THE IMPACTS OF EQUALIZATION OF MUNICIPAL FISCAL CAPACITY A COMPARISON OF THE MARITIME PROVINCES

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I. Introduction

Local governments finance their expenditures through a combination of property taxes, user charges and provincial-local transfers. In the absence of such transfers, large differences in assessment bases imply that communities can offer similar levels of services only if the poorer ones levy higher tax rates. These differences in fiscal capacities can be offset by provincial-municipal equalization grants which enable poorer jurisdictions to provide levels of services at mill rates reasonably comparable to the wealthier ones. Thus equalization can ensure that all provincial residents, regardless of their particular location, receive equal fiscal treatment, and "fiscal equity" is achieved between otherwise-similar individuals in different municipalities.[1]

The purpose of this paper is to examine the impacts of the current provincial-municipal equalization grant programs in the Maritime Provinces on municipal fiscal capacity. In 1963 the Report of the Royal Commission on Finance and Municipal Taxation in New Brunswick, known as the Byrne Report after its chairman, recommended that the N.B. government institute an equalization grant program to lessen differences in fiscal capacities among local governments. In 1974 the Nova Scotia government received similar recommendations from the Nova Scotia Royal Commission on Education, Public Services and Provincial-Municipal Relations, Services and Provincial-Municipal Relations, known as the Graham Report after its chairman. We review the recommendations of the two royal commissions with respect to equalization. We compare them to the programs currently in place in the Maritime Provinces, briefly explaining their mechanics and comparative statics. We simulate the grants implied by each of the current programs on a base of twenty-three independent cities in Ontario and then use this base to examine the impacts of the differentials and affecting the fiscal capacity rankings, among municipalities. We conclude that the N.S. formula best achieves the goals of equalization as laid out by the Byrne and Graham commissions. The N.B. and P.E.I formulas give similar grants in per capita terms to all municipalities and have minimal impacts on differences in fiscal capacity. We recommend that they be replaced with formulas similar to the N.S. program.

The data base used in this paper was constructed from the MARS base of the Ontario Ministry of Municipal Affairs. We selected the 23 independent or single-tier cities in Ontario as the sample and used the grants each city actually received in the years 1980 to 1982 as our base case.[2] The total grant pool available for equalization under each formula was constrained to equal the total amount actually paid to the 23 cities, $586,761,083.

II. Equalization In New Brunswick

A. The Byrne Report

The 1963 Byrne Report recommended that the N.B. government institute an unconditional grant program for local governments with two components: a flat grant and an equalization grant. The Report argued that grants were necessary to:

> "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 unconditional grant program was to have six characteristics (pp. 274-5):

1) the program must provide "substantial" revenues that all local governments can provide "good standards of local services" with "reasonable local property taxes";
2) the program must provide "sufficient" equalization so that all municipalities can provide a "good uniform standard of local services with a similar tax burden";
3) the grants must be sufficient that local governments on average keep their property levies reasonably low;
4) municipalities with good administrations should be rewarded with lower local tax rates; poor ones with higher rates;
5) the program should be flexible so that local governments can have higher levels of services providing they pay for them;
6) the program must not be sensitive to the status of the municipality.

The Byrne Report recommended that the unconditional grant program be based on a formula developed by Graham (1963) which contained both flat-rate and equalization components. In the Report, municipalities are divided into groups according to character and population size. The flat grant G^f is 40 percent of each municipality's standard expenditure, defined as the average per capita gross expenditure for each group of local governments multiplied by population of the municipality. We can represent the flat grant by:[3]

$$G^f = g\,(\Sigma GE/\Sigma N)\,N, \qquad (1)$$

where GE is gross expenditure, N is population and g is the flat rate. The equalization grant G is (pp.277-8) 'the amount necessary to enable all municipalities in each group to provide for the balance of the standard expenditure (60 percent) with a uniform tax burden'. Thus the flat grant is subtracted from standard expenditure to determine the amount to be financed

from equalization. A standard tax rate T, based on the lowest rate necessary to cover the balance in any municipality, is applied to each assessment base A to determine standard revenues. This amount is subtracted from standard expenditure to determine the equalization grant G in the following manner:

$$G = (1 - g)\ (\Sigma GE/\Sigma N)\ N - (t^{*}A) \qquad (2)$$

where $T = [(1 - g)\ (\Sigma GE/\Sigma N)\ N_j) / A_j$

and j is the community with largest gap between standard expenditure and assessment base. The Byrne Report stipulated that the total package should not exceed 70 percent of gross expenditure net of non-tax revenue R:

$$G^{f} + G \leq .7\ (GE - R) \qquad (3)$$

The N.B. government experimented with a version of the equalization program recommended by Byrne but scrapped it when it failed to provide sufficient revenues to the larger and more vocal municipalities. The current N.B. unconditional grant program was instituted in 1978 and bears little relation to the Byrne Report. The flat grant was dropped except for small local service districts which receive 45 percent of their net spending. The current equalization formula is explained below.

B. The Current New Brunswick Equalization Program

Program N.B. municipalities receive equalization based on the following formula:

$$G = [.01A * XY/(.01A * XY + .01A)]\ [(GE_{-1} - R_{-1})\ (1 + r)] * F \qquad (4)$$

where $X = [\ (\Sigma A/\Sigma N)/A/N + 0.25\ (\Sigma A/\Sigma K)/A/K\ ]$

$Y = [\ 1 + (N - 5000)/200{,}000\ ]\ r \geq 1$

The first term in square brackets is the percent of grant support %GS; the second square-bracketed term is the shareable expenditure SE. The %GS ratio is multiplied by SE, the excess of last year's gross budgeted expenditure of the municipality over non-tax revenue increased by an inflation factor r, to give the pre-adjusted grant G^{0} The total of the pre-adjusted grants (negative grants are set equal to zero) is divided into the amount available for equalization. This fraction, F = Grant Pool/Σ^{0}, multiplied by G^{0} determines the final grant G.

The %GS term applies three adjustments to the initial grant base (.01A or percent of total local assessment): (1) $(\Sigma A/\Sigma N)/A/N$, correcting for taxable assessment per capita relative to the provincial average; (2) $0.25(\Sigma A/\Sigma K)/AK$. A correcting for assessment per kilometre relative to the provincial average,

where K is a weighted total of kilometers of roads (local roads have a weight of 1, provincial roads 1/2); and (3) Y, a graded population adjustment reflecting the higher per capita costs of large municipalities. These three adjustments give the fully adjusted grant base FAGB, the numerator of the %GS term, which is then divided by itself plus the tax base to give %GS; i.e. FAGB/(FAGB + .01A) = %GS.

First note the initial grant base .01A disappears from (4) since it is in both the numerator and denominator of %GS. Therefore assessment does not directly influence the grant, but only indirectly through the ratio XY/(XY + 1). We can analyze this ratio by initially assuming Y = 1; i.e. the municipal population is smaller than 5000, so that the ratio reduces to X/(X + 1). If we take the representative municipality we see from (1) that X must be 1.25 so X/(X + 1) equals .555; i.e. for a small town with average per capita and per kilometre assessment, %GS is 55.5 percent. For a very rich, small town (i.e. as X --> 0) %GS approaches zero; for a very poor, small town (i.e. as X rises) %GS is asymptotic to 1. Thus, as a small locality's fully-adjusted grant base grows, its %GS grows more and more slowly (see Figure 1). If the graded population adjustment exceeds 1, the %GS line shown in Figure 1 for an average, small town shifts upwards. For example, if Y = 2, %GS increases from .555 to .714; if Y = 2.2853 (the population size of London, our largest city in the sample) %GS climbs to .7407. Thus for any given X the larger is Y the larger the upward shift in the %GS line. If the municipality is wealthy, the upward shift is smaller (e.g. for X = 1, %GS for London would be .69) whereas for a poor municipality the shift is larger (e.g. for X = 2, London's %GS would be .8205). The shift in the %GS line widens since for larger grant bases, the bigger the population the larger the increase in %GS. The highest %GS would go to a large population city, poor in same %GS if one is wealthy and high population and the other poor and small.

Given %GS the actual grant also depends on SE, shareable expenditure. Since larger and wealthier municipalities will have larger gross expenditure net of non-tax revenue, SE biases the grant in favour of large, high expenditure cities. This variable tends to reward tax effort since it is sensitive to the local mill rate and penalize cities with high charges and other non-tax revenue.

Comparing the current formula (4) to that proposed in the Byrne Report (1,2,3) we see that the current formula bears no resemblance to (2), Byrne's equalization component. However, (4) looks remarkably like Byrne's individual grant constraint (3): a fraction multiplied by gross expenditures net of nontax revenues for each municipality. Since the SE term is biased towards larger and wealthier cities, the only equalizing in the N.B. formula must occur through the%GS fraction. The comparative statics of the N.B. formula are summarized in Table 1. Increases in X, Y, K, SE and N increase the grant whereas A reduces it. SE also tends to reward tax effort since it is sensitive to the local mill rate andto penalize cities with high charges and other non-tax revenue.If another city raises its assessment (A_j rises) or reduces its kilometrage (K_j falls) the provincial average and the scale factor rise,

increasing the grant.

C. Simulation of the New Brunswick Formula

To simulate the N.B. formula using our Ontario data base, we made two adjustments to the program. First, assessment was measured as total equalized assessment A^0 plus the grossed-up value of payments in lieu of taxes P (to include nontaxable property in the municipality); i.e. $A = A^0 + 1000P/m$ where is the commercial mill rate for equalization purposes in Ontario. Second, shareable expenditure was proxied by current tax revenue since (i) Ontario local governments cannot deficit budget; and (ii) we assumed last year's tax revenue grossed up by an inflation factor could be safely proxied by current tax revenue.

Table 2 gives the 1982 ratios that determine the %GS term for the 23 independent cities in Ontario. The Y values vary from 1.04 (cities 8 and 15, Trenton and Pembroke) to 2.29 for London. The %GS ratio varies from .57 (cities 1, 10, 11, 13 and 16) to .71 for Windsor. Larger cities have higher %GS as can be seen from comparing cities Guelph and London. Both cities have A/N near the mean $24,452, and A/K well above the mean $3,520,910. However, %GS for Guelph with Y = 1.34 is .617 whereas London's %GS is much higher at .727. Also small, poor cities receive the same %GS as large, rich ones; compare cities Owen Sound and Trenton with city Thunder Bay (all have %GS = .62).

The simulated grants for the 23 municipalities are shown in Table 3. The 1982 scale factor F is .0994 showing that the N.B. formula uncapped would give ten times the grants of the Ontario program. This is not surprising since New Brunswick is a mostly rural province without any large cities. A formula designed to give large grants to high population centers would be much more expensive in Ontario. The largest grants go to the largest population centers, London (19% of the total) and Windsor (20%), while the smallest grants go to the smallest centers, Pembroke and Trenton (1% each). If we compare the SE rankings as proxied by current tax revenues (see Table 6) with the predicted grants we see that the SE ranks are almost the same as the grant ranks. On a per capita basis, the largest grants go to Windsor and city Brockville, while the smallest per capita grants go to Chatham and Pembroke. The rank of per capita SE against the major determinant of the G/N rank; however, in this case %GS has more influence. For example, London ranks first in terms of %GS but 17th in terms of per capita SE; however its per capita grant ranking is 7th. However, cities 11, 16 and 10 rank second, third and fourth in terms of per capita grants because their per capita SE rank 2, 3 and 4 although their %GS ranks are 21, 23 and 19.

N.B. grants are positively related to assessment, in total and per capita terms, as the OLS regressions below demonstrate:

$$G = -160{,}250 + .00156\ A \quad (\text{ajusted } R^2 = .959)$$

$$G/N = -9.474 + .002\ A/N \quad (\text{adjusted } R^2 = .296)$$

Note the positive sign on A/N. If we regress G against taxable municipal income:

$$G = -506.680 + 3.696\ I \quad (\text{adjusted } R^2 = .916).$$

This is not surprising since assessment and income are closely related:

$$I = 116{,}391 + 0.0004\ A \quad (\text{adjusted } R^2 = .968).$$

However, regressing G/N against I/N showed no relationship. Since the purpose of equalization is to reduce differences in fiscal capacities between local governments; this formula appears to do exactly the reverse.

III. Equalization In Prince Edward Island.

A. The Prince Edward Island Equalization Program

The P.E.I. government, unlike New Brunswick and Nova Scotia, did not hold a royal commission on provincial-municipal relations. Currently, there are two unconditional grant programs in P.E.I., a per capita entitlement that increases with population size, and equalization. The equalization program introduced in 1980 is similar to the N.B. one. The grant formula is:

$$G = [Z/(Z + A)]\ [\{(E_{-1} + E_{-2})/2\}\ (1 + r)] * F \qquad (5)$$

where $Z = (\Sigma A/\Sigma N) * N + 0.25\ [(\Sigma A/\Sigma K) * K + (\Sigma A/\Sigma N) * (N - 2000)]$

The first square-bracketed term is the equalization grant factor line EGFL; the second square-bracketed term is projected current expenditures PE. EGFL is multiplied by PE, an average of the previous two year's current expenditure multiplied by an inflation factor r, to give the pre-adjusted grant G^0 which multiplied by F, the scale factor for the grant pool ($F = \text{Grant Pool}/\Sigma G^0$), the adjusted grant G. The PE variable is larger for larger, wealthier cities and positively affected by the local mill rate, as in the N.B. formula.

The variable Z, the adjusted grant base line, makes three adjustments to the grant base; adjustments 2 and 3 have a 25 percent weight: (i) $(\Sigma A/\Sigma N)*N$ calculates the total assessment base a municipality would have if it had average per capita assessment; (ii) $(\Sigma A/\Sigma K)*K$ calculates the total kilometers of roads (local roads have a weight of 1, provincial roads of 1/2) a municipality would have if it had average per kilometre assessment; and (iii) $(\Sigma A/\Sigma N)*(N - 2000$ adds a correction factor for populations in excess of 2000 to adjust for higher costs associated with larger population (if $N < 2000$ this factor is set to zero). Once Z is calculated, the fraction $Z/(Z + A) = EGFL$.

The major difference between %GS in the N.B. formula and EGFL in the P.E.I.formula is the population adjustment factor. We can see this as follows. First note that if we divide (5) through by A, EGFL becomes $(Z/A)/(Z/A + 1)$ where:

$$Z/A = (\Sigma A/\Sigma N)/A/N + 0.25\ [(\Sigma A/\Sigma K)/A/K + (\Sigma A/\Sigma N)/A/(N - 2000](6)$$

Comparing this with X*Y from the New Brunswick formula:

$$X^*Y = [(\Sigma A/\Sigma N)/A/N + 0.25\ (\Sigma A/\Sigma K)/A/K]\ [1 + (N - 5000)/200,000](7)$$

We see that the major difference is the population adjustment factor which is given significantly more weight in the N.B. formula. If N < 2000 the two equations are exactly the same; if N < 5000 (Z/A) is larger than X*Y; but for populations in excess of 5000, Z/A grows proportionately faster than X*Y. The EGFL curve is graphed in Figure 2. Comparing %GS with EGFL, i.e. X*Y/(X*Y + 1 as a function of X, with Z/A/(Z/A + 1) as a function of (Z/A), we see that both curves monotonically increase and are asymptotic to one. However, population increases cause upward shifts in the %GS curve but movements along the EGFL curve. A small, average municipality under the P.E.I. formula has Z/A = 1.25 so that EGFL equals .555 as in the N.B. formula. A large, average city has Z/A = 1.so that EGFL equals .6 whereas in N.B. the %GS could be as high as .7 or .8. That is, a city with average A/N and average A/K receives a proportionately larger grant under the N.B. formula because Y enters multiplicatively into the %GS ratio whereas the population adjustment factor enters additively into the EGFL ratio. Hence the N.B formula tends to reward large cities more than the P.E.I. formula.

Give EGFL the actual grant depends on projected expenditure. Again this variable will be larger for larger, wealthier cities and positively affected by the local mill rate, as in the N.B. formula. Note that the N.B. formula, however formula uses current expenditure. To the extent that a city has large capital expenditure and/or small non-tax revenue, SE exceeds projected expenditure. The comparative statics of the P.E.I. formula are summarized in Table 1. The direction of the effects is similar to that of the N.B. formula.

B. Simulation of the Prince Edward Island Formula

The adjustments to the P.E.I. formula to accommodate the data base are straightforward: $A = A^0 + 1000P/m$, and this year's current expenditure was substituted for the grossed-up average of the past two years.

Table 2 shows EGFLs for the 23 Ontario cities. The lowest EGFL is .56 for large, wealthy Thunder Bay (compare its %GS at .62) and the highest is .66 for small, poor Pembroke (compare its %GS at .63). The N.B. formula gives higher %GS to larger cities compared to the P.E.I. formula. For example, comparing cities 19 Guelph and 12 London, EGFL = .59 and %GS = .62 for Guelph but EGFL = .58 and %GS = .73 for much larger London. (See also city 4 Windsor.)

The simulated P.E.I. grants are shown in Table 4. The scale factor F for 1982 is .084, slightly smaller than for N.B., indicating that the pre-adjusted grant total for P.E.I. is larger than for N.B. The largest grants again go to Windsor and London (16% each) while the smallest go to Pembroke and Trenton (1% each). If we compare grant rankings with rankings of current expenditure

(see Table 6) we see that the correlation is almost 100%; EGFL has little influence othe rankings. In per capita terms the P.E.I. formula gives larger (smaller) per capita grants to the smaller (larger) cities than does the N.B. formula. Cornwall #18 receives the largest per capita grant; Woodstock the smallest.

The OLS regressions below shows the positive and strong relationship between grants and assessment and grants and income with coefficients significant at the 1% level.

$$G = 302{,}759 + 0.0012\ A \quad (\text{adjusted } R^2 = .956).$$

$$G = 36{,}492 + 2.9407\ I \quad (\text{adjusted } R^2 = .903).$$

A and I are closely related, but G/N and I/N or A/N were insignificant.

IV. Equalization In Nova Scotia

A. The Graham Report

The 1974 Graham Report recommended that the old N.S. structure of conditional grants be replaced by general purpose transfers indexed to the growth in provincial revenues. The Report recommended an equalization grant, capital grants and a few specific conditional grants. Equalization would "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 proposed program would be in two tiers; one equalizing county, the other area, services. The formula for county equalization proposed in the Report was:

$$G = (\Sigma NE/\Sigma N * N) - (t * A) \qquad (8)$$

$$\text{where } t = (\Sigma NE/\Sigma N * N) / (\Sigma A^{t3}/\Sigma N * N)$$

The first bracketed term in (8) is standard expenditure and the second revenue yield where t is the standard tax rate. Standard expenditure measures the spending a municipality would make if it had the provincial average per capita net expenditure and its own population. (If actual expenditure were less than this, actual expenditure is used.) The standard tax rate is standard expenditure divided by standard assessment, the per capita average of the top three per capita-assessments times own population. The standard tax rate times own assessment is the revenue yield, the tax revenue the municipality would have if it had the average tax rate. Standard expenditure minus revenue yield equals the equalization grant for each municipality.

The programs proposed by the Byrne and Graham reports are quite similar (compare (2) and (8)); this is not surprising since Byrne's proposal was based on Graham (1963). The Graham Report, however, did not recommend a flat grant, arguing that deficiency payments were not necessary in the N.S. case. Graham's recommendations were more successful than Byrne's since the 1980 N.S.

equalization program closely follows its royal commission's recommendations.

B. The Nova Scotia Equalization Program

In 1980 the N.S. government repoperating grant with a revenue guarantee; a capital grant replaced shared debt charges and payments in lieu of taxes were made equal to full taxation. The basioperating or equalization grant is designed to reflect disparities in need and ability to pay among municipalities. Local governments are divided into five classes depending on their number of households. The current grant formula is:

$$G = [(\Sigma(E - C) / \Sigma H) * H - STR * A] * F \qquad (9)$$

where $STR = [\Sigma(E - C) - GP] / \Sigma A$

$$GP = [\Sigma(E - C)/\Sigma\Sigma(E - C)] * \Sigma GP$$

In (9) E is current expenditure and C is conditional grants, E - C is net expenditure. Summing per household net expenditure for all municipalities in a particular class, $\Sigma(E - C)/\Sigma H$, gives standard per household expenditure SPHE that class. Multiplying SPHE by total households determines standard expenditure for each city. The standard tax rate STR is measured as total net expenditure for each class minus the grant pool for that class, divided by total assessment for the class. The class grant pool GP is measured by the fraction total net expenditure for one class is of total net expenditure for all classes times the provincial pool $\Sigma\Sigma GP$. STR is multiplied by actual assessment for the municipto determine the revenue yield. Subtracting the revenue yield from standard expenditure gives the first-round grant G^0. These grants are totalled and compared to the available grant pool for that class. A scale factor $F = GP/\Sigma dG^0$ calculated and the actual grant is the first-round grant times F.

There are many similarities between the current formula and that proposed in the Graham Report. First, compare the standard expenditure terms in (8) and (9): H replaces N and net expenditure subtracts conditional grants; otherwise the definitions are the same. (Also note the similarity with Byrne's definition in (2).) Second, the standard tax rate terms are similar. In (9) STR reduces to $\Sigma NE/\Sigma A^{t3}$ since the N terms cancel. In (8) total assessment for the class replaces assessment of the top three counties; NE is defined as above and an extra term is added to numerator - GP. Subtracting GP, the class grant pool, from the numerator of STR reduces the standard tax rate and hence, reduces the revenue yield, STR * A. This increases the grant size and has a similar effect to reducing the assessment base from ΣA to ΣA^{t3} which Graham proposed. Third, in the Graham Report the pool grows at the rate of provincial revenues; this provides a cap to the program. In the N.S. formula each grant is capped by the class grant pool.

If we substitute the STR and GP definitions into (9) G collapses to:

$$G = \Sigma(E - C)\,[H/\Sigma H - w * A/\Sigma A\,] * F \qquad (10)$$

where $w = [1 - \Sigma\Sigma GP/\Sigma\Sigma(E - C)] \geq 1$

The ratio w measures the gap between total net expenditure of all municipalities and the provincial grant pool. (In 1984 w = .83 in Nova Scotia.) This arrangemenis similar to the 1967-82 federal equalization formula: $G = \Sigma TR\,[N/\Sigma N - \Sigma B]$. Class net expenditure, $\Sigma(E - C)$, is similar but smaller than ΣTR, total revenue $H/\Sigma H$ replaces $N/\Sigma N$; and $w*A/\Sigma A$ replaces $B/\Sigma B$ where B is the tax base. Thus the N.S. formula is a revenue equalization program, equalizing the difference between the share of households and the (weighted) share of the tax base.

The comparative statics of the N.S. formula are summarized in Table 1. Increases in A_i, own assessment, lower a municipality's grant whereas increases in A_j for a city in the same (a different) class raise (leave unchanged) the grant. A rise in own net expenditure, $E_i - C_i$, or that of a municipality in same class, $E_j - C_j$, probably raises G^i; a rise in net expenditure of a different class reduces the grant. Changes in households have the same effects as population changes in the N.B. and P.E.I. formulas.

C. Simulation of the Nova Scotia Formula

To simulate the N.S. formula we ignored the separate classes of households, putting all 23 cities in the first class,[4] and $A = A^0 + 1000\ P/m$ as before. The constants or provincial averages in our 1982 sample were SPHE = $1,522.83, STR =.022639 and w = .940. Since w in Nova Scotia was .83 the N.S. grant pool in 198 was larger (i.e. more generous) relative to total N.S. net expenditure than the Ontario grant pool is here. The scale factor F equal .755, much higher than for either N.B. or P.E.I.; as we see below this is because the N.S. formula gives zero grants to several large cities, reducing ΣG^0 and thus raising F. It is easy to calculate an individual city's grant. For example using (9), city 16 Barrie's grant is [SPHE * H - STR * A] * F = [$1,522.83 * 15,740 - .022639 * $1,048,785,794] * .755 = $170,541. The actual grant shown in Table 5 is $170,328; the difference due to rounding. To simply determine whether or not a city receives a grant it is faster to calculate G/H = [SPHE - STR * A/H] * F. If SPHE < STR * A/H, the city does not receive a grant; eg. city 23, Thunder Bay has A/H = $79,331 so STR * A/H = $1795.97 which exceeds SPHE = $1522.83. Since SPHE and STR are constants for any one year, which cities do/do not receive a grant basically depends on their per household assessment. An alternate method is to compare $H/\Sigma H$ with $A/\Sigma A * w$ as in (10). Table 6 shows these ratios; using .94, one can quickly scan the table to see which cities do not receive grants.[5]

The simulated N.S. grants are shown in Table 5. Three cities, Windsor, Sault Ste. Marie and Thunder Bay do not receive grants; in each case their share of the assessment base (weighted by .94) exceeds their share of

households (see Table 6 for the distributions). The largest total grants go to London followed by Kingston. In per capita terms, the N.S. formula gives the largest grants to the poorest cities: St. Thomas, Trenton and Pembroke. The N.S. formula is clearly biased towards low fiscal capacity municipalities and can afford to give these cities large grants because other, wealthier cities receive no grants at all.[6]

The OLS regressions of N.S. grants against assessment are interesting because, unlike N.B. and P.E.I., the N.S. grants are not related to assessment. (For G the coefficient is significant at the 10% level; for G/H at the 1% level.)

$$G = 2{,}688{,}500 + .000595\ A \quad (\text{adjusted } R^2 = .1246)$$

but per household grants are negatively related to per household assessment:

$$G/H = 899.59 - .0127\ A/H \quad (\text{adjusted } R^2 = .8808)$$

V. Equalization and the Redistribution of Wealth

In this section we measure how successful the three equalization programs are at offsetting differences in fiscal capacities. Per capita assessments vary from $18,508 to $29,514 among the 23 cities. According to our OLS regressions only the N.S. program would lessen these disparities since it gives grants inversely related to per household assessment. Here we see if this presumption is correct using GINI, RIC and HI indexes as our tests.

Our first test calculates pre and post-grant GINI coefficients. If grants are used to provide local public goods or to reduce local mill rates, they should be fully capitalized into property values. Thus larger grants should raise per household wealth as measured by total equalized assessment. Since Ontario has had an equalization program for several years, these grants should already be capitalized into assessment values. Our pre-grant measure of wealth is therefore determined by subtracting the capitalized value of the Ontario equalization grant from total equalized assessment for each city.[7] We assume a capitalization factor of 0.2 and an infinite life for the property and the grant. (See Eden and Auld (1987) for details.) The GINI coefficient ranks cities from poorest to richest and cumulates the gap between each city's per household assessment and the provincial average, $\Sigma A/\Sigma H$. The pre-grant GINI = .0710, indicating small, but clear evidence of fiscal inequity. The post-grant GINI adds the capitalized grants to the pre-grant wealth measure. The post-grant GINI ratios are N.B. = .0703, P.E.I. = .0671 and N.S. = .0317; that is, the N.B. equalization program reduces pre-grant wealth inequities by 1 percent, P.E.I. by 5.5 percent and N.S.by 55.4 percent. Clearly, the N.B. and P.E.I. programs have little effect; the N.S. program, however, significantly lessens differences in fiscal capacities.

As an alternative measure of the impact of equalization on fiscal equity we also computed the Resource Inequality Coefficient index or RIC (see Paglin, 1975 and Smith, 1978). This measure does not require of municipalities and

hence is easier to calculate. Figures 3 and 4 illustrate this difference; the RIC simply adds the areas (each block is one city) above and below the provincial-average benchmark whereas the GINI ratio is the area M divided by the area M + N. The pre-grant RIC is .1008, slightly larger than the GINI, and the post-grant RICs are: .1006 for N.B. (a 0.2% improvement), .0976 for P.E.I. (3.17%) and .0429 for N.S. (57.44%). Thus the RIC coefficient also shows that N.B. and P.E.I. programs do little to improve inequity relative to the N.S. program.

Plotnick's (1981) HI index of income inequalities can be used to test for horizontal inequalities between municipalities. Plotnick defines horizontal equality in terms of ranks: two cities with the same rank before the government tax should have the same rank after the tax. The HI index is zero if the ranking of cities in the pre-tax situation is identical to the post-tax ranking; as the number of rerankings increase the index rises and in the limit reaches 1. Here we use the HI index to determine whether equalization grants cause wealth reranking among the municipalities. We redefine the HI index as:

$$HI = \sum_{i}^{M} 1\, W_i^P - W_i\, 1 \,/\, 2 \sum_{i}^{N} 1\, W_i - \bar{W}\, 1 \qquad (11)$$

where W is post-grant wealth of municipality i, W is mean post-grant wealth, W^P is rank-preserving level of wealth for i, N is total number of municipalities and M is total number of reranked municipalities. HI is zero if M = 0 (complete horizontal equality) and HI = 1 if M = N (complete horizontal inequality).

Since little reranking occurs in the N.B. and P.E.I. programs HI - 0. The explanation for this is simple: the N.B. and P.E.I. grants are closely related to assessment; adjusted R^2 in both cases exceeds .9. Because these programs use provincial averages as their benchmarks the per capita grants are not large and do not vary much between cities (the range is $27 to $49 in N.B. and $21 to $43 in P.E.I.). Hence it is not surprising that little reranking occurs. Under the N.S. program, however, the number of rerankings is substantial and HI - .25. Per capita grants are strongly and negatively related to per household assessment (adjusted R^2 = .88) and the range is also significantly wider in Nova Scotia (from $0 to $132). Since larger absolute and relative grants are more likely to cause rerankings, a high HI index for Nova Scotia is expected. The basic reason why so much reranking occurs in the N.S. program, however, lies in the nature of the formula. In practice, all equalization programs in Canada are gross programs that is, their minimum grant is zero since units above the benchmark cannot receive negative grants. Since the program benchmark is the provincial average and no city above the average receives a negative grant, the rankings of the top cities are unaffected by equalization. The only way a redistributive program such as N.S. can increase the fiscal capacity of poor cities is at the expense of the middle wealth cities since they must suffer a drop in rank in order to raise the poor ones.

In absolute terms, the middle cities are better off since they receive grants but in relative terms their wealth has deteriorated. Reductions in fiscal inequity are thus achieved at the expense of worsening horizontal inequalities.

VI. Conclusions

The Byrne Report recommended an equalization program for New Brunswick based on fiscal equity, one that would offset differences in fiscal capacities between municipalities. The Commission proposed an individual grant ceiling: no grant should exceed 70 percent of gross expenditure net of all charges, payments in lieu of taxes and grants. The ceiling is the only component of the proposal that is de facto legislation. The current formula bases the grant on the percent of grant support times shareable expenditure. The grant, both in total and per capita terms, is positively related to assessment and mill rates and only indirectly to measures of fiscal inequity. Since the highest %GS ratio is 72 percent and shareable expenditure is as defined above, in practice the ceiling proposed in the Byrne Report does hold, although fiscal equity is not achieved. The N.B. formula thus appears to degenerate into a per capita flat grant. The formula is also biased towards large population municipalities. Since these tend to be the welathier centers this can be regarded as a poorly designed feature of the program. One could argue that since large population centers have higher needs for police, fire, etc. due to congestion, the formula compensates for differences in costs among cities (see Bradbury et al., 1984). If this is true, then the program could compensate for fiscal need differences. However, in the absence of objective measures of needs, it is hard to justify such a bias.

The P.E.I. formula uses an equalization grant factor line multiplied by current expenditure where EGFL is a ratio similar to %GS but less generous to large population municipalities. The grant is driven by current expenditure; ie.the grant rankings correspond to municipal expenditure rankings. Like N.B., this formula also appears to degenerate into a per capita flat grant.

The Graham Report recommended an equalization program based on fiscal equity, and the current N.S. program is a true fiscal equity formula since differences in fiscal capacities are reduced significantly by the grant. The formula is similar to the federal program; cities with a larger (smaller) share of households than of weighted assessment receive positive (zero) grants. While the N.B. and P.E.I. formulas give similar levels of $30-$40 per capita to all cities, the N.S. program gives grants that vary from zero to $132 per capita.

However, there are problems with the N.S. formula. First, the grant scheme is so complicated that it is hard to believe that either the donor or recipient governments fully understand it. The calculation of the standard tax rate with its internal grant pool (is w really necessary?), the application of STR and SPH to determine the initial grant and the capping by a second grant pool is too complex a procedure. Since the mathematics eventually boil down to a formula similar to the federal one (a well-understood program) it would be

simpler and clearer to strip the formula of its excess jargon and mathematics and bring it down to its basic principles. Second, Table 1 shows that separating municipalities into classes, each with its own grant pool, can cause individual grant changes if there is an exogenous change in another municipality depending on whether or not it is in the same class. Similar effects occur in the 1982-87 federal program which has classes of provinces depending on whether a province is in or out of the revenue base (see Courchene, 1984). Since the purpose of arbitrarily segregating municipalities into classes is probably a concern for costs related to population, an alternative solution could be to include variables correcting for fiscal need. (Need variables are included in the N.B. and P.E.I. programs; however, since they only affect the %GS and EGFL ratios, they have little actual impact.) Third, most equalization formulas use population rather than households. In terms of the median voter model, it is the household that pays property taxes and makes the decisions on local public goods. Thus for fiscal capacity definitions number of households is a more appropriate concept than population. However, environmental costs are imposed by people so that for measures of needs, population is the preferred concept. The N.B. and P.E.I. formulas use population; the N.S. formula uses households. Perhaps a more accurate program should measure cost disparities in population terms and fiscal disparities in household terms? And fourth, the N.S. program causes significant reranking of cities in terms of wealth if the grants are capitalized into property values. Since the purpose of equalization is to lessen inequities in assessment bases and the grant pool is not large enough to handle such redistribution where grants must be nonzero, the result is that low wealth cities gain at the expense of middle wealth cities. One solution could be to turn the program into a net scheme supplemented by a per-household flat grant; all citieswould receive the flat grant but the equalization component would be negative for wealthy cities. Alternatively, the provincial pool and provincial standard could both be raised, the grant ceiling removed altogether or the scale factor changed from a constant fraction to a sliding scale inversely related to municipal assessment per household.

We conclude that the N.S. program best achieves the fiscal equity goal outlined in the two royal commissions. The N.B. and P.E.I. formulas bear little relation to fiscal equity: in fact they appear to be flat grants in disguise. They should be replaced with formulas more closely based on the N.S. program.[8]

FOOTNOTES

An earlier version of this paper was presented at the annual meetings of the A.C.E.A. at Mount Allison University, October 1986. I would like to thank the discussant, John Mersereau, and the participants for their comments. It is partly based on research conducted by myself and D.A.L. Auld, School of Natural Resources (see Eden and Auld, 1987). The project was financially supported by SSHRCC and I thank the Council for its support. I would also like

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1. On the fiscal equity principle in a provincial-municipal context see Auld and Eden (1982, 1987a,b). On the financing problems of local governments see Kitchen (1984), Kitchen and McMillan (1985) and Siegel (1980).
2. The 23 independeNt cities in Ontario were selected as the data base since they were a small enough set to allow detailed cross-sectional comparisons among them, while preserving a broad enough variety of assessment per household levels and socio-demographic characteristics. The two-tier Ontario cities in regional forms of government were omitted due to the difficulty of allocating expenditures at the upper tier back to the constituent households in the lower tier cities. (This particularly affects the N.S. program). It clearly would have been preferable to run these programs on Maritime data bases, but the data were not available to us. However, a similar analysis was recently conducted by the N.S. Ministry of Municipal Affairs, following our approach and achieving similar results on N.S. data.
3. Each variable should be subscripted by i to represent i; e.g. G should read G_i for the equalization grant to municipality i. However, we omit subscripts from all the equations to simplify their presentation. Where the variable repesents the total of all municipalities, a summation sign is used.
4. In the N.S. formula class 1 contains municipalities with more than 7500 households; class 2 between 3000 and 7500 households; class 3 less than 3000; while classes 4 and 5 are rural areas. For purposes of calculating STR and GP, classes 1, 2 and 3 are combined. In our data sample only 2 cities had less than 7500 households (Trenton and Pembroke) so we did not separate them. For Ontario, one could argue that the class sizes should be incrased substantially; however, any change would have been arbitrary so we used the N.S. limits.
5. Note that using households instead of population biases the grants in favour of municipalities where the N/H ratio is low since such cities have a larger percent share of households than of population and this percent positively affects the grant. That is, the N.S. formula is biased in favour of cities like Barrie and Sarnia with a low of 2.4 people per household and against cities such as Sault Ste. Marie with a high 2.8 N/H. If $N/\Sigma N$ were substituted for $H/\Sigma H$ in equation (10), assuming w remains equal to .94, we can see from Table 7 that Sault Ste. Marie would be eligible for a grant since $N/\Sigma N = 5.93\%$ and $(A/\Sigma A) * w = 5.16\%$ whereas under the current formual its grant is zero since $H/\Sigma H = 5.30\%$. Ontario is the only other province to use H instead of N.
6. In fact, both the P.E.I. and N.S. formulas have revenue guarantees built in so that no city receives less grants than it did before equalization was

introduced. This guarantee would lessen the impact of the N.S. program as measured here. We have ignored the revenue guarantees in all the formulas.

7. In Ontario some municipalities have moved to market value assessment; others have not. The Ontario government calculates an equalization factor (based on an average of the previous three years equalization factors) yearly for each municipality. The assessment base times this factor is called "equalized assessment" and is meant to make assessments among municipalities comparable for purposes of calculating conditional and unconditional grants. We have used equalized assessment, A^0, plus nontaxable assessment throughout our analysis, 8. And, in fact, the P.E.I. government is currently in the process of doing just that. It is revising its program to follow along the lines of a simplified N.S. formula, using the same arguments made in this paper.

Figure 1

The Percentage of Grant Support

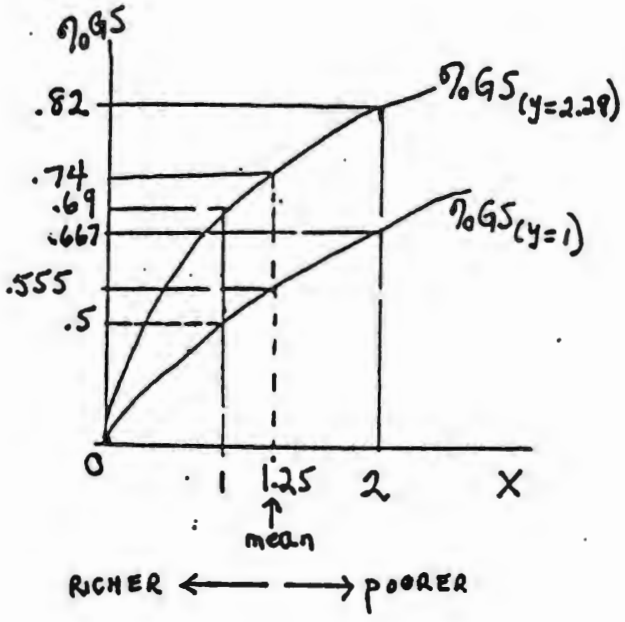


Figure 2

The Equalization Grant Factor Line

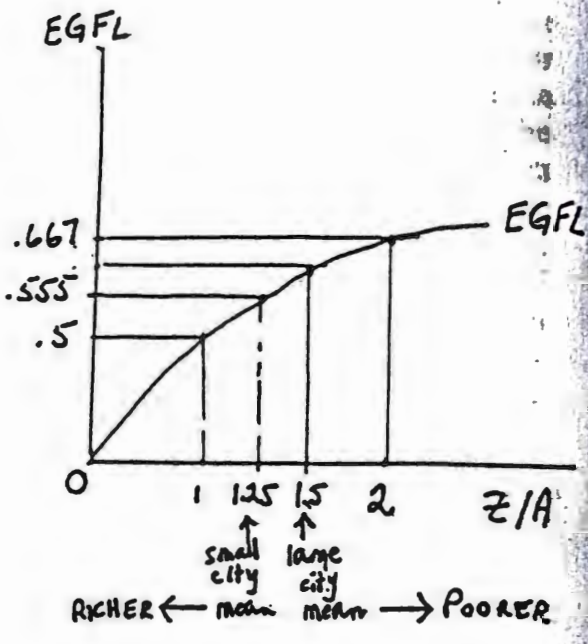
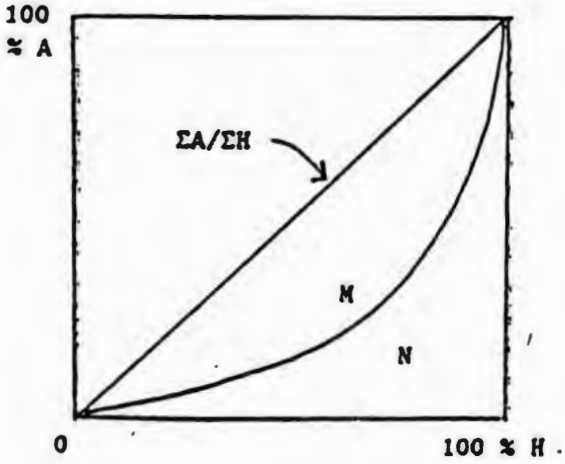


Figure 3

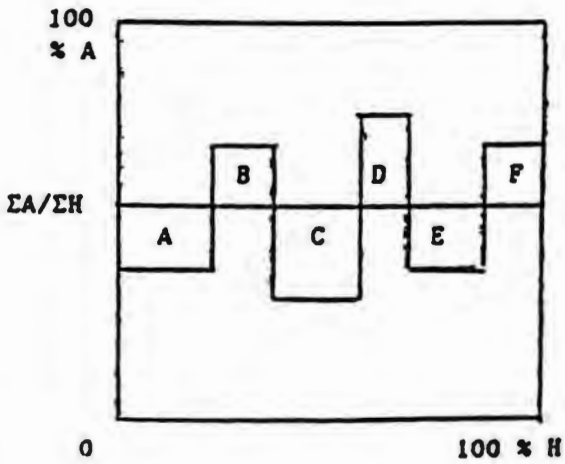
Calculating the GINI Coefficient



GINI = M/(M + N)

Figure 4

Calculating the RIC Coefficient



RIC = Σ(A + B + C + D + E + F)/area below the equivalent average line

Table 1

Comparative Static Effects of Grant Formulas

Exogenous Change in:	Sign of Effect on Grant: N.B. Grant	P.E.I. Grant	N.S. Grant
equalized assessment A_i	-	-	-
another city's assessment A_j	+	+	+ / 0 *
own population N_i	+	+	
another city's population N_j	-	-	
own households H_i			+
another city's households H_j			- / 0 *
own kilometrage K_i	+		+
another city's kilometrage K_j	-		-
own gross expenditure GE_i	+ (t-1)		
another's gross expenditure GE_j	- (t-1)		
own current expenditure E_i		+ (t-1,t-2)	+ ?
another's current expenditure E_j		- (t-1,t-2)	+ ? / - *
own conditional grants C_i			- ?
another's conditional grants C_j			- ? / + *
own non-tax revenue R_i	- (t-1)		
another's non-tax revenue R_j	+ (t-1)		
inflation factor r	+	+	
grant pool scale factor F	+	+	+

* first sign refers to a municipality in the same class as municipality i, second sign refers to a municipality in a different class from i.

Table - 2

Calculating the Percent of Grant Support and the Equalization Grant Factor Line

		$\frac{\Sigma A/\Sigma N}{A/N}$	$\frac{\Sigma A/\Sigma K}{A/K}$	X (N.B.)	Y (N.B.)	% Grant Support (N.B.)	E.G.F.L. (P.E.I.)
City #1	Woodstock	1.0309	.7396	1.2158	1.1055	.5734	.5925
#2	Brantford	1.0818	.8615	1.2972	1.3373	.6342	.6093
#3	St. Thomas	1.2723	1.2950	1.5961	1.1115	.6395	.6541
#4	Windsor	.9259	1.3998	1.2759	1.9579	.7142	.6008
#5	Kingston	1.1364	.6513	1.2992	1.2802	.6245	.6115
#6	Owen Sound	1.1982	1.3060	1.5247	1.0738	.6083	.6293
#7	Belleville	1.1013	.8199	1.3063	1.1476	.5998	.6102
#8	Trenton	1.2626	1.0761	1.5316	1.0485	.6163	.6434
#9	Chatham	1.0299	.7460	1.2164	1.1763	.5886	.5937
#10	Sarnia	.9091	.8398	1.1191	1.2209	.5774	.5721
#11	Brockville	1.0395	.8851	1.2608	1.0760	.5757	.5992
#12	London	.9862	.7079	1.1632	2.2853	.7266	.5847
#13	Stratford	1.0101	.8818	1.2306	1.1053	.5763	.5941
#14	Peterborough	1.1001	.9080	1.3271	1.2824	.6298	.6143
#15	Pembroke	1.3210	1.2744	1.6396	1.0441	.6313	.6578
#16	Barrie	.8795	1.0642	1.1455	1.1636	.5713	.5751
#17	Orillia	1.1364	1.0804	1.4065	1.0875	.6047	.6248
#18	Cornwall	1.0593	2.1763	1.6034	1.2061	.6591	.6499
#19	Guelph	1.0070	.7772	1.2013	1.3402	.6168	.5911
#20	Sault Ste. Marie	.9671	.9667	1.2088	1.3878	.6266	.5910
#21	Timmins	1.0812	1.2898	1.4037	1.1941	.6263	.6243
#22	North Bay	1.1696	1.0180	1.4241	1.2265	.6359	.6303
#23	Thunder Bay	.8285	.9803	1.0736	1.5287	.6214	.5608

Table 3

Grants Under the New Brunswick Formula

		Total Grant	Percent Distribution	Per Capita Grant
City #1	Woodstock	$, 903,244	1.827 %	$ 34.61
#2	Brantford	$ 2,282,506	4.616 %	$ 31.50
#3	St. Thomas	$. 747,949	1.513 %	$ 27.39
#4	Windsor	$ 9,697,671	19.611 %	$ 49.33
#5	Kingston	$ 1,930,296	3.903 %	$ 31.62
#6	Owen Sound	$ 662,584	1.340 %	$ 33.55
#7	Belleville	$ 119,844	2.423 %	$ 34.72
#8	Trenton	$ 432,087	.874 %	$ 29.39
#9	Chatham	$ 1,094,830	2.214 %	$ 27.20
#10	Sarnia	$ 17,716,152	3.592 %	$ 36.11
#11	Brockville	$ 775,714	1.569 %	$ 38.38
#12	London	$. 9,292,856	18.792 %	$ 35.46
#13	Stratford	$ 758,235	1.533 %	$ 29.09
#14	Peterborough	$ 2,203,270	4.455 %	$ 35.84
#15	Pembroke	$ 375,704	.760 %	$ 27.21
#16	Barrie	$ 1,368,534	2.767 %	$ 36.29
#17	Orillia	$ 704,191.	1.424 %	$ 31.31
#18	Cornwall	$ 1,624,567	3.285 %	$ 35.15
#19	Guelph	$ 2,269,739	4.590 %	$ 31.08
#20	Sault Ste. Marie	$ 2,639,270	5.337 %	$ 31.97
#21	Timmins	$ 1,308,614	2.646 %	$ 29.87
#22	North Bay	$ 1,463,676	2.960 %	$ 29.10
#23	Thunder Bay	$ 3,940,911	7.969 %	$ 35.39

Table 4

Grants Under the Prince Edward Island Formula

		Total Grant	Percent Distribution	Per Capita Grant
City #1	Woodstock	$ 359,297	1.123 %	$ 21.28
#2	Brantford	$ 2,607,885	5.274 %	$ 35.99
#3	St. Thomas	$ 944,927	1.911 %	$ 34.61
#4	Windsor	$ 7,803,547	15.780 %	$ 39.70
#5	Kingston	$ 2,461,143	4.977 %	$ 40.32
#6	Owen Sound	$ 659,131	1.333 %	$ 33.37
#7	Belleville	$ 1,152,474	2.331 %	$ 33.39
#8	Trenton	$ 511,081	1.034 %	$ 34.77
#9	Chatham	$ 1,261,301	2.551 %	$ 31.33
#10	Sarnia	$ 1,744,004	3.527 %	$ 35.46
#11	Brockville	$ 779,423	1.576 %	$ 38.57
#12	London	$ 7,940,062	16.056 %	$ 30.30
#13	Stratford	$ 786,959	1.591 %	$ 30.19
#14	Peterborough	$ 2,342,408	4.737 %	$ 38.10
#15	Pembroke	$ 528,943	1.070 %	$ 38.30
#16	Barrie	$ 1,198,755	2.424 %	$ 31.78
#17	Orillia	$ 758,394	1.534 %	$ 33.72
#18	Cornwall	$ 1,972,125	3.988 %	$ 42.67
#19	Guelph	$ 1,895,070	3.832 %	$ 25.95
#20	Sault Ste. Marie	$ 3,291,575	6.656 %	$ 39.87
#21	Timmins	$ 1,707,230	3.452 %	$ 38.96
#22	North Bay	$ 2,041,407	4.128 %	$ 40.59
#23	Thunder Bay	$ 4,507,704	9.116 %	$ 40.70

Table 5

Grants Under the Nova Scotia Formula

		Total Grant	Percent Distribution	Per Capita Grant
City #1	Woodstock	$ 905,169	1.850 %	$ 34.69
#2	Brantford	$ 4,319,626	8.735 %	$ 59.62
#3	St. Thomas	$ 3,609,331	7.299 %	$ 132.19
#4	Windsor	0	0	0
#5	Kingston	$ 5,503,247	11.129 %	$ 90.15
#6	Owen Sound	$ 1,777,951	3.595 %	$ 90.01
#7	Belleville	$ 3,062,608	6.193 %	$ 88.74
#8	Trenton	$ 1,544,083	3.122 %	$ 105.03
#9	Chatham	$ 1,497,998	3.029 %	$ 37.21
#10	Sarnia	$ 828,330	1.675 %	$ 16.84
#11	Brockville	$ 1,355,606	2.741 %	$ 67.08
#12	London	$ 10,254,590	20.737 %	$ 39.13
#13	Stratford	$ 1,186,493	2.399 %	$ 45.52
#14	Peterborough	$ 3,504,668	7.087 %	$ 57.01
#15	Pembroke	$ 1,553,612	3.142 %	$ 112.51
#16	Barrie	$ 170,328	.344 %	$ 4.52
#17	Orillia	$ 2,080,994	4.208 %	$ 92.53
#18	Cornwall	$ 907,591	1.835 %	$ 19.64
#19	Guelph	$ 1,063,053	2.154 %	$ 14.58
#20	Sault Ste. Marie	0	0	0
#21	Timmins	$ 1,710,874	3.460 %	$ 39.05
#22	North Bay	$ 2,612,654	5.283 %	$ 51.94
#23	Thunder Bay	0	0	0

Table 6

1982 Distribution Statistics for the Independent Municipalities

		$\frac{A}{\Sigma A}$	$\frac{N}{\Sigma N}$	$\frac{K}{\Sigma K}$	$\frac{T}{\Sigma T}$	$\frac{E}{\Sigma E}$	$\frac{H}{\Sigma H}$
City #1	Woodstock	1.818 %	1.874 %	1.344 %	2.074 %	1.136 %	1.854 %
#2	Brantford	4.814 %	5.204 %	4.147 %	4.740 %	5.187 %	5.221 %
#3	St. Thomas	1.541 %	1.961 %	1.996 %	1.540 %	1.731 %	2.031 %
#4	Windsor	15.243 %	14.118 %	21.340 %	17.883 %	15.739 %	14.200 %
#5	Kingston	3.859 %	4.383 %	2.513 %	4.071 %	4.878 %	4.515 %
#6	Owen Sound	1.267 %	1.419 %	1.655 %	1.434 %	1.269 %	1.478 %
#7	Belleville	2.252 %	2.479 %	1.846 %	2.631 %	2.289 %	2.610 %
#8	Trenton	.836 %	1.056 %	.900 %	.923 %	.963 %	1.033 %
#9	Chatham	2.807 %	2.891 %	2.094 %	2.450 %	2.575 %	2.880 %
#10	Sarnia	3.883 %	3.533 %	3.263 %	4.051 %	3.694 %	3.785 %
#11	Brockville	1.396 %	1.451 %	1.236 %	1.775 %	1.576 %	1.531 %
#12	London	19.086 %	18.821 %	15.512 %	16.842 %	16.457 %	19.392 %
#13	Stratford	1.853 %	1.872 %	1.634 %	1.733 %	1.605 %	1.933 %
#14	Peterborough	4.015 %	4.415 %	3.645 %	4.607 %	4.621 %	4.339 %
#15	Pembroke	.751 %	.992 %	.957 %	.784 %	.974 %	0.956 %
#16	Barrie	3.081 %	2.709 %	3.278 %	3.135 %	2.526 %	2.922 %
#17	Orillia	1.422 %	1.615 %	1.336 %	1.534 %	1.471 %	1.672 %
#18	Cornwall	3.134 %	3.320 %	6.820 %	3.246 %	3.677 %	3.092 %
#19	Guelph	5.210 %	5.243 %	4.049 %	4.846 %	3.883 %	5.068 %
#20	Sault Ste Marie	6.130 %	5.930 %	5.926 %	5.547 %	6.749 %	5.300 %
#21	Timmins	2.911 %	3.147 %	3.734 %	2.752 %	3.314 %	3.011 %
#22	North Bay	3.088 %	3.612 %	3.144 %	3.031 %	3.923 %	3.324 %
#23	Thunder Bay	9.600 %	7.933 %	9.411 %	8.332 %	9.740 %	7.649 %

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