

Basic Industry Activity in Remote Canadian Regions

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Introduction

Regional economies within Canada have historically been defined on the basis of provincial groupings. Five such groupings have characteristically been used: the Atlantic provinces (Newfoundland, Nova Scotia, New Brunswick and Prince Edward Island); Quebec; Ontario; the Prairie provinces (Alberta, Saskatchewan and Manitoba); and British Columbia.¹ While regional analyses based upon these groupings may have their usefulness, there are vast differences between the economic structure of populous, southern sub-provincial regions, where most end-product manufacturing and service activity takes place, and the sparsely-populated northern and fringe areas, which are primarily dependent on government transfers and resource extraction and processing. Included in this latter category are the northern territories (Yukon and Northwest Territories), often ignored altogether in discussions of Canada's economic regions or discussed in isolation from the provincial north.²

Exceptions to the provincial view of regions have included Rea (1976) and Hamelin (1979, 1984), both of whom focus on Canada's northern areas as distinct from the rest of the country. Rea provides an excellent review of the economic and political development of these regions with an emphasis on the role of government policy. Hamelin's earlier work covers geographic and economic aspects of the North, paying particular attention to the dominance of the federal government in the region and to the underdevelopment of native economies. The series of papers represented in the later Hamelin work result from a national seminar dealing with public administration in the North. An array of literature addressing the topic of Canada's northern and remote single enterprise communities supplements these works.³

While it is useful to view the northern and remote regions of Canada as a homogeneous entity for some purposes, it is not

necessarily true that the wide range of economies comprising this area are equally developed or structurally similar. Hamelin makes a similar point in summarizing the views expressed by participants in the seminar on northern management noted above:

In this seminar, it became clear that many of those who study or deal with the Canadian North do not conceive of it as an entity; such a view of the North as a whole has always been undermined by the regional (rather than transnorthern) experience of those people as well as by the separate federal, provincial and territorial political structures.⁴

From the economist's perspective, seeing the North not as undifferentiated but as a set of regions sharing certain common features raises a key question: Should the appropriately defined region be the community or some wider area encompassing a number of communities? Given the plethora of literature on single industry communities it seems to have been taken for granted that the broader region is not a useful concept. This would be justified if regions were only defined on the basis of whether general equilibrium conditions were met, but this is not the case. Richardson (1979), for example, identifies three types of regions: 1) *homogeneous regions*, where communities within the region have a sufficient amount in common, in terms of characteristics and interactions, to differentiate them as a group from other areas; 2) *nodal or polarized regions*, characterized by internal interactions and flows, usually with a central or nodal community, and not necessarily having other common features; and, 3) *planning or ad hoc regions*, which contain communities falling under the same political, administrative or program authority but perhaps having little else in common besides location.

It is easy to conceive of all three regional types existing in northern and remote areas of Canada, even simultaneously, in some cases, within the same region. The Yukon and Northwest Territories, for example, with their central capital cities, could be classed as nodal regions despite the great distances and sometimes weak linkages between these cities and outlying communities.⁵ Yet these same jurisdictions also fit the definition of the planning region. Railbelts, electrical grids, highways and other infrastructure commonly found in most remote regions also provide a homogenizing influence. Perhaps dominating all other regionalizing factors is the unity arising from similar resource endowments. West Coast fishing and canning communities clearly share com-

base analysis as "obsolete"⁹ — its usefulness has been recognized in certain applications. Tiebout (1956), in an early work on the subject, concurs with the theoretical underpinnings of the approach when it is applied to small regions, while Weiss and Gooding state that "economic base analysis is strongest when applied to small regions with market dependence on specialized export activity"¹⁰ Clearly, the regions under discussion here will meet these criteria.

Although this description of base analysis and its possible application to small, remote regions is brief, it sets the stage for the analysis that follows. In the next section, a set of 21 remote Canadian regions are identified and described. Using highly disaggregated data, each region's experienced labour force is partitioned into basic and non-basic components. The methodology used in performing this exercise is outlined in some detail, with a fuller description available in Knowler (1988). Following a description of this methodology, comments are provided on the variation among export bases.

Identification and Description of Remote Regions in Canada

Attempts have been made to precisely delimit the Canadian North either administratively, geographically, or in an ad hoc manner. Rea (1976), drawing on a number of sources, defines the southern extent of the North on the basis of census division boundaries. Weller (1984) uses administrative area criteria and Hamelin (1979) uses an index of attributes. However, the North is unlikely to coincide exactly with remote Canada, the primary focus of this paper. It is easy to imagine areas which fall outside the delimited North but remain remote from markets, dependent on resource industries and which have relatively underdeveloped support sectors. Certain coastal areas of B.C. would qualify, such as the region between Prince Rupert and Powell River and portions of Vancouver Island, as would many of the outport communities of Newfoundland. Likewise, some so-called northern areas, particularly in Ontario and Alberta, are simply too near to major centers to be considered as remote.

Since the focus here is on remote regions, Rea's boundary was modified to take this into account. The resulting southern limit of remote Canada, again based upon census division boundaries, is presented in Figure 1. In deriving regions within this hinterland an

at a peak of mining and resource exploration activity."¹² While data for exports from the hinterland region are not available, statistics on Canadian exports of raw and processed resource commodities show that volumes fluctuated over the period, and generally fell in 1981, but were offset by dramatic price increases (see Table 2). Because of the overriding importance of these export industries to remote areas the statistics probably reflect accurately developments in these regions taken together.

Amongst those regions evidently in decline in 1981 there was inconsistency in mobility patterns. In regions 2 and 4, both in Newfoundland, high unemployment rates suggest a more sedentary workforce in comparison to region 11, northern Manitoba, where a low unemployment rate in the presence of a 10% drop in population from 1976 to 1981 suggests a much more transient labour force.

Except for all three Alberta regions and region 9 (comprising northwestern Ontario), unemployment rates in Canada's remote regions were above the national rate of 6.5% in 1981. This is partially explained by high unemployment amongst northern native people. Census data compiled by Franks (1984) show that the native unemployment rate within the provincial and territorial north (excluding Newfoundland) averaged 18.1% in 1981, compared to a rate amongst non-natives of 6.7%. Labour force participation rates of native people are much lower than those of non-natives; in some cases, native participation rates are as low as fifty percent of the native working age population. Natives are also more likely to be underenumerated in the census than non-natives. Thus, true northern unemployment rates may be even higher than figures derived from the census.

Income data reveal additional disparity amongst remote regions. Average employment incomes in 1980 ranged from a low of \$9,310 in one of the fishing regions of the East Coast to \$16,377 on the West Coast. Average total incomes, presented along with other income data in Table 3, were only slightly less unequal in 1980 than employment incomes. About half the regions showed average total incomes above the Canadian average of \$13,716.

Non-employment income (its share of total income is indicated in Table 3) can be especially important in remote areas because of its essentially basic character. One can quibble over whether property income, including rent, bank interest and other investment income, derives from outside the region, but transfer payments such as unemployment insurance payments, social assistance and

Figure 1

REMOTE REGIONS IN CANADA

TABLE 1 Population, Unemployment Rate and Income in Remote Canadian Regions

REGION	PROVINCE/ TERRITORY	CENSUS DIVISIONS	POPULATION 1981	POPULATION DATA CHANGE FROM 1976 (%)	UNEMPLOYMENT RATE, 1981 (%)	AVERAGE 1980 EMPLOYMENT INCOME (\$)
1	Nfld.	2,3	56,577	2.01	13.7	9,888
2	Nfld.	4,5,9	100,388	(1.08)	21.2	9,487
3	Nfld.	6,7,8	139,988	0.45	20.2	9,310
4	Nfld.	10	31,318	(5.25)	15.7	14,812
5	Que.	84	93,529	6.01	13.7	12,881
6	Que.	90,98	104,092	7.82	14.7	13,334
7	Que.	97	115,881	0.13	19.1	15,258
8	Ont.	56	96,875	(0.01)	7.5	13,842
9	Ont.	60	59,421	2.49	5.0	13,233
10	Man.	21,22,23	61,391	(10.18)	6.6	14,113
11	Sask.	18	25,304	19.81	9.8	11,732
12	Alta.	12	84,221	33.41	4.9	14,818
13	Alta.	14	24,635	27.08	5.3	14,586
14	Alta.	15	128,639	20.23	4.7	13,124
15	B.C.	41	59,252	14.79	9.2	13,861
16	B.C.	43,45,49	60,118	8.56	9.0	16,377
17	B.C.	51	38,309	17.45	10.0	14,616
18	B.C.	53	89,431	12.33	8.3	15,704
19	B.C.	55,57	57,416	23.78	8.0	14,375
20	Yukon	1	23,153	6.03	7.6	15,288
21	NWT.	4,5,6,7,8	42,496	6.94	8.1	13,968

SOURCE: 1981 Census of Canada (Statistics Canada), Taxation Statistics (Revenue Canada)

TABLE 3 Selected Income Statistics for Remote Canadian Regions, 1980

REGION	EMPLOYMENT INCOME (%)	UNEMPLMNT INSURANCE INCOME (%)	OTHER INCOME (%)	TOTAL INCOME (%)	NUMBER REPORTING INCOME	AVERAGE TOTAL INCOME \$
1	83.9	9.2	6.9	100.0	23,950	10,404
2	81.0	10.9	8.1	100.0	46,260	10,232
3	79.9	11.3	8.8	100.0	60,210	10,184
4	92.5	4.5	3.0	100.0	16,254	13,299
5	86.7	4.8	8.5	100.0	44,715	13,150
6	88.8	6.0	5.2	100.0	45,100	13,406
7	90.8	5.0	4.2	100.0	54,990	15,208
8	86.7	1.9	11.4	100.0	52,290	13,703
9	85.7	1.9	12.4	100.0	30,360	13,037
10	89.5	2.0	8.4	100.0	30,240	13,050
11	90.5	2.7	6.8	100.0	9,785	11,075
12	89.3	1.3	9.4	100.0	40,980	15,295
13	87.8	1.0	11.3	100.0	13,435	15,440
14	85.5	0.8	13.8	100.0	62,325	14,121
15	86.6	2.6	10.8	100.0	30,970	14,225
16	91.6	2.0	6.4	100.0	30,200	16,518
17	89.1	2.1	8.8	100.0	19,885	14,828
18	89.8	2.0	8.2	100.0	49,410	16,133
19	89.1	1.4	9.5	100.0	32,385	14,908
20	90.1	2.4	7.5	100.0	13,880	16,026
21	93.2	1.5	5.3	100.0	22,165	13,950

SOURCE: Taxation Statistics (Revenue Canada)

9	10	11	12	13	14	15	16	17	18	19	20	21	AVERAGE
23.5	33.6	24.6	25.5	32.6	28.4	29.9	37.5	38.9	20.1	21.4	11.9	15.4	27.8
0.0	0.0	0.0	7.2	4.9	13.7	4.3	0.0	3.2	0.8	7.6	0.0	0.0	2.2
14.1	3.8	5.0	0.0	8.4	5.2	22.0	21.3	25.7	18.6	5.1	0.0	0.0	9.4
0.4	1.9	1.9	0.2	0.2	0.0	0.1	1.3	0.1	0.0	0.1	0.3	0.4	4.2
0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.5	0.1
8.9	26.1	17.6	0.4	16.1	3.7	3.4	14.9	9.9	0.3	4.5	11.5	11.8	10.0
0.0	0.1	0.1	17.8	3.1	5.8	0.0	0.0	0.1	0.3	3.7	0.0	2.7	1.6
0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.4
4.0	1.8	7.8	8.9	8.8	8.0	8.6	4.6	4.0	7.0	7.3	4.6	3.3	6.0
0.6	0.4	0.4	0.3	0.2	1.2	4.9	0.7	1.2	2.0	0.8	0.3	0.1	0.9
0.7	0.4	0.3	0.5	0.9	0.6	0.6	1.0	0.6	1.4	0.4	0.8	1.5	1.0
2.6	1.0	7.1	8.1	7.7	6.2	3.1	2.8	2.1	3.6	6.1	3.5	1.7	4.1
4.0	2.9	2.4	0.6	4.0	2.7	1.7	1.4	2.8	3.7	4.4	3.8	5.0	2.8
0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	3.0	0.5
3.4	2.5	0.0	0.2	1.5	0.6	0.8	0.4	1.7	2.7	1.1	0.3	0.1	1.1
0.2	0.3	0.2	0.2	0.0	0.0	0.0	0.5	0.4	0.2	0.2	0.2	1.9	0.5
0.0	0.0	0.0	0.0	1.8	1.3	0.7	0.4	0.5	0.6	2.1	1.2	0.0	0.5
0.4	0.0	0.0	0.1	0.6	0.3	0.1	0.1	0.1	0.1	0.8	0.0	0.0	0.1
0.0	0.1	0.0	0.2	0.0	0.4	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1
7.1	1.5	1.4	0.0	3.9	2.5	4.3	1.8	3.0	4.0	4.1	5.8	1.5	2.4
6.7	1.5	1.4	0.0	3.2	1.6	3.3	1.8	2.5	3.0	3.5	4.4	0.9	2.0
0.4	0.0	0.0	0.0	0.7	0.9	1.0	0.0	0.5	1.0	0.6	0.1	0.0	0.3
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.6	0.1
14.2	15.0	27.0	14.5	11.4	10.0	10.4	11.4	13.7	9.9	10.1	22.0	31.0	14.8
2.3	2.7	2.7	7.5	1.3	1.7	1.5	2.8	1.3	1.7	1.2	8.6	11.3	3.2
3.9	2.7	9.2	1.8	2.5	2.3	1.8	1.4	1.7	2.3	2.0	5.1	7.9	2.9
0.6	0.6	0.6	0.2	0.7	0.6	0.7	0.5	0.6	0.4	1.1	1.0	0.5	0.6
2.7	3.7	10.5	1.6	5.1	1.6	3.3	3.3	6.6	1.5	3.0	4.5	7.1	3.7
4.8	5.2	4.0	3.4	1.8	3.8	3.2	3.3	3.5	3.8	2.7	2.8	4.2	4.3
6.3	7.3	6.2	5.3	5.4	4.6	6.5	5.9	6.1	6.5	5.5	5.4	4.9	7.8
59.1	62.1	69.4	54.8	66.1	56.2	61.4	62.6	68.5	51.2	52.8	53.5	61.1	61.6
1.69	1.61	1.44	1.82	1.51	1.78	1.63	1.60	1.46	1.96	1.89	1.87	1.64	1.64

NOTE: Figures may not add due to rounding

would be dampened if experienced labour force data were used. This would make this data much less useful than, say, income for constructing short run, impact multipliers.

A breakout of the experienced labour force by industry was possible at the highly disaggregated three digit SIC level using the census data. With such detailed information, industries could be grouped immediately according to whether they were clearly basic, clearly non-basic or mixed basic and non-basic.

Designated as clearly basic were all primary industries except agriculture, logging and quarries (including sand pits); all manufacturing industries except dairy products, bakery products, beverages, sawmills, printing and publishing, fabricated metal products, ornamental and architectural metal products, metal stamping and pressing, machine shops, and non-metallic mineral products; heavy construction; railway and water transport; pipelines; grain elevators; and government transfer services.

Included under government transfer services, besides federal public administration, were activities funded largely by non-local governments which in larger population settings would be considered local or non-basic.¹⁵ Clearly basic transfer services included provincial and territorial public administration, highway maintenance, hospitals and welfare organizations. Heavy construction, with its orientation towards road-building, other infrastructure construction, and the building of large industrial facilities, has both a transfer service component and an export-linked component. Heavy construction was grouped as an export-linked secondary industry because of the difficulty of isolating the transfer service component.

Sorting the basic from non-basic in mixed industries required a more complex methodology than arbitrary assignment. The two standardized techniques for performing this task are the use of location quotients and the minimum requirements technique. For discussion of the location quotient and minimum requirements approaches see Tiebout (1962) and Richardson (1979), while for a comparison of the two techniques using a single set of data, see Gibson and Worden (1981). A procedure for partitioning basic and non-basic where input-output information is available is discussed in Stabler and Howe (1988).

Unfortunately, neither of the two standardized means of partitioning the work force in mixed industries was deemed appropriate for remote regions in Canada. For agriculture, logging, sawmills,

some basic workers may have been captured under wholesale trade, business services and warehousing, all designated here as non-basic. In general, however, the multipliers presented in Table 4 are in keeping with values calculated elsewhere for remote, rural economies.¹⁸ Further discussion of the non-basic sector is deferred to a subsequent paper.

Summary

This paper has examined the structure of the basic sector in remote regional economies in Canada using highly disaggregated census data from the 1981 Census of Canada. After making a case for analysis at the regional level within the Canadian hinterland, in contrast to analysis at the community level, 21 remote economies were identified. A review of income and population data for these regions indicated that there were significant differences between regions in terms of per capita incomes and rates of population growth during the period immediately preceding 1981.

Canada's hinterland areas are commonly said to be dependent upon the exporting of raw or semi-processed resource commodities and government transfers. It was argued in this paper that their structure could therefore be analysed using the relatively simple base analysis technique. Partitioning the basic sector from the non-basic sector using standard methodologies, such as location quotients or the minimum requirements approach, proved inappropriate. Instead, an ad hoc approach was used, which made use of judgement and a median requirement, to isolate basic work forces within each industry.

Isolating the basic sector in remote regional economies confirmed that primary and processing activities are crucial to the economic health of these regions. Just under half of the basic sector was associated directly with these activities, and this ignores some indirect exports and export-linked transportation activity. Only the two northern territories, with their large public administration work forces, indicated a lesser dependence on resource extraction and processing. That being said, it was clear that on a regional basis there was often several different resource industries represented, confounding the image of remote regions as being dependent upon a single resource or industry.

It was also evident that despite the reliance upon resource extraction, transfers were an important source of basic income.

Worden (1981) suggest making allowances for in and out commuters, part-time workers, industry wage differentials and transfer income. Only a transfer income adjustment was made here. A number of researchers besides Gibson and Worden have made allowance for transfer income, including McNulty (1977) and Garrison (1972). Both McNulty and Garrison include all or components of dividend, interest, and rental income, along with transfer payments, as basic income, whereas Gibson and Worden consider only transfer payments. Here, I exclude property income from the initial calculations but include it later for comparison purposes.

To make the transfer income adjustment, McNulty and Garrison use income data for all their calculations and simply include transfer payments as a distinct component in the basic sector. Gibson and Worden work instead with employment and must adjust transfer income to a full-time employment equivalent. This was done by dividing transfer income by net average annual income in the communities studied. Using an estimate of regional transfer payments (made up of unemployment insurance income and other transfer payments, assumed here to be 5% of total income¹⁵), the same operation was performed on the Canadian regional data. However, the wage used to convert the data to an employment equivalent was the provincial or territorial industrial aggregate and taxes were not netted out, since in Canada the majority of transfer income is taxable.

Discussion of the Basic Sector in Remote Canadian Regions

The results of the analysis described above are presented in Table 4, with base multipliers for each region indicated in the final row. Basic industries are grouped along familiar lines, with primary extraction and processing combined under single industry headings for convenience and all government activity shown together under "transfer services." Requiring some explanation is non-processing manufacturing, here divided into two groups, "forward-linked manufacturing" and "other manufacturing." The forward-linked industries are: food and beverage manufacturing and wood industries, except for those industries allocated to processing or the non-basic sector; pulp and paper industries, except pulp and paper mills; primary metal industries, except smelting; and other petroleum and coal products. "Other manufacturing" covers a wide range of light industrial manufacturing, assumed to be serving the

territories. In the latter three regions, the concentration within air transport results in part from government, industry, and tourist demand, all of which can be considered basic. For example, many mining and petroleum industry workers are flown in and out of remote communities and work camps. However, it is possible that some of the basic workers captured here should be classed as non-basic, since different patterns of local transportation (there being few roads) may also account for a portion of the regional specialization. Water transport specialization was predominantly found in coastal regions, including communities in Newfoundland and Sept-Iles in Quebec. There was also a distinctive concentration of workers in this industry in the Northwest Territories. These workers were associated with barging on the Mackenzie River, one of the major transport modes for supplying the northern oil industry as well as northern communities.

Not surprisingly, tourism and travel are not major contributors to the economic base in most remote regions. Only two regions, region 9, containing the Lake-of-the-Woods area of far western Ontario, and the Yukon showed work force concentrations in the tourism/travel group in excess of 5%. Several other regions were placed in the 4% to 5% range. However, that tourism and travel contributed as much as indicated to the the economic base in regions with traversing highways suggests that indeed this form of export activity should not be ignored in base analyses. Lichty and Steinnes (1982), in a study of a small rural Minnesota region, confirm that such areas can benefit greatly from destination and non-destination travel.

While tourism/travel may not play a large basic role in most remote Canadian regions, it is obvious from Table 4 that the reverse is true for transfers. Together, transfer services and income funded by transfer account for an average of 22.6% of the experienced labour force in the 21 regions studied. In a study of the transfer economy of rural Alaska, defined somewhat differently than here, Knapp and Huskey (1987) indicated that as much as 46% of the per capita income in four census divisions of northwestern Alaska was derived from transfer payments or transfer service employment.¹⁷

Several observations concerning the two territories can be made with regard to transfer services. First, basic public administration in these regions accounts for as much as 4 times the average share of the work force that is seen for this industry in northern provincial jurisdictions. Second, this gap narrows considerably once the focus

- ¹⁶ North (1955) uses the term to refer to manufacturing industries for which transfer costs are not important and which develop in a specific location purely by chance.
- ¹⁷ The authors include all direct transfer payments; see note 13 for a definition of what is included in transfer services.
- ¹⁸ See Nickel, et. al. (1978) for sample employment ratios in mining-dependent northern communities of Canada. The ratios given for single industry communities range from 1.20 in Schefferville, Quebec to 1.83 in Flin Flon, Manitoba. Gibson and Worden (1981) calculate base multipliers for 20 small communities in Arizona; adjusting for transfer payments, their estimates run from 1.27 to 1.76. While methodologies and locales differ in both studies mentioned, there appears to be a degree of consistency in the multiplier estimates with those of Table 4.

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