production consequent upon the

rearrangement [of rights] is greater than the costs which would be involved in bringing it

about" (p. 15).

Demsetz (1967) applied this theory to develop a more formal theory of

institutional change, contending that a rearrangement of institutions (in the form of

property rights structures) can be expected when a resource becomes relatively more

valuable. A rise in value of a resource will cause an increase in the benefits of

establishing more formal property rights; these benefits will accrue to the holder(s) of

---

[14] See Chapter 2 of this thesis for a more detailed discussion on transaction costs.

17

rights. If this rise in benefits is greater than the costs of altering the existing property

rights structure, the institutional framework can be expected to change. North and

Thomas (1970) built on this concept, proposing that institutions emerge when the

"discounted expected gains exceed the expected costs" of the new institutional

arrangement (page 5).

A change in property rights institutions may occur to allow individuals to respond

more appropriately to changes in demand for (and thus value of) a resource. To illustrate

how property rights institutions respond to a change in the value of a resource, Demsetz

(1967) used the example of the Canadian fur trade. Prior to European settlement,

Aboriginals in eastern Canada hunted animals without established private property rights

(that is, as an open resource to which all parties had equal access and no person had the

right to exclude others). With low demand for animal furs, animal populations were

easily maintained under this system of open access. After the arrival of European

settlers, however, demand for animal furs increased, which caused an increased incentive

for individuals to hunt to supply this growing demand.

With communal access to hunting grounds there was little incentive to abstain

from hunting, resulting in the risk of depletion of animal populations by overhunting (the

familiar concept of the tragedy of the commons). Under the system of open access, the

benefits of hunting (income from the sale of furs) accrued to the individual hunter, and

the costs (diminished animal population) were spread among the larger hunting

population. With the development of private property rights, however, individuals were

allowed to exclude others from hunting on their designated land. This provided

incentives for hunters to maintain animal populations at a sustainable level, allowing

consistent economic benefits to be realised (Demsetz, 1967).

Following Demsetz, North and Thomas (1970) went on to theorise about the role

of expected costs and benefits of institutional change, reasoning that institutional change

can be expected when the discounted benefits of such a change are greater than the costs.

This amendment to the traditional theory is of particular importance, as the costs and

benefits of introducing a change in societal institutions may not occur simultaneously.

The costs of changing institutions are likely to be incurred in the short term while the

benefits may be experienced a time after the change is implemented.

North (1990) further posited that institutions emerge to reduce transaction costs

and allow for more efficient economic exchange. If transaction costs are reduced, the

marginal net benefits (marginal benefits minus marginal costs) of using a resource (such

as land) will increase. This concept is demonstrated in Figure 3.1, which depicts

marginal net benefit curves for two competing uses of a resource, and the resulting price

and proportion of the resource used by each party (determined by the intersection of the

two marginal net benefit curves). A reduction of transaction costs user one would cause

an upward shift of their marginal net benefits curve (MNB_1 to MNB_1'). As a result, the

proportion used by user one increases, the proportion used by user two decreases, and the

price of the resource increases for both users. With a shift in the marginal net benefit

curve (MNB_1), total benefits increase (the total area under the curves), as do benefits

accruing to individual one. Due to the increase in rental rate, producer surplus will also

increase. However, the proportion of the resource used and the benefits accruing to

individual two will decrease.

Despite its use in economic literature, there are criticisms of the traditional model of institutional change. The cost/benefit approach may be sufficient to explain institutional change in certain circumstances, such as when the lack of personal property rights result in externalities. Stronger personal property rights may emerge in order to deal with negative externalities caused by more communal property regimes (such as in the example of the developing Canadian fur trade used by Demsetz (1967)). However, a change in the existing institutional arrangement that redistributes economic benefits (increasing benefits for one group at the expense of another group) may not fit with this proposed model.

The relationships between different political and social groups must be considered when discussing institutional change, and are not adequately accounted for in Demsetz's (1967) account of property rights development. As de Janvry (1973) argues, pressure from interest groups who could potentially benefit either from the current institutional arrangement or from legislative change may be able to influence governments or those with power to alter institutions. This point is also made by Benson (1981), who states that "the group which most desires a property right will be the group willing to give the most" (p. 438). Those who may bear a disproportionate share of the benefits of an institutional change (or who may benefit at the expense of others) may be more motivated to pursue changes to the institutions governing economic exchange, and may thus exert more influence on those in power.

Benson (1981) also argues that those involved in introducing land use regulations may benefit from institutional change (or by maintaining the original institutional

arrangement), and may thus influence the process. This is of particular importance in the context of Canadian First Nations, and will be discussed below.

Bromley (1989) presents other potential motivations for institutional change, including changing public attitudes towards the distribution of societal wealth. According to this theory, institutions change over time due to changing attitudes of wealth allocation among different social groups, which in turn can cause factor prices to change. Thus, price changes are induced by institutional change rather than the other way around (Bromley, 1989). Using the example of progressive income tax rates in developed countries, Bromley (1989) explains that societies may give more relative weight to the utility of its poorer citizens, causing a change in its institutions.

3.3 The Median Voter Model

Though Demsetz's model of institutional change provides an economic explanation for institutional change, it fails to explain the means by which this change occurs. Banner (2002) seeks to answer this question, asking how societies "overcome the obstacles that might block a transition to a more efficient property regime" (p. S361). He identifies the problem of collective action as an obstacle to institutional transformation, explaining that benefits may accrue to all members of society whether they are involved in implementing a new institutional arrangement, providing incentives for some to free ride on those who institute the change.

The problem of collective action may be overcome through voting on particular issues. In instances where a majority vote is held to decide a single issue (rather than several issues being grouped together in a single vote), the median voter model may be

used to explain the outcome of the vote. According to this theory, a vote is decided by the median voter (that is, one whose preference lies in the centre of those of all voters) (Congleton, 2003).

The median voter model assumes that the preference of each voter is single peaked; that is, each voter prefers one outcome to all other possible outcomes of the vote (Mueller, 1989). Thus, the utility the voter experiences with his or her preferred outcome is greater than the utility that he or she would experience with any other outcome. If x^* is voter i's preferred outcome along the vector x of possible outcomes, then

$$U_i(x_i^*) > U_i(x_i)$$

where x_i represents all other possible outcomes along the vector x for individual i.

If the two above conditions are met (the vote is a one-dimensional issue and the preferences of each voter are single-peaked), the median voter model dictates that the preferences of the median voter will determine the outcome of the majority-rule vote (Mueller, 1989).

3.4 Institutional Change and Canadian First Nations

The concepts introduced above have direct implications in for institutional change on Canadian First Nations in the form adoption of the Framework. Opting out of the sections of the Indian Act that govern reserve land and adopting the Framework Agreement allow First Nations to have greater control over land use decisions and reduce transaction costs associated with reserve land use.

In the context of Canadian First Nations, it is important to distinguish various levels of property rights. While much of the literature discusses property rights in terms

of the individual, there are many other arrangements that allow varying levels of property

rights for many people. Schlager and Ostrom (1992) distinguish between personal and

communal property rights, and between communal property rights (a system under which

several people are involved in the management of a resource) and open access rights

(under which no person or group is excluded from accessing and using a resource).

Adopting the Framework Agreement will not necessarily change the property

rights for individuals living on First Nation reserves (although it has the potential to do

so, as each First Nation that adopts will develop its own individual land code), but the

property rights for the First Nation itself will change. Because approval of the federal

government is no longer required for changes in land use (as it was under the Indian Act)

and the First Nation has the ability to develop its own land code, it is granted additional

power to define property rights institutions on reserves (what Schlager and Ostrom

(1992) refer to as management rights).

When a First Nation adopts the Framework Agreement and begins to operate

under its own land code, land transactions are no longer subject to federal government

approval. Without the requirement for approval of the federal government, transaction

costs associated with leasing reserve land will be lower for First Nations operating under

their individual land codes (as discussed by Alcantara (2007)).

In the presence of transaction costs, the market for reserve land for a particular

use may be constrained. Because of the extended time and other constraints that off-

reserve consumers face when dealing with First Nations operating under the Indian Act,

the marginal net benefits of using reserve land may be reduced, resulting in off-reserve

consumers using a relatively smaller proportion of reserve land. This concept is shown in

23

Figure 3.3, in which the marginal net benefit curves of off-reserve consumers (MNB_1)

and First Nations (MNB_2) are shown. The proportion of land allocated to each group and

the rental rate are determined by the point at which their marginal net benefit curves

intersect.

The transaction costs faced by non-First Nations consumers dealing with First

Nations operating under the Indian Act may act to prevent transactions from taking place.

Transaction costs will reduce the benefits available to off-reserve consumers, potentially

resulting in low levels of off-reserve investment (or no investment, if the transaction costs

are sufficiently high and outweigh the benefits).

If transaction costs are reduced, such as with adoption of the Framework

Agreement, the benefits of engaging in transactions with First Nations may increase,

causing the marginal net benefit curve for off-reserve consumers to shift outward. This,

as shown in Figure 3.4, will result in a higher proportion of land being used by off-

reserve consumers increasing the total benefits resulting from transactions involving

reserve land. Reducing transaction costs will also cause the benefits accruing to First

Nations to increase. A reduction in transaction costs may result in an increase in the

price paid for land (the rental rate). This will provide a benefit to the First Nations

themselves who are landlords and will receive more money for leasing their land.

First Nations may also face costs associated with adopting the Framework

Agreement. The costs of adopting the Framework Agreement will be incurred by First

Nations primarily in the short term. (Table 3.1 presents a list of the potential costs and

benefits for First Nations who adopt the Framework Agreement.) First Nations who

adopt the Framework Agreement may be able to reduce transaction costs and

consequently attract more business opportunities on their reserves, the potential benefits are likely to be realised over time rather than immediately. The model of institutional change proposed by Demsetz (1967) and North and Thomas (1970) would predict that a First Nation would adopt the Framework Agreement if these expected benefits outweighed the costs of adopting.

Despite the potential economic benefits for First Nations who develop their own land codes, other considerations may factor into a First Nation's decision to adopt the Framework Agreement. As discussed above, a small, politically active group may affect whether or not institutional change is undertaken. If a relatively small group such as a First Nation's band council[15] wishes to adopt the Framework Agreement, they may have greater influence than less organised groups within the First Nation who oppose adoption. Alternatively, if those in power receive substantial benefits from the status quo (operating under the land code provisions of the Indian Act), adoption may be unlikely. Therefore, political power and the distribution of benefits may be important factors when evaluating incentives for institutional change.

The question of collective action and the mechanism by which First Nations come to implement institutional change is also of importance in the case of Framework Agreement adoption. The median voter model, introduced above, can be applied to explain Framework Agreement adoption by individual First Nations, as band members are required to vote on the issue before the adoption is approved. In the case First Nations, if the expected utility of the median voter is greater under the Framework

---

[15] For a First Nation to adopt the Framework Agreement, the band council must first express its interests through the submission of a band council resolution (BCR), after which a vote is held with all band members eligible to participate. The process of adopting the Framework Agreement is discussed in more detail in the previous chapter.

25

Agreement than under the Indian Act, it can be expected that the First Nation will vote to adopt the Framework Agreement. If the median voter expects that his or her utility will be greater with the land code provisions of the Indian Act than under the Framework Agreement, the vote to adopt will not pass. The expected utility of voters may be economic (resulting from increased economic activity on reserves, increased employment opportunities, etc.) or non-economic (utility resulting from reserve land no longer being governed by the Indian Act), or a combination of the two.

3.5 Hypothesis

Distance to an urban centre, the main variable of interest in this study, is used as a proxy for the remoteness of First Nation reserves. The greater the distance of a reserve to an urban area, the more remote that reserve is; fewer opportunities for economic development may exist for reserves that are more remote. I hypothesise that distance to urban areas will be negatively associated with Framework Agreement adoption (that is, First Nations closer to urban areas will be more likely to adopt). The increase in benefits discussed above may be greater close to urban areas due to a higher population and greater number of business opportunities. I hypothesise that First Nations with reserves closer to urban centres will take action to capture the potential increase in benefits associated with lower transaction costs by adopting the Framework Agreement and developing their own land codes.

In addition to the characteristics of reserves and their surrounding areas that may influence a First Nation's to adopt the Framework Agreement, population characteristics may also have an effect. The Framework Agreement is promoted as a way for First

26

Nations to take control over land use decisions and also as a way to stimulate economic development[16]. As the Framework Agreement is endorsed as a potential path towards economic growth, I hypothesise that greater proportion of a First Nations population residing on its reserves will be correlated with a First Nation adopting the Framework Agreement. The greater the proportion of people living on reserves, the greater number of people stand to benefit if the reserve does experience increased economic growth. Likewise, First Nations with larger areas of land (reserve land area) may perceive a greater opportunity to stimulate economic growth on their land as its area increases, and it is thus expected that greater land area will be associated with the decision to adopt the Framework Agreement.

---

[16] For example, see the Lands Advisory Board (www.labrc.com) or AANDC (www.aadnc-aandc.gc.ca).

Table 3.1. Potential benefits and costs to First Nations (and their band members) of adopting the Framework Agreement.

Potential Benefits	Potential Costs
Ability to respond more quickly to business opportunities (Stewart, 1999)	Cost of developing land code, reaching band members off reserve, holding adoption vote
Reduction of transaction costs associated with land transfers (Alcantara, 2007)	Reduced certainty for third parties dealing with First Nations (Isaac, 2005)
Potential to strengthen personal property rights on First Nation reserves (Alcantara, 2007)	
Protection from provincial expropriation (Isaac, 2005)	

Rental
Rate

MNB$_2$

MNB$_1$

R

0

100

100

0

Proportion of land used
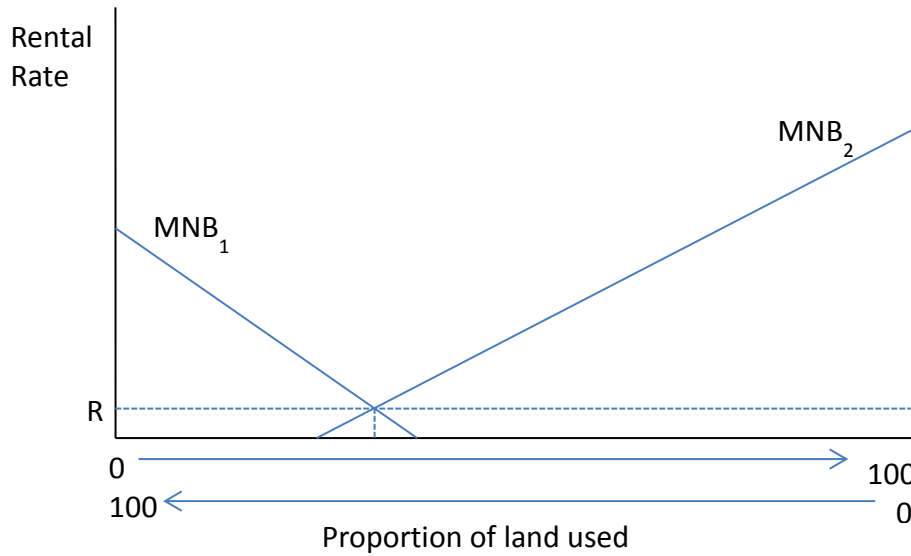
Figure 3.1. Marginal net benefit curves of two consumers of land. The proportion of land used by each consumer and rental rate are determined by the intersection of the two curves.

Rental
Rate

MNB$_2$

MNB'$_1$

MNB$_1$

R'
R

0

100

100

0

Proportion of land used
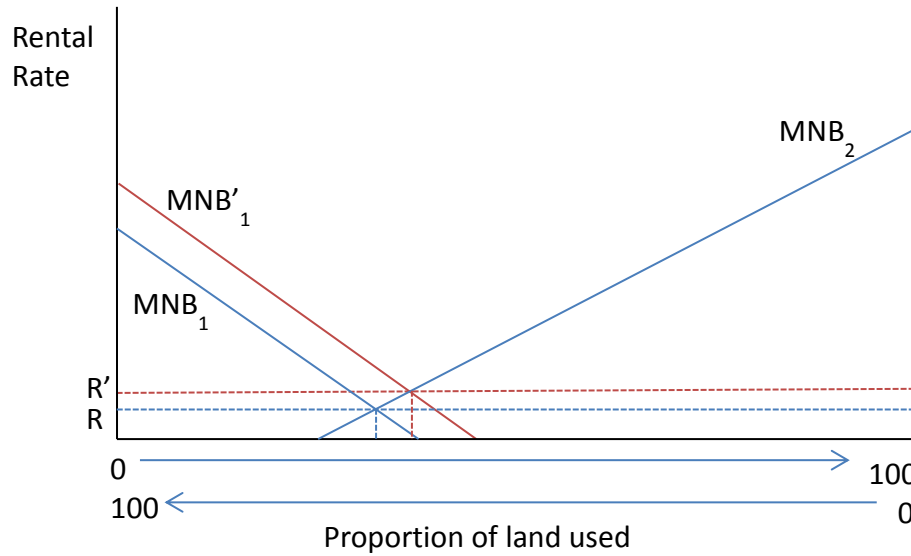
Figure 3.2. Marginal net benefit curves of two consumers of land. The proportion of land used by each consumer and rental rate are determined by the intersection of the two curves. With a reduction in transaction costs, user 1's curve shifts, causing the proportion of land used by 1 to increase, the proportion of 2 to decrease, and the rental rate to rise (from R to R').
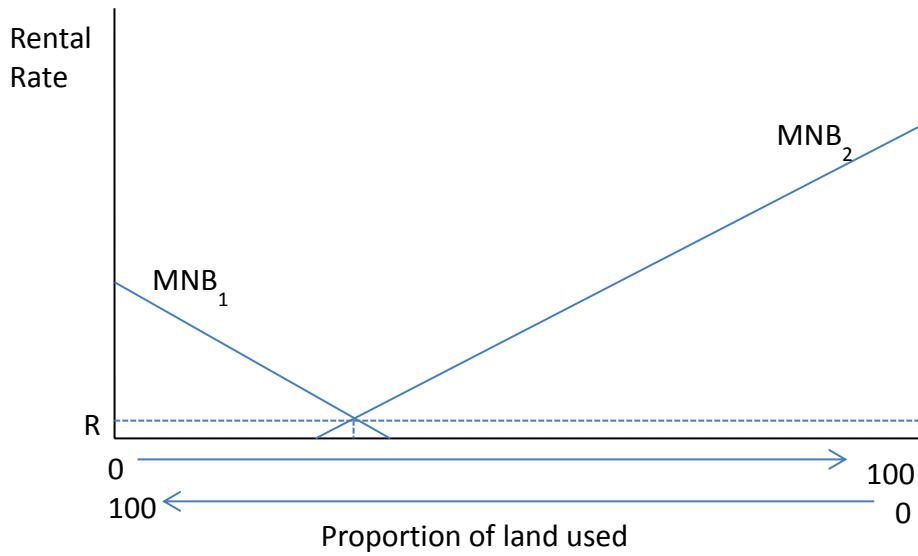
Figure 3.3. Marginal net benefit curves of off-reserve consumers of land (MNB_1) and First Nations (MNB_2) under the Indian Act. The proportion of land used by each consumer and rental rate are determined by the intersection of the two curves.
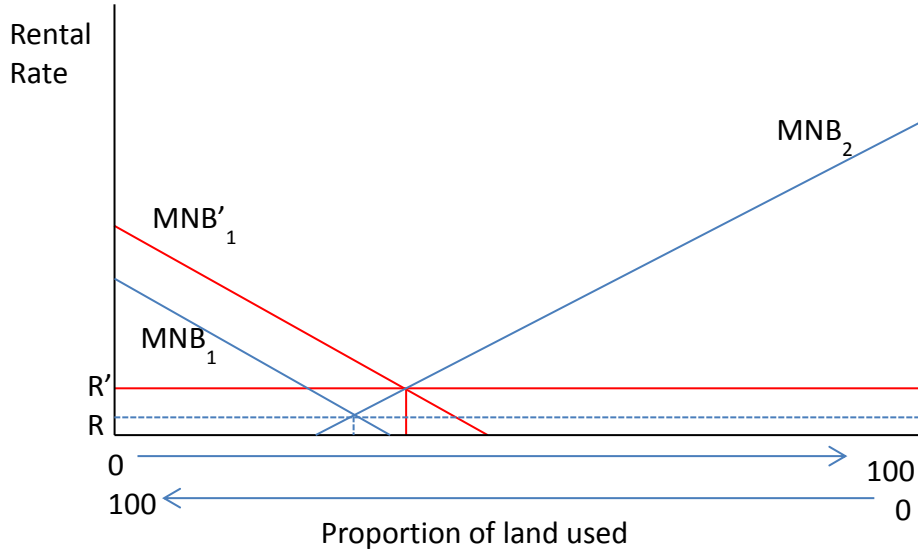
Figure 3.4. Marginal net benefit curves of off-reserve consumers of land (MNB_1) and First Nations (MNB_2) under the Framework Agreement. The proportion of land used by each consumer and rental rate are determined by the intersection of the two curves. With a reduction in transaction costs after adoption of the Framework Agreement, the marginal net benefit curve of off-reserve consumers will shift outwards causing the proportion of land used to increase, and causing a subsequent increase in the land rental rate (from R to R').

Chapter 4: Data and Methods

This chapter will describe the data used in my study and the sources from which they were collected. I will also discuss some of the limitations relating specifically to data on First Nations populations in Canada. Finally, this chapter will present the methods I use to test my hypothesis stated in the previous chapter. I will present my proposed empirical framework employed to determine the factors associated with a First Nation's decision to adopt the Framework Agreement, and outline the probit model used to test the hypothesis that First Nations closer to urban areas are more likely to adopt the Framework Agreement.

4.1 Data Sources

Data used in this study were obtained primarily from the 2006 Canadian Census. Of the 617 recognised First Nations in Canada, a subset of 288 was used in this study. First Nations land in northern Canada (Yukon Territory, Northwest Territories, and Nunavut) is subject to different administration regimes than those governing the majority of reserves in the rest of the country[17]; First Nations in the territories were therefore were excluded from this analysis. Excluding these First Nations reduced the potential sample size from 617 to 588 Canadian First Nations.

Due to the complex nature of First Nations and their reserves in Canada, the number of First Nations included in this study was further reduced. Several reserves have multiple First Nations listed on AANDC's Reserve/Settlement/Village Detail

---

[17] First Nations are subject to the Yukon First Nations Self-Government Act of 1993 in the Yukon, the Nunavut Land Claims Agreement of 1993 in Nunavut, and various settlement agreements in the Northwest Territories.

website[18]. For example, the Blue Quills First Nation reserve in Alberta has six First Nations[19] listed; there are several more reserves that are similar. Reserves that have more than one First Nation listed were omitted from this study. For First Nations with shared reserves in addition to reserve(s) on which they are listed exclusively, the shared reserve was excluded and the First Nation was treated according to the number of reserves under which it is listed as the sole First Nation.

In addition to multiple First Nations listed on one (or multiple) reserve(s), a single First Nation may have several reserves listed. Many First Nations (223) have only one reserve; however others have as many as 123[20]. Because of this complexity and the need to aggregate data from many reserves to the level of a single First Nation, this study was limited to First Nations with one or two reserves listed (and on which they were the sole First Nation) on the AANDC website. This gave a subset of 288 First Nations of the 588 First Nations in the 10 Canadian provinces[21]. (Table 7.1 in the Appendix lists the First Nations included in this thesis.) The methods of aggregating data to the level of each First Nation are described below.

Total band population and the percentage of First Nations living on reserves were obtained from the 2006 Registered Indian Population by Sex and Residence, published by AANDC. The remainder of First Nation population data used in this study were obtained from the Aboriginal Population Profile of the 2006 Census[22]. The data for Aboriginal[23]

---

[18] http://pse5-esd5.ainc-inac.gc.ca/FNP/Main/Search/SearchRV.aspx?lang=eng
[19] Beaver Lake Cree Nation, Cold Lake First Nations, Frog Lake, Heart Lake, Kehewin Cree Nation, and Saddle Lake Cree Nation.
[20] The Ochapowace First Nation in Saskatchewan.
[21] This reduced the number of First Nations operational or in the developmental stages of Framework Agreement adoption from 69 to 28.
[22] http://www12.statcan.gc.ca/census-recensement/2006/dp-pd/prof/92-594/index.cfm?Lang=E

populations in First Nation communities were used in this analysis. If available, data

listed for the Indian band area were used[24]. For First Nations for whom an Indian band

area was not listed in the census but for whom data were listed for a reserve administered

by the First Nation, data from that reserve were used.

There are several limitations inherent in First Nations population data from the

Canadian census. Not all First Nations participated in the 2006 census, and data for these

populations are therefore not available. First Nations for which data are not available

were excluded from the regressions involving on-reserve characteristics. Additionally,

data for First Nation communities with fewer than 40 people were suppressed by

Statistics Canada to avoid identification of individuals within those communities; these

First Nations were not included in the second stage of regressions. Furthermore,

Statistics Canada suppresses data for communities with non-response rates of 25% or

greater; these reserves were also excluded.

Due to the suppression of data and less than full participation in the census,

population data are available for 152 of the 288 First Nations with one or two reserves.

Because of this reduced sample size, a separate set of regressions was performed to

include First Nation population data.

In addition to the Aboriginal Population Profile, data on First Nation populations

exist as a part of the First Nation Profiles on the AANDC website[25]. On-reserve data are

also from the Census and "are based on the total population enumerated within the

---

[23] While the Aboriginal population may include members of other First Nations as well as Metis and Inuit, for the purpose of this study it is assumed that the data for populations on First Nation reserves represents the members of the First Nation affiliated with the reserve.
[24] As described in the Census Aboriginal Peoples Profile, an Indian band area consists of census subdivisions affiliated with the First Nation.
[25] http://pse5-esd5.ainc-inac.gc.ca/fnp/Main/index.aspx?lang=eng

Census Subdivisions (communities) affiliated to [each] First Nation." Though data from more reserves were available from this source, the data from the Aboriginal Peoples Profile of the 2006 Census were chosen for my analysis. Though some First Nation reserves constitute their own Census Subdivision, some are contained partly or wholly in others. Additionally, it is not clear whether these data pertain only to those identified as Aboriginal Canadians or for the population as a whole, and it thus cannot be determined whether they give an accurate representation of the First Nation population living on reserves. This source was therefore not chosen for the on-reserve data included in this study.

4.2 Empirical Model

Probit regressions were performed first on data for First Nations with one reserve, and then expanded to include First Nations with two reserves. Three Models were included in this analysis due to the limited availability of First Nation population data (see discussion above). Model 1 includes no First Nation population data. Model 2 included total band population and the proportion of First Nations living on reserves, incorporating data which reduced the sample size (from 200 to 197 First Nations with one reserve, and from 288 to 281 First Nations with one and two reserves). Model 3 included data on educational attainment, which significantly reduced the sample size (to 108 First Nations with one reserve and 152 First Nations with one and two reserves).

In Model 1 of this analysis, the probability that a First Nation will adopt the

Framework Agreement is represented by the following equation

$$P(FA|X) = G(\alpha_0 + X\alpha) \qquad\qquad 4.1$$

where $P(FA|X)$ is the probability of Framework Agreement adoption, G is the

cumulative distribution function of the normal function and X is a vector of variables of

reserves and their surrounding areas including the distance of a First Nation's reserve(s)

to the nearest urban centre (x_1), the cost of living in the Census Division surrounding the

reserve(s) (x_2), and the population growth in the surrounding Census Division (x_3).

With the inclusion of First Nation population data in Models 2 and 3, the

probability of Framework Agreement adoption is modelled by the equation below

$$P(FA|X,Y) = G(\alpha_0 + \alpha X + \beta Y) \qquad\qquad 4.2$$

such that G is the cumulative distribution function of the normal distribution, X is the

same vector of variables as in equation 4.1, and Y is a vector of First Nation population

variables including the total population of the First Nation band (y_1), and the proportion

of the First Nation living on its reserve(s) (y_2), and the proportion of people on the

reserve who have not received a high school education (y_3).

4.3 Description of Variables

4.3.1Dependent Variable

The dependent variable in the regression is adoption of the Framework

Agreement by a First Nation. First Nations operational under the Agreement (i.e.

operating under their own land code) and those in the developmental stages of adopting it

at the time of this study were assigned a value of 1. First Nations that have not adopted

the Framework Agreement (including those who are signatories to the FNLMA but are listed as inactive and those whose vote to adopt the Framework Agreement did not pass) were assigned a 0.

4.3.2 Reserve and Surrounding Area Variables

Distance to an Urban Centre

The effect of distance of reserves to an urban area[26] on a First Nation's decision to adopt the Framework Agreement is the main variable of interest in this study. This variable was included to represent the potential for economic activity on First Nation reserves. It is assumed that greater proximity to an urban area (and thus a smaller distance) is associated with an increased opportunity for off-reserve investments on reserves. Adoption of the Framework Agreement may make it easier for First Nations who adopt to attract investment on their reserves, leading to greater economic benefits on reserves. First Nations in these areas may adopt the Framework Agreement in an effort to capture these benefits.

The straight-line distance[27] between the centre of each reserve and the centre of the nearest urban area with a population of 100 000 people or more was used as the distance variable included in the regression. Urban areas were restricted to those with populations of 100 000 or more, as it was thought that this may more accurately represent increased potential for economic activity than the census definition of an urban area, with a minimum population of just 1000 people.

---

[26] The Canadian census definition of an urban area is an area with a population of at least 1,000 and population density of at least 400 people per square kilometre.
[27] The distance variable was calculated using Vincenty's formula, a method which more accurately models the earth as an ellipsoid rather than as a perfect sphere.

For First Nations with one reserve (or one reserve administered without another First Nation) the distance of this reserve to the nearest urban centre was included. For First Nations with two reserves, a weighted average of the distances of each reserve was calculated, with each distance weighted by the proportional area of each reserve to the First Nation's total reserve area[28].

The natural log of the distance of reserves to the closest urban centre with a population of 100 000 people was used in the probit regression rather than the actual distance itself. This was done for two reasons: first, the distance variable included an outlying data point. Rather than exclude that observation from the dataset, the natural log of all distances was used.

Reserve Land Area

The land area of each reserve was determined by geographic information system (GIS) software. The area of reserves associated with each First Nation was included as a measure of the land administered by and the potential resources available to the First Nation. For First Nations with more than one reserve, the sum of the area of both reserves was included as a single variable.

Cost of Living

The cost of living (average gross rental rate[29]) in the census divisions surrounding First Nation reserves was obtained from the 2006 Canadian Census. This variable was included as a measure of economic pressure from the population in the area immediately surrounding First Nation reserves. If a First Nation's reserve was contained in multiple

---

[28] Such that if a First Nation's reserves had an area of 25 and 75 km^2 for a total area of 100 km^2, the distance of the first reserve would be given a weight of 0.25 and the second a weight of 0.75.
[29] Defined by Statistics Canada, the average monthly total of all shelter expenses paid by tenant households, including monthly rent and costs of electricity, heat and municipal services.

census divisions, a weighted average of the cost of living of each of the census divisions was calculated. The cost of living in each census division was weighted by the proportion of the reserve contained in that census division. For First Nations with multiple reserves, the same method of weighting average described above was used, with the data weighted by the proportion of total reserve area.

Census Division Population Density

The population density (measured in people per km^2) in the census divisions surrounding reserves was obtained from the 2006 Canadian census. Weighted averages of population densities were calculated for First Nations with reserves in multiple census divisions and for First Nations with two reserves. The method for calculating these averages is the same as described above.

4.3.3 First Nation Population Variables

Total Band Population

The total band population for each First Nation was obtained from the 2006 Registered Indian Population by Sex and Residence, published by Indian Affairs and Northern Development Canada. This report compiles data from the Indian Register including people who are registered as Indians under section 5 of the Indian Act.

Proportion of First Nation Population on Reserves

The proportion of each First Nation residing on its reserve(s) was calculated from the numbers of band members living on reserve and crown land as a proportion of the total band population, obtained from the 2006 Registered Indian Population by Sex and Residence.

The proportion of the First Nation population who did not receive a high school diploma was calculated from numbers obtained from the Aboriginal Peoples Profile of the 2006 census. The number of the Aboriginal identity population who had no certificate, diploma, or degree was divided by the total Aboriginal identity population 15 years and over to obtain the proportion of those without a high school education.

4.4 Methods

Stata 11 was used to perform the statistical analysis of the data. A probit model was used to determine whether certain economic factors are associated with a band's decision to adopt the Framework Agreement. The dependent variable, Framework Agreement adoption, was modelled as a discrete choice, with First Nations who are operational under their individual land codes and those who are in the developmental stages of adopting given a value of 1, and those who are neither operational nor developmental assigned a value of 0. First Nations who are signatory to the FNLMA but inactive (did not pursue development of a land code) or who did not vote to adopt their individual land code were also assigned a 0.

4.5 Hypotheses

The main variable of interest, distance to an urban centre, is expected to be negatively associated with a First Nation's decision to adopt the Framework Agreement. (The closer a First Nation's reserves are to an urban centre, it is hypothesised that they will be more likely to adopt.) As discussed in Chapter 3, it is expected that the benefits

of adopting the Framework Agreement (and thus reducing transaction costs associated with land transactions) are greater closer to urban centres. It is therefore expected that First Nations with reserves close to urban centres will take measures to change the institutions guiding land transactions and promote more efficient exchange, and will be more likely to adopt the Framework Agreement.

The cost of living and population density in the census division(s) surrounding reserves are expected to be positively associated with Framework Agreement adoption. These variables are included to represent economic pressure in the area immediately surrounding First Nation reserves. In areas with high cost of living and population density, demand for land may be greater than where these two variables are lower.

I expect that the proportion of the First Nation living on reserve to be positively associated with Framework Agreement adoption. The Framework Agreement is promoted by the federal government and the Lands Advisory Board as a step towards economic development. Members of First Nations with high levels of unemployment may vote for adoption in an effort to create more jobs on their reserve(s). First Nations with a higher proportion of their members living on reserve may expect that economic development on their reserve(s) will have a direct and positive economic impact on their reserve, and therefore vote in favour of adoption.

Educational attainment is also expected to have an impact on the decision to adopt the Framework Agreement. I expect that First Nations with a higher proportion of band members without a high school education (and thus a lower level of education attainment) to be less likely to adopt the Framework Agreement than those with a higher

level of educational attainment. First Nations with lower levels of education may be less aware of the Framework Agreement as a whole, and the potential benefits of adopting.

4.6 Assumptions

While the Framework Agreement was introduced in 1996 and officially enacted in 1999, the 2006 Census was chosen as the primary source of data for this thesis. As shown in Figures 3.1 and 3.2 in the preceding chapter, First Nations adopted the Framework Agreement from 2000 until 2012. Seventeen First Nations adopted prior to 2006 and 21 adopted after. By choosing 2006 as the year from which data were collected, an assumption was made that adoption of the Framework Agreement prior to 2006 had no discernible effect on the independent variables for those First Nations who adopted it prior to this date.

It is also assumed that adopting the Framework Agreement will reduce the transaction costs associated with transferring land rights, making it easier for a First Nation to lease its reserve land. This is a statement made in the promotion of the Framework Agreement, though it is not stated in such economic terms. In a case study comparison of two First Nation who have adopted the Framework Agreement, Alcantara (2007) found that adoption had the effect of reducing transaction costs for both First Nations. A reduction in transaction costs will allow First Nations to take advantage of business opportunities. (See, for example, the FARE Talk podcast with Chief Robert Louie, claiming that adopting the Framework Agreement will allow First Nations to "move at the speed of business.")

I also assume that First Nations are net lessors of land. This assumption is necessary, as net lessors would be more likely to take measures that allow them to lease land in response to an increase in demand. They are thus able to capture an increase in income from leasing their initial land endowment. Conversely, if First Nations (or members) sought to lease more land than they were initially endowed with, they may take measure to ensure that the demand for that land did not increase.

Chapter 5: Results

This chapter will present the results of the analysis described in the previous

chapter. The results from the analysis will be presented by variable for First Nations with

one and one and two reserves for the models excluding and including First Nation

population data. Interpretations of the results will be provided. The results of the

empirical analysis indicate that the main variable of interest, distance to an urban centre

with a population of 100 000 people or more, has a negative effect on the probability that

a First Nation will adopt the Framework Agreement.

Distance to an Urban Centre

As described in preceding chapter, a probit model was used to determine whether

certain variables are associated with a First Nation's decision to adopt the Framework

Agreement. The first regressions were run using data from First Nations with one reserve

over which they have exclusive control, and then expanded to include First Nations with

two reserves[30]. Due to limited availability of First Nation population data, three models

were included.

The results for one-reserve First Nations are presented below in Table 5.1, and for

one- and two-reserve First Nations in Table 5.2. As shown in the tables, the marginal

effect of the natural log of the distance is negatively and significantly associated with

Framework Agreement adoption in Models 1 and 2. The effect of distance is not

significant in Model 3, though this may be due to a reduction in the sample size caused

---

[30] The reasons for limiting the analysis to First Nations with a small number of reserves are explained in the previous chapter.

by the inclusion of First Nation population data[31]. When the regression was run with the same First Nations but without the education variable, the marginal effect of distance remained significant[32]. In addition to the reduction in observations when population data were included, the education variable had a correlation of greater than 0.5 with the distance and percentage of the First Nation living on reserves, which may have contributed to the reduction in statistical significance.

Furthermore, though the significance of the marginal effect of the distance variable was reduced with the inclusion of the education variable, the probit coefficients were negative and significant in all three models, indicating that distance to an urban centre has a negative effect on the probability that a First Nation will adopt the Framework Agreement. The results of the probit regression (rather than the marginal effects) are reported in Tables 7.4 and 7.5 in the appendix of this thesis.

Summary statistics of data included in regressions for all three models for First Nations with one and First Nations with one and two reserves are presented in Tables 5.2 through 5.8. Tables 5.9 through 5.14 present the correlation coefficients for all six regressions.

Though the value of the marginal effect is different in the different models as well as when the sample is increased to include First Nations with two reserves, these results are consistent as the sample size is increased to include First Nations with two reserves, suggesting that distance to an urban centre with a population of 100 000 people or more is negatively associated with a First Nation's decision to adopt the Framework Agreement.

---

[31] From 200 to 108 First Nations with one reserve, and from 287 to 152 First Nations with one and two reserves.
[32] The marginal effect of the distance variable was -0.0406 with a p value of 0.048.

Census Division Cost of Living

Marginal effect of the cost of living in the census division(s) surrounding reserves on the probability that a First Nation adopted the Framework Agreement was positive and statistically significant for Models 1 and 2 for First Nations with one and First Nations with one and two reserves. These results can be interpreted as the effect of an increase of $100 in the housing rental rate (from the mean) will increase the probability that a First Nation will adopt the Framework Agreement by approximately 2% (though the exact marginal effect varies by model).

Census Division Population Density

The population density of the surrounding census divisions had no effect on the probability of Framework Agreement adoption for First Nations with one reserve. However, the marginal effect of the population density was statistically significant for First Nations with one and two reserves for Models 1 and 2, indicating that an increase in the population density (measured in people per square kilometre) decreased the probability that a First Nation adopted the Framework Agreement by -0.02%.

Reserve Area, Band Population, Proportion on Reserve, and Education

The marginal effects of the other variables included in the regression on the probability that a First Nation adopted the Framework Agreement were not statistically significant[33], suggesting that these variables had no effect on the probability that a First Nation adopted the Framework Agreement. This was consistent for all three models for First Nations with one and First Nations with one and two reserves.

---

[33] With the exception of percentage of the First Nation living on reserve, which was -0.0008 and statistically significant at the 10% level in Model 2 for First Nations with one and two reserves. This indicates that an increase in the percentage of the First Nation living on reserve decreased the probability of Framework Agreement adoption by 0.08%.

Table 5.1. Probit results for First Nations with one reserve, reporting marginal effects and robust standard errors.

Variable	Model 1 Marginal Effect	Model 1 Robust SE	Model 2 Marginal Effect	Model 2 Robust SE	Model 3 Marginal Effect	Model 3 Robust SE
Ln distance 100km	-0.0602***	0.0192	-0.0512***	0.0179	-0.0124	0.0144
Reserve area (km^2)	-5.01e-6	0.0001	2.96e-5	0.0002	9.69e-5	0.0001
CD cost of living ($100)	0.0239**	0.0111	0.0264***	0.0102	0.0085	0.0077
CD pop. density	-0.0004	0.0004	-0.0004	0.0004	-0.0003	0.0003
Band Population	-		5.06e-6	1.00e-5	8.24e-6	1.0e-5
% on reserve	-		-0.0007	0.0006	-3.83e-5	0.0002
% without high school	-		-		-0.0006	0.0006
Constant[a]	-2.5159***	0.7501	-2.5352***	0.7937	-2.5637	1.6132
Pseudo R^2	0.1921		0.2027		0.4056	
Number of observations	200		197		108	
Framework Agreement adopters	18		18		10	

Statistical significance at the 1% (***), 5% (**), and 10% (*) levels.
[a] Reporting constant term from probit regression rather than the marginal effect.

Table 5.2. Probit results for First Nations with one and two reserves, reporting marginal effects and robust standard errors.

Variable	Model 1		Model 2		Model 3	
	Marginal Effect	Robust SE	Marginal Effect	Robust SE	Marginal Effect	Robust SE
Ln distance 100km	-0.0647***	0.0000	-0.0578***	0.0166	-0.0311	0.0191
Reserve area (km^2)	-4.8e-5	9.0e-5	-2.53e-5	0.0001	-0.0002	0.0001
CD cost of living ($100)	0. 0220**	0.0088	0.0221***	0.0079	0.0058	0.0061
CD pop. density	-0.0002**	0.0001	-0.0002**	0.0001	-0.0001	0.0003
Band population	-		-1.61e-6	1.0e-5	7.68e-6	1.0e-5
% on reserve	-		-0.0008*	0.0005	-5.9e-5	0.004
% without high school	-		-		-0.0011	0.0007
Constant[a]	-2.5444***	0.6850	-2.2324***	0.7328	-0.5795	1.4892
Pseudo R^2	0.2676		0.2829		0.3741	
Number of observations	287		280		152	
Framework Agreement adopters	28		28		14	

Statistical significance at the 1% (***), 5% (**), and 10% (*) levels.
[a] Reporting constant term from probit regression rather than the marginal effect.

Table 5.3. Summary statistics for First Nations with 1 reserve, Model 1 (n=200).

Variable	Mean	Std. Dev.	Minimum	Maximum
Ln distance 100km	0.5569	1.0001	-2.8965	2.3765
Distance to urban centre (km)	261.99	221.75	5.52	1076.69
Reserve area (km^2)	67.1491	120.8593	0.0292	852.0419
CD cost of living ($)	572.42	139.02	250.00	893.00
CD population density	18.1347	64.7656	0.0340	736

Table 5.4. Summary statistics for First Nations with 1 reserve, Model 2 (n=197).

Variable	Mean	Std. Dev.	Minimum	Maximum
Ln distance 100km	0.5515	0.9990	-2.8965 (5.52 km)	2.3765 (1076.72 km)
Distance to urban centre (km)	259.87	219.06	5.52	1076.69
Reserve area (km^2)	67.8772	139.8069	0.0292	852.0419
CD cost of living ($)	572.00	139.81	250	893
CD population density	18.2908	65.2349	0.0340	736
Band population	1312.9	1367.5	42	9455
% on reserve	55.32	22.78	0	98.77

Table 5.5. Summary statistics for First Nations with 1 reserve, Model 3 (n=108).

Variable	Mean	Std. Dev.	Minimum	Maximum
Ln distance 100km	0.7367	0.9035	-2.0322	2.3765
Distance to urban centre (km)	294.29	231.59	13.10	1076.69
Reserve area (km^2)	90.4201	146.3626	0.02915	852.04
CD cost of living ($)	537.00	141.88	250.00	844.00
CD population density	6.8693	18.4090	0.0340	127.0000
Band population	1723.6	1179.4	371	6640
% on reserve	61.40	21.58	16.52	98.77
% without high school	60.48	16.43	30.00	97.83

Table 5.6. Summary statistics for First Nations with one and two reserves, Model 1 (n=287).

Variable	Mean	Std. Dev.	Minimum	Maximum
Ln distance 100km	0.5194	1.0184	-2.8965	2.3765
Distance to urban centre (km)	252.66	211.07	5.52	1076.69
Reserve area (km^2)	71.6922	139.74	0.0292	1412.461
CD cost of living ($)	586.12	141.90	250	1042
CD population density	23.6438	93.8860	0.0340	957

Table 5.7. Summary statistics for First Nations with one and two reserves, Model 2 (n=280).

Variable	Mean	Std. Dev.	Minimum	Maximum
Ln distance 100km	0.5143	1.0177	-2.8965	2.3765
Distance to urban centre (km)	250.83	208.62	5.52	1076.69
Reserve area (km^2)	71.9332	140.0178	0.0292	1412.461
CD cost of living ($)	585.20	142.83	250	1042
CD population density	23.9697	95.0187	0.0340	957
Band population	1403.6	1561.57	42	10 430
% on reserve	55.52	21.38	0	98.77

Table 5.8. Summary statistics for First Nations with one and two reserves, Model 3 (n=152).

Variable	Mean	Std. Dev.	Minimum	Maximum
Ln distance 100km	0.6847	0.8757	-2.0990	2.3765
Distance to urban centre (km)	274.34	214.78	12.26	1076.69
Reserve area (km^2)	98.6015	175.1355	0.02915	1412.461
CD cost of living ($)	547.55	144.43	250.00	844.00
CD population density	8.0695	21.0445	0.0340	147
Band population	1805.5	1393.3	223	10 071
% on reserve	61.30	20.89	16.52	98.77
% without high school	59.83	16.31	30.00	97.83

Table 5.9. Correlation coefficients for First Nations with one reserve, Model 1.

Variable	Ln distance	Reserve area	CD cost of living	CD population density
Ln distance 100km	1.0000			
Reserve area (km²)	0.1588**	1.0000		
CD cost of living	-0.3867***	-0.1393**	1.0000	
CD population density	-0.4205***	-0.0963	0.3504***	1.0000

Statistical significance at the 1% (***), 5% (**), and 10% (*) levels.

Table 5.10. Correlation coefficients for First Nations with one reserve, Model 2.

Variable	Ln distance	Reserve area	CD cost of living	CD population density	Band Population	% on reserve
Ln distance 100km	1.0000					
Reserve area (km²)	0.1620**	1.0000				
CD cost of living	-0.3851***	-0.1386*	1.0000			
CD population density	-0.4215***	-0.0972	0.3508***	1.0000		
Band Population	-0.1128	0.4022***	-0.1498**	0.0317	1.0000	
% on reserve	0.3700***	0.1816**	-0.1962***	0.0037	0.0371	1.0000

Statistical significance at the 1% (***), 5% (**), and 10% (*) levels.

Table 5.11. Correlation coefficients for First Nations with one reserve, Model 3.

Variable	Ln distance	Reserve area	CD cost of living	CD pop. density	Band Pop.	% on reserve	% without high school
Ln distance 100km	1.0000						
Reserve area (km^2)	0.1029	1.0000					
CD cost of living	-0.3339***	-0.1247	1.0000				
CD population density	-0.5053***	-0.0968	0.4063***	1.0000			
Band Population	-0.2663***	0.4609***	-0.1541	0.1010	1.0000		
% on reserve	0.5293***	0.1185	-0.2245**	-0.1316	-0.2272**	1.0000	
% without high school	0.5461***	-0.0119	-0.2314**	-0.2724***	-0.1558	0.5018***	1.0000

Statistical significance at the 1% (***), 5% (**), and 10% (*) levels.

Table 5.12. Correlation coefficients for First Nations with one and two reserves, Model 1.

Variable	Ln distance	Reserve area	CD cost of living	CD population density
Ln distance 100km	1.0000			
Reserve area (km^2)	0.1348**	1.0000		
CD cost of living	-0.4101***	-0.1005*	1.0000	
CD population density	-0.4564***	-0.0941	0.3142***	1.0000

Statistical significance at the 1% (***), 5% (**), and 10% (*) levels.

Table 5.13. Correlation coefficients for First Nations with one and two reserves, Model 2.

Variable	Ln distance	Reserve area	CD cost of living	CD population density	Band Population	% on reserve
Ln distance 100km	1.0000					
Reserve area (km^2)	0.1270**	1.0000				
CD cost of living	-0.4109***	-0.1036*	1.0000			
CD population density	-0.4596***	-0.0942	0.3171***	1.0000		
Band Population	-0.0619	0.5192***	-0.1586***	0.0114	1.0000	
% on reserve	0.2962***	0.1523**	-0.1772***	-0.0529	0.1086*	1.0000

Statistical significance at the 1% (***), 5% (**), and 10% (*) levels.

Table 5.14. Correlation coefficients for First Nations with one and two reserves, Model 3.

Variable	Ln distance	Reserve area	CD cost of living	CD pop. density	Band Pop.	% on reserve	% without high school
Ln distance 100km	1.0000						
Reserve area (km^2)	0.0586	1.0000					
CD cost of living	-0.3482***	-0.0604	1.0000				
CD population density	-0.5408***	-0.1106	0.4350***	1.0000			
Band Population	-0.1524**	0.6538***	-0.1446*	0.0104	1.0000		
% on reserve	0.4762***	0.0902	-0.1800**	-0.1120	-0.1342*	1.0000	
% without high school	0.5745***	-0.0529	-0.2621***	-0.3128***	-0.1611**	0.5217***	1.0000

Statistical significance at the 1% (***), 5% (**), and 10% (*) levels.

Chapter 6: Conclusions

In this chapter I will discuss the results presented in Chapter 5 and identify the limitations of this analysis. I will also discuss the potential implications of this study for institutional change on Canadian First Nation reserves and consider areas for further research.

6.1 Discussion of Results

The Framework Agreement was developed as a way for First Nations to gain greater control over their reserve land than they have under the Indian Act. The Framework Agreement allows First Nations to opt out of the 34 sections of the Indian Act governing reserve land and to develop their own land codes. The Framework Agreement also eliminates the involvement of the federal government in reserve land administration for First Nations who choose to adopt it. Though it has been in existence since 1999, relatively few First Nations have adopted it and are currently operating under their own individual land codes. This thesis strove to identify the factors affecting the probability that a First Nation will adopt the Framework Agreement.

The results obtained from the probit regression in this thesis indicate that distance to an urban centre with a population of 100 000 people or more negatively affects the probability of Framework Agreement adoption. This result was statistically significant for First Nations with one reserve as well as when the sample size was increased to include First Nations with two reserves over which they have exclusive control. When educational attainment was included in the model (Model 3), the effect of distance was negative but no longer significant (for First Nations with one or with one and two

reserves), though this may have been due to the reduction of the sample size[34] and the

correlation between the education variable and the distance and proportion of the First

Nation living on reserves.

Though this study has shown that distance to an urban centre has a negative effect

on the probability that a First Nation will adopt the Framework Agreement, this result is

only for data from a subset of Canadian First Nations. Due to the complex nature of the

data (described in detail in Chapter 4) it was not feasible to include all Canadian First

Nations in this present study, limiting it to a study of First Nations with one and two

reserves.

As shown in Chapter 5, the effects of other variables (the population density of

the census division(s) in which reserves are located, total band population, percentage

living on reserves, and educational attainment) on the decision to adopt the Framework

Agreement were statistically insignificant. Many of the marginal effects were small

enough that their economic significance could also be considered quite small.

The limitations of First Nation population data are discussed in Chapter 4 of this

thesis. In some cases, the data are limited to on-reserve populations rather than at

available at the band level (educational attainment, for example). Furthermore, these data

are not available for all First Nation reserves due to participation in the census and data

suppression.   The availability of these data is therefore quite limited, and limited the

number First Nations incorporated into the analysis (the reduction of First Nations due to

the inclusion of educational attainment).

---

[34] From 200 to 108 First Nations with one reserve and from 288 to 152 First Nations with one and two
reserves.

If these data were available for First Nation populations at the band level rather than only for those on reserves, it may give a more accurate representation of the educational attainment of the First Nation as a whole. This in turn may yield more accurate results in statistical analysis of the data.

The complexity of the data and their organisation limited the scope of this thesis. Ideally, all Canadian First Nations would be included in the model. However, due to the complex nature of First Nations land administration (more fully discussed in the previous chapter), this was not feasible. As the decision to adopt the Framework Agreement is made at the level of each First Nation, but some data are available at the reserve level, the data at the reserve level had to be aggregated to the level of each First Nation to which the reserves belonged. Using this method, expanding the data set to include First Nations with more than two reserves would result in many observations being used to calculate a weighted average, which may result in less than accurate results (especially for a First Nation with 123 reserves).

6.2 Implications

Institutional change is an area of study about which much has been theorised. Tensions exist about the reasons for institutional change, and the processes that these changes come about (or reasons that changes do not occur). This study contributes to this dialogue, investigating the theoretical approach of expected economic benefits as a factor that may influence institutional change on Canadian First Nation reserves.

They may not be the only factor in a First Nation's decision to adopt the Framework Agreement, but the expected economic benefits are likely to play a factor in a

First Nation's decision to adopt. Though difficult to test for empirically in this study, the assumption was made that proximity to an urban centre would result in the increased potential for economic activity on reserves, and First Nations in these areas would therefore expect a greater benefit from adoption than those in more remote areas.

The result obtained in this study (distance negatively affecting the probability that a First Nation will adopt the Framework Agreement) is consistent with the hypothesis stated in Chapters 3 and 4. Under the assumption that economic opportunities increase with proximity to an urban centre, First Nations in these regions may adopt the Framework Agreement in an attempt to capture these economic opportunities. This is consistent with the theory of institutional change posed by Demsetz (1967), predicting that institutions will change if the benefits of instituting the change are greater than the costs of doing so.

There may, however, be other factors that influence a First Nation's decision to adopt. The Indian Act is seen by many First Nations as an outdated and patriarchal document, giving too much control to the federal government over First Nations people and their reserves. Several Canadian First Nations have taken individual measures to gain control over their reserve land, such as negotiating separate treaties and self-governing agreements with the federal government. First Nations may see adoption of the Framework Agreement as a step towards greater autonomy over their reserve lands, taking administrative responsibilities out of the hands of the Canadian government. (The Westbank First Nation, for example, has negotiated a self-governing agreement after first adopting the Framework Agreement.)

The motivations of particular groups within a First Nation may also play a role in its decision to adopt the Framework Agreement. Those with political power may have the ability to influence the band council's decision to seek entrance into the FNLMA, or the decision of band members participating in the vote to adopt. If those with power perceive personal benefit from either institutional arrangement (the Indian Act or the Framework Agreement), they may influence adoption (either negatively or positively) regardless of the potential benefits for the First Nation as a whole.

The results of this thesis may have implications for studies examining the economic outcomes of First Nations who adopt the Framework Agreement. The factors affecting adoption may also influence the potential for economic development on reserves. If, for example, proximity to an urban area increases the probability that a First Nation will adopt the Framework Agreement, it may be the case that the economic outcomes of adopting are due to the opportunities present near these open areas. Effects of adopting the Framework Agreement may be different for First Nations with reserves in remote areas (i.e. farther from urban centres), and may therefore not have the same potential for economic development as it could closer to urban areas.

6.3 Conclusion

This study examined institutional change on Canadian First Nation reserves, investigating adoption of the Framework Agreement on First Nation Land Management. Specifically, it examined the effect of certain characteristics on the probability that a First Nation would adopt the Framework Agreement. The results of the probit analysis showed that distance to an urban centre with a population of 100 000 people or more had

a negative effect on the probability that a First Nation adopted the Framework

Agreement. This suggests that First Nations with reserves closer to urban areas may

change the institutions governing land use in an attempt to capture economic

opportunities in these areas.

References

Alcantara, C. 2003. Individual property rights on Canadian Indian reserves: the historical emergence and jurisprudence of Certificates of Possession. *The Canadian Journal of Native Studies* 23 (2): 391-424.

Alcantara, C. 2005. Certificates of possession and First Nations housing: a case study of the Six Nations Housing Program. *Canadian Journal of Law and Society* 20 (2):183-205.

Alcantara, C. 2007. Reduce transaction costs? Yes. Strengthen property rights? Maybe: the First Nations Land Management Act and economic development on Canadian Indian reserves. *Public Choice* 132 (3-4): 421-432.

Alchian, A. A., and H. Demsetz. 1973. The property rights paradigm. *The Journal of Economic History,* 33(1), 16-27.

Anderson, T.L., and D. Lueck. 1992. Land tenure and agricultural productivity on Indian reservation. *Journal of Law and Economics,* 35(2), 427-454.

Banner, S. 2002. Transitions between property regimes. *The Journal of Legal Studies* 31(S2), S359-S371.

Benson, B.L. 1981. Land use regulation: a supply and demand analysis of changing property rights. *The Journal of Libertarian Studies* 5(4), 435-451.

Bromley, D.W. 1989. Institutional change and economic efficiency. *Journal of Economic Issues* 23(3), 735-759.

Coase, R. 1960. The problem of social cost. *The Journal of Law and Economics* 3, 1-44.

Congleton, R.D. 2003. The median voter model. In *The Encyclopedia of Public Choice* (pp. 707-712). Springer US.

Deaton, B.J. (Interviewer) and Chief R. Louie (Interviewee). 2012. First Nations Lands and Economies [podcast]. http://www.uoguelph.ca/fare/FARE-talk/index.html#first

Demsetz, H. 1967. Toward a theory of property rights. *American Economic Review*, 347-359.

First Nations Lands Advisory Board. 2011. Annual Report 2010-2011.

First Nations Land Management Act, S.C. 1999, c.24. Retrieved from the Department of Justice Canada website: http://laws-lois.justice.gc.ca/eng/acts/F-11.8/

Flanagan, T., C. Alcantara, and A. Le Dressay. 2010. *Beyond the Indian Act: Restoring Aboriginal Property Rights.* Montreal & Kingston: McGill-Queen's University Press.

Framework Agreement on First Nations Land Management. Retrieved from the First
Nation Land Advisory Board website:
http://www.fafnlm.com/documents/Text-of-the-Framework-Agreement-on-First-Nation-
Land-Management.pdf

Indian Act, R.S.C. 1985, c. I-5. Retrieved from the Department of Justice Canada
website: http://laws-lois.justice.gc.ca/eng/acts/I-5/.

Isaac, T. 2005. First Nations Land Management Act and Third Party Interests. *Alberta
Law Review*. 42(4), 1047-1060

Mueller, D.C. 1989. *Public Choice II: A Revised Edition of Public Choice.* New York:
Cambridge University Press.

North, D. 1987. Institutions, transaction costs and economic growth. *Economic Inquiry*
25(3), 419-428.

North, D. 1990. *Institutions, Institutional Change and Economic Performance*. New
York: Cambridge University Press.

North, D., and R.P. Thomas. 1970. An economic theory of growth in the Western world.
The Economic History Review 23(1), 1-17.

Schlager, E., and E. Ostrom. 1992. Property-rights regimes and natural resources: a
conceptual analysis. *Land Economics* 68(3), 249-262.

Stewart, J. 1999. Proceedings of the standing senate committee on Aboriginal peoples.
http://www.parl.gc.ca/Content/SEN/Committee/361/abor/29ev-
e.htm?comm_id=1&Language=E&Parl=36&Ses=1 (accessed August 29th, 2012).

Williamson, C. R. 2009. Informal institutions rule: institutional arrangements and
economic performance. *Public Choice* 139(3-4), 371-387.

Williamson, C. R., and C. B. Kerekes. 2011. Securing private property: Formal versus
informal institutions. *Journal of Law and Economics* 54(3), 357-3

Appendix

Table 7.1. List of First Nations included in this study by province, Framework Agreement adoption (where 1 denotes a First Nation operational under its land code or in the developmental stages of adoption and 0 denotes a First Nation who has not adopted), and number of reserves for which is listed as the sole First Nation.

First Nation	Province	Framework Agreement Adoption	Number of Reserves
Tsuu T'ina Nation	Alberta	1	1
Beaver First Nation	Alberta	0	2
Beaver Lake Cree Nation	Alberta	0	1
Blood	Alberta	0	2
Driftpile First Nation	Alberta	0	1
Duncan's First Nation	Alberta	0	2
Enoch Cree Nation #440	Alberta	0	2
Ermineskin Tribe	Alberta	0	1
Frog Lake	Alberta	0	2
Heart Lake	Alberta	0	2
Horse Lake First Nation	Alberta	0	2
Kehewin Cree Nation	Alberta	0	1
Little Red River Cree Nation	Alberta	0	2
Louis Bull	Alberta	0	1
Montana	Alberta	0	1
O'Chiese	Alberta	0	2
Piikani Nation	Alberta	0	2
Samson	Alberta	0	2
Sawridge	Alberta	0	2
Siksika Nation	Alberta	0	1
Sucker Creek	Alberta	0	1
Sunchild First Nation	Alberta	0	1
Swan River First Nation	Alberta	0	2
Nanoose First Nation	BC	1	1
Seabird Island	BC	1	1
Shuswap	BC	1	1
Shxwhÿ:y Village	BC	1	2
Skowkale	BC	1	2
Squiala First Naiton	BC	1	2
Sumas First Nation	BC	1	2
Tsawout First Naiton	BC	1	2
T'Sou-ke First Nation	BC	1	2
Tzeachten	BC	1	1
Yakweakwioose	BC	1	1

?Akisq'nuk First Nation	BC	0	1
Blueberry River First Nation	BC	0	2
Bridge River	BC	0	2
Cheam	BC	0	2
Doig River	BC	0	2
Esquimalt	BC	0	1
Glen Vowell	BC	0	1
Hagwilget Village	BC	0	2
Halalt	BC	0	2
Halfway River First Nation	BC	0	1
Kwaw-kwaw-Apilt	BC	0	1
Kwiakah	BC	0	2
Kwikwetlem First Nation	BC	0	2
Lake Cowichan First Nation	BC	0	1
Malahat First Nation	BC	0	1
Nooaitch	BC	0	2
Osoyoos	BC	0	2
Popkum	BC	0	2
Prophet River First Nation	BC	0	1
Qualicum First Nation	BC	0	1
Saulteau First Nations	BC	0	1
Semiahmoo	BC	0	1
Skeetchestn	BC	0	2
Soda Creek	BC	0	2
Soowahlie	BC	0	1
Stellat'en First Nation	BC	0	2
Sts'ailes	BC	0	2
Tobacco Plains	BC	0	1
Tseycum	BC	0	1
West Moberly First Nations	BC	0	1
Long Plain	Manitoba	1	1
Barren Lands	Manitoba	0	1
Berens River	Manitoba	0	2
Birdtail Sioux	Manitoba	0	2
Bloodvein	Manitoba	0	1
Buffalo River Dene Nation	Manitoba	0	1
Canupawakpa Dakota First Nation	Manitoba	0	2
Dakota Plains	Manitoba	0	1
Dakota Tipi	Manitoba	0	1
Dauphin River	Manitoba	0	1
Ebb and Flow	Manitoba	0	1
Fisher River	Manitoba	0	2
Fort Alexander	Manitoba	0	1

Gamblers	Manitoba	0	1
Grand Rapids First Nation	Manitoba	0	1
Hollow Water	Manitoba	0	1
Kinonjeoshtegon First Nation	Manitoba	0	2
Lake Manitoba	Manitoba	0	1
Lake St. Martin	Manitoba	0	2
Little Black River	Manitoba	0	1
Little Grand Rapids	Manitoba	0	1
Little Saskatchewan	Manitoba	0	2
Marcel Colomb First Nation	Manitoba	0	1
O-Chi-Chak-Ko-Sipi First Nation	Manitoba	0	1
O-Pipon-Na-Piwin Cree Nation	Manitoba	0	1
Pauingassi First Nation	Manitoba	0	1
Pinaymootang First Nation	Manitoba	0	1
Pine Creek	Manitoba	0	1
Poplar River First Nation	Manitoba	0	1
Sandy Bay	Manitoba	0	1
Sayisi Dene First Nation	Manitoba	0	1
Shamattawa First Nation	Manitoba	0	1
Sioux Valley Dakota Nation	Manitoba	0	1
Skownan First Nation	Manitoba	0	1
Tootinaowaziibeeng Treaty Reserve	Manitoba	0	1
Waywayseecappo First Nation Treaty Four - 1874	Manitoba	0	1
York Factory First Nation	Manitoba	0	1
Buctouche	New Brunswick	0	1
Elsipogtog First Nation	New Brunswick	0	2
Fort Folly	New Brunswick	0	1
Indian Island	New Brunswick	0	1
Kingsclear	New Brunswick	0	1
Madawaska Maliseet First Nation	New Brunswick	0	1
Oromocto	New Brunswick	0	1
Pabineau	New Brunswick	0	1
Saint Mary's	New Brunswick	0	2
Tobique	New Brunswick	0	1
Woodstock	New Brunswick	0	1
Miawpukek	Newfoundland	1	1
Mushuau Innu First Nation	Newfoundland	0	1
Sheshatshiu Innu First Nation	Newfoundland	0	1
Chapel Island First Nation	Nova Scotia	0	1
Eskasoni	Nova Scotia	0	2
Glooscap First Nation	Nova Scotia	0	1
Waycobah First Nation	Nova Scotia	0	1

Atikameksheng Anishnawbek	Ontario	1	1
Beausoleil	Ontario	1	2
Bingwi Neyaashi Anishinaabek	Ontario	1	1
Chippewas of Georgina Island	Ontario	1	2
Chippewas of Kettle and Stony Point	Ontario	1	1
Chippewas of Rama First Nation	Ontario	1	1
Dokis	Ontario	1	1
Henvey Inlet First Nation	Ontario	1	2
Mississauga	Ontario	1	1
Mississaugas of Scugog Island	Ontario	1	1
Nipissing First Nation	Ontario	1	1
Aamjiwnaang	Ontario	0	1
Albany	Ontario	0	1
Alderville First Nation	Ontario	0	2
Algonquins of Pikwakanagan	Ontario	0	1
Animbiigoo Zaagi'igan Anishinaabek	Ontario	0	1
Anishinabe of Wauzhushk Onigum	Ontario	0	1
Attawapiskat	Ontario	0	2
Aundeck-Onmi-Kaning	Ontario	0	1
Bearskin Lake	Ontario	0	1
Biinjitiwaabik Zaaging Anishnaabek	Ontario	0	1
Brunswick House	Ontario	0	2
Cat Lake	Ontario	0	1
Chapleau Cree First Nation	Ontario	0	2
Chippewas of Nawash First Nation	Ontario	0	2
Chippewas of the Thames First Nation	Ontario	0	1
Constance Lake	Ontario	0	2
Couchiching First Nation	Ontario	0	1
Curve Lake	Ontario	0	2
Deer Lake	Ontario	0	1
Eabametoong First Nation	Ontario	0	1
Eagle Lake	Ontario	0	1
Flying Post	Ontario	0	1
Fort Severn	Ontario	0	1
Fort William	Ontario	0	1
Garden River First Nation	Ontario	0	1
Ginoogaming First Nation	Ontario	0	1
Grassy Narrows First Nation	Ontario	0	1
Gull Bay	Ontario	0	1
Hiawatha First Nation	Ontario	0	1
Iskatewizaagegan #39 Independent First Nation	Ontario	0	2
Kasabonika Lake	Ontario	0	1

Kee-Way-Win	Ontario	0	1
Kitchenuhmaykoosib Inninuwug	Ontario	0	1
Lac Des Mille Lacs	Ontario	0	1
Lac La Croix	Ontario	0	1
Lac Seul	Ontario	0	1
Long Lake No. 58 First Nation	Ontario	0	1
Magnetawan	Ontario	0	1
Martin Falls	Ontario	0	1
Matachewan	Ontario	0	1
Mattagami	Ontario	0	1
M'Chigeeng First Nation	Ontario	0	1
Mishkeegogamang	Ontario	0	2
Mississaugas of the Credit	Ontario	0	1
Mitaanjigamiing First Nation	Ontario	0	1
Mohawks of Akwesasne	Ontario	0	2
Mohawks of the Bay of Quinte	Ontario	0	1
Moose Cree First Nation	Ontario	0	2
Moose Deer Point	Ontario	0	1
Moravian of the Thames	Ontario	0	1
Munsee-Delaware Nation	Ontario	0	1
Muskrat Dam Lake	Ontario	0	1
Naicatchewenin	Ontario	0	2
Neskantaga First Nation	Ontario	0	1
North Caribou Lake	Ontario	0	1
North Spirit Lake	Ontario	0	1
Northwest Angle No.33	Ontario	0	2
Obashkaandagaang	Ontario	0	1
Ochiichagwe'babigo'ining First Nation	Ontario	0	1
Ojibway Nation of Saugeen	Ontario	0	1
Ojibways of the Pic River First Nation	Ontario	0	1
Oneida Nation of the Thames	Ontario	0	1
Pays Plat	Ontario	0	1
Pic Mobert	Ontario	0	2
Pikangikum	Ontario	0	1
Poplar Hill	Ontario	0	1
Rainy River First Nations	Ontario	0	2
Red Rock	Ontario	0	2
Sagamok Anishnawbek	Ontario	0	1
Sandy Lake	Ontario	0	1
Serpent River	Ontario	0	1
Sheguiandah	Ontario	0	1
Sheshegwaning	Ontario	0	1
Taykwa Tagamou Nation	Ontario	0	2

Temagami First Nation	Ontario	0	1
Thessalon	Ontario	0	1
Wabauskang First Nation	Ontario	0	1
Wabigoon Lake Ojibway Nation	Ontario	0	1
Wahnapitae	Ontario	0	1
Wahta Mohawk	Ontario	0	1
Walpole Island	Ontario	0	1
Wapekeka	Ontario	0	2
Wasauksing First Nation	Ontario	0	1
Wawakapewin	Ontario	0	1
Webequie	Ontario	0	1
Weenusk	Ontario	0	1
Whitefish River	Ontario	0	1
Whitesand	Ontario	0	1
Wikwemikong	Ontario	0	2
Wunnumin	Ontario	0	2
Zhiibaahaasing First Nation	Ontario	0	2
Lennox Island	PEI	0	2
Montagnais du Lac St.-Jean	Quebec	1	1
Abenakis de Wolinak	Quebec	0	1
Algonquins of Barriere Lake	Quebec	0	1
Atikamekw d'Opitciwan	Quebec	0	1
Bande des Innus de Pessamit	Quebec	0	1
Conseil de la Premiere Nation Abitibiwinni	Quebec	0	1
Conseil des Atikamekw de Wemotaci	Quebec	0	2
Cree Nation of Chisasibi	Quebec	0	1
Cree Nation of Mistissini	Quebec	0	1
Cree Nation of Wemindji	Quebec	0	1
Eagle Village First Nation - Kipawa	Quebec	0	1
Eastmain	Quebec	0	1
Innu Takuaikan Uashat Mak Mani-Utenam	Quebec	0	2
Innue Essipit	Quebec	0	1
Kahnawake	Quebec	0	1
Kitigan Zibi Anishinabeg	Quebec	0	1
La Nation Innu Matimekush-Lac John	Quebec	0	2
Les Atikamekw de Manawan	Quebec	0	1
Les Innus de Ekuanitshit	Quebec	0	1
Listuguj Mi'gmaq Government	Quebec	0	1
Micmacs of Gesgapegiag	Quebec	0	1
Mohawks of Kanesatake	Quebec	0	1
Montagnais de Natashquan	Quebec	0	1

Montagnais de Unamen Shipu	Quebec	0	1
Naskapi Nation of Kawawachikamach	Quebec	0	1
Nation Anishnabe du Lac Simon	Quebec	0	1
Nation Huronne Wendat	Quebec	0	2
Odanak	Quebec	0	1
Premiere nation de Whapmagoostui	Quebec	0	1
Premiere Nation Malecite de Viger	Quebec	0	2
The Crees of the Waskaganish First Nation	Quebec	0	1
Timiskaming First Nation	Quebec	0	1
Waswanipi	Quebec	0	1
Kinistin Salteaux Nation	Saskatchewan	1	2
Muskoday First Nation	Saskatchewan	1	1
Whitecap Dakota First Nation	Saskatchewan	1	1
Ahtahkakoop	Saskatchewan	0	1
Big Island Lake Cree Nation	Saskatchewan	0	1
Big River	Saskatchewan	0	2
Cote First Nation	Saskatchewan	0	1
Cowessess	Saskatchewan	0	2
Day Star	Saskatchewan	0	1
George Gordon First Nation	Saskatchewan	0	1
Hatchet Lake	Saskatchewan	0	1
James Smith	Saskatchewan	0	2
Kawacatoose	Saskatchewan	0	2
Little Black Bear	Saskatchewan	0	2
Lucky Man	Saskatchewan	0	1
Ministikwan Lake Cree Nation	Saskatchewan	0	2
Montreal Lake	Saskatchewan	0	2
Muscowpetung	Saskatchewan	0	1
Nekaneet	Saskatchewan	0	1
Pasqua First Nation #79	Saskatchewan	0	1
Peepeekisis	Saskatchewan	0	1
Red Earth	Saskatchewan	0	2
Red Pheasant	Saskatchewan	0	1
Shoal Lake Cree Nation	Saskatchewan	0	1
Standing Buffalo	Saskatchewan	0	1
Sturgeon Lake First Nation	Saskatchewan	0	2
The Key First Nation	Saskatchewan	0	1
Wahpeton Dakota Nation	Saskatchewan	0	2
Waterhen Lake	Saskatchewan	0	1
White Bear	Saskatchewan	0	2
Witchekan Lake	Saskatchewan	0	2
Wood Mountain	Saskatchewan	0	1

Table 7.2. List of First Nations and their alternate names under which they are listed in
in some data sources

First Nation	Alternate Name
Animbiigoo Zaagi'igan Anishinaabek	Lake Nipigon Ojibwe
Atikameksheng Anishnawbek	Whitefish Lake First Nation
Bande des Innus de Pessamit	Betsiamites
Bay of Quinte Mohawk	Tyendinaga Mohawk
Bingwi Neyaashi Anishinaabek	Sand Point First Nation
Chapel Island First Nation	Potlotek First Nation
Chippewas of Rama First Nation	Chippewas of Mnjikaning First Nation
George Gordon First Nation	Gordon
Grand Rapids First Nation	Misipawistic Cree Nation
Iskatewizaagegan #39 Independent First Nation	Shoal Lake 39
Island Lake First Nation	Ministikwan Lake Cree Nation
Kahnawake	Mohawks of Kahnawake
Little Black River	Black River
Mashteuiatsh	Montagnais du Lac St.-Jean
Stanjikoming First Nation	Mitaanjigamiing First Nation
Sts'ailes	Chehalis

Table 7.3. List of urban areas with a population of 100 000+ (according to the 2006 Canadian census) to which the distances of reserves were measured.

City
St. John's
Halifax
Chicoutimi-Jonquiere
Montreal
Ottawa-Gatineau
Quebec
Sherbrooke
Trois-Riveres
Barrie
Guelph
Hamilton
Kingston
Kitchener
London
Oshawa
St. Catharines
Sudbury
Thunder Bay
Toronto
Windsor
Winnipeg
Regina
Saskatoon
Calgary
Edmonton
Kelowna
Vancouver
Victoria
Abbotsford

Table 7.4. Probit results for First Nations with one reserve, reporting coefficients and robust standard errors.

Variable	Model 1 Coefficient	Model 1 Robust SE	Model 2 Coefficient	Model 2 Robust SE	Model 3 Coefficient	Model 3 Robust SE
Ln distance (100km)	-0.5650***	0.1414	-0.5399***	0.1535	-0.7432*	0.3845
Reserve area (km^2)	-4.71e-5	0.0011	-0.0003	0.0017	-0.0058	0.0038
CD cost of living ($100)	0. 2242*	0.1152	0.2783**	0.1168	0.5099**	0.2278
CD pop. density	-0.0041	0.0035	-0.0045	0.0041	-0.0178*	0.0102
Band population	-		-5.34e-5	0.0001	0.0005**	0.0002
% on reserve	-		-0.0076	0.0065	-0.0023	0.0107
% without high school	-		-		-0.0366*	0.0206
Constant	-2.5159***	0.7501	-2.5352***	0.7937	-2.5637	1.6132
Pseudo R^2	0.1921		0.2027		0.4056	
Number of observations	200		197		108	
Framework Agreement adopters	18		18		10	

Statistical significance at the 1% (***), 5% (**), and 10% (*) levels.

Table 7.5. Probit results for First Nations with one and two reserves, reporting coefficients and robust standard errors.

Variable	Model 1		Model 2		Model 3	
	Coefficient	Robust SE	Coefficient	Robust SE	Coefficient	Robust SE
Ln distance (100km)	-0.6468***	0.1414	-0.6605***	0.1233	-0.7395**	0.2928
Reserve area (km^2)	-0.0006	0.0009	-0.0001	0.0012	-0.0046	0.0059
CD cost of living ($100)	0. 2223**	0.1.004	0.2427**	0.1069	0.1375	0.1666
CD pop. density	-0.0023**	0.0009	-0.0025***	0.0009	-0.0024	0.0081
Band population	-		-4.54e-5	5.64e-5	0.0002	0.0002
% on reserve	-		-0.0095*	0.0065	-0.0014	0.0089
% without high school	-		-		-0.0261	0.0164
Constant	-2.5415***	0.6866	-2.159***	0.7429	-0.5795	1.489
Pseudo R^2	0.2649		0.2825		0.3741	
Number of observations	287		280		152	
Framework Agreement adopters	28		28		14	

Statistical significance at the 1% (***), 5% (**), and 10% (*) levels.