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Fur Trappers in the Northwest Territories: An Econometric Analysis of the Factors Influencing Participation

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ABSTRACT. Commercial fur trapping, once the primary economic activity of the aboriginal inhabitants of the Northwest Territories, now accounts for only a small fraction of the income received by native people. Many adult native males do continue to engage in commercial trapping, nevertheless, though with varying degrees of commitment. A review of the recent literature reveals a wide variety of suggested motivations for this continuing involvement. Through the use of econometric techniques we are able to analyze the motivations of two distinct sub-groups of trappers. One group, accounting for about 15% of those who trap, has a substantial commitment to the activity and is motivated primarily by the income-earning potential of fur sales. The second group, which includes approximately 85% of the participants, consists of those whose participation is best explained by the lack of alternative employment opportunities.

Key words: Northwest Territories, fur trappers, traditional economy

RÉSUMÉ. Le piégeage commercial des animaux à fourrure, qui était jadis la principale activité des aborigènes des Territoires du Nord-Ouest, ne compte maintenant que pour une fraction minime de leur revenu. Beaucoup d'aborigènes adultes de sexe masculin continuent cependant à pratiquer le piégeage commercial, quoiqu'à des degrés d'intensité divers. Une revue des publications récentes montre que des motivations très diverses ont été suggérées pour la poursuite de cette activité. Grâce à l'utilisation de techniques économétriques, on peut analyser les motivations de deux sous-groupes distincts de trappeurs. L'un, qui comprend environ 15% de tous les trappeurs, s'engage de façon relativement sérieuse dans cette activité et il est surtout motivé par le potentiel de revenu que génère la vente des fourrures. Dans le deuxième groupe, qui comprend environ 85% de tous les trappeurs, on retrouve ceux dont la participation pourrait s'expliquer par le simple fait qu'ils ne peuvent trouver un autre emploi.

Mots clés: Territoires du Nord-Ouest, trappeurs d'animaux à fourrure, économie traditionnelle

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INTRODUCTION

The role of hunting, fishing and trapping in native economies has long been a focus of attention for social scientists with research interests in the North. Prior to the mid-20th century, semi-nomadic natives were dependent on those activities for both subsistence and, through the sale of furs, most of their cash. Following World War Two, fur prices began an erratic secular decline in real terms while the cost of purchased inputs rose. The result was a "cost-price squeeze," a situation familiar to producers of numerous other primary products.

The native people's semi-nomadic lifestyle was replaced beginning in the 1950s by permanent habitation in numerous small villages scattered throughout the North. Provision of modern housing, health care facilities and an expansion of social assistance programs, coupled with compulsory schooling and the gradual availability of jobs in the modern economy, reinforced the permanency of village life.

Native people do continue to hunt, fish and trap, however, and while receipts from the sale of furs now provide only a small share of total cash income, there is ample evidence that a substantial portion of native sustenance is obtained from the wild harvest. Collectively these activities are referred to alternatively as the "traditional economy," the "bush economy" or the "traditionalistic economy," the latter in acknowledgement of the fact that, while the items harvested have not changed, the equipment and techniques employed have evolved in keeping with emerging technology. We will use the term "traditional economy" throughout this paper to refer to the all-inclusive hunting, fishing and trapping activities engaged in by native people for both subsistence and cash income. The more specific term "trapping" will refer to the harvesting of furs for sale. Trappers are those who engage in this activity, though, of course, they may be involved in subsistence activities or employed elsewhere in the economy.

In this paper we investigate selected aspects of the commercial trapping industry in the Northwest Territories (N.W.T.). Specifically we attempt to identify those factors that currently influence participation in this historically important activity.

BACKGROUND

The focus of northern social science research has reflected the evolving structure of the economy, the types of activities engaged in by native people at each stage of development and the problems faced particularly during periods of stressful transition. Thus, addressing the period during which the traditional sector formed the backbone of the northern economy, writers analyzed its structure and explained how it functioned (Innis, 1930; Crean, 1962; Francis and Morantz, 1983), interpreted the methods used to allocate common resources (Ray, 1978; Morantz, 1980; Harper-Fender, 1981; Flannery and Chambers, 1986), or attempted to determine the nature and significance of activities engaged in by native people (Rich, 1960; McMannus, 1972; Eccles, 1973; Ray, 1974; Trigger, 1985). The crisis that followed the collapse of fur prices after World War Two is discussed by Leechman (1948), Shimkin (1955), Dunning (1958) and Vallee (1962), while the period of transition from hunter to worker — still in process

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— is analyzed by Gladstone (1953), Kew (1962), VanStone (1963), Hargrave (1965-66), Nowak (1975), Asch (1977), George and Preston (1987) and Stabler (1989).

As mega-projects reached the North in the 1960s and '70s, the concerns about environment, unsettled land claims and the apparent failure of native people to share fully in the benefits of northern development led to an open conflict of ideologies, the essence of which was succinctly captured in the title of Thomas Berger's report on the Mackenzie Valley Pipeline Inquiry: Northern Frontier—Northern Homeland (1977).

A major portion of Berger's report was devoted to an attempt to ascertain the relative importance of wage employment, subsistence harvesting and fur trapping in the native economy and the motivation of native people for engaging in the activities identified. Lack of a comprehensive statistical data base, however, compelled Berger to rely primarily on anecdotal information and on a limited number of case studies that had investigated only selective aspects of the native economies of particular villages or regions. (Shortcomings of Census, DIAND and other historical data are discussed in Stabler, 1989.) On the basis of this information, Berger concluded that hunting, fishing and trapping was still the backbone of the native economy and that wage employment was seen by a large segment of native society primarily as a means of equipping themselves to participate in traditional activities. Although several natural and social scientists were critical of the commissioner's methodology and, consequently, his results (Bliss, 1978; Olfert, 1977; Ritchie, 1978; Stabler, 1978; Stabler and Olfert, 1980), a portion of the academic community and a large segment of the general public apparently concluded that Berger had carried the day.

Since the publication of the Mackenzie Valley Pipeline report, a great deal of statistical information has become available on the northern economy and native participation in traditional as well as wage activities. These data include numerous specific studies of subsistence harvesting across the N.W.T. (and Alaska) that, taken together, provide a very comprehensive statistical profile of these activities (Usher, 1976; Meyers, 1982; Mackey and Orr, 1987; Usher and Wenzel, 1987; Wolfe and Walker, 1987). Second, the 1981 census provided the most comprehensive information on native employment in the modern economy assembled to that time (1981 Census, Native People's Microfiche). Finally, in 1984 the Bureau of Statistics of the N.W.T. conducted detailed interviews with 11 164 people between 15 and 64 years (36% of the territorial population between these ages). This survey again obtained comprehensive information on employment in the modern economy as well as on participation in traditional pursuits. (The questionnaire used for the 1984 Labour Force Survey, a discussion of methodologies, and statistics regarding sample reliability are found in N.W.T. Bureau of Statistics [N.W.T. Labour Force Survey, Yellowknife, April 1985].)

Collectively these data reveal an intricate pattern of participation by native people in both modern and traditional activities. Selected aspects of this pattern pertinent to the subject of this paper are identified in Table 1. As shown in the table, 66% of native males without jobs were engaged in traditional activities at least part of the time in 1984, while 50% of those with jobs also participated. The surveys of traditional harvesting are quite consistent with this observation and together substantiate the conclusion that subsistence harvesting is alive and well.

TABLE 1. N.W.T. native males[1] aged 15-64 by employment status and participation in traditional activities[2] at the time of the 1984 survey

Employed (3241) Engaged in traditional activities			Not employed (4018) Engaged in traditional activities		
None	Part-Time	Year Around	None	Part-Time	Year Around
1611	1242	388	1366	1987	665

[1] Female participation in traditional activities is much lower than males' and is concentrated (76%) in part-time activity of 1-3 months' duration.
[2] Traditional activities include hunting, fishing and trapping for both commercial and subsistence purposes.
Source: Derived from N.W.T. Bureau of Statistics, Labour Force Survey, 1984.

With respect to employment in the wage economy, data from 1969 to 1971 revealed that 33% of N.W.T. natives between 15 and 65 were then employed for wages for at least part of the year (Meldrum and Helman, 1975). At the time the 1981 census was taken, 47% of natives over 15 were employed, and by 1984, 64% of the native population between 15 and 64 had worked for wages during the previous 12 months. Further, 38% of the native people employed in 1984 held jobs in professional, managerial or highly skilled occupations. As with many northern data, those regarding employment are not perfectly comparable from one period to the next. However, they are sufficient for identifying a distinct trend to growing and more meaningful involvement in the modern economy.

The labour force activity of N.W.T. natives has been extensively analyzed by Stabler (1989) using the 1984 survey (N.W.T., 1985). Analysis of the characteristics of those involved in traditional pursuits revealed that participation, in general, was directly related to age, lack of education and unemployment. Employment in the wage economy, on the other hand, was directly related to level of education: 75% of those with high school diplomas were employed in 1984, while only 44% of those with less than high school held jobs. Further, even for those with less than high school, employment was directly related to number of years of formal education. Selective observations from Stabler (1989) are presented in Tables 2 and 3. These data identify the age, education and employment characteristics of N.W.T. males who engaged in traditional pursuits in 1984. Table 2 contains absolute numbers for the entire male population between 15 and 64. Table 3 focuses on English-speaking males between 15 and 44.

Regarding Table 3, the numbers refer to the percentage of a particular group that is either engaged or not engaged in traditional activities. For example, in group a, 31% of those between 15 and 24, without jobs and with 8 or fewer years of education, did not participate in traditional activities. In group c, the same information is separately provided for those with jobs, according to type of job. In group b, information regarding participants is further disaggregated into part-time and year-around durations. In group d, the disaggregation into part-time and year-around is provided separately by type of job held. Finally, reading across any row sums the activity patterns of people within a given age group by level

TABLE 2. Participation in traditional pursuits by native males between 15 and 64 years, by age, modern labour force participation and average years of formal education, N.W.T., 1984

	15-24		25-44		45-64		Row	
	No.	Grade	No.	Grade	No.	Grade	Totals	Mean
Not engaged in traditional pursuits								
Employed	432	9.04	944	8.98	234	2.85	1610	8.14
Not working—want job	579	8.27	498	8.05	156	4.35	1233	7.45
Do not want work	31	5.28	31	6.90	72	1.56	134	3.59
Totals	1042		1473		462		2977	7.77
Engaged in traditional pursuits								
1-3 months								
Employed	220	8.21	528	7.90	165	2.23	913	6.94
Not working—want job	532	7.52	451	6.47	186	1.25	1169	6.13
Do not want work	42	7.02	12	4.42	86	0.81	140	3.00
Totals	794		991		437		2222	6.26
4-6 months								
Employed	62	9.07	140	8.55	53	3.86	255	7.69
Not working—want job	220	7.25	188	7.61	78	1.58	486	6.52
Do not want work	12	6.16	14	2.95	29	0.86	55	2.59
Totals	294		342		160		796	6.64
7-11 months								
Employed	18	8.26	47	9.03	12	1.71	77	7.74
Not working—want job	47	6.31	54	6.44	23	1.19	124	5.53
Do not want work	2	3.00	5	4.38	11	0.00	18	1.96
Totals	67		106		46		219	6.14
All year								
Employed	59	7.72	241	6.15	100	0.50	400	5.01
Not working—want job	176	7.29	253	5.40	119	1.15	548	5.07
Do not want work	23	6.53	34	5.04	63	0.54	120	2.91
Totals	258		528		282		1068	4.80

Source: Derived from N.W.T. Bureau of Statistics, Labour Force Survey, 1984.

TABLE 3. Percentage of English-speaking native males engaged in traditional activities by age group, highest grade completed and employment status, N.W.T., 1984[a,b]

WITHOUT JOBS

	Group a: not engaged Age 15-24			Group b:engaged Age 15-24					
				Part time			Year around		
	Grade 0-8	Grade 9-11	High school	Grade 0-8	Grade 9-11	High school	Grade 0-8	Grade 9-11	High school
	31	47	51	55	43	47	14	9	2
	Age 25-44			Age 25-44					
				Part time			Year around		
	Grade 0-8	Grade 9-11	High school	Grade 0-8	Grade 9-11	High school	Grade 0-8	Grade 9-11	High school
	32	45	49	51	43	51	17	12	—

WITH JOBS

	Group c: not engaged Age 15-24			Group d:engaged Age 15-24					
				Part time			Year around		
Type of job	Grade 0-8	Grade 9-11	High school	Grade 0-8	Grade 9-11	High school	Grade 0-8	Grade 9-11	High school
Primary	43	56	72	48	35	28	9	8	—
Secondary	45	56	80	45	36	20	9	8	—
	Age 25-44			Age 25-44					
				Part time			Year around		
Type of job	Grade 0-8	Grade 9-11	High school	Grade 0-8	Grade 9-11	High school	Grade 0-8	Grade 9-11	High school
Primary	41	54	63	39	38	37	19	8	—
Secondary	47	36	63	34	54	37	19	10	—

[a] Primary jobs refer to those in professional, managerial and skilled occupations. Secondary refers to clerical, labouring and low-skill occupations.
[b] Excludes students, inmates and others unable to participate in income-earning activities.
Source: Derived from N.W.T. Bureau of Statistics, Labour Force Survey, 1984.

of education and employment status. Thus, for the first row, 31% of males aged 15–24, without jobs, and with up to 8 years education did not participate in traditional pursuits, while 55% participated part-time and 14% full-time. Females are omitted from this particular analysis because their participation in traditional pursuits is, for the most part, limited to 1–3 months per year. Males 45 and over, as well as those who do not speak English, are likewise excluded because their generally low levels of educational attainment and/or lack of fluency in the language of commerce preclude them from most jobs in the modern economy.

These data clearly reveal that economic factors are a very important influence in the way native people allocate their time between employment and participation in traditional pursuits generally. Even though many obviously continue to rely on traditional activities for subsistence purposes, participation declines the higher is the opportunity cost of that participation.

One activity has yet to be analyzed. This is the commercial trapping industry. The focus of social science research on this activity in recent years consists either of a few excellent, often very detailed, case studies (Usher, 1971; Sharp, 1975; Jarvenpa, 1980) or the calculation, in passing, of that portion of an area's total cash income obtained from the sale of furs (Hobart, 1981; Meyers, 1982; Quigley and McBride, 1987). The case studies present fine-grained detail regarding the daily and weekly activities, work patterns and concerns of the trapper over a year or so as interpreted by the observer. The income statements reflect the relative importance of this activity, usually at a single point in time, as a source of support in native economies. Neither attempts to look at the big picture: the influences that affect the decision to trap or not, through time, all across the North. This is our objective in this paper. Specifically, we attempt to identify, through regression analysis, those pervasive factors influencing participation in this activity throughout the N.W.T. over several years. Through the use of this statistical technique, we hope to provide greater insights into the motivation of native people for participating in the trapping industry than what is available in the existing literature.

HYPOTHESES, DATA AND METHODOLOGY

Additional analysis of the information contained in Table 2 reveals suggestive distinctions between those engaged in traditional pursuits year around versus those involved part time. Full-time participation of males aged 45–64 was nearly twice as great as that of 15– to 24-year-olds and was 33% greater than that of males between 25 and 44. Further, those participating full time in traditional activities had, as a weighted average, only about 58% of the years of formal education as those who did not participate at all. These observations suggest that year-around involvement in the traditional sector may be seen as the major alternative to employment predominantly by those people who have little realistic expectation of permanent or even regular seasonal employment in the modern economy.

The characteristics of part-time participants, on the other hand, resemble more closely those of non-participants. Proportions of each age group engaged part time are nearly equal (47, 42 and 46% respectively, beginning with the youngest); further, part-time participants have, as a weighted average, 87% as much formal education as non-participants. However, 89% of those without jobs engaged part time in traditional pursuits indicated that they wanted a job in the modern economy. It would seem plausible to infer, therefore, that part-time participants consist of two sub-groups, neither of which regards trapping as its primary occupation: 1) those without work who want a job and who have a reasonable expectation of either permanent or regular seasonal work in the modern economy; and 2) those with jobs who are either attempting to supplement their incomes or are participating for recreational reasons or to preserve their cultural identity.

If the interpretation just posited is correct, it should be possible, with data specific to the trapping industry, to identify two groups of trappers, each of which responds to a somewhat different set of influences. In particular, part-time trappers should be more sensitive to employment opportunities in the modern sector than those engaged full time.

Native people in the N.W.T. do not require a licence to hunt for subsistence purposes. They do, however, require a General Hunting Licence, which is obtained by right, in order to trap commercially. In addition, fur dealers in the N.W.T. are compelled to keep records of furs purchased from trappers. These records, which are maintained by the N.W.T. Department of Renewable Resources, form a major part of the data base used for this study. Summary information regarding number of trappers and returns from fur sales is reported in Table 4.

The nominal dollar figures shown in column 3 of Table 4, however, are not particularly informative. First, income earned from the sale of furs is used to purchase both consumer and capital goods sold at retail, but retail prices rose substantially between 1973 and 1987. A better indication of the purchasing power of the revenue gained from fur sales is obtained by dividing the nominal dollar figures in column 3 by Statistics Canada's personal expenditure implicit price deflator. This calculation produces the "real gross revenue" figures shown in column 4.

A second correction of the nominal revenue figures in column 3 is required in order to put the production figures on a consistent basis. Both the species composition of the fur harvest and the price paid for each type of fur varied from year to year between 1973 and 1987. A consistent measure of the production (or output) of furs is obtained by valuing each year's harvest of hides and pelts sold, by type, in terms of their 1981 prices. This calculation produces the "real gross product" figures in column 5.

Calculations of both of the above types are regularly performed in social income and product accounting. The computation of real revenue by use of the personal expenditure implicit deflator is one standard technique; it measures the real purchasing power of the income earned in some activity. The computation of real product as the sum of each type of output valued at constant base-period prices is another; it measures the real output of what is produced. For more on these concepts, see Wilton and Prescott (1987). The figures in column 5 were subsequently used in constructing columns 6 and 7, which divide trappers into two categories: those with $2000 or more in real production and those with under $2000.

In addition to receipts from the sale of furs, trappers are the beneficiaries of loan and assistance programs managed by

TABLE 4. Trappers,[1] gross receipts from fur sales, and distribution of gross product, N.W.T., 1973/74 to 1986/87[2]

Year	Number of trappers	Total gross receipts[2]			Distribution of real gross product	
		Nominal revenue	Real revenue[4] (1981 Base)	Real product[5] (1981 Base)	Under $2000	Over $2000
1973-74	3426	$3 067 884	$6 167 841	$3 364 163	2997	429
1974-75	3282	2 175 115	3 958 353	3 285 922	2822	460
1975-76	3413	2 742 481	4 512 144	2 888 950	3000	413
1976-77	4089	4 317 141	6 620 366	4 385 786	3589	500
1977-78	3679	3 837 896	5 479 578	3 928 592	3243	436
1978-79	3925	5 739 422	7 618 028	4 310 014	3360	565
1979-80	4319	5 337 411	6 530 541	4 221 192	3675	644
1980-81	4336	5 029 151	5 594 162	4 547 769	3666	670
1981-82	3635	3 737 928	3 737 928	3 737 928	3086	549
1982-83	3167	2 794 711	2 535 575	2 570 832	2795	372
1983-84	3191	2 665 886	2 275 424	2 451 153	2857	334
1984-85	3790	3 295 438	2 693 452	2 851 823	3386	404
1985-86	2922	3 267 885	2 567 679	2 379 051	2532	390
1986-87	2903	5 656 162	4 263 011	2 835 263	2452	451

[1] A very few long-term non-native residents of the N.W.T. also hold General Hunting Licenses. These people are not separately identified in the analysis, since their numbers are insignificant.
[2] The figures are "gross" in that the costs incurred in harvesting the furs have not been deducted. The information required for such a calculation does not exist at this time.
[3] Income received for furs, hides and pelts sold privately or retained for personal use is not included in these figures. N.W.T. Renewable Resource officials estimate these dispositions to be limited.
[4] Real revenue is computed by dividing the nominal revenue figures by the personal expenditure implicit price deflator using 1981 as the base.
[5] The real product is computed by valuing each year's production of hides and pelts sold by type in terms of their 1981 prices. Twenty types are included: polar bear, other bear, beaver, coyote, fisher, blue fox, cross fox, red fox, silver and black fox, white fox, lynx, marten, mink, muskrat, otter, seal, squirrel, weasel, wolf and wolverine.
Source: Department of Renewable Resources, 1982 and Supplements.

the N.W.T. Department of Renewable Resources. One of these programs, for example, advances a portion of the appraised value of the catch prior to sale. This program undoubtedly is of assistance to the trapper but is, in effect, a loan that has to be repaid. It is doubtful, therefore, that this program *systematically* influences the decision of *whether* to trap or not. A trapper's incentive program, on the other hand, provides a subsidy based on the value of total sales to trappers selling at least $600 worth of fur. This program does increase the trapper's income and could be expected to have the same influence as higher fur prices (with no subsidy). In parts of the subsequent analysis, trappers' incentive payments (divided by the personal expenditure implicit price deflator) have been added to receipts from fur sales to construct a variable that captures the real total gross income received as a result of trapping. The yearly amounts of trapper's incentive grants from the inception of this program are shown in Table 5.

TABLE 5. Trappers' incentive grants,[1] N.W.T., 1977-87

Year	Nominal	Real (1981 base)
1977-78	$285 148	$407 122
1978-79	328 000	435 360
1979-80	163 755	200 362
1980-81	502 204	558 625
1981-82	421 779	421 779
1982-83	341 261	309 618
1983-84	386 254	329 681
1984-85	342 984	280 330
1985-86	400 097	314 369
1986-87	963 000	725 806

[1] Incentives are currently paid on the basis of 25% on the first $2000 of fur sold, decreasing by 5% on each additional $2000 increment up to $8000. An incentive of 5% is paid on any sales over $8000.
Source: N.W.T. 1977-87, Department of Finance, Territorial Accounts.

For our analysis, trappers were separated into two groups: those producing less than $2000 of real product and those producing $2000 or more. These groupings were selected from several alternatives; they represent lesser and greater commitments respectively to traditional activities. In keeping with conventional economic theory, it was hypothesized that participation of both groups would be positively related to monetary return (fur sales plus incentive grants). Based on observations from the N.W.T. labour force survey data, it was further hypothesized that the participation of those with $2000 or more of real product (representing a greater commitment to traditional activities) would not be influenced by the availability of jobs in the modern economy, but that those with under $2000 would be positively influenced. Finally, participation of both groups was hypothesized to vary with both temperature and native population, the former a proxy variable capturing the disutility of being out in colder weather, and the latter capturing the influence of both an increased number of dependents as well as an increased number of potential participants.

The statistical technique employed in the following analysis is ordinary least squares (OLS) regression. Its power lies in its ability to simultaneously estimate the effect of several variables (the independent variables) on another variable (the dependent variable). Regression techniques include a number of hypothesis tests for testing relationships between variables. There is a large, mature literature on regression analysis, including many excellent texts, such as Judge *et al.* (1980).

RESULTS

The results of the econometric analysis are reported in Table 6 for trappers producing a real gross product of less than $2000 and in Table 7 for those with $2000 or more.

TABLE 6. Equation for trappers with real gross production of less than $2000[1]

Independent variables	Regression coefficients	T values	Elasticities	Means
Intercept	7539.59	5.88	—	—
Total employment	-372.04	-3.07	-1.07	8.89
Weather	61.43	2.26	-0.36	-17.96
Native population	91.20	2.40	0.73	24.90
Employment dummy	-3351.51	-2.47	-0.76	0.71
D 84	1036.69	4.20	0.02	0.07

[1] $R^2 = 0.8812$; $\overline{R}^2 = 0.8069$; Durbin-Watson Statistic = 2.639. Average Absolute Percentage Error = 3.70%. All coefficients are significant at the 5% level except weather, which is significant at the 10% level. The Durbin-Watson Statistic shows no evidence of autocorrelation.

In Table 6, the dependent variable is the number of trappers with real gross product of less than $2000. In addition to the constant term, the independent variables are:

- total employment in the N.W.T. in thousands;
- the average mean daily temperature in degrees celsius for the months October through February at Yellowknife;
- native population in thousands;
- a dummy to account for the change in methodology used by Statistics Canada to collect employment data, equal to 1 before 1983 and 0 from 1983 on;
- a dummy equal to 1 in 1984 and 0 elsewhere to correct for a large unexplained difference between actual and predicted values in that year.

TABLE 7. Equation for trappers with real gross production of $2000 or more[1]

Independent variables	Regression coefficients	T values	Elasticities	Means
Intercept	-340.37	-1.97	—	—
Revenue per capita ($T-1$)	1.08	6.56	0.47	205.79
Terms of trade	148.80	3.41	0.42	1.32
Native population	15.72	3.46	0.83	24.90
D 77	-113.97	-2.78	-0.02	0.07
D 80	141.66	3.48	0.02	0.07

[1] $R^2 = 0.9178$; $\overline{R}^2 = 0.8664$; Durbin-Watson Statistic = 2.487. Average Absolute Percentage Error = 4.94%. All coefficients are significant at the 5% level. The Durbin-Watson Statistic shows no evidence of autocorrelation.

In Table 7, the dependent variable is the number of trappers with gross production of $2000 or more. The independent variables for this equation, in addition to the intercept, include the following:

- Trapping revenue per capita in real terms, lagged one period. This variable is calculated as the annual nominal dollar receipts from fur sales plus the nominal dollar sum of trappers' incentive grants. This sum is divided by the personal expenditure implicit price deflator, and the result is divided by the native population of the N.W.T. This variable is lagged one period to reflect the practice of basing the decision regarding the current year's activity on the latest (last year's) information.
- A terms-of-trade variable, constructed by dividing the nominal dollar total receipts from fur sales by the real output of fur. The result of this calculation produces the implicit price deflator for fur. The fur price deflator was then divided by the personal expenditure implicit price deflator to indicate whether the fur price index was rising or falling relative to the price of consumer goods.
- Native population in thousands.
- Dummy variables set at 1 for 1977 and 0 elsewhere and at 1 for 1980 and 0 elsewhere to correct for unexplained differences between actual and predicted values in those years.

INTERPRETATION

The equation reported in Table 6 indicates that, all else being equal, an increase in total employment of 1000 people in the N.W.T. will lead to a reduction of 372 trappers whose gross production is less than $2000. This clearly demonstrates that, when offered a choice between a job and part-time trapping, there is a strong movement into employment. This does not mean, however, that the individual who takes a job abandons traditional harvesting altogether. He may well continue to hunt and fish for subsistence purposes while employed. What it does indicate is that a job is seen as a superior method of earning income.

A second important influence is the temperature variable. It indicates that an increase in the average temperature of one degree celcius will lead to an increase of 61 trappers. More generally, this indicates that more part-time trappers will be out during a "warmer" winter, while fewer will go out during a "colder" one.

Finally, an increase of 1000 in the native population will lead to an additional 91 part-time trappers.

In the elasticities column, the relationship between the dependent variable and each independent variable is stated in percentage terms. For example, a 10% increase in the native population will lead to a 7.3% increase in part-time trappers.

Of considerable interest is what is not included in the equation reported in Table 6. Neither the income variable (receipts from fur sales) nor the trapper's incentive grant, separately or combined, in nominal or in real terms, was significant in any specification tried.

Taken all together, this analysis implies that participants with under $2000 gross production are, as a group, involved in the trapping industry because of a lack of alternative employment opportunities, rather than because of its income-producing potential.

Turning to those trappers producing $2000 or more in gross output, a very different set of influences is seen to operate. The equation reported in Table 7 indicates that, *ceteris paribus*, a $1 increase in real revenue per capita leads to a 1.08 increase in the number of trappers in the $2000-plus category. In percentage terms, the elasticity column shows that a 10% increase in real revenue per capita leads to a 4.7% increase in the number of trappers in the $2000-plus category. In addition, an increase of 1.00 in the terms of trade index leads to an increase of 149 more trappers, while an increase of 1000 in the native population leads to an additional 16.

The coefficients of revenue per capita and the terms of trade that appear in Table 7 may at first appear to reflect data definitions rather than the behaviour of trappers. For example, the argument might be advanced that an increase in fur prices — even if it had absolutely no effect at all on trapper activities — would increase the number of trappers in the $2000-plus category. That argument is incorrect. The trappers were divided into the over and under $2000 categories on the basis of their real product. Real product only includes the effect of changes in the quantity of furs harvested and does not include the effect of changes in price. Thus an increase in fur prices will only lead to an increase in the number of trappers in the $2000 and over category if it induces individuals to a greater effort in trapping.

CONCLUSIONS

The observations based on direct information about trappers and the trapping industry support many of the inferences made from the labour force survey data. Specifically, participation of trappers with real gross output of less than $2000 is observed to be inversely related to the availability of jobs in the modern economy and to the severity of the winter, rather than to income obtained from trapping. The coefficient on the employment variable indicates that an increase of 1000 in total employment in the N.W.T. would lead to a reduction of 372 trappers in the under-$2000 category. This number is very close to the proportion that native employment is of total employment in the N.W.T. — 34.5% — as reported in the 1984 labour force survey.

Participation of trappers with real gross production of $2000 or more was positively related to the real income variables: e.g., fur revenue per capita and terms of trade. However, their participation was not systematically influenced by either the availability of jobs in the modern sector or the severity of the winter. These observations lend further support to inferences made from the labour force survey data. Those individuals with the greatest commitment to the trapping industry consist predominantly of people with limited or sporadic involvement in the modern sector, trapping being, in this case, a substitute for employment in the modern economy. Their participation is directly related to the income-generating potential of the trapping activity, since it is likely that this is, for them, an important source of cash income.

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