

GEOMATICS AND THE LAW

The Effect of Informal Property Rights on First Nations' Community Well-Being

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Introduction

Informal property rights exist on First Nations Reserves. Estimating socio-economic development (community well-being) on 91 Reserves in British Columbia vis-à-vis informality reveals a negative effect (i.e., informality hinders development). However, the significance of the effect is ambiguous.

Formal v Informal

The parcel is that to which the legal right applies; and boundaries define the location and spatial extent of the parcel. Boundary principles—mostly from court judgments, sometimes from legislation—are predicated on such parcels and such formal rights. Think of fee simple, leases, easements and so on. For First Nation Reserves there is an identical symmetry between parcels and formal rights. The parcels are surveyed and created pursuant to section 29 or 31² of the *Canada Lands Surveys Act*; and rights to those parcels are granted pursuant to the *Indian Act*. Such rights include possession (evidence of which is a Certificate of

Possession—(s20); permits (s28); leases of designated lands (s53); assignments of designated lands (s54); leases of uncultivated/unused lands (s58(1)); leases of possessed lands (s58(3)). Indeed, formal rights are not granted or sanctioned in the absence of a formal parcel.

Of course, this list of formal rights pertains only to First Nations operating under the *Indian Act*. For those First Nations that have regained autonomy (e.g., Tsawwassen FN); have sectoral self-government (e.g., Westbank FN), or are operating under the *First Nations Land Management Act* (e.g., Muskoday FN since 1998 or Dokis FN since 2013) different formal rights exist. This analysis is not about the diversity of such formal rights across a range of First Nation parcels; nor even about formal rights and parcels. Rather, it is about the informal rights and parcels that exist across First Nation Reserves. Although such rights are not sanctioned by the *Indian Act* (or, indeed, by any other legislation),³ the intention here is not to question their existence or to denigrate their acceptance within Indigenous communities.

The cause/source/lineage of informality is not that relevant, because informal rights pervade all land tenure

systems, including non-Indigenous lands across Canada⁴ and elsewhere.⁵ For instance, think of the possessiveness of house-owners about the sections of road in front of their houses. Formally, the road vests in the municipality; informally, the house-owner considers anybody who parks there to be trespassing. Or, consider the transfer of high-value commercial parcels (and buildings) in Canadian cities through the unregistered transfers of beneficial interests, so as to avoid land transfer taxes. The Supreme Court of Canada has accepted informal rights at least twice. In 1894, the SCC acknowledged the informal rights that had existed in Edmonton during the fur trade era and that were only formalized when patents were issued in 1887.⁶ More recently, the SCC ruled that property rights are not uniform across the entire parcel. In the middle of a parcel (distant from the boundaries), rights are formal and sacrosanct. At the periphery of the parcel (close to the boundary), rights are more informal: “I also do not think constitutional protection should turn on whether the [garbage] bags were placed a few inches inside the property line or a few inches outside it.”⁷

- ¹ Respectively, MA – Economics (2016), Simon Fraser University; and Surveyor General Branch, NRCan. This does not necessarily reflect the views of NRCan. Erin helped with Figure 2 and footnote 16.
- ² For lands that vest in First Nations, as for the Sechelt First Nation and 11 Yukon First Nations, parcels are created pursuant to sections 24, 25, 27 and 29 of the *CLS Act*, because the lands are no longer administered by Canada.
- ³ For a condemnation of informal rights in the face of First Nation (Chief and Council) opposition, see: *Johnstone v Mistawasis First Nation*, 2003 SKQB 240.
- ⁴ Because “landowners are people;” as summarized by de Rijcke, *Intention and rights in land: Implications for title registration and parcel boundaries*. Presentation to CCLTO & CCOG-Cadastral. Toronto. September 2014.
- ⁵ Knight. *Statutory recognition of customary land rights in Africa*. Food & Agriculture Organization. Rome. 2010.
- ⁶ *Brown v Town of Edmonton*, 1894 CarswellNWT 26.
- ⁷ *R v Patrick*, 2009 SCC 17 at para 43. The issue was whether police trespassed onto the parcel to take garbage bags. The court ruled that no trespass had occurred because property rights near the boundary were weak.



Figure 1: A coherent First Nation subdivision—many informal rights (houses) in the absence of parcels (purple).

This is not a paean in praise of informality; because some informality is inequitable.⁸ Nor is it a rant against informality, because some informality is a choice by Indigenous peoples to keep the State at bay.⁹ So, let's move beyond emotive value judgments and vapid generalities to empirical analysis.¹⁰ Such analysis is rare because informality on First Nation Reserves has not been systemically studied: "This absence of documentation and central recording makes it impossible at the present time to construct a customary rights variable for statistical analysis."¹¹ Or does it? This analysis assesses the effect of informality on socio-economic development.¹²

Methodology

In British Columbia there are 198 First Nations across some 1 584 Reserves with a population of 70 000. Population is not spread out evenly across all Reserves for a First Nation; there is usually a population centre in one Reserve. As such, this analysis focuses on the main Reserve for each First Nation. However, the sample size is reduced to 143 Reserves, given that First Nations under the *First Nations Land Management Act* do not register rights in the Indian Lands Registry (ILR).

The dependent variable reflects economic development: the Community Well-Being Index (CWB). The CWB is

a metric used by Indigenous and Northern Affairs Canada (INAC) and is created using data from the Statistics Canada 2011 Census of Population and the National Household Survey (NHS). The CWB is a value between 0 and 100 and is an aggregate metric of a Reserve's level of income, education, housing and labour force activity. "Income" captures total income per capita; "education" captures how many members have at least a high school education and how many a university degree; "housing" reflects whether homes are overcrowded or in need of repair; "labour force activity" is a standard employment metric. Although each of the four indicators is equally weighted (which may seem arbitrary), the disaggregated indicators are presented as well. This allows an examination of the impact of informality on education, housing, income and labour force activity.

An Aboriginal Population Profile is not available for every First Nation on the National Household Survey website.¹³ As such, a CWB indicator is only available for 91 Reserves, thus reducing the sample size from 143. Furthermore, only 33 Reserves have data for the metrics of education, labour force activity, income and housing. So, two samples are examined—91 Reserves using the aggregated CWB (Table 1); and 33 Reserves using the constituent parts of CWB (Table 3).

The independent variable of interest is the extent of informal rights. There is no dataset of informality; conversely, rights registered in the ILR (CPs, leases, permits, ...) are formal, pursuant to the *Indian Act*. For this analysis,

⁸ For an excellent review of informality on First Nations Reserves, see: Alcantara, Customary land rights on Canadian Indian Reserves, Chapter 5 in *Beyond the Indian Act*. pp 73–90. 2010.

⁹ Scott. *The art of being governed*. 2009.

¹⁰ For a discussion of the inappropriateness of registering informal rights in the ILR, see: Ballantyne & Ballantyne. Socio-economic value of the Indian Lands Registry. *Geomatica*. 69(3): 341–346. 2015.

¹¹ Flanagan & Beauregard. *The wealth of First Nations: An exploratory study*. Fraser Institute. p9. 2013.

¹² The economic analysis is based on: Ballantyne. The nuance of informality: Land tenure and economic development on Indian Reserves. Research paper for MA – Economics. Simon Fraser University. August 2016.

¹³ Statistics Canada outlines three reasons: The census area does not meet the threshold of 250 people; the data has been suppressed for confidentiality reasons; some Reserves opt out of the census.

everything else on Reserve is considered informal.¹⁴ The Electronic Registry Index Plan (eRIP) available through the ILR provides electronic maps using Geographic Information System (GIS) technology. These maps are dependent on the Parcel Identification Number shared between the ILR and NRCan's Canada Land Survey System (CLSS). The eRIP shows how land is held on each Reserve (e.g., CPs are shown in orange on the eRIP; leases are striped). Using the eRIP's tools, these areas are calculated, and—given the total area of Reserve—a proportion of Reserve land held formally is calculated.

Subtracting formal area from total area results in informal area, for each Reserve. Such informality is defined two ways:

- The ratio of informality (as a proportion of the Reserve area).
- Total informality (ha), which does not account for the size of the Reserve.

The analysis includes four control variables: Reserve population, Reserve area, location, and Global Non Response Rate. Population density can be calculated from population and area. There is precedence for inferring that communities with high levels of density have high levels of development, because density (effect) is often a result of development (cause).

Location is crucial to development for a variety of reasons, including access to markets and cost of living. A remote Reserve might have poor

economic outcomes (i.e., a low CWB) owing to location and not to the extent of informality. As such, there are two location variables: "Closeness to service centre," and "Closeness to urban centre." A service centre refers to the nearest town with the most basic services. An urban centre has a population of over 50 000. These include Nanaimo, Victoria, Greater Vancouver, Kamloops, Kelowna, Prince George, Lethbridge, Calgary, and Grande Prairie.¹⁵ Both metrics are included in the INAC reserve profile in increments of 0–50 km, 50–300 km, and more than 300 km. Given that these increments are vague and non-descript, road distances were calculated using Google Maps.

The final control variable is the Global Non Response (GNR) rate: the percentage of a community who opt not to participate in the census. GNR rates, normalized, range from zero to one (zero being "total response" in which the census captures the entire population). GNR rates greater than 0.50 are deemed to be of little use and are suppressed by StatsCan. The GNR variable, available with the CWB data, is useful as it reflects a community's engagement with the wider state. GNR can function as a proxy for civic engagement, which is an important engine for economic growth in a democracy. Furthermore, on a deeper level, those who feel the incentive to respond to the census see value in the institutions that support governance, both on Reserve and nationally.¹⁶ Functioning First Nation governance, with thriving institutions, increases democratic capital which drives growth. The working hypothesis here is that lower GNR rates reflect better civic engagement and more robust institutions and will be correlated with higher levels of CWB.¹⁷



Figure 2: First Nation Reserve with possession (orange), leases (striped) and informal (beige).

¹⁴ Land against which no rights are registered in the ILR is not necessarily informal. For Reserves in B.C., much of this land is held by the First Nation/Band collectively (i.e., not possessed by any individual or family). This has the potential to overestimate informality—see Conclusion for the antidote.

¹⁵ The latter three are in Alberta but remain the nearest urban centre for some Reserves.

¹⁶ Or perhaps they simply enjoy completing forms and responding to letters.

¹⁷ It would also be beneficial to include Aboriginal Governance Indicators developed by the Frontier Centre for Public Policy. Sadly, these indicators are only available for First Nations in Manitoba, Saskatchewan and Alberta.

For the 91 Reserves, the influence of informality on CWB is analyzed using Ordinary Least Squares regression:

$$CWB_i = \alpha + \beta \text{informality}_i + X_i' \theta + u_i \quad (1)$$

where X_i is a vector of control variables, and u_i is an error term uncorrelated with the covariates.

For 33 of the 91 Reserves, data is available not only for CWB, but also for its components: income, education, housing and labour force activity. For these 33 reserves, the Seemingly Unrelated Regression method is used,

given that the sample size is small and that the error terms are assumed to be highly correlated:

$$\text{Income}_i = \alpha + \beta \text{informality}_i + X_i' \theta + u_i \quad (2)$$

$$\text{Education}_i = \alpha + \beta \text{informality}_i + X_i' \theta + u_i \quad (3)$$

$$\text{Housing}_i = \alpha + \beta \text{informality}_i + X_i' \theta + u_i \quad (4)$$

$$\text{LFA}_i = \alpha + \beta \text{informality}_i + X_i' \theta + u_i \quad (5)$$

Crucially, for equations 1 to 5, the term “informality” encapsulates all measurements of the extent of formal (and, by definition, informal) rights: ratio of informality and total informality.¹⁸

Results

Of the 91 Reserves: 65 have Certificates of Possession; 19 have leases; and 17 have both. Total area is 117 489 ha; total CP area is 12 968 ha; total lease area is 655 ha.

Thus, it is clear that all the results are insignificant. However, there are certain trends worth noting:

Table 1: Summary statistics of 91 Reserves.

| | Average | Max | Min |
|--------------------------|---------|-------|------|
| CWB | 61 | 82 | 45 |
| Population | 337 | 2604 | 70 |
| GNR | 0.20 | 0.50 | 0.02 |
| Area (ha) | 1291 | 13283 | 10 |
| S. Centre (km) | 148 | 691 | 1 |
| City (km) | 273 | 886 | 1 |
| CP (ha) | 143 | 3318 | 0 |
| Lease (ha) | 7 | 400 | 0 |
| Total informality | 1141 | 11883 | 9.8 |
| Ratio informality | 0.86 | 1 | 0.1 |

Table 2: Estimating CWB.¹⁹

| | Ratio of informality | Total informality |
|-----------------------|----------------------|-------------------|
| Ratio of inf. | -1.14 | |
| Total inf. | | -0.36 |
| Population | 1.04 | 1.03 |
| GNR | 1.27 | 1.22 |
| Size (ha) | 1.66 | -1.75 |
| S. Centre (km) | -0.07 | 0.16 |
| City (km) | -1.52 | -1.75 |
| Popdens. | 0.12 | 0.16 |
| Cons | 14.98* | 29.64* |

¹⁸ There is no feasible instrument capturing the extent of informality to warrant an IV regression. Too little is understood about the magnitude of such informality.

¹⁹ At the 95% confidence level, the correlation is significant if the absolute value of the test statistic exceeds 1.96. See the statistics annotated with * in Tables 2, 4 and 5.

- As the ratio of informality increases, the CWB is predicted to decrease.
- Distance from both a service centre and city reduces CWB (distance from a city substantially more so). This suggests that remoteness hinders development.
- As Reserve population and area increase, the impact on CWB is positive.
- Population density also has a positive coefficient.
- The real shock is the positive value of GNR, which suggests that if a Reserve has a poorer response rate to the census, the CWB is generally higher.

The same trends are mostly evident when total informality is used as the

measure. However, total informality seems to have a far less powerful effect on CWB.

Of the 33 Reserves: 27 have CPs, of which 11 had leases. Total Reserve area is 60 623 ha; total CP area is 6 584 ha; total lease area is 534 ha.

When parsing the results, remember that these 33 Reserves are included in the initial 91 (Table 4 is a sub-set of Table 2, so comparison between the two groups is not warranted). It is clear that:

- An increase in the ratio of informality lowers CWB, Income, Education, Housing and Labour Force Activity.
- The impact is greatest on Income (which is significant), followed by Housing, Education and LFA (all of

which are not significant). This suggests that increasing formal rights (e.g., CPs and leases) increases the income of First Nation members.

- The coefficient on Housing is almost significant, which suggests that housing quality is poorer when property rights are ill-defined.

The last two findings are consistent with conventional economic theory, whereby secure property rights facilitate income growth through a number of avenues (such as the ability to attract investors). The analysis here is limited to highlighting the trends. There is no empirical explanation for why informality hinders income or housing; it is simply that—across 33 Reserves—it appears to hinder.

Table 3: Summary Statistics of 33 Reserves.

| | Average | Max | Min |
|------------------------------|---------|-------|------|
| CWB | 61 | 82 | 45 |
| Income | 70 | 94 | 45 |
| Education | 40 | 60 | 22 |
| Housing | 76 | 96 | 53 |
| Labour Force Activity | 67 | 81 | 47 |
| Population | 660 | 2604 | 259 |
| GNR | 0.24 | 0.50 | 0.05 |
| Area (h) | 1837 | 13283 | 13 |
| S. Centre (km) | 167 | 691 | 1 |
| City (km) | 281 | 818 | 1 |
| CP (h) | 200 | 3318 | 0 |
| Lease (h) | 16 | 400 | 0 |
| Total informality | 1621 | 11883 | 12 |
| Ratio informality | 0.86 | 1 | 0.10 |

Table 4: Estimating CWB (using Income, Education, Housing, LFA) for ratio of informality.

| | CWB | Income | Education | Housing | LFA |
|-----------------------|--------|--------|-----------|---------|--------|
| Ratio of inf. | -1.99* | -2.31* | -1.22 | -1.78 | -0.52 |
| Pop. | 1.32 | 1.24 | 1.62 | 0.57 | 0.65 |
| GNR | -0.26 | -0.34 | 0.15 | -0.06 | -0.76 |
| Size (ha) | 1.02 | 2.05* | -0.02 | 0.73 | 0.42 |
| S. Centre (km) | -0.12, | 0.41 | -0.89 | -0.89 | 1.01 |
| City (km) | -1.20 | -0.87 | -0.88 | -0.75 | -1.04 |
| Popdens. | -0.51 | 0.82 | -1.76 | 0.23 | -0.90 |
| Cons. | 12.57* | 10.05* | 6.75* | 10.20* | 10.20* |

Table 5: Estimating CWB (using Income, Education, Housing, LFA) for total area of informality.

| | CWB | Income | Education | Housing | LFA |
|-----------------------|------------|---------------|------------------|----------------|------------|
| Total inf. | 0.87 | 1.31 | 0.11 | -0.06 | 1.28 |
| Pop. | 2.40* | 2.66* | 2.03* | 1.16 | 1.50 |
| GNR | -0.57 | -0.71 | -0.05 | -0.33 | -0.90 |
| Size (ha) | -0.80 | -1.05 | -0.21 | 0.07 | -1.20 |
| S. Centre (km) | -0.66 | -0.24 | -1.23 | -1.34 | 0.88 |
| City (km) | -1.49 | -1.28 | -1.02 | -0.90 | -1.30 |
| Popdens. | -0.42 | 0.85 | -1.67 | 0.32 | -0.94 |
| Cons. | 18.50* | 13.61* | 10.01* | 14.90* | 17.60* |

Increasing total informal rights appears to increase CWB, Income, Education and LFA, while reducing Housing. However, this result is largely superficial—the coefficients are all nearly zero. This observation suggests that as a metric, total informality is not informative. The only significant results concern Population, which is positively associated with CWB, Income and

Education. The trend for GNR to the census is negatively associated with all indicators, which is intuitive.

Conclusion

When comparing the two measures of informality, the ratio of informality outweighs the total area of informality.

Table 4 is far more informative than Table 5. Given the unique geography of each Reserve, it makes more sense to base a measurement on the proportion of informal rights. Of course, if all Reserves were homogenous in size, the two metrics would be equally useful.

One must be wary of extrapolating the findings from British Columbia to First Nation Reserves across Canada. B.C. was largely ignored by historic treaties. There are 111 First Nations, comprising 70% of the Aboriginal population, currently participating in the modern treaty—comprehensive land claim process.²⁰ Furthermore, the rugged topography means that there are many First Nations and a fragmented mosaic of Reserves.

The measure of informality developed here is imperfect—it overestimates the extent of informality because land against which no rights are registered is not necessarily informal. On the other hand, there is much evidence from the developing world that experts significantly underestimate tenure informality, and have low precision for all proxies of informality.²¹ So, perhaps one tendency (to underestimate) offsets the other (to overestimate). In any case, the methodology is the best tool available and provides a consistent measure across Reserves on a national scale. □



Figure 3: “Now, choosing the right tenure regime is just a mere formality.”

²⁰ Aragon. Do better property rights improve local income? Evidence from First Nations’ treaties. *Journal of Development Economics*. v116, pp43–56. 2015.

²¹ Smolka & Niderman. Measuring informality in housing settlements: Why bother? *Land Lines*. April 2009.