

## A Taxonomy of Atlantic Canada's High Consumption Rate

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Analysis of regional consumption and savings flows has been a little-researched area of regional economics. Applied regional economics typically focuses on labour markets, migration, and those variables on the production side of gross domestic product where data are available and of reasonably good quality. But, some writers point out that savings flows emanating from within a region might be an important source of local investment (Bradfield 1984, 71-72; Bradfield 1988, 160-164). Consequently, if it can be shown that local savings are important for small-region development, an analysis of personal savings (and, conversely, consumption) by province and region ought to be important. For a poor region like Atlantic Canada, an analysis of consumption and saving may be especially important in this regard.

This research note compares consumption rates for each province in Atlantic Canada from two Statistics Canada data sources: the Provincial Economic Accounts and the Survey of Family Expenditures. The former publishes very high consumption rates (low savings rates) for Atlantic Canada in comparison to the latter. This note accounts for the main reasons for the differing consumption/savings rates for the Atlantic provinces. Somewhat surprisingly, this note finds that the deliberate omission of "net tourism spending" flows in the Provincial Economic Accounts explains little of the region's high consumption rate. The high household spending rates come from two sources. First, imputed home ownership consumption is higher in Atlantic Canada, given that a greater proportion of people own homes relative to the national average. Of those people that do own homes, people in Atlantic Canada own a higher proportion of their homes as equity relative to the Canada

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wide norm. Second, imputed consumption on education is much higher in Newfoundland than it is elsewhere in Canada. Both phenomena explain roughly eighty percent of the measured consumption rate differences between the Provincial Economic Accounts and the Family Expenditure Survey in Atlantic Canada.

### Consumption and Savings Rates in Atlantic Canada

Table 1 presents consumption and savings rate data for each of the provinces in Atlantic Canada, the region as a whole, the "rest of Canada" as taken to mean the six remaining provinces, and for all of Canada, for 1982 and 1986. The first set of two columns show consumer spending rates from Statistics Canada's Provincial Economic Accounts. The second pair of columns show consumption rates using both spending and income data from the Survey of Family Expenditures.<sup>1</sup>

As can be seen from the table, the Atlantic region, especially Newfoundland, Prince Edward Island and Nova Scotia, exhibit relatively high consumption rates as measured by the Provincial Accounts. In 1982, Atlantic Canada's spending rate was 89.2 percent, compared to 79.2 percent for the rest of the country. In 1986, when the national consumption rate rose, the Atlantic region's spending rate was 5.5 percentage points greater than the corresponding rate for the remainder of the country.<sup>2</sup> But the difference in rates of household spending (for Atlantic Canada, in contrast to the rest of Canada) narrows considerably when using the Survey of Family Expenditures information. Using both consumption and disposable income data from that survey, household spending rates in Atlantic Canada are only moderately higher, by about 1.5 to 2 percent, than that for the rest of Canada.

Clearly, the divergent consumption rates as reported in the Provincial Economic Accounts translate into correspondingly wider saving rate differentials (see Table 3).<sup>3</sup> For the six-province "rest of Canada" region, the rate of saving declined from 18.7 to 10.8 percent from 1982 to 1986; for Atlantic Canada, the rate of savings declined from 8 to 4.3 percent over that period. Among individual Atlantic provinces, Newfoundland and Nova Scotia

1. See Appendix 2 for the exact definitions and sources of data used in this research note.
2. For recent literature on the recent decline in savings rates, see Blecker (1990) and Carroll and Summers (1987).
3. The calculated savings rates, when added to the corresponding consumption rates in the first two columns of Table 1, do not add up to unity. This follows since "current transfers from persons to corporations" and "current transfers from persons to non-residents" must be added to savings and consumption to equal personal disposable income.

TABLE 1 Provincial Consumption Rates in Canada (percent)

	Provincial Economic Accounts <sup>a</sup>		Survey of Family Expenditures <sup>b</sup>	
	1982	1986	1982	1986
Newfoundland	92.2	96.1	91.8	95.4
P.E.I.	87.5	88.8	88.7	91.5
Nova Scotia	89.4	93.7	86.4	95.3
New Brunswick	79.3	92.4	85.6	92.7
Atlantic Canada	89.2	93.6	87.4	94.3
Quebec	79.3	89.7	89.9	95.8
Ontario	77.6	86.6	84.4	90.3
Western Canada	81.0	87.7	84.4	91.4
Rest-of-Canada	79.2	87.8	85.8	92.1
Canada	79.9	88.2	85.9	92.2

Source: Statistics Canada, *Provincial Economic Accounts*, Cat. No. 13-213; unpublished data from the Household Surveys Division of Statistics Canada.

- a. Total consumption divided by personal disposable income as measured by the Provincial Economic Accounts.
- b. Total consumption divided by personal disposable income as measured by the Survey of Family Expenditures.

register the lowest household savings rates.<sup>4</sup> The comparatively low savings rates for Atlantic Canada could point to an important economic problem, if it can be shown that some regional investment can originate from local savings. Consequently, it is worthwhile to investigate the sources of the high consumption rates for the Atlantic region.

Consumption data from the Provincial Economic Accounts and the Survey of Family Expenditures can differ for a number of accounting reasons. First, the Provincial Economic Accounts estimates of provincial consumption purposely omit the "net-out-of-province spending" component -- a component analogous to the "net expenditure abroad" estimate made for consumption for

4. Indeed, during the 1960s and for much of the 1970s, all four provinces in Atlantic Canada show negative savings rates. Negative savings rates are not sustainable in the long run, therefore the 1960s and 1970s savings data runs counter to economic intuition. Negative savings rate, if recorded for a long period of time, suggest that aggregate consumption may be overstated, since personal consumption is much larger in importance than transfers to other sectors. As Statistics Canada suggests:

"Because the personal saving figure is calculated residually, it reflects the net effect of any errors occurring in the component estimates of income, consumer spending, and transfers to government and other sectors. The error factor in this estimate is therefore likely to be greater than the error factor in any of the component estimates associated with it." (Statistics Canada, 1975: 157).

Canada as a whole in the National Accounts.<sup>5</sup> The next section of this research note develops rough provincial estimates for this key variable, for 1982 and 1986. Second, certain parts of total Provincial Economic Accounts consumption contain imputed data; the Survey of Family Expenditures consumption data includes cash spending only. The next to last section of this note presents a simple accounting exercise to pinpoint those imputed items which largely account for the differing consumption rates by region. The final section of this note gives concluding comments.

### Net Out-of-Province Spending by Province

Total consumption at the national level includes a "net expenditure abroad" estimate (line 48 of Table 60 in the annual National Income and Expenditure Accounts). This entry adds to consumption non-business spending of Canadian residents abroad, and subtracts out spending by foreigners visiting Canada.<sup>6</sup> Net spending abroad, in current dollars, totalled \$617 million in 1982 and \$119 million in 1986 respectively. (Positive net consumption expenditure abroad translates into a balance of payments deficit in tourism spending.) These amounts represent rather low spending outflows for Canada, relative to other years.<sup>7</sup> After 1983, for example, the tourism deficit typically averaged about \$1.2 billion to \$1.5 billion a year.

At the provincial level, however, analogous "net spending abroad" data are not published. As stated in the Provincial Economic Accounts:

"... the national estimates for personal expenditure on consumer services include expenditure by Canadians outside Canada, net of expenditure by foreigners inside of Canada, while net exports include expenditure by

5. The National Accounts publish "net expenditure abroad" in both current-dollar and constant-dollar terms, as they do for any other expenditure component. This note focuses only on current-dollar magnitudes, given the well-known problems involved with constructing expenditure deflators by province.

6. Since the component is part of aggregate consumption expenditures, only non-business foreign spending is included in it. It is necessary to subtract "travel expenditures chargeable to business expense accounts" from total spending overseas. Other small adjustments must be made to net tourist spending flows; expenditures of Canadian armed forces personnel and gifts-in-kind sent abroad must also be added. See Tables 5-5 in Statistics Canada, National Income and Expenditure Accounts: Volume 3 -- A Guide to the National Income and Expenditure Accounts, Cat. No. 13-549E, p. 154, for details.

7. The \$119 in 1986 represents a sharp, one-year drop in net tourism imports, due to the increased tourism spending on Expo 86, held in Vancouver, British Columbia, among other reasons. In the next section of the text, net tourism spending for British Columbia is seen to show a sharp surplus. See also the discussion in Statistics Canada, Touriscope -- Domestic Travel, 1986, Cat. No. 87-504, p. 38 and Touriscope -- International Travel, 1986, Cat. No. 66-201, p. viii. The low 1982 figure stems from the 1981-82 Canadian recession.

Canadians outside of Canada. These net travel expenditures are not included in the Provincial Economic Accounts because it has not been possible to calculate interprovincial expenditure flows" (From Footnote 1 of Table 1 in Statistics Canada, Provincial Economic Accounts, 1984-1988, Cat. No. 13-213, p. 147.)

The basic difficulty in computing a full-length, provincial "net spending abroad" series, from 1961 to the present, stems from the paucity of tourism spending data. The Education, Culture, and Tourism Division at Statistics Canada only began collecting international tourist spending data in 1972. Data for interprovincial tourism spending (that is, spending by domestic Canadian residents visiting other provinces) is even more fragmentary. The first domestic survey was undertaken in 1971 and bi-annual surveys have been undertaken since 1980. In addition, estimating provincial tourism spending on carrier routes is difficult, if not impossible, due to the difficulty in identifying the origin (by province) of the transportation source. For these reasons, the Provincial Economic Accounts section has decided not to publish this consumption component. For Atlantic Canada, one would expect that net-out-of-province spending would be negative, given the region's relatively large tourism sector. Consequently, the *a priori* expectation is that published Provincial Economic Accounts consumption for the region would be overstated.

Rudimentary net out-of-province spending estimates, however, can be calculated for each province for those years for which overlapping international and interprovincial data are available. Such data exist for 1980, 1982, 1984, 1986, and 1988. In this section, estimates of provincial "net out-of-province spending" are made for 1982 and 1986 only. (In the following section, an analysis is made using the Survey of Family Expenditures, which has, so far, published provincial consumption data for just those two years). The final net out-of-province spending estimates are then adjusted to correspond to the "net expenditure abroad" consumption estimates in the National Accounts. Using such net out-of-province spending estimates, total consumption spending (and residual saving) for Atlantic Canada can then be re-calculated to include net tourism spending.

We first define total tourism spending within provinces as

$$C^i = C_i^i + C_j^i + C_u^i + C_f^i \quad (1)$$

where

$$C^i = \text{total tourism spending within province } i,$$

$$C_i^i = \text{tourism spending in province } i \text{ by residents of province } i,$$

$$C_j^i = \text{tourism spending in province } i \text{ by residents of all other nine provinces } j,$$

$$C_u^i = \text{tourism spending in province } i \text{ by residents of the United States},$$

$$C_f^i = \text{tourism spending in province } i \text{ by residents of foreign coun-}$$

tries other than the United States.

Note that all superscripts of variables in this section of the paper refer to spending in a province; all subscripts of variables in this section refer to the origin of expenditures. (The data sources for all variables in this paper are listed in Appendix 2.)

We then define total tourist spending by residents of province *i* as

$$C_i = C_i^i + C_i^j + C_i^u + C_i^f \quad (2)$$

where

- $C_i^i$  = total tourism spending by residents of province *i*,  
 $C_i^j$  = tourist spending by residents in province *i* in all other nine provinces *j*,  
 $C_i^u$  = tourist spending by residents of province *i* in the United States,  
 $C_i^f$  = tourist spending by residents in province *i* in foreign countries other than the United States.

"Net Out-of-Province Expenditures", for a given province *i*, is defined by subtracting (1) from (2):

$$NC^i = C_i^j + C_i^u + C_i^f - C_j^i - C_u^i - C_f^i \quad (3)$$

and the corresponding "Net Expenditure Abroad", for Canada taken as a whole is defined by summing (3) over *i*:

$$NC^c = C_c^u + C_c^f - C_u^c - C_f^c \quad (4)$$

Note that the  $C_i^j$ ,  $C_j^i$  terms disappear since  $C_i^j - C_j^i$  summed over *i* equals zero.

Data were compiled for  $NC^i$  for 1982 and 1986. The data construction was intended to make  $NC^i$  sum, as closely as possible, to  $NC^c$  (as it appears as line 48, Table 60, Cat. No. 13-201). To do this, several mechanical adjustments had to be made to incorporate net payments of "foreign carriers and crew spending". Also, total travel expenditures chargeable to business expense accounts plus a small residual component had to be estimated by province.<sup>8</sup>

The results of this exercise are shown in the first two columns of Table 2. As can be seen from the table, the Atlantic region runs a balance-of-payments

**TABLE 2** Estimates of Net-out-of-Province Spending and Changes to Consumption Rates: 1982 and 1986

	Net Out-of-Province Spending (\$ millions)		Adjusted Consumption Rates (%) <sup>a</sup>		Change in Consumption Rates after Adjustment (%) <sup>b</sup>	
	1982	1986	1982	1986	1982	1986
Newfoundland	- 2	- 2	92.1	96.0	- 0.1	- 0.1
P.E.I.	- 90	- 66	78.2	83.9	- 9.3	- 4.9
Nova Scotia	- 104	- 44	88.0	93.3	- 1.4	- 0.4
New Brunswick	10	- 33	87.1	91.9	+ 0.2	- 0.5
Atlantic Canada	- 186	- 145	88.2	93.0	- 1.0	-0.6
Rest-of-Canada	806	263	79.5	87.9	+ 0.3	+ 0.1
Canada	617	119	80.2	88.1	+ 0.2	0.0

Source: Calculated as described in the text. See Appendix 2 for details of sources.

- a. Calculated by adding the Net Out-of-Province spending to total Provincial Economic Accounts consumption, and then dividing by Provincial Economic Accounts personal disposable income.  
b. Calculated by subtracting the middle two columns of this table from the first two columns of Table 1.

**TABLE 3** Saving Rates and Changes to Saving Rates: 1982 and 1986

	Unadjusted Savings Rates (%) <sup>a</sup>		Adjusted Savings Rates (%) <sup>b</sup>		Change to Savings Rates after Adjustment (%)	
	1982	1986	1982	1986	1982	1986
Newfoundland	5.4	1.9	5.5	1.9	0.1	0.0
P.E.I.	10.2	8.8	19.4	13.8	9.2	5.0
Nova Scotia	7.7	4.0	9.2	4.4	1.5	0.4
New Brunswick	10.4	5.7	10.2	6.1	-0.2	0.4
Atlantic Canada	8.1	4.3	9.2	4.9	1.1	0.6
Rest-of-Canada	18.7	10.9	18.4	10.7	-0.3	-0.1
Canada	18.0	10.8	17.7	10.4	-0.3	0.0

Source: Calculated from Statistics Canada, Provincial Economics Accounts, Cat. No. 13-213, and from data as described in the text.

- a. Calculated by dividing "Personal Savings" by "Personal Disposable Income".  
b. Calculated by first subtracting Net Out-of-Province Spending (from Table 2) from Personal Savings, then dividing by Personal Disposable Income.

surplus in tourist spending of roughly \$190 million and \$150 million for the two years considered. The rest-of-Canada region thus runs a higher balance-of-payments tourism deficit than Canada as a whole. But as Table 2 shows, changes to overall Provincial Economic Accounts consumption rates, after the net out-of-province spending are added to the official estimates, are quite small.

8. This procedure is done at the national level. See Statistics Canada, "Table 2 -Components of Receipts and Payments on Travel Account", Touriscope -- International Travel, 1986, Cat. No. 66-201, p. 3.

For Atlantic Canada taken as a whole, the decline in the consumption rate is only about one percentage point in 1982 and a half percentage point in 1986. Correspondingly, the savings rate for the region rises from 8.1 to 9.2 percent in 1982, and from 4.3 to 4.9 percent in 1986 (see Table 3). Prince Edward Island's rate of consumption, given its large tourist sector, does fall appreciably, by 9 and 5 percentage points for the two years under consideration. (For this province, the savings rate rises sharply from 10.2 to 19.4 percent in 1982, and from 8.8 to 13.8 percent in 1986.) But for the other three larger provinces, changes in consumption and savings rates are rather small. Consequently, for Atlantic Canada, the explanation of its relatively high consumption rate, as measured by the Provincial Economic Accounts, must lie elsewhere.

### Consumption Rate Differences by Major Commodity Group

Data as estimated by the Provincial Economic Accounts yield higher consumption levels than statistics generated by using the Survey of Family Expenditures. This can be seen, in Table 1, by comparing the first pair of columns with the second pair of columns. The reasons for the higher Provincial Accounts estimates extend beyond that of omitting net out-of-province spending flows. Estimates taken from the Provincial Economic Accounts impute certain items, not normally associated with monetary outlays, to personal consumption.<sup>9</sup> Such imputations include: the rental value of home ownership over and above direct costs of operating a house (property taxes, insurance, mortgage interest, etc.); the total operating costs of educational services, charitable institutions, and insurance companies, over and above the actual fees paid; and "...the cost of farm products consumed directly in farm households, the cost of food received by employees in lieu of wages, and the value of services for which banks and other institutions make no specific charges." (Statistics Canada 1984: 3.15-3.16)

In this section, a comparison of consumption rates between the two Statistics Canada sources is undertaken by major expenditure group for each province in Atlantic Canada, the region as a whole, and Canada taken as a whole. This correspondence exercise entails estimating the difference in consumption rates, between the two data sources, for each of the eight main

9. See Statistics Canada, "The Relationship Between Estimates of Expenditure and Data in the National Accounts", *Family Expenditure in Canada: 1986*, Cat. No. 62-555, pp. 181-182. The Provincial Accounts consumption data is calculated using sales and other domestic allocators onto the respective consumption group at the national level (as shown in Table 60 of Cat. No. 13-201). See Statistics Canada (1978).

spending groups,<sup>10</sup> for each region considered, after taking into account analogous measurement differences for Canada as a whole. The exercise is done for 1982 and 1986. In algebraic terms, define the measurement difference for each major spending component  $k$ , for each province or region  $i$ , as

$$SDIF_{ik} = (C_{ik}^{PA} - C_{ik}^{FE})/PDI_i^{PA} \quad (5)$$

where

$SDIF_{ik}$  = spending difference in province  $i$  in expenditure group  $k$ ,

$C_{ik}^{PA}$  = consumption of major expenditure group  $k$ , in province  $i$ , as measured by the Provincial Economic Accounts,

$C_{ik}^{FE}$  = consumption of major expenditure group  $k$ , in province  $i$ , as measured by the Survey of Family Expenditures,

$PDI_i^{PA}$  = personal disposable income in province  $i$ , as measured by the Provincial Economic Accounts.

Note that the major expenditure groups had to be standardized as to which consumer commodities belonged to which group. An explanation of the method of standardization appears in Appendix 1. The difference of  $SDIF_{ik}$ , with respect to the associated difference for Canada as a whole ( $SDIF_{ck}$ ), is defined as:

$$RDIF_{ik} = SDIF_{ik} - SDIF_{ck} \quad (6)$$

Finally, define the term

$$RDIF_i = \sum_{k=1}^8 RDIF_{ik} \quad (7)$$

10. The eight major consumption groups are: (1) food, beverages, and tobacco; (2) clothing, footwear, and accessories; (3) gross rent, fuel, and water; (4) furniture, furnishings, and household equipment operations; (5) medical care and health services; (6) transportation and communications; (7) recreation, entertainment, education, and cultural services; and (8) personal goods and services. Note that differing components of "net out-of-province" spending, as discussed in the previous section, could be spread out among any of the major expenditure groups. But the major part of that component would be in major group 7, under "recreational services", and major group 8, under "expenditure on restaurants and hotels". So rough comparisons of the two consumption data bases, as done in the third section of this research note, could uncover some of the net out-of-province spending differences, as seen by differences in major groups 7 and 8. The data was kindly provided to the author by the Family Expenditure and Provincial Economic Accounts sections of Statistics Canada, in the form of unpublished worksheets, for which the author is grateful. See Appendix 2 for details.

The variable  $RDIF_i$  measures the deviation of the total consumption rate, for each province, from Canada's total consumption rate, after the normal data measurement differences between the Provincial Economics Accounts and the Survey of Family expenditures are taken into account at the national level. For Atlantic Canada taken as a whole, this difference ( $RDIF_A$ ) is 6.9 percent. (From Table 1,  $SDIF_A = 20.7$  percent;  $SDIF_C = 13.8$  percent. So  $RDIF_A = SDIF_A - SDIF_C = 6.9$  percent. For 1986, analogous arithmetic yields  $RDIF_A = 6.0$  percent.)

Table 4 presents the  $RDIF_{ij}$ ,  $RDIF_i$ , and  $RDIF_A$  data for 1982 and 1986. Note that the  $RDIF_{Aj}$  appear as the third row from the bottom, with  $RDIF_A$  appearing as the right-hand number in that row, for each table. As can be seen from these rows,  $RDIF_{A3}$  (representing regional deviations from data-source differences for the "gross rent, fuel, and water" expenditure group), and  $RDIF_{A7}$  (representing regional deviations of data-source differences for the "recreation, entertainment, education, and cultural services" spending category) account for roughly 80 percent of the  $RDIF_A$  gap. In other words, after taking into consideration the normal data methodology differences at the Canada level, these two expenditure components account in a large part for the relatively high consumption rate in Atlantic Canada, as measured by the Provincial Economic Accounts. Each will be discussed in turn:

- (i) **Gross Rent, Fuel, and Water Consumption:** a further decomposition of this spending group was undertaken, in which more detailed  $RDIF_{i3m}$  numbers were calculated, with  $m = 1...3$  being "gross paid rent", "gross imputed rent", and "other" categories respectively. Atlantic Canada has  $RDIF_{A3}$  values of 3.5 and 2.8 percent for 1982 and 1986 respectively, and these differentials are largely accounted for by the "gross imputed rent" sub-category: This sub-group accounts for 3.2 percentage points (of the 3.5) and 2.5 percentage points (of the 2.8) in 1986. Statistics Canada reports a high gross imputed rent for Atlantic Canada for two reasons. First, the proportion of families in Atlantic Canada owning their own homes (about 70 per cent) is higher than that for Canada as a whole (about 60 per cent). Second, home owners in the Atlantic region own proportionately more of their homes as equity, relative to the rest of the country.<sup>11</sup>

11. Using 1981 Census information as a benchmark, roughly 74 percent of Atlantic Canadians owned their own homes, as compared to about 62 percent for Canada as a whole. (See, Statistics Canada "Table 1: Occupied Private Dwellings by Tenure ...", Occupied Private Dwellings: Selected Characteristics, Cat. No. 92-932, (1983), pp. 1-1 - 1-4). Census data for 1986 shows similar relative home ownership patterns. See Table 1, in Statistics Canada, Dwellings and Households: Part 2, Cat. No. 93-105. A different survey, Statistics Canada, Incomes, Assets, and Indebtedness of Families in Canada, 1977, provides corroborating evidence. From Table 49, roughly 70 percent of families in Atlantic Canada are homeowners, in contrast to 60 percent for Canadian families as a whole. Also, roughly 63 per cent of

TABLE 4 Consumption Rate Differences, by Statistics Canada Source and Relative to Canada, by Province and Region, and by Consumption Expenditure Component: 1982

	Consumption Expenditure Group <sup>a</sup>								
	RDIF <sub>11</sub>	RDIF <sub>12</sub>	RDIF <sub>13</sub>	RDIF <sub>14</sub>	RDIF <sub>15</sub>	RDIF <sub>16</sub>	RDIF <sub>17</sub>	RDIF <sub>18</sub>	RDIF <sub>i</sub> <sup>b</sup>
Nfld.	-1.6	-0.5	3.7	0.7	-0.2	1.0	7.4	0.4	10.9
P.E.I.	1.0	0.8	3.1	1.5	-0.1	1.9	0.4	2.1	10.8
N.S.	-0.6	0.5	3.6	0.6	0.3	0.7	1.2	0.0	6.4
N.B.	0.2	0.2	3.2	0.4	0.7	-0.8	0.2	-0.4	3.8
Atlantic Canada	-0.6	0.2	3.5	0.6	0.3	0.4	2.4	0.2	6.9
Rest of Canada	0.0	0.0	-0.3	-0.1	0.0	-0.1	-0.1	-0.1	-0.7
Canada	---	---	---	---	---	---	---	---	---

  

	Consumption Expenditure Group <sup>a</sup>								
	RDIF <sub>11</sub>	RDIF <sub>12</sub>	RDIF <sub>13</sub>	RDIF <sub>14</sub>	RDIF <sub>15</sub>	RDIF <sub>16</sub>	RDIF <sub>17</sub>	RDIF <sub>18</sub>	RDIF <sub>i</sub> <sup>b</sup>
Nfld.	1.5	-0.4	2.3	-0.2	-0.6	0.6	6.0	-0.4	9.1
P.E.I.	-1.5	0.1	1.3	-0.1	-0.4	-1.1	-0.8	0.1	-2.1
N.S.	0.5	0.8	3.2	0.2	0.2	0.9	1.0	0.1	7.1
N.B.	0.3	0.6	2.9	0.6	0.6	0.5	-0.2	-1.4	3.5
Atlantic Canada	0.9	0.4	2.8	0.1	0.1	0.6	1.7	-0.5	6.0
Rest of Canada	0.0	-0.1	-0.3	0.0	-0.2	-0.2	-0.2	0.0	-0.7
Canada	---	---	---	---	---	---	---	---	---

- a. The Consumption Expenditure Groups are defined as follows:  
 1 - food, beverages, and tobacco; 2 - clothing, footwear, and accessories; 3 - gross rent, fuel and power; 4 - furniture, furnishing, and household equipment and operations; 5 - medical care and health series; 6 - co-transportation and communications; 7 - recreation, entertainment, education, and cultural services; and 8 - personal goods and services. Also see Appendix 1.
- b. Calculated as described in the text. See Appendix 2 for sources of data.

- (ii) **Recreation, Entertainment, Education and Cultural Services:** it is noted immediately from Table 4 that Newfoundland accounts in large part for the Atlantic region's large  $RDIF_{A7}$ . To pinpoint the exact source of this large measurement difference, this component was disaggregated further for Newfoundland. Of the four subgroups, education consumption accounted for more than 100 percent of Newfoundland's total reported  $RDIF_{F7}$  (7.8 percent in 1982 and 8.2 percent in 1986). Detailing Newfoundland's

Atlantic region homeowners own their residences mortgage free while the comparable figure for Canadian homeowners is 46 percent.

education spending further, the huge expenditure outlay is accounted for by its large "private school" consumption. As measured by Statistics Canada, the province is said to represent roughly 30 percent of the Canadian "private school" consumption.<sup>12</sup> The province's entire elementary and secondary school system is church run, and this stylized fact appears in the provincial accounting system as "private schooling" (see Munroe (1974), chapter 11).

Finally, note that the eighth major consumption group, which includes "restaurants and accommodation" spending, explains little of the aggregate consumption differences, except for Prince Edward Island. It is this spending category which would reflect large net out-of-province spending in this exercise.

## Conclusions

This research note shows that, while Atlantic Canada's average consumption rate as measured by the Provincial Economic Accounts is comparatively higher than that as measured by the Family Expenditure Survey, the reasons for this differential cannot be attributed to regional differences in net tourism spending. Only in Prince Edward Island does such non-resident spending play any important role. This note showed that the higher imputed owner-occupied housing consumption, plus the high "private school" consumption in Newfoundland, account, in large part, for the measured survey difference.

One troubling puzzle as yet to be explained is the negative savings flows for each Atlantic province during the 1960s and 1970s. Proportionately larger imputed consumption implies comparatively higher consumption rates, since extra imputations on the consumption side are matched dollar-for-dollar by added imputations in earned (disposable) income (for a discussion of this practice, see Reich (1987)). The marginal propensity to consume out of imputed income equals one, by definition, so any recorded negative savings must use an approach different from that of this note. This paper focused on the 1980s, where data are more plentiful.

The results of this paper are only suggestive. First, the "net out-of-province spending" estimates shown above should be considered as rudi-

12. One could ask whether Newfoundland's church-run elementary and secondary schooling, which is included in "private school" consumption, is comparable to private education in other parts of the country. Similarly, one could ask whether houses in Atlantic Canada, used in computing "gross imputed rent", are comparable with housing conditions in the rest of the country. In this paper inter-regional current-dollar consumption estimates are comparable only in-so-far as to the closeness of provincial (regional) allocators used to proxy final current-dollar consumption spending.

mentary. Moreover, the quality of the data used makes accurate measurement impossible. As is suggested in Appendix 1, much of the data used for this paper came from unpublished work-sheets from Statistics Canada. That agency has been reluctant to publish the data for individual provinces of Atlantic Canada since, given the small size of the provinces and the varied detail of consumption sub-components, the data are prone to error. Poor survey response rates, inherent regional measurement problems, and other errors in regional income accounting make explanations of some stylized facts difficult.

These caveats having been made, regional accounting research in Canada could be directed to expanding both inter-province spending and intra-provincial saving flows in a fruitful way. First, the rudimentary "net out-of-province spending" estimates as shown in Table 2 could be refined, extended to other provinces, and calculated for other years as a time series. Other data construction methods could be used to "backcast" the data through the 1970s and 1960s. Ultimately, a single time series, "net out-of-province spending" ought to be included as a consumption component in the Provincial Economic Accounts.

Accounting research could also be extended to estimate total corporate saving at the provincial level. Some components of the total (for example, inventory valuation adjustment, capital assistance from government, and unremitted profits of government business enterprises) could be estimated fairly accurately. But undistributed corporate profits, the remaining component of total corporate saving, would be difficult to measure. Special surveys or some related allocator technique would have to be used to calculate that key savings variable.

If total provincial corporate savings could be estimated, a total "net out-of-province savings" variable could be estimated as a residual, subtracting provincial personal savings, corporate savings, and government savings (the government deficit) from zero. Such a rudimentary set of savings flow accounts would prove useful for regional development research in Canada.

## Appendix 1

This Appendix explains how the Family Expenditure consumption data were massaged to adhere to the Provincial Accounts consumption data. In all cases the Family Expenditure statistics were changed; the Provincial Accounts data were left unchanged. This massaging exercise was done for 1982 and 1986.

"Total current consumption" includes household transfers to government and business, thus these payments had to be netted out. These were: drivers' licence fees, registration fees, public medical insurance, forfeits on deposits (to government), and interest on personal loans (to business). To this result is added "expenditures on other gifts e.g. flowers, clothing, and toys" and "con-

tributions to charitable organizations".

For each major consumption expenditure group  $k$ , the following adjustments were made:

- $k=1$ : food, beverages, and tobacco. "Tobacco products and alcoholic beverages", less "alcohol beverages served on licensed premises", was added to "food purchased from stores".
- $k=2$ : clothing, footwear, and accessories. From "clothing" was subtracted "laundry and dry cleaning" and "total jewellery".
- $k=3$ : gross rent, fuel, and power. "Board paid to private households" was added to, and "traveller accommodation" was subtracted from "total shelter" expenditures.
- $k=4$ : furniture, furnishings, and household equipment and operations. To calculate this aggregate, the following components were summed: "household operation", "household furnishings", "laundry and dry cleaning", and "home entertainment and appliances", while "communications" expenditures were netted out.
- $k=5$ : medical care and health services. Calculated as "health care", less spending on "public hospital and medical plans".
- $k=6$ : transportation and communication. "Transportation" and "communication" were first summed, then spending on "drivers' licences" and "other registration fees" were netted out.
- $k=7$ : recreation, entertainment, education, and cultural services. "Recreation", "reading materials" and "education" spending were summed, then "home entertainment appliances" was netted out.
- $k=8$ : personal goods and services. To calculate this heterogeneous consumption group, first the following components were summed: "food purchased from restaurants", "traveller accommodation", "alcohol purchased from licensed establishments", "jewellery", "personal care", "miscellaneous", and "gifts and contributions". Then, "interest on personal loans", "forfeit on deposits", and "money gifts and contributions" were subtracted.

## Appendix 2

### Mnemonics and Sources of Data

- $C^i$  Total tourism spending in province  $i$  by resident of that province. The 1982 data was provided to the author by the Education, Culture, and Tourism Division of Statistics Canada. The 1986 data comes from Statistics Canada, "Table 38: Domestic Travel Account Balance, by Province 1986", Touriscope -- Domestic Travel, 1986, Cat. No. 87-504, p. 92.
- $C_j^i$  Total tourism spending in province  $i$  by residents of all other nine provinces  $j$ . The 1982 data comes from the Education, Culture and Tourism Division of Statistics Canada. The 1986 data comes from Table 38 of Cat. No. 97-504, as cited above.
- $C_u^i$  Total tourism spending in province  $i$  by residents of the United States. These data were provided to the author by the Education, Culture and Tourism Division of Statistics Canada.
- $C_f^i$  Total tourism spending in province  $i$  by residents of foreign countries other than the United States. The data for individual Atlantic Canadian provinces was provided to the author by the Education, Culture and Tourism Division of Statistics Canada. Data for the remaining provinces, Atlantic Canada, and the Canadian total can be found in Statistics Canada, "Table 19: Trip Characteristics of Residents of Countries other than the United States Entering Canada and Staying One or More Nights, by Province Visited, 1982", Travel Between Canada and Other Countries, 1982, Cat. No. 66-201, and Touriscope, International Travel 1986, Cat. No. 66-201.
- $C_j^i$  Total tourism spending by residents of province  $i$  in all other nine provinces  $j$ . The 1982 data comes from the Education, Culture and Tourism Division of Statistics Canada. The 1986 data were calculated residually, subtracting  $C_j^i$  from total  $C^i$  spending, "by province of origin", found in Statistics Canada, "Table 33: Total and Overnight Travel, Reported Expenditures by Type and Province of Origin", Touriscope, Domestic Travel, 1986, Cat. No. 87-504.
- $C_i^u$  Total tourist spending by residents of province  $i$  in the United States. These data were provided to the author by the Education, Culture, and Tourism Division of Statistics Canada.
- $C_i^f$  Total tourist spending by residents in province  $i$  in foreign countries other than the United States. The data for individual Atlantic Canadian provinces came from Education, Culture, and Tourism Division of Statistics Canada. Data for the remaining



six provinces, Atlantic Canada, and the Canadian total can be found in Statistics Canada, "Table 32: Trip Characteristics of Canadian Residents Returning from Countries Other than the United States, by Province of Residence, 1982", Travel Between Canada and Other Countries, 1982, Cat. No. 66-201, and Touriscope, International Travel 1986, Cat. No. 66-201.

$C_{ik}^{PA}$  Consumption spending on a Provincial Economic Accounts basis, for each province  $i$ , for each major group  $k$ , as described in footnote 10 above. The data were provided to the author by the Provincial Economic Accounts section of Statistics Canada.

$C_{ik}^{FE}$  Consumption spending on a family expenditure basis, for each province  $i$ , for each major group  $k$ , as described in Appendix 1. The data were compiled using a special run undertaken by the Family Expenditure Surveys Section of Statistics Canada for the author. The special run added part-year families to full-year families, by province, then calculated consumption "aggregates" by detailed expenditure category by multiplying each family class, respectively, by published per-full-time family spending and the (unpublished) per-part-time family spending. The consumption aggregates, by province and by component, were then adjusted as described in Appendix 1. The author thanks the Family Expenditure Surveys section for their help in providing the data.

$PDI_i^{PA}$  Personal disposable income, by province. Statistics Canada, "Table 16: Sources and Disposition of Personal Income", Provincial Economic Accounts, Cat. No. 13-213.

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