

# *Incidence and Distribution: Newfoundland's Consumption Tax Revisited*

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## PRÉCIS

Cet article réexamine l'incidence et le fardeau des taxes provinciales de vente et d'accise à Terre-Neuve. L'article est basé sur des séries de données sur la distribution des dépenses dans la province qui n'étaient pas disponibles auparavant, et il recourt à un échantillon d'une durée plus longue et à une fourchette plus étendue de concepts de revenu que ceux utilisés dans des études précédentes; nous sommes donc en mesure de présenter des résultats nouveaux et plus détaillés.

L'article donne une estimation des tendances, pour la période de 1984 à 1992, dans l'incidence de la taxe de vente au détail (TVD) prélevée respectivement sur tous les articles imposables, les vêtements pour hommes, les vêtements pour dames et la portion imposable des dépenses en nourriture. L'article mentionne également des résultats séparés pour les taxes d'accise sur le tabac et les boissons alcooliques. Étant donné le concept de revenu que nous préférons, c'est-à-dire celui associé à la variante centrale, les taxes à la consommation semblent principalement, et de plus en plus, régressives. Ces résultats font contraste avec les résultats d'études précédentes portant sur Terre-Neuve. Par ailleurs, la taxe d'accise sur les boissons alcooliques constitue une exception car elle marque un recul sensible en régressivité. Le TVD sur les vêtements produit des résultats intéressants en ce qui concerne l'incidence par sexe et les effets de distribution. Pour la période de l'étude, le fardeau relatif des taxes à la consommation retombe manifestement sur les groupes à revenus faibles.

Étant donné la variation dans les résultats d'incidence et les tendances qui sont indiquées par les données, il est indispensable d'effectuer un choix judicieux en ce qui concerne le concept de revenu, les hypothèses

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des déplacements du fardeau fiscal et la période échantillon si l'on veut que les initiatives visant à réformer l'impôt atteignent leurs objectifs d'efficacité et d'équité.

## ABSTRACT

This article re-examines the incidence and burden of provincial sales and excise taxes in Newfoundland. It is based on distributive provincial expenditure series that were not previously available, and it uses a longer sample period and a wider range of income concepts than earlier studies used; thus we are able to report new and more detailed results.

The article estimates incidence patterns for the period 1984 to 1992 for the retail sales tax (RST) levied on, respectively, all applicable items, men's clothing, women's clothing, and the taxable portion of food expenditures. It also reports separate results for excise taxes on tobacco products and alcoholic beverages. Given our preferred income base, central variant income, commodity taxes appear to be predominantly and increasingly regressive, a result contrary to the results of earlier studies for Newfoundland. The excise tax on alcoholic beverages provides an exception to this result, since it displays a marked decline in regressivity over time. The RST on clothing shows interesting gender-specific incidence and distributional effects. Over the study period, the relative burden of consumption taxes fell squarely on low-income groups.

Given the variation in the estimated incidence results and the trends indicated by the data, a judicious choice of income concept, shifting assumptions, and sample period is necessary if tax reform initiatives are to achieve their efficiency and equity objectives.

## INTRODUCTION

Recommendations in the 1992 strategic economic plan<sup>1</sup> for Newfoundland led the provincial government, in its 1992 ministerial financial statement, to introduce higher tobacco, gasoline, and diesel taxes, increase various licence fees, and raise income tax rates. In framing such tax reform initiatives, policy makers rely heavily on analyses of tax incidence and tax burden. Yet the usefulness of these analyses to policy makers is tempered by the fact that different studies often produce different results. There are several reasons why reported incidence results may differ. Some of these reasons refer to the analytical procedures used in

<sup>1</sup> Government of Newfoundland and Labrador, Economic Recovery Commission, *Challenge and Change—A Strategic Economic Plan for Newfoundland and Labrador* (St. John's: the commission, June 1992). Newfoundland Minister of Finance Winston Baker presented his Financial Statement on December 4, 1992. No analysis of these tax changes is in evidence; see J. Feehan, W. Locke, S. Lynch, N. Roy, and C.M. Wernerheim, *Provincial Government Budgetary Policy: An Assessment of the 1993-94 Budget and the Ministerial Financial Statement*, Research and Policy Papers no. 18 (St. John's: Memorial University of Newfoundland, Institute for Social and Economic Research, June 1993).

incidence studies, and as they are well understood they need present little difficulty to policy making; other, data-related reasons have perhaps received less attention.

Conventional wisdom holds that consumption taxes are regressive. The degree of regressivity identified by a researcher will vary, however, with the concept of income and the shifting assumptions used in the analyses. If one assumes that consumption taxes are shifted forward to consumers, one's results will tend to show that the taxes are regressive; if instead the assumption is that consumption taxes are shifted backward to recipients of factor incomes, the result will be that the taxes are progressive.<sup>2</sup> Relatively recent studies have noted that the independent treatment of shifting assumptions and income concepts typical of past studies can lend a troublesome ambiguity to incidence results. Meerman<sup>3</sup> and Whalley<sup>4</sup> have shown that it not only complicates the interpretation and comparison of existing empirical results but also makes the redistributive effects of the tax system more uncertain than they were previously thought to be.<sup>5</sup>

More difficult to assess ex post are differences in results attributable to the sparseness and poor quality of the available data. Our results suggest that data-related issues matter more than they are often thought to do.<sup>6</sup> Previous studies for Newfoundland, like most other Canadian regional tax incidence studies, have taken the national framework for incidence analysis and made separate regional calculations. Using detailed provincial expenditure data that have only recently become available, we are able to present new and more detailed calculations of the incidence and the burden of sales and excise taxes.<sup>7</sup>

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<sup>2</sup> See, for example, the Canadian studies summarized by Jean-Marie Dufour and François Vaillancourt, "Provincial and Federal Sales Taxes: Evidence of Their Effect and Prospect for Change," in Wayne R. Thirsk and John Whalley, eds., *Tax Policy Options in the 1980s*, Canadian Tax Paper no. 66 (Toronto: Canadian Tax Foundation, 1982), 408-36.

<sup>3</sup> Jacob Meerman, "The Incidence of Sales and Excise Taxes, or Where Do We Put the Transfers?" (December 1980), 88 *Journal of Political Economy* 1242-48.

<sup>4</sup> John Whalley, "Regression or Progression: The Taxing Question of Incidence Analysis" (November 1984), 17 *Canadian Journal of Economics* 654-82.

<sup>5</sup> See also G.C. Ruggeri, D. Van Wart, and R. Howard, "The Redistributive Impact of Taxation in Canada" (1994), vol. 42, no. 2 *Canadian Tax Journal* 417-51; Frank Vermaeten, W. Irwin Gillespie, and Arndt Vermaeten, "Tax Incidence in Canada" (1994), vol. 42, no. 2 *Canadian Tax Journal* 348-416; and G.C. Ruggeri, D. Van Wart, and R. Howard, "Equity Aspects of Sales Taxes and Income Taxes" (1994), vol. 42, no. 5 *Canadian Tax Journal* 1263-75.

<sup>6</sup> Notwithstanding Whalley's point that the choice of shifting assumptions matters most "irrespective of how carefully the data work is done or how elaborate or detailed the original data sources are." *Supra* footnote 4, at 664.

<sup>7</sup> Related studies for Newfoundland or Atlantic Canada include R. Howard, G. Ruggeri, and D. Van Wart, "The Progressivity of Provincial Income Taxes in Canada" (1991), vol. 39, no. 2 *Canadian Tax Journal* 288-308; and Ronald Meng and W. Irwin Gillespie, "The Regressivity of Property Taxes in Canada: Another Look" (1986), vol. 34, no. 6 *Canadian Tax Journal* 1417-30.

The two earlier studies for Newfoundland considered only sales taxes and an aggregate of all consumption taxes. In the first of these studies, Ruggeri<sup>8</sup> found the sales tax to be regressive when he used a definition of income that omitted government transfers and nearly proportional when he used an income measure that included government transfers. Schrank and Feehan<sup>9</sup> used family money income as the only income measure and assumed full forward shifting; they concluded that the sales tax and an aggregate of sales and excise taxes were both “effectively proportional.” By contrast, our results, based on six income concepts, suggest that sales and excise taxes are predominantly regressive, and increasingly so in recent years. In evidence also is an increase in the relative burden of consumption taxes on lower income groups.

Both the Ruggeri study and the Schrank and Feehan study used Canadian family expenditure data, since no provincial distributive series of household expenditure were then available. Ruggeri based his expenditure pattern for Newfoundland on national data, which calculate sales tax revenue on the basis of current consumption. Schrank and Feehan used the expenditure pattern for St. John’s as a proxy for the provincial expenditure distribution. Both methods may have biased the results. For instance, only about 17 percent of the province’s population resides in the St. John’s metropolitan area.<sup>10</sup> Differences between urban and rural lifestyles, and differences between the consumption patterns of the rich and the poor in the same location, render questionable the generalization of the results obtained by Schrank and Feehan for St. John’s to the province as a whole.<sup>11</sup> Also, the breakdown of the 12-category expenditure distribution<sup>12</sup> reported by Schrank and Feehan is not sufficiently detailed to permit comparison of our results with their allocation of tax payments to various income classes, particularly in the case of key expenditure categories such as tobacco products and alcoholic beverages. Ruggeri<sup>13</sup> and others have also brought attention to the role of the sample period in determining incidence. Ruggeri used a single year, 1969. Schrank and Feehan<sup>14</sup> provided observations for three years, 1974, 1978, and 1982, but found no significant changes in the incidence pattern from year to year.

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<sup>8</sup> G.C. Ruggeri, “On the Regressivity of Provincial Sales Taxation in Canada” (Summer 1978), 4 *Canadian Public Policy* 364-72.

<sup>9</sup> William E. Schrank and James P. Feehan, “The Regressivity of Newfoundland’s Consumption Tax Structure, 1974-1982” (1984), vol. 32, no. 2 *Canadian Tax Journal* 294-309.

<sup>10</sup> Statistics Canada, *Dwellings and Households*, catalogue no. 93-311.

<sup>11</sup> Likewise, it is not possible to determine the extent to which the differences in sales tax incidence between Newfoundland and the other provinces observed by Ruggeri, supra footnote 8, are attributable to regional (or provincial) differences in tax rate profiles not reflected in adjusted national data.

<sup>12</sup> Schrank and Feehan have indicated to the authors that their data set, although originally somewhat larger, was truncated to arrive at the 12 expenditure categories used in their analysis.

<sup>13</sup> Supra footnote 8.

<sup>14</sup> Supra footnote 9.

We have avoided these data-related problems by basing our calculations of tax incidence and tax burden on a provincial distributive expenditure series available from 1984, a wider range of income measures, and a longer sample period.

It is the inadequacy of the data used in the earlier studies, rather than any inadequacy in analysis, that has led us to re-examine the incidence of Newfoundland's sales and excise taxes. The remainder of the article is organized as follows. The next section describes the methodology and the data. The third section presents the income distribution of households. The fourth section discusses the incidence patterns of sales and excise taxes, and the fifth discusses their distributive effects on households. The final section summarizes our results and considers their policy implications.

### METHODOLOGY AND DATA

This section explains the model, database, income concepts, and shifting assumptions that we employed in estimating the tax incidence patterns. We used the new social policy simulation database and model (SPSD/M), which Statistics Canada developed for analysis of the financial interactions of governments and individuals.<sup>15</sup> The model combines a highly disaggregated national database, simulation algorithms, and a separate commodity tax input/output model that estimates effective federal and provincial retail-sales-tax-equivalent commodity tax rates by expenditure category and tax type. Our estimates of effective tax rates are based on income data from the System of National Accounts (SNA) and expenditure data from the Survey of Family Expenditure (FAMEX).<sup>16</sup> We defined the effective tax rate for each expenditure component as the ratio of total commodity taxes paid to the total supply price of the expenditure component exclusive of the relevant taxes.<sup>17</sup> To calculate the effective tax rates

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<sup>15</sup> Several other recent studies of tax incidence in Canada have used the same model. See in particular Patrick Grady, "The Distributional Impact of the Goods and Services Tax: A Reply to Gillespie" (1991), vol. 39, no. 4 *Canadian Tax Journal* 937-46; Vermaeten et al., supra footnote 5; and Ruggeri et al., supra footnote 5.

<sup>16</sup> Certain discrepancies between the SNA data and the FAMEX data are inevitable, since the FAMEX categories are applied to the household sector only whereas the SNA draws on the entire personal sector, including households, self-employed professionals, and non-profit organizations. For example, FAMEX includes consumer expenditures that are typically underreported in surveys, such as alcohol, tobacco, and insurance premiums. The derivation of distributive series for Newfoundland from the SNA also gives rise to a discrepancy between the Statistics Canada data contained in the SPSPD/M data base and that of the Provincial Economic Accounts. We avoid these problems here by using income data from the Provincial Economic Accounts and expenditure data from the Newfoundland Statistics Agency whenever there is a discrepancy between data from these sources and the data in the SPSPD/M database.

<sup>17</sup> The effective sales tax rate = (direct taxes + all taxes reallocated from the production process)/(producers' value added + all trade margins' value added). For more details on the SPSPD/M, see Michael Bordt, Grant J. Cameron, Stephen F. Gribble, Brian B. Murphy, Geoff T. Rowe, and Michael C. Wolfson, "The Social Policy Simulation Database and Model: An Integrated Tool for Tax/Transfer Policy Analysis" (1990), vol. 38, no. 1 *Canadian Tax Journal* 48-65.

**Table 1 Newfoundland Inflation, Retail Sales Tax, and Excise Tax Rates**

	1984	1986	1989	1992
Inflation <sup>a</sup> . . . . .	4.4%	2.9%	3.6%	1.1%
Retail sales tax <sup>b</sup> . . . . .	12%	12%	12%	12% <sup>c</sup>
Excise taxes				
Gasoline . . . . .	22%	22%	23%	13.7 <sup>d</sup>
Diesel . . . . .	26%	26%	27%	15.6
Alcoholic Beverages . . . . .	51%	47%	41%	33%
Cigarettes <sup>e</sup> . . . . .	4.78	4.78	5.28	7.78
Cigars <sup>f</sup> . . . . .	11-57	13-69	125% <sup>g</sup>	125%
Tobacco <sup>h</sup> . . . . .	33	33	3.52	5.19

Sources: Newfoundland Statistics Agency and the Department of Finance, Government of Newfoundland and Labrador.

<sup>a</sup> Calculated from the CPI (all items), Newfoundland, year-on-year, CANSIM #P683000.

<sup>b</sup> Includes clothing. <sup>c</sup> In Newfoundland, this tax is applied to the 7 percent goods and services tax (GST). The GST increased consumer prices by 1.6 percent at the national level in 1991, the year of its introduction; see 1992 Economy, Government of Newfoundland and Labrador. <sup>d</sup> On March 7, 1992, the calculation of the tax on gasoline and diesel fuel was changed from an ad valorem (average retail price per litre) to a per-unit basis (cents per litre sold). <sup>e</sup> Cents per cigarette. <sup>f</sup> Cents per cigar. <sup>g</sup> In the 1989 budget, an ad valorem tax based the manufacturer's suggested retail price replaced the per-unit levy. <sup>h</sup> Cents per half-ounce unit. In 1989, the fine cut rate per 25 gram unit was changed to two-thirds of the cigarette rate per unit.

for Newfoundland, we applied the statutory nominal sales and excise tax rates shown in table 1, assumptions about tax shifting, and various user-defined income concepts. The resulting distributive series of tax payments was then expressed both in dollar terms and as a percentage of income. The flexibility of the software environment allowed us to adjust the SPSD/M database in order to represent the Newfoundland context more accurately. Thus we adjusted the database to ensure consistency between all income and expenditure categories. To this end, we substituted the actual growth rate of personal income from the provincial economic accounts for the rate derived from the population-adjusted Statistics Canada data for Newfoundland in the standard SPSD/M database. On the expenditure side, we (1) removed the imputed components of educational, cultural service, and health care expenditures not paid by households and (2) ensured that underreported expenditures on alcohol and tobacco products and insurance premiums matched known levels of provincial revenue. Table 2 shows the distribution of provincial aggregate taxable household expenditures by commodity group in dollars and as a percentage of total expenditure for the four years in our sample period. We used this distribution to estimate incidence patterns of sales and excise taxes for a range of income concepts. This exercise permits comparison of our results with those of previous studies for Newfoundland. It also allows us to consider two issues, raised in the literature, about the income concepts most commonly used: the treatment of transfer payments and the respective merits of the current-income and life-cycle income concepts.

Table 2 Personal Expenditures on Goods and Services in Newfoundland

Expenditure category	1984		1986		1989		1992	
	%	\$ millions	%	\$ millions	%	\$ millions	%	\$ millions
Food and non-alcoholic beverages . . . . .	14.41	677.8	13.66	729.6	12.44	811.5	12.09	889.9
Alcoholic beverages . . . . .	4.0	188.3	4.28	228.6	4.14	269.7	4.1	301.8
Tobacco . . . . .	2.31	108.9	2.72	145.3	2.49	162.1	2.85	209.7
Men's and boys' clothing . . . . .	2.16	101.7	1.97	105.2	1.80	117.7	1.54	113.4
Women's, girls', and infants' clothing . . . . .	3.19	150.2	3.04	162.4	2.85	185.6	2.64	194.7
Footwear and shoe repair . . . . .	0.84	39.7	0.77	40.9	0.70	45.4	0.59	43.6
Gross imputed rent . . . . .	11.70	550.4	12.16	649.8	12.54	817.7	13.18	970.2
Gross paid rent . . . . .	2.22	104.6	2.23	118.9	2.22	144.8	2.33	171.9
Other lodging . . . . .	0.25	11.7	0.25	13.5	0.27	17.5	0.28	20.9
Electricity . . . . .	2.82	132.5	2.85	152.0	2.51	163.5	2.96	217.8
Natural gas . . . . .	0.22	10.5	0.00	0.0	0.17	11.3	0.0	0.0
Other fuels . . . . .	1.68	78.9	1.69	90.2	1.29	84.1	1.7	124.8
Furniture, carpets, and floor covering . . . . .	1.46	68.5	1.43	76.2	1.48	96.7	1.29	95.1
Durable household appliances . . . . .	1.35	63.4	1.24	66.4	1.18	77.0	1.00	73.3
Semidurables . . . . .	2.78	130.6	2.78	148.3	2.79	182.0	2.44	179.3
Non-durables . . . . .	2.32	109.2	2.23	119.3	2.09	136.5	2.05	150.9
Laundry and dry cleaning . . . . .	0.12	5.8	0.13	7.0	0.13	8.2	0.15	11.1
Domestic services . . . . .	0.96	45.2	0.99	53.0	1.11	72.5	1.26	93.0
Other household services . . . . .	0.29	13.8	0.26	14.1	0.30	19.5	0.27	20.2
Medical care . . . . .	10.18	55.6	1.24	66.4	1.31	85.5	1.45	106.5
Hospital care . . . . .	0.25	11.9	0.34	18.1	0.32	21.0	0.33	24.6
Other medical care . . . . .	0.15	7.1	0.17	9.1	0.16	10.4	0.16	12.1
Drugs and sundries . . . . .	1.59	74.6	1.58	84.4	1.66	108.0	1.6	117.7
New and used automobiles . . . . .	4.97	233.7	4.70	251.0	5.14	335.2	3.86	284.3
Auto repairs and parts . . . . .	1.83	86.3	1.81	96.8	2.08	135.5	1.75	128.8
Gasoline, oil, and grease . . . . .	3.75	176.4	3.63	194.0	3.28	213.6	3.37	248.0
Other auto-related services . . . . .	0.42	19.8	0.48	25.5	0.52	33.6	0.77	56.8
Local and intercity transportation . . . . .	1.96	92.4	1.94	103.5	1.86	121.6	1.81	133.3
Telephone and other communications . . . . .	1.65	77.4	1.69	90.4	1.77	115.3	1.85	136.0

(Table 2 is concluded on the next page.)

**Table 2 Concluded**

Expenditure category	1984		1986		1989		1992	
	%	\$ millions	%	\$ millions	%	\$ millions	%	\$ millions
Recreation, sports, and camping equipment .....	2.31	108.6	2.37	126.5	2.63	171.4	2.64	194.4
Books, magazines, and stationery .....	1.33	62.8	1.30	69.7	1.38	90.0	1.26	93.1
Recreational services .....	1.31	61.8	1.48	79.1	1.88	122.3	2.13	157.1
Education and cultural services .....	10.53	495.2	10.45	558.5	10.43	680.0	10.32	759.8
Jewellery, watches, and repairs .....	0.54	25.2	0.48	25.9	0.44	28.4	0.36	26.3
Toilet articles, cosmetics, etc. ....	1.25	58.7	1.22	65.4	1.19	77.8	1.20	88.0
Personal care .....	0.70	33.0	0.75	40.2	0.8	52.1	0.94	69.3
Expenditure in hotels and restaurants .....	4.64	218.2	4.80	256.5	5.17	336.8	5.36	395.0
Personal business .....	2.65	124.6	2.92	155.8	3.44	224.1	3.91	288.0
Contributions to non-profit organizations .....	1.90	89.3	1.97	105.2	2.07	134.9	2.20	162.0
Net expenditure abroad .....	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
Total expenditure .....	100.00	4,704.3	100.00	5,342.7	100.00	6,520.8	100.00	7,362.7
Average household expenditure (\$) .....	—	29,476	—	32,919	—	38,699	—	41,857

Sources: Calculated from the *Provincial Economic Accounts* (Newfoundland Statistics Agency); Statistics Canada, *Provincial Economic Accounts, Annual Estimates*, catalogue no. 13-213 and *Provincial Economic Accounts, Preliminary Estimates*, catalogue no. 13-213P; and the SPSP data base.



Measures of the incidence of commodity taxation and of the distribution of the commodity tax burden that exclude transfer payments from income can differ dramatically from measures that include transfers in income. This point was first made by Browning and by Browning and Johnson,<sup>18</sup> who argued that the common practice of allocating tax burdens as if all income were capital income or labour income is flawed where government transfers are an important source of income. Browning's initial position was that because transfer payments are indexed the burden of commodity taxes falls on factor income. Criticism of this conclusion on the ground that not all transfers are indexed led Browning to restate his argument within the framework of differential tax incidence: he concludes that if transfer payments are independent of sales and excise taxes, then these taxes are substantially more progressive than they were previously thought to be.<sup>19</sup> Meerman<sup>20</sup> responds with the finding that, depending on how government spends the revenues it collects, consumption taxes may be regressive even if transfers are included in the income base. This conclusion is contested in turn by Whalley,<sup>21</sup> who argues that the concentration of transfers at the lower end of the income distribution (and savings at the upper end) is sufficient for the pattern of consumption tax incidence to appear progressive.

A recent study by Ruggeri et al. also finds progressivity in the Canadian consumption-tax structure (given an after-tax income base) but only at the low end of the income scale—a result they attribute to the indexing of government transfers to persons to make up for tax-induced increases in the general price level. On the other hand, Vermaeten et al. find that sales and excise taxes are regressive (given a pre-tax and broad income base) when transfers are not indexed. Because the two studies use different definitions of income, their results are not directly comparable. Nevertheless, the analysis by Vermaeten et al. points to noteworthy pitfalls

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<sup>18</sup> Edgar K. Browning, "The Burden of Taxation" (August 1978), 86 *Journal of Political Economy* 649-71; Edgar K. Browning, "Tax Incidence, Indirect Taxes, and Transfers" (December 1985), 38 *National Tax Journal* 525-33; and Edgar K. Browning and William R. Johnson, *The Distribution of the Tax Burden* (Washington, DC: American Enterprise Institute for Public Policy Research, 1979).

<sup>19</sup> Browning focuses on sources side effects (uses side effects disappear when one uses an appropriate income concept), since if transfers are indexed to the price level only factor incomes can bear the burden of indirect taxes. It has been brought to our attention that since transfers in Canada are not indexed in the manner assumed by Browning, the Browning effect on the incidence pattern of provincial sales taxes may not occur in this country. For a discussion of the indexing of transfers and Canadian sales tax incidence, see G.C. Ruggeri and K. Bluck, "On the Incidence of the Manufacturers' Sales Tax and the Goods and Services Tax" (December 1990), 16 *Canadian Public Policy* 359-73; Giuseppe C. Ruggeri and Kelly A. Bluck, "The Treatment of Transfers in the Measurement of Sales Tax Incidence: The Case of Canada's Manufacturers' Sales Tax" (January 1992), 20 *Public Finance Quarterly* 24-46; G.C. Ruggeri, "On the Measurement of Sales Tax Incidence in the Presence of Transfers" (1993), vol. 48, no. 1 *Public Finance* 132-37; and Ruggeri et al., *supra* footnote 5.

<sup>20</sup> *Supra* footnote 3.

<sup>21</sup> *Supra* footnote 4.

in indexation practices that can produce misleading commodity-tax-incidence results.<sup>22</sup>

There is also the issue of the respective merits of current income and permanent income as measures for the purpose of determining incidence. Whalley<sup>23</sup> notes that differences in incidence results may stem from differences in the treatment of savings and human capital; he suggests that incidence should be calculated on the basis of lifetime consumption rather than annual consumption to account for a potential lack of comparability across income classes. A similar point is made by Feehan.<sup>24</sup>

In large part because of the debate over income measures in the recent literature, the six income measures we use here include, but are not limited to, the income measures used in the previous studies for Newfoundland. The definitions of these measures establish reasonable upper and lower limits for incidence and burden. The first five measures use an annual time frame, and the sixth uses a life-cycle time frame. The first measure, family money income (FMI), includes wages and salaries, income from self-employment (non-farming), net farm income, interest, dividends, other investment income, all pensions, government transfer payments, net income from roomers and boarders, and other taxable money income, all gross of personal (federal and provincial) income taxes. Family disposable money income (FDMI) is money income net of personal taxes. Broad income (BI), or pre-government income, is a hypothetical measure of private factor income defined here, much as Gillespie defines it,<sup>25</sup> as money income plus imputed components in the national accounts, including actual capital gains, gross rental (including the imputed rent from owner-occupied dwellings), converted interest income, and actual amount of Canadian dividends. Broad income also includes the other items in the FAMEX survey, such as inheritances, bequests, lump-sum settlements from property insurance, accident and health policies, money gifts from outside the spending unit, income tax refunds, unshifted corporate taxes, all net of transfer payments<sup>26</sup> and net of refundable tax credits received from government. Next, adjusted broad income (ABI), or post-government income, is calculated as broad income

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<sup>22</sup> Full indexation does not preclude the occurrence of changes in tax incidence as a result of relative price changes. Also, consistency requires that all relevant income sources be indexed for absolute price changes; see Vermaeten et al., *supra* footnote 5, at 365. In view of these difficulties, we have elected not to index transfers in our analysis here.

<sup>23</sup> *Supra* footnote 4.

<sup>24</sup> James P. Feehan, "Provincial Government Taxation of Clothing and Footwear: Revenue and Equity Aspects" (March 1985), 11 *Canadian Public Policy* 26-39.

<sup>25</sup> W. Irwin Gillespie, *The Incidence of Taxes and Public Expenditures in the Canadian Economy*, Studies of the Royal Commission on Taxation no. 2 (Ottawa: Queen's Printer, 1966).

<sup>26</sup> Transfers represent non-earned income received from government. Non-cash transfers (such as income-tested subsidies for health care or subsidized housing) are not included.

gross of government transfer payments and net of total taxes allocated by income range.<sup>27</sup>

Our central variant, which we shall call central variant income (CVI), is borrowed from Whalley.<sup>28</sup> It is defined as income gross of transfers and gross of personal income taxes but net of all other taxes.<sup>29</sup> CVI is our preferred income concept: commodity tax incidence rates measured on this base have an intuitive appeal and an intuitive relevance to tax policy in that they may be loosely interpreted as answering the question "what share of personal income does the government collect in (sales and excise) taxes?" There are two compelling reasons for using the concept of "observed" or actual income as the central variant, rather than "original" or counterfactual income, the alternative emphasized by Pechman and Okner<sup>30</sup> and by Browning and Johnson.<sup>31</sup> First, Whalley's income concept is invariant to alternative shifting assumptions. Second, unlike the concept used by Pechman and Okner and by Browning and Johnson, which adds sales and excise taxes back into income by income group,<sup>32</sup> Whalley's concept does not involve any gross-up or reallocation of these taxes. CVI does, however, share with BI the disadvantage that it encompasses part of the government but not all of it.

A lack of relevant and accurate data for measures of life-cycle or permanent income renders attempts to measure lifetime incidence questionable. Studies that make such attempts typically use a proxy for the requisite series of annual incidence calculations for each year of an individual's life. We agree with Vermaeten et al.<sup>33</sup> about the uncertainties inherent in estimating the time profile of income and tax burdens upon which measures of lifetime incidence depend. Nevertheless, in order to leave no stone unturned in reassessing the pattern of consumption tax

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<sup>27</sup> Ruggeri, *supra* footnote 8, and others have criticized FMI for excluding non-money components and other items that affect taxpayers' command over resources and BI for ignoring the distributional consequences of the fiscal system. In particular, if redistribution favours low-income groups, then the retail sales tax is said to be more regressive when its incidence is measured in terms of a pre-government rather than a post-government concept of income. ABI is not free of measurement errors, since it requires calculation of net fiscal incidence to various income groups. See also Gillespie, *supra* footnote 25, for a discussion of the pros and cons of various income concepts.

<sup>28</sup> *Supra* footnote 4.

<sup>29</sup> Whalley, *ibid.*, also grosses up imputed income from owner-occupied housing by the household marginal tax rate. This adjustment would have a negligible effect in our case.

<sup>30</sup> Joseph A. Pechman and Benjamin A. Okner, *Who Bears the Tax Burden?* (Washington, DC: Brookings Institution, 1974).

<sup>31</sup> *Supra* footnote 18.

<sup>32</sup> Consumption is grossed up by the amount of annual taxes paid in order to calculate average total tax rates on annual consumption. This is done in different ways by Browning and Johnson, *ibid.*, and Pechman and Okner, *supra* footnote 30. The procedure is problematic, however, for reasons noted by Meerman, *supra* footnote 3, and discussed in detail by Whalley, *supra* footnote 4.

<sup>33</sup> *Supra* footnote 5.

incidence for Newfoundland, we include one such measure here. Following Ruggeri<sup>34</sup> and Feehan,<sup>35</sup> we assume that current consumption is proportional to permanent income and use average total current consumption (ATCC) as the proxy.<sup>36</sup>

We assume that the individual income tax is borne by labour income with no effects on the uses side. Corporate and property taxes are borne by capital income. We also adopt the standard assumption that sales and excise taxes are shifted forward fully; that is, they are borne on the uses side in proportion to taxed consumption.<sup>37</sup> The tax-shifting assumptions employed in this article derive from the small open economy framework that we use to represent the Newfoundland economy. In our view, this framework is the most appropriate one, on balance, for the purpose of measuring consumption tax incidence in Newfoundland. It is true, however, that the assumptions of perfect capital mobility and price-taking behaviour on the part of domestic producers of tradable goods and services inherent in the framework imply that the indirect tax collected on business inputs and exports cannot be shifted forward to consumers but must be absorbed by the less mobile factor of production—labour—in the form of a reduction in compensation. We assume, as do Vermaeten et al.<sup>38</sup> in their standard tax-shifting case, that firms in long-run equilibrium pass forward to consumers any commodity taxes on intermediate goods and exports up to the amount implied by the world rate. Given the small open economy assumption, any taxes in excess of that amount are shifted backwards to labour.<sup>39</sup>

## TAX REVENUE AND THE DISTRIBUTION OF INCOME

Since the marginal propensity to consume declines as disposable income increases, any increase in consumption taxes will be regressive, other

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<sup>34</sup> Supra footnote 8.

<sup>35</sup> Supra footnote 24.

<sup>36</sup> ATCC is calculated from the distribution of taxable expenditure categories given in table 2. We thus abstract from any uses side effects arising from differences in lifetime expenditure patterns by range of lifetime income.

<sup>37</sup> We were unable to estimate satisfactorily the burden of the provincial sales tax on investment. We assume that this portion of the sales tax raises the value of the initial local investment correspondingly. Depreciation in subsequent years will thus include sales tax. Grady, supra footnote 15, makes a similar assumption in his application of the SPSPD/M model.

<sup>38</sup> Supra footnote 5.

<sup>39</sup> The distinction between direct and indirect tax components is also recognized by Ruggeri et al., supra footnote 5, who obtained estimates for their study of the direct sales and excise tax components allocated to each category of consumer spending. Any such adjustment in our case, had it been feasible, would have had a comparatively small effect, since we are concerned only with provincial taxes whereas the two aforementioned studies deal with both the federal and the provincial tax structures. Furthermore, firms in Newfoundland are for the most part small, locally owned and operated businesses with low value added and a small export share of output. There are only a few firms at the other end of the firm-size distribution. We therefore ignore the tax share shifted backwards to labour.

things being equal. This would seem to argue against increases in excise taxes such as those contained in the 1992 ministerial statement.<sup>40</sup> Yet provincial tax policy in the past appears to have assumed that the consumption tax structure is more regressive than the previously cited studies have found it to be. Changes in sales and excise taxes have come only slowly. In particular, as table 1 shows, there has been no change in the retail sales tax (RST) rate since 1982, and changes in excise taxes over the past decade have been relatively modest. The personal income tax (PIT) rate, on the other hand, has risen dramatically since the PIT was first introduced in Newfoundland in the early 1960s.

The RST is the principal source of tax revenue in Newfoundland. In fiscal 1992-93, the RST accounted for 17.4 percent of provincial tax revenue (or about 10 percent of provincial GDP) and excise taxes accounted for another 7.9 percent; thus the total consumption-tax share of provincial revenue was 25.3 percent. Personal income taxes and corporate income taxes together accounted for 16.6 percent.<sup>41</sup> The balance came from other provincial sources and the federal government. Sales and excise taxes are attractive to governments because they provide a means of stabilizing tax revenue in the face of commodity price changes. Excise taxes levied ad valorem are very sensitive to price changes, but a government can stabilize real revenues by switching to per-unit levies. The Newfoundland government availed itself of this option during the period under study. Between 1989 and 1991, the inflation rate increased from 3.6 to 6.1 percent and above-average price increases were recorded for energy and other commodities.<sup>42</sup> In 1992, both the inflation rate and the world market price of oil were lower than they had been in the previous year. In order to stabilize in real terms the tax revenue derived from gasoline and diesel fuel, the provincial government switched in 1992 from ad valorem taxes on these commodities to per-unit taxes, thus avoiding the more transparent and politically less palatable alternative of increasing ad valorem tax rates in order to stabilize revenue. A desire to stabilize revenue in the face of increasing inflation also explains a shift in tobacco tax policy in 1989. The government changed the tax on cigars from a per-unit levy to an ad valorem levy, increased the per-unit tax on cigarettes, and tied the base for the tax on fine-cut tobacco to that of the now higher per-unit tax on cigarettes.<sup>43</sup>

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<sup>40</sup> Supra footnote 1.

<sup>41</sup> The shares for gasoline, alcoholic beverages, and tobacco products were 3.4 percent, 2.5 percent, and 2 percent respectively. See Newfoundland and Labrador, Department of Finance, 1993 Budget, March 18, 1993.

<sup>42</sup> Newfoundland and Labrador, Cabinet Secretariat, Economic Research and Analysis Division, *The Economy 1992* (St. John's: Queen's Printer for Newfoundland, 1992).

<sup>43</sup> The anticipated effect of these changes on tobacco tax revenue may have been diminished somewhat by a greater tax-induced leakage from smuggling activity. See, for example, "Seized Cigarettes Will Be Sold To Raise Cash for Province: Baker," *The (St. John's) Evening Telegram*, February 28, 1994.

Since consumption tax revenue changes with income, it is useful to begin the analysis of incidence by considering the distribution of income over the study period. For this purpose, we choose family disposable money income (FDMI) in Newfoundland for 1984, 1986, 1989, and 1992. As table 3 shows, total FDMI grew by 57.7 percent between 1984 and 1992. If one adjusts the data for changes in the number of households per income group, the average FDMI growth was somewhat lower at 43 percent. Not surprisingly, FDMI grew proportionately more at the upper income levels. The total FDMI accruing to households with annual earnings of \$50,000 or more increased by 179.4 percent. At the same time, however, the number of households with earnings of \$50,000 or more grew by 139.4 percent. The result was an average FDMI growth of 16.5 percent in nominal terms over the period. Perhaps more interesting are the developments at the lower end of the income distribution. Although the total FDMI accruing to households that earned \$20,000 or less declined by 35.8 percent, the number of households in this group declined even more steeply, by 41 percent; the net result, a 9 percent increase in average nominal FDMI, left these households better off in real terms. Taken together, however, the results for the high-income and low-income groups imply that the inequality of the income distribution increased during the period, at least in terms of the FDMI measure.

### THE RETAIL SALES TAX INCIDENCE AND BURDEN

The remainder of this article argues that two key factors underlie the observed pattern of differential income growth in Newfoundland between 1984 and 1992: (1) an increase in the sales-tax-to-income ratio toward the end of the period and (2) an increase over the entire period in the regressivity of the consumption tax structure as a whole. Low-income households were disadvantaged disproportionately by both trends.

In Newfoundland, transfer payments to households constitute the second largest component of personal income; they accounted for over 22 percent of family disposable money income in 1992.<sup>44</sup> These transfers are concentrated at the lower end of the income distribution and, other things being equal, tend to reduce regressivity. Nevertheless, as table 4 shows, there is still considerable regressivity in the lower income brackets. Therefore, were the federal government to reduce its transfer payments, as it is currently proposing to do, the redistributive effects of the retail sales tax alone would make low-income households worse off.

Given a constant RST rate, the year-to-year variability in the average RST incidence reflects changes in provincial economic activity. By all income measures, the average ratio of RST to income fell during the middle and late 1980s, when household income grew faster than sales tax revenue. With the onset of recession in the early 1990s, however, income fell relative to RST revenue and the average ratio of tax to income increased. Note also, as table 4 shows, that in 1984 above-average effective

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<sup>44</sup> Newfoundland Statistics Agency, *Provincial Economic Accounts, 1992*.

**Table 3 Average Family Disposable Money Income and Number of Households by Income Group, Newfoundland, Selected Years**

Income group (\$)	1984		1986		1989		1992	
	FDMI	H	FDMI	H	FDMI	H	FDMI	H
0-10,000 .....	73.2	10.4	73.9	9.5	62.5	7.4	14.0	1.7
10-20,000 .....	439.6	30.0	360.3	24.4	272.1	18.2	315.2	22.1
20-30,000 .....	749.2	33.3	692.3	30.7	557.1	24.5	560.6	24.5
30-40,000 .....	937.4	30.6	836.7	27.4	717.4	23.4	783.0	25.9
40-50,000 .....	850.0	22.8	962.2	25.5	945.7	24.4	910.0	23.8
50-60,000 .....	572.4	12.9	781.2	17.3	984.1	21.4	1,008.1	22.4
60,000+ .....	1,257.7	19.6	1,843.3	27.4	3,605.8	49.2	4,104.5	55.5
Totals .....	4,879.5	159.6	5,549.9	162.3	7,144.7	168.5	7,695.4	175.9
Mean FDMI (\$) ...	30,573		34,216		42,402		43,749	

Note: FDMI = family disposable money income (\$ million); H = Number of households (thousands).

Source: SPSD/M data base.

RST tax rates were borne only by households earning less than \$40,000. By 1989, all income groups but the highest faced above-average tax rates.

Table 5 shows the “dominating” type of incidence by commodity group for the years 1984 to 1992. There is considerable consistency in the incidence pattern over all income concepts and income groups. The incidence pattern for CVI, FMI, and BI all exhibit regressivity. The treatment of transfers in BI renders the RST strongly regressive for all income groups. If one uses the post-government income measure, ABI, the RST is still regressive except for the low-income group. Adjusting for personal income taxes in FDMI introduces mild progressivity for low-income households. If the RST is applied to the permanent income base, ATCC, it is, as one would expect, predominantly progressive at all income levels except the highest.

The income measures that place the greatest and smallest relative burdens on low-income households are BI and ATCC, respectively. The difference between the estimates for these two measures are noteworthy. To explore further the effects of the RST on low-income households, we considered the incidence of the tax on two important categories of necessities, clothing and food. Space constraints preclude a complete reporting of the various tax and income concept scenarios; we report below the details for the central variant only (table 6) and summarize the remaining results.<sup>45</sup>

### Clothing

The patterns of RST incidence for clothing expenditures display interesting gender-specific differences. These differences suggest that the demand for women's clothing is less income-elastic than the demand for men's

<sup>45</sup> Our findings for BI, ABI, and ATCC are roughly consistent with Ruggeri's, *supra* footnote 8. Our results for FMI and FDMI are at variance with those reported by Schrank and Feehan, *supra* footnote 9. The complete set of simulation results is available from the authors upon request.

**Table 4 Effective RST Incidence by Income Concept**

Income concept	Income group (\$)							Mean incidence
	0-10,000	10,000-20,000	20,000-30,000	30,000-40,000	40,000-50,000	50,000-60,000	60,000+	
<b>1984: RST paid as a percentage of</b>								
Family disposable money income (FDMI) . . . . .	6.01	5.82	5.45	4.76	4.66	4.37	3.42	7.68
Family money income (FMI) . . . . .	6.05	5.67	5.08	4.33	4.07	3.88	3.07	4.15
Broad income (BI) . . . . .	38.26	13.37	8.67	6.28	5.09	4.58	3.19	5.55
Adjusted broad income (ABI) . . . . .	7.42	7.26	6.65	5.64	5.47	5.09	3.82	5.36
Central variant income (CVI) . . . . .	7.48	7.02	6.11	5.05	4.68	4.43	3.39	4.79
Average total current consumption (ATCC) . . . . .	3.77	4.58	4.85	4.92	4.62	4.98	4.67	4.74
<b>1986: RST paid as a percentage of</b>								
FDMI . . . . .	5.68	5.72	5.76	4.78	4.53	4.19	3.43	7.23
FMI . . . . .	5.65	5.53	5.33	4.29	4.01	3.68	3.04	3.95
BI . . . . .	57.76	14.49	9.41	6.49	5.10	4.54	3.27	5.20
ABI . . . . .	7.18	7.33	7.46	5.83	5.43	4.92	3.91	5.26
CVI . . . . .	7.13	7.02	6.74	5.12	4.69	4.24	3.40	4.62
ATCC . . . . .	3.57	4.32	4.87	4.67	4.42	4.57	4.62	4.57
<b>1989: RST paid as a percentage of</b>								
FDMI . . . . .	5.76	5.73	5.33	4.95	4.57	4.16	3.21	6.55
FMI . . . . .	5.72	5.61	5.02	4.48	4.03	3.65	2.82	3.54
BI . . . . .	70.60	18.00	8.90	7.20	5.52	4.76	3.30	4.68
ABI . . . . .	7.32	7.56	6.95	6.30	5.62	5.00	3.66	4.74
CVI . . . . .	7.24	7.34	6.42	5.55	4.83	4.28	3.16	4.13
ATCC . . . . .	3.37	4.09	4.48	4.53	4.54	4.12	4.38	4.35
<b>1992: RST paid as a percentage of</b>								
FDMI . . . . .	7.41	6.15	6.46	5.90	5.66	4.77	3.15	7.11
FMI . . . . .	7.04	6.07	6.05	5.31	4.95	4.14	2.75	3.81
BI . . . . .	20.41	26.29	10.99	8.69	7.06	5.24	3.57	5.34
ABI . . . . .	13.51	8.81	9.91	8.57	7.68	6.45	3.84	5.61
CVI . . . . .	13.16	8.63	9.04	7.37	6.44	5.34	3.27	4.80
ATCC . . . . .	3.89	4.34	5.00	5.26	5.22	4.59	3.97	4.50

clothing. Consider men's clothing first. In the case of CVI, as tables 5 and 6 show, the tax is proportional, progressive, and regressive for low-, middle-, and high-income households respectively. All income classes except the highest bear above-average effective tax rates. For the other income concepts (except BI), the tax is progressive at the low and middle income levels and regressive at the high income level when all four years are considered. Not surprisingly, the income measures that place the largest and smallest burdens on the low-income groups are, again, BI



**Table 5 The Dominant Pattern of Sales and Excise Tax Incidence<sup>a</sup> by Income Concept and Income Group, Newfoundland, 1984-1992**

	Income concept <sup>b</sup>											
	FDMI		FMI		BI		ABI		ATCC		CVI	
	LJ <sup>c</sup>	MI <sup>d</sup>	HI <sup>e</sup>	LJ	MI	HI	LJ	MI	HI	LJ	MI	HI
RST on all items .....	E	R	R	R	R	R	R	R	R	R	R	R
RST on												
Clothing (male) .....	P	P	R	P	R	R	P	P	R	P	P	R
Clothing (female) .....	R	R	R	R	R	R	E	E	R	P	P	R
Food .....	R	R	R	R	R	R	R	R	R	P	R	R
Excise tax on												
Tobacco products .....	E	R	R	E	R	R	R	R	R	P	R	R
Alcoholic beverages .....	P	R	R	P	E	R	P	E	R	P	P	R

<sup>a</sup> R = regressive; P = progressive; E = effective proportional. <sup>b</sup> The income concepts are as defined in table 4. <sup>c</sup> Low income = \$0-\$20,000. <sup>d</sup> Middle income = \$20,000-\$50,000. <sup>e</sup> High income = \$50,000+.

**Table 6 Tax Incidence by Commodity Group and Income Group, Central Variant Income, Newfoundland, Selected Years**

	Income group (\$)							Mean incidence
	0-10,000	10,000-20,000	20,000-30,000	30,000-40,000	40,000-50,000	50,000-60,000	60,000+	
<b>1984</b>								
Percentage of RST paid on								
Men's clothing .	0.20	0.22	0.23	0.19	0.19	0.18	0.14	0.18
Women's clothing . . . . .	0.42	0.36	0.28	0.26	0.28	0.25	0.21	0.26
Food . . . . .	0.36	0.29	0.21	0.16	0.13	0.12	0.08	0.15
Percentage of excise tax paid on								
Tobacco products . . . . .	2.04	1.59	1.36	1.03	0.79	0.71	0.43	0.89
Alcoholic beverages . . . . .	1.36	1.84	1.59	1.37	1.37	1.47	1.07	1.37
<b>1986</b>								
Percentage of RST paid on								
Men's clothing .	0.17	0.21	0.22	0.18	0.19	0.16	0.12	0.16
Women's clothing . . . . .	0.38	0.37	0.30	0.26	0.26	0.25	0.19	0.24
Food . . . . .	0.32	0.31	0.23	0.16	0.14	0.11	0.08	0.14
Percentage of excise tax paid on								
Tobacco products . . . . .	1.70	1.40	1.49	0.92	0.72	0.60	0.44	0.77
Alcoholic beverages . . . . .	1.36	1.74	1.86	1.51	1.35	1.26	1.19	1.38
<b>1989</b>								
Percentage of RST paid on								
Men's clothing .	0.17	0.20	0.18	0.19	0.17	0.16	0.11	0.14
Women's clothing . . . . .	0.37	0.39	0.28	0.24	0.25	0.26	0.17	0.21
Food . . . . .	0.33	0.32	0.22	0.18	0.14	0.12	0.08	0.12
Percentage of excise tax paid on								
Tobacco products . . . . .	1.41	1.65	1.49	1.17	0.91	0.74	0.44	0.73
Alcoholic beverages . . . . .	1.21	1.60	1.51	1.53	1.23	1.17	0.98	1.15
<b>1992</b>								
Percentage of RST paid on								
Men's clothing .	0.44	0.25	0.26	0.23	0.24	0.18	0.12	0.16
Women's clothing . . . . .	0.84	0.42	0.37	0.31	0.30	0.27	0.17	0.23
Food . . . . .	0.56	0.39	0.34	0.23	0.20	0.15	0.08	0.14
Percentage of excise tax paid on								
Tobacco products . . . . .	2.63	2.14	2.90	1.69	1.17	1.13	0.44	0.93
Alcoholic beverages . . . . .	14.61	2.31	2.02	1.39	1.26	1.34	0.74	1.08

and ATCC respectively. At the middle and high income levels, the difference in the burden across income concepts is substantially smaller.

The results for women's clothing are quite different. Under the CVI scenario, the RST levied on women's clothing<sup>46</sup> is predominantly regressive for the low-income groups and proportional for the middle-income groups. If one uses the other income concepts, the tax is regressive for the low-income groups (except in the cases of ABI and ATCC), progressive for the middle-income groups (except in the cases of BI and ABI), and regressive for the high-income groups. On balance, the RST on women's clothing appears to be regressive.<sup>47</sup> This generalization is supported by the data given in table 7 on RST revenue paid on clothing by income group. The RST paid on women's clothing increased consistently with income in each of the four years studied as the income and expenditure distributions shifted upward. The average effective incidence, however, fell for men's clothing and women's clothing alike between 1984 and 1989, when it stabilized at a level that varies with the income concept used. Again, all income classes except the highest bore above-average effective tax rates, except in 1984 when the \$30-40,000 and \$60,000+ classes bore below average tax rates. It is also evident that the tax revenue derived from the sale of women's clothing has consistently been considerably higher than the revenue from the sale of men's clothing. Over the four years, the RST revenue from women's clothing exceeded the revenue from men's clothing by an average of 47 percent. In households that earned less than \$20,000 per year, purchases of women's clothing outstripped purchases of men's clothing by no less than 87 percent on average. The corresponding figures for the middle-income (\$20,000-\$50,000) and high-income (\$50,000-\$60,000) classes are 38 percent and 51 percent respectively. These findings suggest a gender difference in the relative priority placed on clothing. Our results also seem to suggest that women in low- and high-income households alike have a common perception of the importance of clothing in achieving upward social mobility. In low-income households with little scope for upward mobility, the burden of this tax over time could be substantial.

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<sup>46</sup> This corresponds to "women's, girls', and infants' clothing" in table 2. Children's clothing (defined by garment size) is exempt from retail sales tax as per the Retail Sales Tax Regulations, 1979, Nfld. reg. 49/79, as amended. The analysis is unaffected by this exemption, since we use effective rates rather than nominal rates. It appears, however, that the exemption of children's clothing alone makes the general sales tax more regressive than does the exemption of all clothing. See David G. Davies, "Clothing Exemptions and Sales Tax Regressivity: Note" (March 1971), 61 *The American Economic Review* 187-89.

<sup>47</sup> Compare Feehan, *supra* footnote 24, who finds the tax on clothing in Canada to be effectively proportional when family money income is the measure, and strongly progressive on the current consumption base. Somewhat different results are reported in two earlier studies for the United States by Davies, *supra* footnote 46, and Jeffrey M. Schaefer, "Clothing Exemptions and Sales Tax Regressivity" (September 1969), 59 *The American Economic Review* 596-99.

**Table 7 Dollar Amount of RST Paid on Men's and Women's Clothing by Income Group, Newfoundland, Selected Years**

Income group (\$)	1984		1986		1989		1992	
	Men	Women	Men	Women	Men	Women	Men	Women
0-10,000 . . . . .	11.13	23.69	10.43	23.43	11.70	24.71	19.45	37.41
10,000-20,000 ..	26.18	43.45	25.75	44.63	23.17	44.99	25.06	43.16
20,000-30,000 ..	45.93	55.86	43.09	59.96	34.76	52.89	42.85	59.70
30,000-40,000 ..	55.92	75.07	50.08	73.11	52.99	65.22	55.86	74.89
40,000-50,000 ..	71.79	104.94	68.73	95.39	60.65	89.91	79.54	102.20
50,000-60,000 ..	75.62	109.68	73.11	111.65	73.01	115.15	73.07	107.17
60,000+ . . . . .	88.15	133.43	82.37	127.07	83.17	127.67	85.80	124.03
Average total . . .	53.13	76.20	53.19	79.54	57.75	87.56	64.67	91.83

## Food

Although food as such is exempt from sales taxation in Newfoundland, the food expenditure data include certain items in a household's food basket that are taxable. The incidence of the sales tax on this admittedly minor category is of interest in as much as it affects the poor. Table 6 shows that the RST is regressive for CVI in every year and for all income brackets. This finding holds for the other income concepts as well—except, notably, for ATCC at low income levels, where the tax is progressive. The average RST incidence on food has decreased somewhat over the past decade. In 1984, households that earned less than \$40,000 (in CVI) faced above-average effective tax rates and households that earned more than \$40,000 faced below-average tax rates. By 1992, only households that earned over \$60,000 faced below-average tax rates.

In this case, BI places the largest relative burden on low-income households and CVI (rather than ATCC) the smallest burden. Taken together, these findings imply that if the exemption on food were removed the overall regressivity of the RST would increase, other things being equal. This result differs from those of Davies<sup>48</sup> and Hamilton and Whalley.<sup>49</sup>

## THE EXCISE TAX INCIDENCE AND BURDEN

### Tobacco Products

The tobacco excise tax is regressive on the CVI base for the three income clusters in table 5. This result holds for all of the other income concepts except for FDMI, FMI, and ATCC at low income levels, where the tax is proportional or progressive. The distributive effects associated with the trend in average incidence are noteworthy. In 1989, an increase in the excise tax raised the price of tobacco products coincidentally with the onset of recession in Newfoundland. If this state of affairs dampened the demand for tobacco products, the fact is not evident from the average amount paid

<sup>48</sup> Supra footnote 46.

<sup>49</sup> Bob Hamilton and John Whalley, "Efficiency and Distributional Effects of the Tax Reform Package," in Jack Mintz and John Whalley, eds., *The Economic Impacts of Tax Reform*, Canadian Tax Paper no. 84 (Toronto: Canada Tax Foundation, 1989), 373-98.

**Table 8 Dollar Amount of Excise Tax Paid on Tobacco Products and Alcoholic Beverages by Income Group, Newfoundland, Selected Years**

Income group (\$)	1984		1986		1989		1992	
	Tobacco	Alcohol	Tobacco	Alcohol	Tobacco	Alcohol	Tobacco	Alcohol
0-10,000 . . . . .	115.4	76.9	105.3	84.2	94.6	81.1	117.7	652.9
10,000-20,000 ..	193.3	223.3	168.0	209.0	192.3	186.8	217.2	235.3
20,000-30,000 ..	273.3	318.3	286.7	358.3	281.6	285.7	473.5	330.6
30,000-40,000 ..	297.4	395.4	262.8	430.7	320.5	418.8	409.3	335.9
40,000-50,000 ..	293.9	508.8	262.7	490.2	332.0	450.8	395.0	424.4
50,000-60,000 ..	310.1	643.4	265.9	560.7	331.8	523.4	455.4	540.2
60,000+ . . . . .	275.5	693.9	295.6	806.6	327.2	729.7	311.7	524.3
Average total . . .	258.9	400.0	245.5	449.8	296.7	468.8	364.4	423.0

in excise tax.<sup>50</sup> Indeed, as table 8 shows, average household expenditure on tobacco grew enough between 1984 and 1992 to increase the excise tax revenue from tobacco products by 41 percent. Yet the shifts in the income distribution over the period, the regressivity of the excise tax, and an increase in the proportion of households in the upper income brackets together served to reduce the tax revenue collected as proportion of disposable income. By 1992, all income classes except the highest faced above-average effective tax rates. The income measure that results in the largest burden on low-income households is BI, and the measure that results in the smallest burden is ATCC. Table 8 shows that in 1992 the relative tax burden was greatest for the \$20,000-\$30,000 income group, for which the excise tax paid increased by 73.3 percent in nominal terms over the 1984-1992 period. For the \$60,000+ class, the increase was 13.1 percent.

### Alcoholic Beverages

As tables 5 and 6 show, the excise tax on alcoholic beverages is progressive at low income levels and regressive at the other levels when CVI is the measure. As in the case of tobacco products, the range of income classes that faced above-average tax rates increased gradually over time, to include in 1992 all but the highest income class. At low income levels, the incidence was progressive throughout the 1984-1992 period for the other income measures (except BI, for which the incidence was regressive throughout). At high income levels, the incidence was consistently regressive for all measures except ATCC. The incidence for middle-income households was mixed. As to the burden of the alcohol tax, table 8 shows that between 1984 and 1992 the excise tax rate fell by 13.5 percent,<sup>51</sup> whereas the average dollar amount of tax paid by households increased by 5.8 percent. Although middle-income households paid a larger (albeit

<sup>50</sup> The demand for tobacco tends to be both price- and income-inelastic. See, for example, Abeyayehu Tegene, "Kalman Filter and the Demand for Cigarettes" (July 1991), 23 *Applied Economics* 1175-82. Our results are consistent with this conclusion.

<sup>51</sup> This corresponds to a decrease in the nominal tax rate of 18 percentage points. See table 1.

falling) proportion of income in alcohol tax during the sample period, the relative burden of the tax fell squarely on low-income households: the excise tax paid by low-income households increased considerably, whereas the tax paid by middle- and high-income households decreased.

## CONCLUSIONS

This paper has re-examined the incidence and distributive effects of sales and excise taxes on households in Newfoundland over the period 1984 to 1992; it has also provided separate results for the incidence and burden of these taxes on certain specific commodities: men's clothing, women's clothing, food, tobacco products, and alcoholic beverages. The income concept and shifting assumptions selected by the researcher are the key determinants of tax incidence and distribution results; nevertheless, as our analysis has shown, data details can make an important difference in those results. For example, data for a number of years are likely to yield more reliable incidence results than are data for a single year. Given the important role that incidence analysis plays in defining tax policy, it is surprising how little attention data-related issues have received in the literature. Previous studies for Newfoundland have indicated that both the incidence of the sales tax and the incidence of an aggregate of all consumption taxes in the province are effectively proportional. By using provincial expenditure series, we derived results that are not only more detailed than the results of the earlier studies but also substantially different from those results; indeed, our results were different when we used the same income concepts and shifting assumptions as the earlier studies.

The entire consumption tax structure in Newfoundland appears to be predominantly regressive. This regressivity has increased slightly since 1984, even though the retail sales tax rate has remained unchanged, and despite attempts to levy excise taxes selectively and grant sales tax exemptions on certain commodities. The RST is also regressive when it is applied to the taxable proportion of food expenditures. Thus a broadening of the RST base to include food would be regressive: it would increase the tax burden on low-income groups and on all persons with fixed incomes. Applied to men's clothing, the RST is progressive at low- to middle-income levels, and regressive at high income levels. The incidence pattern is somewhat different when the RST is applied to women's clothing: regressivity dominates at the low income levels and mild progressivity at the middle income levels. Not only is there an apparent gender difference in the incidence patterns, but the RST revenue derived from women's clothing is considerably higher at all income levels than the revenue from men's clothing. Since children's clothing is grouped with women's clothing for taxation purposes, it is unlikely that a removal of the existing RST exemption for children's clothing will promote equity.

The incidence of the excise tax on tobacco products is proportional or progressive at the low income levels and regressive at the other levels. The tax on alcohol is progressive or proportional for low- and middle-income households and regressive for high-income households. Although

we detected no change in incidence across income groups for either tobacco or alcohol over the study period, the average effective incidence of alcohol taxation fell substantially and the average effective incidence of tobacco taxation increased substantially. We conclude that the observed variations in incidence patterns over time are largely attributable to changes in excise tax rates, inflation, and the introduction in 1991 of the federal goods and services tax. Our results do not suggest that the recorded excise tax changes have promoted equity in the province.

We have argued in favour of the central variant income base. The relative distribution of the consumption tax burden varies, however, not only by income concept but also across commodity groups; therefore, care must be taken in assessing the net fiscal incidence by income group. In the final analysis, the choice of an income base must be made with a view to the particular policy question that is being addressed.