

Lorraine Eden

## Provincial-municipal equalization in the Maritime provinces

**Abstract:** This paper examines provincial-municipal equalization grant programs in New Brunswick, Nova Scotia and Prince Edward Island. It reviews the equalization grants recommended by the Byrne and Graham royal commissions and compares them to the actual programs in place in the Maritime provinces. The current programs are then simulated using a common data base of the twenty-three independent cities in Ontario. The impacts of the grants on the distribution of wealth among the sample cities are determined. The paper concludes that only the Nova Scotia program is successful at lessening differences in fiscal capacity among municipalities. The paper ends with suggestions for reform that parallel the earlier recommendations of the Byrne and Graham royal commissions.

**Sommaire :** Cet article porte sur les programmes de subventions de péréquation provinciale-municipale au Nouveau-Brunswick, en Nouvelle-Écosse et à l'Île-du-Prince-Édouard. L'auteure rappelle d'abord les subventions de péréquation recommandées par les commissions royales Byrne et Graham et les compare aux programmes en vigueur dans les provinces maritimes. Procédant ensuite par simulation, elle analyse les programmes actuels à partir d'une base de données commune aux 23 villes indépendantes de l'Ontario. Elle détermine l'impact des subventions sur la répartition de la richesse entre les villes examinées. L'auteure conclut que seul le programme de la Nouvelle-Écosse parvient à réduire les disparités qui existent entre les municipalités sur le plan de la capacité fiscale. Elle termine en suggérant des réformes qui vont dans le même sens que les recommandations formulées par les commissions royales Byrne et Graham.

Since 1957 the Canadian government has given equalization grants to the provinces and in 1982 the principle of equalization was enshrined in the Constitution Act. Many provinces now also provide equalization grants to their

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## Equalization in New Brunswick

In the 1960s New Brunswick municipalities were responsible for a wide variety of services financed from local property taxes. The 1963 Report of the Royal Commission on Finance and Municipal Taxation in New Brunswick, known as the Byrne Report after its chairman, was responsible for the shifting in 1967 of health, education and welfare services to the province, leaving fire, garbage, and so on at the local level. Assessment became a provincial responsibility, with the province setting and collecting the property tax. Municipalities could impose additional taxes collectable by the province. This reassignment shifted the functions most likely to have economies of scale and/or intermunicipal spillovers to the province. As a result, the government raised general purpose grants to 72 per cent of all transfers, the highest of the provinces in 1982, although these grants were only 4 per cent of provincial expenditure.<sup>5</sup>

The Byrne Report recommended an unconditional grant which would implement the principle of fiscal equity . . . with respect to local as well as to general services, so that it would be possible to provide both types of services at good standards at about the same tax burdens throughout the province; that is, so that a citizen living in a given type of locality would receive about the same fiscal treatment as if he lived in a similar type of locality anywhere else in the province (p. 273).

The program was to have six characteristics:

- i) it must provide "substantial" revenues that all local governments can offer "good standards of local services" with "reasonable local property taxes";
- ii) it must provide "sufficient" equalization so that all municipalities can offer a "good uniform standard of local services with a similar tax burden";
- iii) the grants must be sufficient that local governments on average keep their property levies reasonably low;
- iv) municipalities with good administrations should be rewarded with lower local tax rates; poor ones with higher rates;
- v) the program should be flexible so that local governments can have higher levels of services providing they pay for them; and
- vi) the program must not be sensitive to the status of the municipality (pp. 274-75).

The Byrne Report recommended that the unconditional grant be based on a formula developed by Graham which contained two components: a flat grant, and equalization.<sup>6</sup> In the report, municipalities were divided into groups according to character and population size. The flat grant was 40 per cent of each municipality's standard expenditure, defined as the average per capita gross expenditure for each group of local governments multiplied

5 Canadian Tax Foundation, *Provincial and Municipal Finances*; and Jamieson, "Budgeting in the Atlantic Provinces."

6 John F. Graham, *Fiscal Adjustment and Economic Development: A Case Study of Nova Scotia* (Toronto: University of Toronto Press, 1963).

by population of the municipality. The equalization component was "the amount necessary to enable all municipalities in each group to provide for the balance of the standard expenditure with a uniform tax burden" (pp. 277-78). That is, standard expenditure net of the flat grant determined the amount to be financed from equalization. A standard tax rate, based on the lowest rate necessary to cover the balance in any municipality, was applied to each government's assessment base to determine standard revenues. This amount was subtracted from standard expenditure to determine the equalization grant. The total package was not to exceed 70 per cent of gross expenditure net of non-tax revenue. Thus the Byrne equalization grant is:

$$G^{BYRNE} = 60\% \times \text{Standard Expenditure} - \text{Standard Revenues} \quad (1)$$

The New Brunswick government experimented with Byrne's grant proposal but scrapped it when it failed to provide sufficient revenues to the larger (and more vocal) municipalities. The current program, instituted in 1978, bears little relation to the formula.<sup>7</sup> Only small local service districts receive a flat grant of 45 per cent of their net spending. All other municipalities receive equalization based on the formula:

$$G^{NB} = \text{Percent of Grant Support} \times \text{Shareable Expenditure} \times \text{Scale Factor} \quad (2)$$

The percent of grant support (%GS) term adjusts the initial grant base, 1 per cent of local assessment, for three correction factors. The first corrects for local tax strength, the second adjusts for property concentration relative to street mileage, and the third is a graded population adjustment for populations over 5,000. These three adjustments to the initial grant base give the fully adjusted grant base, which is then divided by itself plus the initial grant base to give the %GS. The shareable expenditure (SE) term is the excess of last year's gross budgeted expenditure of the municipality over non-tax revenue, times an inflation factor. The product of the %GS and SE terms is called the pre-adjusted grant. Pre-adjusted grants (negative grants are set at zero) are totalled and divided by the grant pool, the provincial funding available for equalization. This ratio, the scale factor, times the pre-adjusted grant, yields the final grant,  $G^{NB}$ .<sup>8</sup>

The New Brunswick formula gives high percent of grant support ratios to large population cities which are poor in terms of per capita/kilometre assessment. Alternatively, two cities can have the same %GS if one is wealthy and large and the other poor and small.<sup>9</sup> Table 1, column 5, reports the 1982 %GS ratios for the twenty-three cities. Larger cities have higher %GS, as can

7 Details of the various equalization formulas can be found in the Appendix.

8 This procedure, setting negative grants to zero, totalling, finding a scale factor and multiplying the pre-adjusted grant by the scale factor to determine the final grant, is used by all Maritime grant formulas.

9 For municipalities with populations below 5,000 and assessments per capita and per kilometre

PROVINCIAL-MUNICIPAL EQUALIZATION IN THE MARITIMES

TABLE 1: 1982 Statistics Used in Calculating the Maritime Grants

City #1		1	2	3	4	5	6	7
		% dist. of assessment	% dist. of population	% dist. of shareable expenditure (N.B.)*	% dist. of projected expenditure (P.E.I.)**	% of Grant Support (N.B.)	EGFL (P.E.I.)	Fiscal Gap (N.S.)
#1	Woodstock	1.818 % <sup>17</sup>	1.874 % <sup>17</sup>	2.074 % <sup>16</sup>	1.136 % <sup>21</sup>	.5734 <sup>22</sup>	.5925 <sup>17</sup>	.1451 <sup>18</sup>
#2	Brantford	4.814 % <sup>6</sup>	5.204 % <sup>6</sup>	4.740 % <sup>6</sup>	5.187 % <sup>5</sup>	.6342 <sup>6</sup>	.6093 <sup>12</sup>	.6958 <sup>3</sup>
#3	St. Thomas	1.541 % <sup>18</sup>	1.961 % <sup>16</sup>	1.540 % <sup>19</sup>	1.751 % <sup>16</sup>	.6395 <sup>4</sup>	.6541 <sup>2</sup>	.5825 <sup>4</sup>
#4	Windsor	15.245 % <sup>2</sup>	14.118 % <sup>2</sup>	17.883 % <sup>1</sup>	15.739 % <sup>2</sup>	.7142 <sup>2</sup>	.6008 <sup>13</sup>	-.1303 <sup>21</sup>
#5	Kingston	3.859 % <sup>9</sup>	4.383 % <sup>8</sup>	4.071 % <sup>8</sup>	4.878 % <sup>6</sup>	.6245 <sup>12</sup>	.6115 <sup>10</sup>	.8875 <sup>2</sup>
#6	Owen Sound	1.267 % <sup>21</sup>	1.419 % <sup>21</sup>	1.434 % <sup>21</sup>	1.269 % <sup>20</sup>	.6083 <sup>15</sup>	.6293 <sup>5</sup>	.2870 <sup>9</sup>
#7	Belleville	2.252 % <sup>15</sup>	2.479 % <sup>15</sup>	2.631 % <sup>14</sup>	2.289 % <sup>15</sup>	.5998 <sup>17</sup>	.6102 <sup>11</sup>	.4931 <sup>6</sup>
#8	Trenton	.836 % <sup>22</sup>	1.056 % <sup>22</sup>	.923 % <sup>22</sup>	.963 % <sup>23</sup>	.6163 <sup>14</sup>	.6434 <sup>6</sup>	.2492 <sup>12</sup>
#9	Chatham	2.807 % <sup>14</sup>	2.891 % <sup>13</sup>	2.450 % <sup>15</sup>	2.575 % <sup>13</sup>	.5886 <sup>18</sup>	.5937 <sup>16</sup>	.2414 <sup>13</sup>
#10	Sarnia	3.885 % <sup>8</sup>	3.533 % <sup>10</sup>	4.051 % <sup>9</sup>	3.694 % <sup>10</sup>	.5774 <sup>19</sup>	.5721 <sup>22</sup>	.1331 <sup>19</sup>
#11	Brockville	1.396 % <sup>20</sup>	1.451 % <sup>20</sup>	1.775 % <sup>17</sup>	1.576 % <sup>18</sup>	.5757 <sup>21</sup>	.5992 <sup>14</sup>	.2188 <sup>14</sup>
#12	London	19.086 % <sup>1</sup>	18.821 % <sup>1</sup>	16.842 % <sup>2</sup>	16.457 % <sup>1</sup>	.7266 <sup>1</sup>	.5847 <sup>20</sup>	1.6512 <sup>1</sup>
#13	Stratford	1.853 % <sup>16</sup>	1.872 % <sup>18</sup>	1.733 % <sup>18</sup>	1.605 % <sup>17</sup>	.5763 <sup>20</sup>	.5941 <sup>15</sup>	.1912 <sup>15</sup>
#14	Peterborough	4.015 % <sup>7</sup>	4.415 % <sup>7</sup>	4.607 % <sup>7</sup>	4.621 % <sup>7</sup>	.6298 <sup>8</sup>	.6143 <sup>9</sup>	.5649 <sup>5</sup>
#15	Pembroke	.751 % <sup>23</sup>	.992 % <sup>23</sup>	.784 % <sup>23</sup>	.974 % <sup>22</sup>	.6313 <sup>7</sup>	.6578 <sup>1</sup>	.2501 <sup>11</sup>
#16	Barrie	3.081 % <sup>12</sup>	2.709 % <sup>14</sup>	3.155 % <sup>11</sup>	2.526 % <sup>14</sup>	.5713 <sup>23</sup>	.5751 <sup>21</sup>	.0260 <sup>20</sup>
#17	Orillia	1.422 % <sup>19</sup>	1.615 % <sup>19</sup>	1.534 % <sup>20</sup>	1.471 % <sup>19</sup>	.6047 <sup>16</sup>	.6248 <sup>7</sup>	.3353 <sup>8</sup>
#18	Cornwall	3.134 % <sup>10</sup>	3.320 % <sup>11</sup>	3.246 % <sup>10</sup>	3.677 % <sup>11</sup>	.6591 <sup>3</sup>	.6499 <sup>3</sup>	.1460 <sup>17</sup>
#19	Guelph	5.210 % <sup>5</sup>	5.245 % <sup>5</sup>	4.846 % <sup>5</sup>	3.885 % <sup>9</sup>	.6168 <sup>9</sup>	.5911 <sup>18</sup>	.1706 <sup>16</sup>
#20	Sault Ste. Marie	6.130 % <sup>4</sup>	5.930 % <sup>4</sup>	5.547 % <sup>4</sup>	6.749 % <sup>4</sup>	.6266 <sup>10</sup>	.5910 <sup>19</sup>	-.4622 <sup>23</sup>
#21	Timmins	2.911 % <sup>13</sup>	3.147 % <sup>12</sup>	2.752 % <sup>13</sup>	3.314 % <sup>12</sup>	.6263 <sup>11</sup>	.6243 <sup>8</sup>	.2747 <sup>10</sup>
#22	North Bay	3.088 % <sup>11</sup>	3.612 % <sup>9</sup>	3.031 % <sup>12</sup>	3.925 % <sup>8</sup>	.6359 <sup>5</sup>	.6303 <sup>4</sup>	.4213 <sup>7</sup>
#23	Thunder Bay	9.600 % <sup>3</sup>	7.953 % <sup>3</sup>	8.352 % <sup>3</sup>	9.740 % <sup>3</sup>	.6214 <sup>13</sup>	.5608 <sup>23</sup>	-1.3750 <sup>22</sup>

Note: rankings are recorded in upper right hand corner of each cell

\* proxied by current tax revenues

\*\* proxied by current operating expenditures

Source: author's calculations using MARS data

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**TABLE 2: Grants Based on the Maritime Equalization Programs**  
 (total 1982 grant pool = \$586,761,083)

City		New Brunswick Grants		Prince Edward Island Grants		Nova Scotia Grants	
		Per cent Distribution	Per Capita Grant	Per cent Distribution	Per Capita Grant	Per cent Distribution	Per Capita Grant
#1	Woodstock	1.827 %	\$34.61	1.123 %	\$21.28	1.830 %	\$34.69
#2	Brantford	4.616 %	\$31.50	5.274 %	\$35.99	8.735 %	\$59.62
#3	St. Thomas	1.513 %	\$27.39	1.911 %	\$34.61	7.299 %	\$132.19
#4	Windsor	19.611 %	\$49.33	15.780 %	\$39.70	0	0
#5	Kingston	3.903 %	\$31.62	4.977 %	\$40.32	11.129 %	\$90.15
#6	Owen Sound	1.340 %	\$33.55	1.333 %	\$33.37	3.595 %	\$90.01
#7	Belleville	2.423 %	\$34.72	2.331 %	\$33.39	6.193 %	\$88.74
#8	Trenton	.874 %	\$29.39	1.034 %	\$34.77	3.122 %	\$105.03
#9	Chatham	2.214 %	\$27.20	2.551 %	\$31.33	3.029 %	\$37.21
#10	Sarnia	3.592 %	\$36.11	3.527 %	\$35.46	1.675 %	\$16.84
#11	Brockville	1.569 %	\$38.38	1.576 %	\$38.57	2.741 %	\$67.08
#12	London	18.792 %	\$35.46	16.056 %	\$30.30	20.737 %	\$39.13
#13	Stratford	1.533 %	\$29.09	1.591 %	\$30.19	2.399 %	\$45.52
#14	Peterborough	4.455 %	\$35.84	4.737 %	\$38.10	7.087 %	\$57.01
#15	Pembroke	.760 %	\$27.21	1.070 %	\$38.30	3.142 %	\$112.51
#16	Barrie	2.767 %	\$36.29	2.424 %	\$31.78	.344 %	\$ 4.52
#17	Orillia	1.424 %	\$31.31	1.534 %	\$33.72	4.208 %	\$92.53
#18	Cornwall	3.285 %	\$35.15	3.988 %	\$42.67	1.835 %	\$19.64
#19	Guelph	4.590 %	\$31.08	3.832 %	\$25.95	2.154 %	\$14.58
#20	Sault Ste. Marie	5.337 %	\$31.97	6.656 %	\$39.87	0	0
#21	Timmins	2.646 %	\$29.87	3.452 %	\$38.96	3.460 %	\$39.05
#22	North Bay	2.960 %	\$29.10	4.128 %	\$40.59	5.283 %	\$51.94
#23	Thunder Bay	7.969 %	\$35.59	9.116 %	\$40.70	0	0

*Note:* rankings recorded in upper right hand corner of each cell

*Source:* author's calculations based on formulas in Appendix and MARS data

be seen from comparing 19 (Guelph) with 4 (Windsor) or 12 (London). Also small, poor cities receive the same %CS as large, rich ones; compare 6 (Owen Sound), 8 (Trenton), and 23 (Thunder Bay).<sup>10</sup>

Since larger, wealthier municipalities have larger gross expenditure net of non-tax revenue, the standard expenditure term also biases the grant in favour of large population cities. This variable rewards tax effort since it is sensitive to the local mill rate, and penalizes cities with high charges and other non-tax revenue. Municipalities have little control over SE since the provincial government uses "partnership budgeting" and can refuse "excessive budgets."

The simulated New Brunswick grants are reported as percent of total grants and as dollars per capita in Table 2. The 1982 scale factor is .0994, showing that the New Brunswick formula, designed for a rural province without large cities, uncapped would cost ten times the amount paid under the Ontario REG. The largest grants go to the largest centres of London (19 per cent) and Windsor (20 per cent), while the smallest go to the smallest centres of Pembroke and Trenton (1 per cent each). The SE rankings (see column 3, Table 1) and grant rankings are almost identical, whereas the %CS (column 5) and grant rankings are unrelated. Thus although %CS affects the *size* of the grant, it has little effect on the grant *rank*. On a per capita basis, the largest grants go to Windsor and Brockville (11); the smallest to Chatham (9) and Pembroke.

In summary, the Byrne Report recommended a New Brunswick equalization program to offset intermunicipal differences in fiscal capacity. The current formula appears to do this since it bases the grant of percent of grant support (a "fiscal deficiency" measure) times shareable expenditure. However, the formula is driven by the SE term and little affected by %CS. As a result it gives grants proportionate to expenditures and does little equalizing. All municipalities receive roughly identical per capita grants.

### Equalization in Prince Edward Island

The expenditure/revenue allocation in Prince Edward Island is similar to the New Brunswick split. Since the late 1960s the province has been responsible for health and social services, but education remains a municipal service. Assessment is a provincial function and all property is subject to tax; there are no payments in lieu of taxes. The assessment base is shared with local governments and the province collects both taxes. In 1982 general purpose

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at the provincial average, the %CS is .555 (see Appendix). Holding population constant, as the assessment base falls, the %CS ratio rises slowly to approach unity. Alternatively, holding assessment per capita and per kilometre constant, as population rises the %CS; also approaches 1. Thus large, poor cities receive the highest %CS ratios.

<sup>10</sup> A rough estimate of wealth is to compare columns 1 and 2 in Table 1; i.e. share of assessment base divided by share of population is a measure of relative fiscal capacity. If the ratio is 1, the city is "average"; above 1, "wealthy"; below 1, "poor."

grants were only 3.3 per cent of all grants, reflecting large education grants and less than 1 per cent of provincial expenditure.<sup>11</sup> There are two general purpose grants, a per capita entitlement that increases with population size, and equalization. The 1980 equalization program is similar to New Brunswick. Its formula is:

$$C^{PEI} = \text{Equalization Grant Factor Line} \times \text{Projected Expenditure} \times \text{Scale Factor} \quad (3)$$

The first term here is the equalization grant factor line (EGFL) which is a ratio similar to %CS in the New Brunswick program. The numerator of EGFL is called the adjusted grant base line. It makes three adjustments to the grant base (total assessment): the first for assessment per capita, the second for assessment per kilometre, and the third for populations in excess of 2,000. The EGFL is calculated as the ratio of the adjusted grant base line divided by itself plus the grant base. It is then multiplied by projected expenditure, an average of the previous two years' current expenditure times an inflation factor (set by the province in consultation with the municipalities), to give the pre-adjusted grant. The scale factor times the pre-adjusted grant equals the adjusted grant,  $C^{PEI}$ .

Comparing the %CS term in the New Brunswick formula with the EGFL term in the Prince Edward Island formula, the major difference is the population adjustment factor which is given significantly more weight in the New Brunswick formula.<sup>12</sup> Column 6 in Table 1 shows that the lowest EGFL is .56 for large, wealthy city Thunder Bay and the highest is .66 for small, poor Pembroke (New Brunswick gives them similar %CS). The New Brunswick formula gives higher %CS to larger cities compared to the Prince Edward Island formula; for example, compare Guelph and London.

Given EGFL, the actual grant depends on projected expenditure which is larger for larger, wealthier cities and positively affected by the local mill rate, as in the New Brunswick formula, which, however, uses gross expenditure net of non-tax revenue whereas Prince Edward Island uses current expenditure. To the extent that a city has large capital expenditure and/or small non-tax revenue, standard expenditure is larger than projected expenditure.

Table 2 shows the simulated Prince Edward Island grants. The scale factor is .084, slightly smaller than for New Brunswick. The largest grants go to Windsor and London (16 per cent each) while the smallest go to Pembroke and Trenton (1 per cent each). The grant rankings are almost identical to the projected expenditure rankings (column 4 of Table 1) so that EGFL has little influence on the grant. In per capita terms the Prince Edward

11 Canadian Tax Foundation, *Provincial and Municipal Finances*, and Jamieson, "Budgeting in the Atlantic Provinces."

12 In both programs a small, average community has a fiscal deficiency ratio of .555; however, when population rises EGFL grows more slowly than %CS because the adjustment factor enters additively into EGFL but multiplicatively into %CS (see Appendix).

Island formula gives larger (smaller) amounts to smaller (larger) cities than does the New Brunswick formula. The highest per capita grant goes to Cornwall (18), the lowest to Woodstock (1). We conclude that the program is similar to the New Brunswick one; it appears to be equalizing since it is based on a fiscal deficiency ratio, the EGFL, multiplied by current expenditure. However, the Prince Edward Island grants are determined by projected expenditure and minimally affected by EGFL; hence, as in New Brunswick, the formula reduces to relatively constant per capita grants.

### Equalization in Nova Scotia

The origins of Nova Scotia equalization derive from the 1974 Report of the Nova Scotia Royal Commission on Education, Public Services and Provincial-Municipal Relations, known as the Graham Report after its chairman. The report recommended that general services be shifted to the province while local services remain with a proposed county system. The province would take over all tax fields except residential property which would be left for the counties. A county-wide mill rate would finance county-wide services (e.g., general government) while area rates financed area-wide services (e.g., fire, public transit). The Graham Report also proposed that conditional grants be replaced by general purpose grants indexed to the growth in provincial revenues. It argued that a two-tier equalization program, one tier for county and the other for area services, was necessary to "permit all municipalities to provide a standard level of services with the same tax burden, regardless of the level of their own fiscal resources" (Vol. II, ch. 24, p. 54). The old system of conditional grants, each with a built-in element of equalization, "was an unsatisfactory solution to equalization problems" (ch. 24, p. 55), since they were not available for many municipal services, restricted local freedom of choice, in many cases provided low levels of shareable costs, and in the case of per capita and proportional grants forced the poor municipalities to raise their own rates higher than those of the rich ones in order to receive the same per capita grant.

The equalization formula proposed in the Graham Report was standard expenditure minus revenue yield. Standard expenditure measured the expenditure a municipality would make if it had the provincial average per capita net expenditure multiplied by its own population. Revenue yield measured the revenue a municipality would receive if it levied the standard tax rate multiplied by own assessment. The standard tax rate was calculated as standard expenditure divided by standard assessment, the per capita average of the top three per capita assessments times own population. Comparing (1) and Graham's proposal we see that the two were similar; this is not surprising since both were based on Graham.<sup>13</sup>

The report's proposals were partly implemented: health is a provincial func-

13 Graham, *Fiscal Adjustment and Economic Development*.



tion, education under school boards financed by local mill rates, and welfare jointly shared by the province and municipalities. Assessment at full market value is a provincial function but mill rates are locally set and collected.<sup>14</sup> Conditional grants, however, were not eliminated as Graham proposed: in 1982 unconditional grants were only 5 per cent of total Nova Scotia transfers and 2 per cent of provincial expenditure.<sup>15</sup> A few conditional grants were replaced by a basic operating grant with a revenue guarantee, a capital grant replaced shared debt charges and payments in lieu of taxes now equal full taxation. In 1980 the government introduced the basic operating grant based on Graham's equalization proposal. The grant divides municipalities into five classes determined by number of dwelling units or households. The formula is:

$$G^{NS} = (\text{Standard Expenditure} - \text{Revenue Yield}) \times \text{Scale Factor} \quad (4)$$

Standard expenditure is calculated by subtracting conditional grants from current expenditure to give net expenditure. Summing per-household net expenditure for each class gives standard per-household expenditure for the class and then multiplying this term by total households determines standard expenditures for each city. The revenue yield term is calculated as the standard tax rate times own assessment. The standard tax rate is the ratio of total net expenditure for each class minus its class grant pool, divided by total assessment for the class. Standard expenditure minus revenue yield gives the first-round grant, which when multiplied by the scale factor determines the actual grant  $G^{NS}$ . We can also rearrange the Nova Scotia formula as:

$$G^{NS} = \text{Class Net Expenditure} \times (\text{Household Share} - \text{Weighted Assessment Share}) \times \text{Scale Factor} \quad (5)$$

Equation (5) is strikingly similar to the 1967-82 federal equalization formula:

$$G^{FED} = \text{Total Revenue} \times (\text{Population Share} - \text{Tax Base Share}) \quad (6)$$

Class net expenditure is similar but smaller than total revenue, households replace population and weighted assessment replaces the tax base. Thus the Nova Scotia program uses a "fiscal gap"; each municipality's grant depends on the gap between its share of households and its share of the assessment base. If the household share exceeds (is less than) the base share the grant is positive (zero).

Table 2 shows that the largest Nova Scotia grant goes to London followed by Kingston. In our 1982 sample the standard per-household expenditure is \$1,522.83, the standard tax rate is .022639 and the weighting term for the

14 John F. Graham, "Local Government Finance: Theory and Policy in the Recent Nova Scotian Context," ACEA meetings, Mount Allison University, October 1986.

15 Canadian Tax Foundation, *Provincial and Municipal Finances*, and Jamieson, "Budgeting in the Atlantic Provinces."

assessment base is .940. The Nova Scotia scale factor is a high .755 because it gives zero grants to several large cities, reducing the total initial grants and thus raising the scale factor. Since the above four numbers are constants for all municipalities in any one year it is easy to calculate  $G^{NS}$  using (4); e.g., Barrie's grant is  $[(\$1,522.83 \times \text{number of households}) - (.022639 \times \text{assessment base})] \times .755 = \$170,541$ . (Barrie's actual grant is \$170,328; the difference is due to rounding error.) An alternate method is to calculate each city's fiscal gap and then multiply it by its class net expenditure as in (5). The fiscal gaps are reported in column 7 of Table 1. The largest fiscal gap goes to the largest city, London (12); its share of households is 19.6 per cent compared to a share of weighted assessment of 17.9 per cent. The next three largest cities (4, 20 and 23), however, have negative gaps and do not receive a grant. The Nova Scotia grant distribution is very different from New Brunswick or Prince Edward Island since the latter formulas always give bigger grants to larger cities. This is only true for Nova Scotia if the large city has a higher percent of households than it does of weighted assessment. For example, Windsor receives 20 per cent of New Brunswick grants, 16 per cent of Prince Edward Island grants but no grant under the Nova Scotia formula! The New Brunswick and Prince Edward Island formulas reward large cities regardless of their assessment base; the Nova Scotia formula rewards them *only* if they are poor. The Nova Scotia formula also gives large grants to the poorest municipalities (St. Thomas, Trenton and Pembroke) – three to four times the per capita grants these cities would receive under the formulas of the other two provinces. The Nova Scotia formula is clearly biased toward cities with low fiscal capacity and can afford to give them large grants because wealthy cities receive no grants.

We now turn to estimating the impacts of these grants on municipal fiscal capacities.

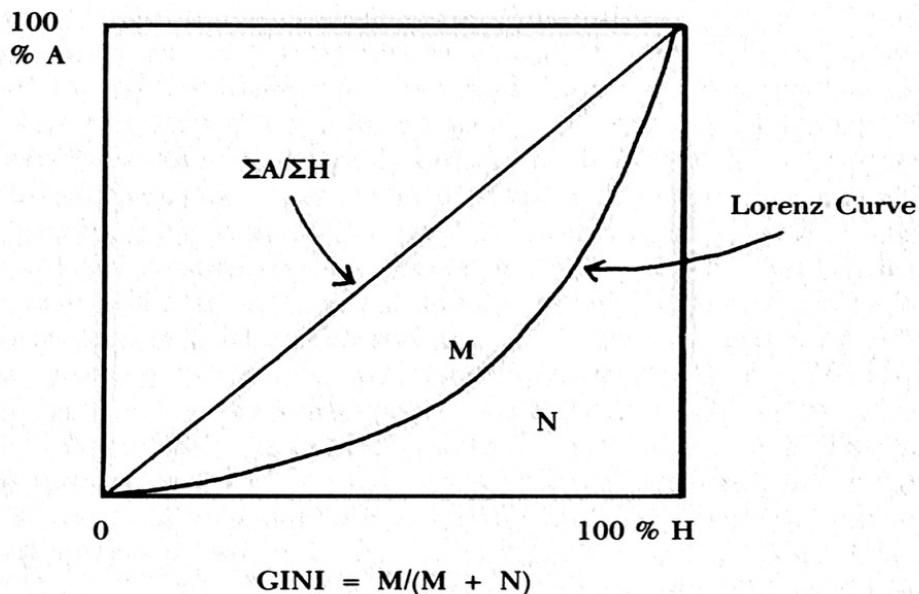
### **Equalization and the redistribution of wealth**

Large differences in assessment bases imply that communities can offer similar levels of services only if the poorer ones levy higher mill rates. The goal of equalization is to offset these fiscal capacity differences, enabling poorer jurisdictions to provide service levels at mill rates reasonably comparable to the average. If equalization grants are used to provide local public goods and/or to reduce local tax rates, they should be fully capitalized into property values. Thus equalization should raise per household wealth, measured by total assessment, and reduce disparities in per capita assessments.<sup>16</sup>

16 Equalization can also affect the ranking of per-household assessments. If substantial rerankings occur due to equalization horizontal inequalities can be created. See Lorraine Eden, "Municipal Equalization Grants: A Comparison of the Maritime Provinces," ACEA meetings, Mount Allison University, October 1986; and Auld and Eden, "Provincial-Local Equalization."

Our method of calculating the impacts of equalization on fiscal capacity uses the GINI technique. The GINI ratio is derived from the Lorenz curve which is used to measure the distribution of income among families or other household units. In our case the Lorenz curve shows the distribution of wealth measured as per-household assessment, pre- and post-equalization, across the twenty-three cities. This is illustrated in Figure 1. The percent of households

Figure 1  
Calculating the GINI Coefficient from the Lorenz Curve

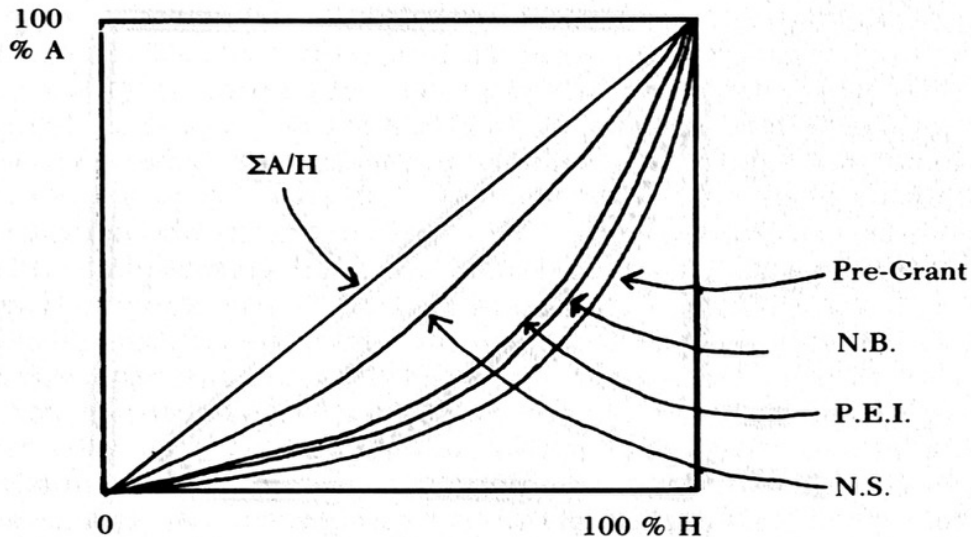


is measured along the horizontal axis and the percent of assessment along the vertical axis. The Lorenz curve ranks units from poorest to richest and cumulates the gap between each city's per-household assessment  $A/H$  and the provincial average  $\Sigma A/\Sigma H$ . If there were perfect fiscal equity, the Lorenz curve would be the diagonal of Figure 1 and all cities would receive  $\Sigma A/\Sigma H$ . The farther away the Lorenz curve is from the diagonal the greater the fiscal disparities that exist. To accurately measure this gap we use the GINI coefficient which calculates the difference between a perfectly equal distribution of wealth and the actual distribution (shown as area  $M$  in Figure 1) divided by the perfectly equal distribution (shown as area  $M$  plus  $N$ ); i.e., the GINI is  $M/(M + N)$ . The smaller  $M$  is, the smaller the amount of vertical inequity and the closer the GINI coefficient is to zero. The GINI thus lies between zero (perfect equality  $M = 0$ ) and one (perfect inequality  $N = 0$ ).

Since Ontario has had an equalization program for several years, the REC should be already capitalized in assessment values. The pre-grant measure of wealth is thus calculated by *subtracting* the capitalized value of the REC from total equalized assessment for each city. We plot the pre-grant measures

of wealth against households in Figure 2. The pre-grant Lorenz curve is close to the diagonal and yields a pre-grant GINI of .0710, indicating some fiscal inequity exists among the municipalities. We then add the capitalized value of the grants for each of the three formulas to our pre-grant measure of per-household assessment to determine the post-grant GINIs. All three post-grant Lorenz curves lie inside the pre-grant curve, indicating that each formula

Figure 2  
The Pre-Grant and Post-Grant Lorenz Curves and GINIs



Pre-Grant GINI = .0710  
 Post-Grant GINIs = .0703 (N.B.)  
                           .0671 (P.E.I.)  
                           .0317 (N.S.)

does lessen the amount of fiscal inequity. The Nova Scotia Lorenz curve lies the closest to the diagonal, followed by the Prince Edward Island and New Brunswick curves; the post-grant GINI ratios are: New Brunswick = .0703, Prince Edward Island = .0761 and Nova Scotia = .0317. Comparing these numbers to the pre-grant GINI of .0710, the New Brunswick formula reduces pre-grant wealth differences by 1 per cent, Prince Edward Island by 5.5 per cent and Nova Scotia by 55.4 per cent. Since the New Brunswick and Prince Edward Island programs do little to redistribute wealth toward the poorer cities, disparities in fiscal capacities remain and fiscal equity is not achieved. The Nova Scotia program, however, significantly lessens differences in fiscal capacities between rich and poor cities. Since the stated purpose of the equalization legislation in each province is to reduce fiscal disparities, we judge the New Brunswick and Prince Edward Island programs as failures, the Nova Scotia program a success.

## Policy recommendations and conclusions

Both the Byrne and Graham reports recommended that their provinces use equalization grants to reduce intermunicipal differences in fiscal capacities. The reports outlined a fiscal gap approach to equalization where grants would depend on the gap between standard expenditure and standard revenue. The New Brunswick and Nova Scotia governments initially implemented these proposals, but now only the Nova Scotia program is based on the fiscal gap approach.<sup>17</sup> The current New Brunswick and Prince Edward Island programs allocate grants in proportion to municipal expenditure. In per capita terms their grants are basically constant across municipalities so that, although the formulas appear to be equalizing through their fiscal deficiency ratios, in practice little equalization occurs. Nova Scotia program is the only formula that significantly reduces fiscal capacity differences among local governments.

The Nova Scotia program is not without its problems, however. First, the grant scheme is complicated, more so than presented above; it is not clear that either donor or receiver government fully understands it. One economic disadvantage (but perhaps a political advantage) of a complicated formula is that it is easier to fudge results and redistribute grants in favour of vocal and/or politically sensitive groups. The potential for such manipulation could be easily avoided since the formula reduces to one similar to the well-understood federal program. We therefore recommend that the Nova Scotia formula should be simplified and stripped of its excess jargon and mathematics. Secondly, separating municipalities into classes, each with its own grant pool, can cause arbitrary grant changes if an exogenous change occurs in another municipality, depending on whether or not it is in the same class. Similar problems arise with the 1982-87 federal formula and are better avoided.<sup>18</sup> Since the purpose of this segregation is probably a concern for higher costs as population rises, one solution could be to include fiscal need variables (e.g. poverty levels, population density), instead of arbitrary cut-off numbers for classes. Thirdly, all three programs use the same scale factor to determine final grants. This ensures that total grants equal the grant pool, but it also ensures that all cities receive the same percent of their fiscal deficiency. Another method could be to give the poorest cities grants as close to their uncapped levels as possible, moving to the next level and repeating the steps until the funds were exhausted. In this manner the scale factor would fall as city wealth rose.

17 Recent correspondence with the Prince Edward Island government indicated that they are in the process of moving to a fiscal gap equalization program.

18 The comparative statics of the old and new federal formulas are well explained in the Courchene-Wildasin appendix to T.J. Courchene, *Equalization Payments: Past, Present and Future*, (Toronto: Ontario Economic Council, 1984). For an analysis of the comparative statics of the Maritime formulas, see Eden, "Municipal Equalization Grants."

To the extent that the true purpose of equalization is political rather than economic, one would expect complicated formulas, substantial political intervention in the allocation of grants, and the choice of a formula that apparently equalizes but in fact favours large municipalities. The New Brunswick and Prince Edward Island governments appear to have followed the latter route, choosing formulas that favour the larger, wealthier cities and do not reduce fiscal disparities. The Nova Scotia government may have followed the first route, choosing a complicated formula that encourages fudging of results and political intervention in the grant process. However, if the Nova Scotia formula were consistently applied we believe this program would best achieve the fiscal equity goal.

We conclude that provincial governments should use equalization grants to reduce local differences in fiscal capacities. The equalization program should follow the principles laid down in the Byrne and Graham reports. It should transfer substantial and sufficient revenues so that poor municipalities can achieve comparable levels of services at comparable levels of taxation to wealthier communities. It should be flexible and reward "good behaviour," but not be sensitive to manipulation by local officials. The program should also be simple, transparent and predictable so that poor municipalities can plan their expenditures to efficiently utilize the additional fiscal capacity made available through the equalization grants.

Lastly, we recommend that all three provincial governments re-examine the Byrne and Graham reports. The fiscal gap approach they developed still remains the best method of reducing fiscal disparities among local governments.

## Appendix on Maritime Equalization Programs

### Formulas

*N.B.*  $G = \% \text{ Grant Support} \times \text{Shareable Expenditure} \times \text{Scale Factor}$   
 $G = [ .01A \times XY / (.01A \times XY + .01A) ] \times [ (GE_{.1} - R_{.1}) (1 + r) ] \times F$   
 where  $X = [ (\Sigma A / \Sigma N) / (A / N) + 0.25 ( (\Sigma A / \Sigma K) / (A / K) ) ]$   
 and  $Y = [ 1 + (N - 5000) / 200,000 ]$

*P.E.I.*  $G = \text{Equalization Grant Factor Line} \times \text{Projected Expenditure} \times \text{Scale Factor}$   
 $G = [ Z / (Z + A) ] \times [ \{ (E_{.1} + E_{.2}) / 2 \} (1 + r) ] \times F$   
 where  $Z = (\Sigma A / \Sigma N) N + 0.25 [ (\Sigma A / \Sigma K) K + (\Sigma A / \Sigma N) (N - 2000) ]$

*N.S.*  $G = [ \text{Standard Expenditure} - \text{Revenue Yield} ] \times \text{Scale Factor}$   
 $G = [ (\Sigma (E - C) / \Sigma H) \times H - \text{STR} \times A ] \times F$   
 where  $\text{STR} = (\Sigma (E - C) - \text{GP}) / \Sigma A$   
 and  $\text{GP} = (\Sigma (E - C) / \Sigma \Sigma (E - C)) \times \Sigma \text{GP}$

Rearranged to resemble the Federal equalization program, the N.S. formula is:

$$G = \text{Class Net Expenditure} \times [ \text{Share of Households} - \text{Share of Weighted Assessment} ] \times \text{Scale Factor}$$

$$G = \Sigma (E - C) \times [ H / \Sigma H - w (A / \Sigma A) ] \times F$$

where  $w = 1 - \Sigma \text{GP} / \Sigma \Sigma (E - C) < 1$

### Definitions of Variables

- A = equalized assessment
- C = conditional grants (N.S.)
- E = current expenditure (P.E.I., N.S.)
- F = scale factor ensuring that total grants equal the grant pool
- G = equalization grant
- GE = gross budgeted expenditures (N.B.)
- GP = class grant pool, the ceiling on grants for each class (N.S.)
- H = number of households or dwelling units (N.S.)
- K = weighted kilometres of roads with local roads having a weight of one and provincial and regional roads having a weight of one-half (N.B. and P.E.I.)
- N = population (N.B., P.E.I.)
- R = nontax revenues (N.B.)
- r = inflation factor used to scale up past expenditures (N.B., P.E.I.)
- STR = standard tax rate, an average tax rate measured as class net expenditure minus the class grant pool, divided by total class assessment (N.S.)