A Comparative Evaluation of Provincial-Local Equalization

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Cet article analyse les programmes de péréquation provinces-municipalités pour sept provinces. Il présente la rationalité fiscale de la péréquation, explique chacun des programmes et simule les schémas d'allocation de chacun en utilisant une base de données commune. Les programmes sont alors évalués en terme de leur capacité à réduire les inégalités fiscales entre les municipalités.

This paper examines current provincial-municipal equalization programs in seven provinces. It outlines the fiscal equity rationale for equalization, explains each program and simulates the grant pattern of each using a common data base. The programs are then evaluated in terms of their success at reducing fiscal inequities across municipalities.

Introduction

The unequal distribution of wealth and income across Canada is an economic fact of life. As a result of this inequality, the ability to pay for public services differs across provinces; governments with lower fiscal capacities would need to levy higher taxes to finance the same level of services. Federal grants prior to 1957 were implicitly equalizing, e.g., per capita grants, ad hoc subsidies to poorer provinces. Since 1957 the federal government has given provincial equalization grants designed to lessen these imbalances; in 1982 the principle of equalization was enshrined in the Constitution Act. Table 1 shows that equalization represented 87.3 per cent of federal-provincial general purpose transfers in 1981–2, for a total of 4,407 million dollars or $178.12 per capita.

Equalization is now an important part of provincial-local finance as well, which makes the relative lack of attention to it to date surprising. With the rapid pace of urbanization in the 1960s and 1970s, local governments faced increasing expenditure commitments. Given the large differences in per household assessments across communities, providing comparable levels of public services would have meant significantly higher mill rates in low-assessment communities. Seven provinces responded to this problem with explicit equalization programs; only Manitoba, Newfoundland and British Columbia did not.[1] In three provinces – Alberta, New Brunswick and Quebec – equalization is the only general purpose transfer while it forms a significant share in four others (Table 1). In 1982, general purpose transfers varied from a low of 1 per cent of total local grants or $8.76 per capita in Quebec to a high of 72 per cent or $111.74 per capita in New Brunswick. With specific purpose transfers to education removed, these figures rise, although Quebec and New Brunswick remain the lowest and highest, respectively. We estimate that local equalization was approximately 37 per cent of general purpose transfers, for a total of 464.36 million dollars or $18.73 in per capita terms. The amount spent in 1982 by the provinces on local

Table 1
Provincial-municipal and federal-provincial transfers in 1982

Province	General purpose ($million)	GP as % of GP + SP	GP as % of GP + NSSP	GP $ per capita	Equalization as % of GP	Equalization $ per capita
Alberta	$ 128.15	5.86%	9.91%	$ 54.75	100%	$ 54.75
NB	81.04	71.89	71.89	111.74	100%	111.74
PEI	2.59	3.32	36.61	20.91	50%?	10.46?
Quebec	56.72	1.26	11.33	8.76	100%	8.76
Ontario	656.57	11.81	24.51	75.01	20%	15.00
NS	29.78	4.65	11.77	34.75	90%?	31.28?
Sask.	72.81	11.97	25.30	73.47	40%	29.39
Nfld.	51.43	66.89	66.89	89.31	0	0
Manitoba	47.60	7.08	23.13	45.66	0	0
BC	116.56	7.59	29.85	41.62	0	0
Yukon/NWT	9.09	27.89	35.72	124.13	50%?	62.07?
All Canada	1,252.34	7.83	21.47	50.62	37%?	18.73?
Federal-provincial transfers	5,051.00	34.60	34.80	204.15	87.3%	178.12

Notes: GP = General purpose transfers do not include payments in lieu of taxes.
SP = Specific purpose transfers for health, education, social services, etc.
NSSP = Non-school specific purpose, i.e., SP minus education transfers.
? = guesstimate (detailed data on equalization as %GP not available).
SOURCE: Canadian Tax Foundation, *Provincial and Municipal Finances* (1983:57 and ch.7; and 1985:198,211 and ch.13).

equalization therefore was about 10 per cent of federal spending on provincial equalization.

The purpose of this paper is to examine municipal equalization in those provinces with explicit programs. First, the traditional rationales for equalization payments are applied to the case of provincial grants to municipalities. Next, the equalization programs are reviewed. We explain the actual formulas that have been developed in each province, and apply them to a common data base of Ontario cities to simulate the grants each formula would generate if applied to this data base.[2] We then measure the impact of the simulated grants on local fiscal capacities as proxied by assessment per household, using two tests for horizontal inequities between municipalities. The paper concludes with an appraisal of the relative success of the seven programs at achieving the fiscal equity goal.

The Rationales for Equalization as Applied to Municipalities

When differences in revenue-raising capacities and/or expenditure needs occur among governments, low capacity and/or high need governments would have to levy higher tax rates than their neighbours to provide similar levels of public services.[3] Thus individuals with similar private incomes and property would be treated differently in terms of their net fiscal benefits (NFBs), i.e., total benefits from public services net of taxes paid, depending on where they reside. With unequal NFBs individuals with the same private incomes would have overall private plus public incomes that vary, causing fiscal inequity. Unequal net fiscal benefits could also cause fiscally-induced migration as people move between jurisdictions in response to varying NFBs, unless they were fully capitalized in land prices. An additional equity and efficiency rationale for equalization is the potential tax exporting that could occur if nonresidents own land or firms export products and/or hire factors outside their jurisdiction. Such exporting could shift the tax burden onto adjacent areas, raising NFBs in the exporting area and lowering them in the importing one, inducing inefficient migration and inequities between households. Equalization grants are designed to offset these problems and achieve fiscal equity, i.e., equal

treatment of equals, so that lower-level jurisdictions could provide reasonably comparable services with reasonably comparable levels of taxation. In practice the grants are lump sum so that governments are free to spend the funds as they wish. Equalization therefore permits but does not ensure the achievement of fiscal equity.[4]

The arguments for equalization are at least as strong at the local level as at the provincial, due to the characteristics of provincial-local fiscal relations.[5] First, the term 'municipality' encompasses a wide variety of government types in terms of area, population and population density. Municipalities have no separate constitutional authority; their functions are assigned by provincial legislatures. Local responsibilities vary widely as a result, raising the probability of differing net fiscal benefits between communities and increasing the need for local equalization. Since factor mobility is probably higher between municipalities than provinces, differences in tax and expenditure packages between local governments may cause more fiscally-induced migration than equivalent differences between provinces, unless full capitalization of NFBs occurs.

Second, municipal governments rely to a greater extent on intergovernmental grants as a revenue source than do provincial governments. The federal government in 1981–2 provided about 21 per cent of total provincial revenues through transfers, compared to 49 per cent of local revenues from provincial transfers (Canadian Tax Foundation, 1985:197,208). The provinces therefore are more responsible for local financing problems than the federal government is for provincial financing. In addition, local governments rely to a much larger extent on specific purpose grants (see Table 1), implying greater interdependence and vulnerability and less autonomy at the local than the provincial level. High reliance on conditional grants implies that local expenditures are likely to strongly reflect provincial priorities. If fiscal capacities differ among communities, poorer local governments cannot achieve these priorities without raising tax rates or reducing other services, in the process creating differing NFBs that require equalizing.

Third, municipal tax revenues are highly concentrated on one source-based tax, the property tax, whereas provincial governments have access to personal and corporate income, sales and natural resource taxes. The key argument for local equalization is the heavy reliance of municipalities on business-related taxes, i.e., commercial, industrial and business property taxes, which can cause fiscal inequities and inefficiencies among communities. Problems of tax harmonization, tax competition, overlapping taxes and tax exporting may also be stronger. Since the property tax is source based, the extent of nonresident land ownership and nonresident commodity purchases affects the ability of local governments to export their taxes. Equalization can lessen these distortions by reducing the need to tax nonresidential property. In addition, reliance on one tax base implies greater vulnerability and volatility since changes in the base translate into large changes in total revenues. This is particularly true where growth rates differ (e.g., cities versus rural areas) since a slowly growing base puts upward pressure on mill rates.

In summary, the equity and efficiency rationales for local equalization are as strong or stronger than at the provincial level. It is therefore important to understand what schemes are in place, and how effective they are in reducing these inequities.

Current Municipal Equalization Programs

There are three types of municipal equalization programs currently in use across Canada. (See Eden and Auld, 1987, for technical details.) The first type is based on *relative fiscal disparity*. It calculates a ratio for each municipality comparing local fiscal capacity to a provincial average, and then multiplies this ratio by total expenditures or a grant pool to obtain individual municipal entitlements. Examples of this type are the Alberta, NB and PEI formulas. All cities receive grants regardless of fiscal capacity, with lower capacity cities receiving higher grants.[6] The second type is based on a *fiscal gap*. It subtracts the ratio of local to provincial average fiscal capacity from a provincial benchmark figure to find the fiscal gap, and gives grants to a municipality only if its fiscal gap is positive. Positive gaps are then multiplied by a measure of

total revenues/expenditures to determine actual local grants. Examples of this gap approach are the Ontario, NS and Quebec formulas. The third approach, based on *fiscal need*, is used by Saskatchewan. It compares standardized expenditures to standardized revenues and provides grants whenever the difference is positive. This is the only approach that includes cost differences; the others are based solely on differences in fiscal capacities.

Grants Based on Relative Fiscal Disparity

Alberta

Alberta has a complicated structure of local governments dominated, in terms of the number of jurisdictions, by a county system. Hospitalization is a provincial responsibility; municipalities are liable for 10 per cent of local social welfare costs and a maximum levy based on equalized assessment covering about 60–65 per cent of education costs. Specific purpose grants dominate provincial transfers; Table 1 shows that general purpose transfers in 1982 were 10 per cent of municipal-related transfers or $54.75 per capita.

All general purpose transfers under the Municipal Assistance Grant were consolidated into an equalization program in 1984. The program provides separate ceilings and formulas for grants to rural and urban municipalities. The urban formula is the product of weighted population and a per capita grant. Weighted urban population is determined by own population times the ratio of average urban per capita assessment to own per capita assessment. The per capita grant is the ratio of the urban grant pool to total weighted population. The rural formula incorporates road kilometrage into the weighted population term. The Alberta urban formula is the simplest of the seven programs as grants are based only on per capita assessment relative to the provincial average.

Column 1 of Table 3 shows the distribution of grants when the Alberta formula is applied to the Ontario data base. London and Windsor receive the largest grants with the smallest grants going to Pembroke and Trenton. The ranking of grant share is almost identical to the ranking of population share as can be seen by comparing the grants with column 2 of Table 2. In per capita terms the grants are not related to population, but to own assessment per capita relative to provincial average per capita assessment. (Compare column 1 of Table 4 with columns 2 and 7 of Table 2.) This ratio predicts the grant rank 21 times out of 23, although the dollar variation in grants is small (between $46 and $29).

New Brunswick

In 1967 the NB government shifted the major general services (e.g., health, education, welfare) to the provincial level, leaving local services such as fire and water at the municipal level. Since education, health and welfare are usually funded with conditional grants, the reassignment of expenditures reduced the need for these grants. Hence the province increased its general purpose transfers so that by 1982 they were 72 per cent of the total or $111.74 per capita, the highest of all the provinces (see Table 1). Equalization is the only general purpose grant.

The current equalization formula, instituted in 1978, is the product of three terms: the per cent of grant support, shareable expenditure and a scale factor ensuring that total grants equal the available grant pool. The first term is a ratio based on assessment per capita relative to the provincial average, assessment per kilometre of roads relative to the average, and a graded population adjustment factor for cities over 5000 population that favours large cities. Shareable expenditure measures the excess of gross budgeted expenditure of the municipality over non-tax revenue, multiplied by an inflation factor. The product of these two terms is the pre-adjusted grant. The last adjustment caps the total amount spent on equalization; the total of the pre-adjusted grants (negative grants in all seven formulas are set equal to zero) is divided by the amount available for equalization to determine the scale factor. The pre-adjusted grant times the scale factor is the final grant.

The per cent of grant support ratio is biased towards large population centres and is highest for large cities that are poor in terms of per capita/weighted kilometre assessment. It gives two cities the same ratio if one is wealthy and high population and the other poor and low population. This is surprising since large,

Table 2
Selected statistics for the independent cities in Ontario, 1982 (city share = city total divided by the total for all cities as a percentage)

		1	2	3	4	5	6	7
		assessment share $A/\Sigma A$	population share $N/\Sigma N$	weighted kilometre share $k/\Sigma k$	tax revenue share $T/\Sigma T$	current expenditure share $E/\Sigma E$	household share $H/\Sigma H$	relative fiscal capacity $A/N/(\Sigma A/\Sigma N)$
City 1	Woodstock	1.818%	1.874%	1.344%	2.074%	1.136%	1.854%	.970
2	Brantford	4.814%	5.204%	4.147%	4.740%	5.187%	5.221%	.925
3	St. Thomas	1.541%	1.961%	1.996%	1.540%	1.751%	2.031%	.786
4	Windsor	15.245%	14.118%	21.340%	17.883%	15.739%	14.200%	1.080
5	Kingston	3.859%	4.383%	2.513%	4.071%	4.878%	4.515%	.880
6	Owen Sound	1.267%	1.419%	1.655%	1.434%	1.269%	1.478%	.893
7	Belleville	2.252%	2.479%	1.846%	2.631%	2.289%	2.610%	.908
8	Trenton	.836%	1.056%	.900%	.923%	.963%	1.035%	.792
9	Chatham	2.807%	2.891%	2.094%	2.450%	2.575%	2.880%	.971
10	Sarnia	3.885%	3.533%	3.263%	4.051%	3.694%	3.785%	1.100
11	Brockville	1.396%	1.451%	1.236%	1.775%	1.576%	1.531%	.962
12	London	19.086%	18.821%	13.512%	16.842%	16.457%	19.592%	1.014
13	Stratford	1.853%	1.872%	1.634%	1.733%	1.605%	1.933%	.990
14	Peterborough	4.015%	4.415%	3.645%	4.607%	4.621%	4.339%	.909
15	Pembroke	.751%	.992%	.957%	.784%	.974%	0.956%	.757
16	Barrie	3.081%	2.709%	3.278%	3.155%	2.526%	2.922%	1.137
17	Orillia	1.422%	1.615%	1.536%	1.534%	1.471%	1.672%	.880
18	Cornwall	3.134%	3.320%	6.820%	3.246%	3.677%	3.092%	.944
19	Guelph	5.210%	5.245%	4.049%	4.846%	3.885%	5.068%	.993
20	Sault Ste. Marie	6.130%	5.930%	5.926%	5.547%	6.749%	5.300%	1.034
21	Timmins	2.911%	3.147%	3.754%	2.752%	3.314%	3.011%	.925
22	North Bay	3.088%	3.612%	3.144%	3.031%	3.925%	3.324%	.855
23	Thunder Bay	9.600%	7.953%	9.411%	8.352%	9.740%	7.649%	1.207

SOURCE: author's calculations from MARS data base; see note 2.

Table 3
Percentage distribution of simulated equalization grants (1982) using the provincial formulas and a common grant pool

		1	2	3	4	5	6
		Alberta	New Brunswick	PEI	Ontario	Nova Scotia	Saskatchewan
City 1	Woodstock	1.912%	1.827%	1.123%	1.118%	1.830%	1.941%
2	Brantford	5.567%	4.616%	5.274%	5.266%	8.735%	5.410%
3	St. Thomas	2.469%	1.513%	1.911%	3.157%	7.299%	2.352%
4	Windsor	12.940%	19.611%	15.780%	9.795%	0	13.174%
5	Kingston	4.930%	3.903%	4.977%	4.993%	11.129%	4.713%
6	Owen Sound	1.572%	1.340%	1.333%	1.408%	3.595%	1.592%
7	Belleville	2.701%	2.423%	2.331%	2.873%	6.193%	2.648%
8	Trenton	1.320%	.874%	1.034%	2.075%	3.122%	1.331%
9	Chatham	2.947%	2.214%	2.551%	4.881%	3.029%	2.932%
10	Sarnia	3.179%	3.592%	3.527%	.554%	1.675%	3.118%
11	Brockville	1.493%	1.569%	1.576%	1.642%	2.741%	1.529%
12	London	18.368%	18.792%	16.056%	13.839%	20.737%	19.339%
13	Stratford	1.872%	1.533%	1.591%	2.450%	2.399%	1.904%
14	Peterborough	4.805%	4.455%	4.737%	3.664%	7.087%	4.618%
15	Pembroke	1.297%	.760%	1.070%	2.055%	3.142%	1.290%
16	Barrie	2.357%	2.767%	2.424%	.515%	.344%	2.341%
17	Orillia	1.817%	1.424%	1.534%	2.264%	4.208%	1.821%
18	Cornwall	3.480%	3.285%	3.988%	3.871%	1.835%	3.361%
19	Guelph	5.226%	4.590%	3.832%	2.894%	2.154%	5.195%
20	Sault Ste. Marie	5.677%	5.337%	6.656%	6.628%	0	5.641%
21	Timmins	3.367%	2.646%	3.452%	5.972%	3.460%	3.324%
22	North Bay	4.182%	2.960%	4.128%	5.466%	5.283%	4.022%
23	Thunder Bay	6.521%	7.969%	9.116%	12.621%	0	6.403%

SOURCE: calculated from authors' simulations; see note 2 and Eden and Auld (1987).

Table 4
Simulated equalization grants in per capita terms (1982) using the provincial formulas and a common grant pool

		1	2	3	4	5	6
		Alberta	New Brunswick	PEI	Ontario	Nova Scotia	Saskatchewan
City 1	Woodstock	$36.24	$34.61	$21.28	$21.18	$34.69	$36.78
2	Brantford	$38.00	$31.50	$35.99	$35.94	$59.62	$36.93
3	St. Thomas	$44.72	$27.39	$34.61	$57.17	$132.19	$42.60
4	Windsor	$32.55	$49.33	$39.70	$24.64	0	$33.14
5	Kingston	$39.94	$31.62	$40.32	$40.45	$90.15	$38.18
6	Owen Sound	$39.36	$33.55	$33.37	$35.25	$90.01	$39.85
7	Belleville	$38.70	$34.72	$33.39	$41.17	$88.74	$37.94
8	Trenton	$44.39	$29.39	$34.77	$69.78	$105.03	$44.79
9	Chatham	$36.20	$27.20	$31.33	$59.95	$37.21	$36.02
10	Sarnia	$31.96	$36.11	$35.46	$5.57	$16.84	$31.35
11	Brockville	$36.54	$38.38	$38.57	$40.19	$67.08	$37.42
12	London	$34.66	$35.46	$30.30	$26.11	$39.13	$36.49
13	Stratford	$35.51	$29.09	$30.19	$46.48	$45.52	$36.11
14	Peterborough	$38.65	$35.84	$38.10	$29.47	$57.01	$37.15
15	Pembroke	$46.44	$27.21	$38.30	$73.59	$112.51	$46.20
16	Barrie	$30.91	$36.29	$31.78	$6.76	$4.52	$30.70
17	Orillia	$39.94	$31.31	$33.72	$49.77	$92.53	$40.04
18	Cornwall	$37.23	$35.15	$42.67	$41.42	$19.64	$35.96
19	Guelph	$35.39	$31.08	$25.95	$19.60	$14.58	$35.17
20	Sault Ste. Marie	$34.00	$31.97	$39.97	$39.70	0	$33.79
21	Timmins	$38.00	$29.87	$38.96	$67.41	$39.05	$37.51
22	North Bay	$41.11	$29.10	$40.59	$53.74	$51.94	$39.54
23	Thunder Bay	$29.12	$35.59	$40.70	$56.36	0	$28.59

SOURCE: calculated from authors' simulations; see note 2 and Eden and Auld (1987).

wealthy cities should not receive the same entitlement as small, poor ones if the term compensates for fiscal capacity differentials. The shareable expenditure term also biases the grant in favour of large, high expenditure cities since they have larger gross expenditure net of non-tax revenue. It rewards tax effort since it is sensitive to the local mill rate and penalizes cities with high non-tax revenue. The NB scale factor is .0994, implying that the uncapped program, designed for a rural province and biased towards large cities, costs ten times the Ontario Resource Equalization Grant (REG) when applied to the Ontario data base.

The simulated 1982 grant distribution is shown in column 2 of Table 3. The largest grants go to the largest cities, London and Windsor, while the smallest grants go to the smallest centres, Pembroke and Trenton. If we compare the rankings of shareable expenditure as proxied by current tax revenues (see column 4 of Table 2) with the predicted grants we see that the correlation is almost 100 per cent. Thus the grant support ranking affects grant size but has little effect on grant rank. Column 2 of Table 4 shows that in per capita terms the largest grants go to Windsor ($49) and Brockville while the smallest go to Chatham ($27) and Pembroke. Again, the per cent of grant support is not an important determinant of the grant in per capita terms; the ranking is determined by per capita shareable expenditure.

Prince Edward Island

Since the late 1960s the P.E.I. government has been responsible for health and social services; education remains a municipal responsibility. Table 1 shows that general purpose grants in 1982 were 3.3 per cent of all local grants or $20.91 per capita. With the large conditional grants to education removed, this percentage rises to 37 per cent. There are two general purpose grant programs in PEI, a per capita entitlement that increases with population size, and equalization.

The equalization program, introduced in 1980, is similar to the NB program. The formula is the product of the equalization grant factor line, projected current expenditure and a scale factor ensuring that total grants equal the grant pool. The factor line is a ratio that adjusts for the total assessment base the municipality would have if it had provincial average per capita assessment, the total kilometres of roads the municipality would have if it had provincial average per kilometre assessment, and a correction factor for population over 2000. This ratio is multiplied by projected expenditure, the average of the previous two years' current expenditure, times an inflation factor. The product of the factor line and projected expenditure gives the pre-adjusted grant, which when multiplied by the scale factor determines the adjusted grant. The factor line functions similarly to the per cent of grant support term in the NB formula but is less generous to large population municipalities. Projected expenditure is larger for larger, wealthier cities and positively affected by the local mill rate, as in the NB formula.

Column 3 of Table 3 shows that the largest grants go to Windsor and London; the smallest to Pembroke and Trenton. If we compare the grant rankings with current expenditure rankings (see column 5 in Table 2) we see that the correlation is almost 100 per cent; the factor line has little influence. The largest per capita grant ($43) goes to Cornwall, the smallest ($21) to Woodstock (see column 3 in Table 4). This formula generally gives larger (smaller) per capita grants to the smaller (larger) cities than the NB formula (see column 2 in Table 2).

Grants Based on a Fiscal Gap

Quebec

In 1980 Quebec reformed its municipal structure, shifting the health and social welfare functions to the province. Financing of education via conditional grants replaced school board taxation. General purpose transfers were $8.76 per capita in 1982, representing 11 per cent of non-school transfers (see Table 1). The equalization grant is the only general purpose transfer.

The Quebec equalization formula compares a provincial benchmark ratio to the ratio of each municipality's per capita assessment divided by the provincial average. If the benchmark is higher than the municipality's share of the total base, the municipality receives a grant equal to the fiscal gap multiplied by own tax revenues net of business tax revenues. If the benchmark is

lower the grant is zero. In 1980 the benchmark was set at 3/4 for communities with above 20,000 population and 2/3 for smaller areas, but in 1982 the benchmark was reduced to 2/3 for all municipalities. Thus a city can only qualify for a grant if its per capita assessment is less than 2/3 of the provincial average. No cities in our sample received a grant in any of the three years under the Quebec formula, since the municipality with the lowest share of the assessment base is Pembroke at .757 (see column 7 of Table 2). This formula is clearly rural biased, designed to give grants only to poor, rural areas.[7]

Ontario

The municipal structure in Ontario is divided into two-tier regions and counties and single-tier municipalities with 23 single-tier or independent cities (our data base) and 20 two-tier cities. Upper-tier governments are generally responsible for health, social services, police, etc., while lower-tiers provide local services. Education is provided by school boards and financed by provincial grants and municipal levies. General purpose transfers, representing 24.5 per cent of non-school transfers, were $75.01 per capita in 1982 (see Table 1). There are six general purpose grant programs: the per capita, police and density grants, the general/northern special support grants, the revenue guarantee and the REG. The REG represents about 20 per cent of general purpose transfers, approximately $15.00 per capita in 1982.

The equalization grant is the product of two terms, the assessment deficiency rate and the net general levy. The deficiency rate equals a pro-rating factor, .6, times the difference between the provincial benchmark of 1 and the ratio of per household assessment to provincial average per household assessment. Each municipality's assessment deficiency rate is constrained to lie between zero and 25 per cent. The net general levy is the total of last year's local tax revenue, payments in lieu of taxes and unconditional grants. The grant is further constrained to lie between last year's equalization grant and last year's plus a dollar amount times the number of households.

Column 4 in Table 3 shows that the Ontario program gives the largest grants to London and Thunder Bay and the smallest to Barrie and Sarnia. Note that seven cities have relative fiscal capacity ratios above 1 (see column 7 in Table 2) and would not have received grants if the grant floor did not exist. The formula is driven by the net general levy, i.e., last year's revenues determine this year's grant. Column 4 in Table 4 shows that the largest grants in per capita terms go to Pembroke ($74) and Trenton; the smallest to Sarnia ($6) and Barrie. The direction is right: larger per capita grants go to poorer cities, but the individual grant floors and ceilings constrain the amount of actual equalization.

Nova Scotia

In Nova Scotia health is a provincial responsibility, education is financed mainly by provincial grants and partly by mandatory local mill rates, and social service costs are jointly shared by the province and municipalities. In 1982 general purpose transfers were 11.8 per cent of non-school transfers or $34.75 per capita (see Table 1). The grant structure was reformed in 1980 to include three unconditional grants: a capital grant, a basic operating or equalization grant and a revenue guarantee. The equalization grant was about $31 per capita in 1982.

The equalization grant divides municipalities into five classes according to number of households, and calculates grants separately by class. The first-round grant is the difference between standard expenditure minus revenue yield. Standard expenditure is the product of summed per household expenditure, net of conditional grants, for all municipalities in a class times own households. Revenue yield is the product of the standard tax rate times own assessment. The standard tax rate is measured as class net expenditure minus the class grant pool, divided by total class assessment. The first-round grants are totalled and compared to the class grant pool to find the scale factor. The actual grant is the first-round grant times the scale factor. This means that each municipality of a given class receives a grant sufficient to enable it to make the standard expenditure at the same rate as other municipalities in that class. The grant is thus designed to enable all municipalities of each class to provide comparable levels of services with the same tax burden.

Manipulation of the NS formula reduces it to a simpler and familiar result: the grant is the difference between share of households and share of weighted assessment, multiplied by class net expenditure. This result is similar to the federal equalization formula; i.e., share of population minus share of the tax base, multiplied by total revenues for all provinces. The federal program provides grants to enable each province to obtain the same amount of revenue it would obtain if it had per capita tax bases equal to the average bases of the five designated provinces and if it applied the national average tax rates to those bases. Thus the NS formula is, like the federal formula, a revenue equalization program; if the population share exceeds (is less than) the base share the grant is positive (zero).[8] We can also rearrange the NS formula as a fiscal gap formula; the grant equals the difference between a class benchmark of one and weighted per household assessment as a fraction of the class average, times standard expenditure. The formula, therefore, is similar to Ontario's with a unitary benchmark and class, rather than individual floors and ceilings.

Three cities, Windsor, Sault Ste. Marie and Thunder Bay do not receive grants (see column 5 in Table 3); in each case their share of assessment (weighted by .94) exceeds their share of households (see columns 1 and 6 in Table 2). The largest grants go to London and Kingston. Column 5 in Table 4 shows that in per capita terms the NS formula gives the largest grants to the poorest municipalities, St. Thomas, Trenton and Pembroke – three to four times what they receive under the other formulas. The grants range from $132 to zero. The NS formula clearly achieves its objective of correcting for differences in fiscal capacities. The NS scale factor equals .755, the highest of the formulas. This is because it gives zero grants to some cities, reducing the pre-adjusted total and thus raising the scale factor.

Grants Based on Fiscal Need: Saskatchewan

In Saskatchewan health and social services are provincial functions whereas education is administered by local school districts; all three functions are financed by provincial transfers. General purpose transfers were $73.47 per capita and represented 25 per cent of municipal-related transfers in 1982, according to Table 1. Saskatchewan introduced a Revenue Sharing Program in 1978 which included three unconditional transfers: a basic grant, a per capita grant and the foundation, or equalization, grant. The foundation grant pool, constrained to 40 per cent of total unconditional transfers, equalled about $30 per capita in 1982.

The foundation grant is designed to help equalize the ability of comparable municipalities to provide an average level of services. The grant is measured as recognized current expenditure net of recognized revenue, multiplied by a scale factor to ensure total grants equal the grant pool. Recognized expenditure is determined by an ordinary least squares regression of operating expenditures against population. Recognized revenue is the sum of payments in lieu of taxes plus recognized property tax revenue, which is calculated as the computational mill rate times assessment. This mill rate is based on an ordinary least squares regression of municipal mill rates against population. The grant, therefore, to a city is its recognized expenditure based on population, minus its receipt of payments in lieu of taxes, minus its computational mill rate based on population times its own assessment. The scale factor for our simulation is .095 indicating that the Saskatchewan formula uncapped would cost ten times the Ontario equalization grant pool. If we use our Ontario data to regress recognized revenue against population we can directly compare the revenue and expenditure equations to determine the grant, assuming the grant pool ceiling holds. The capped results are:

Recognized Expenditure = $ 836,667 + $ 689.41 × Population

Recognized Revenue = − $ 461,779 + $ 343.11 × Population

where average recognized expenditure is $ 42,571,990; average recognized revenue is $ 20,309,414; and average population is 60,536. Subtracting the expenditure equation from the revenue equation gives the foundation grant:

Foundation Grant = $ 1,298,446 + $ 346.30 × Population

The cities receive an estimated grant equal to a floor of 1.3 million dollars plus $346 times their

population, with the average grant being $ 2,116,414. In effect, the formula reduces to a fixed grant which acts like a deficiency transfer, plus a grant based on population. All the municipalities receive grants since they all have recognized expenditures that exceed their recognized revenue.

According to column 6 of Table 3 the highest grants under the Saskatchewan formula go to London and Windsor; the lowest to Pembroke and Trenton. In per capita terms column 6 of Table 4 shows that the highest go to Pembroke ($46) and Trenton; the lowest to Thunder Bay ($29) and Barrie. The grants in both total and per capita terms are very close to those of the Alberta formula. Since the Alberta program is based solely on per capita assessment relative to the provincial average, this implies that cost factors (taken into account by recognized expenditure in the Saskatchewan formula) either differ little among the sample cities or have little impact on the actual grants. Since the Alberta formula is the simplest and the Saskatchewan formula the most complicated, it is surprising that both yield almost identical results.

The Impact of Equalization on Municipal Fiscal Capacity

Each of the seven equalization programs described above was designed to assist municipalities with lower fiscal capacities and/or higher costs than deemed acceptable by their provincial government. It must be emphasized that these formulas have been revised, in some instances several times, to meet particular needs. Testing them on a data base of Ontario independent cities ignores the special circumstances under which these formulas actually function. However, the technique has the advantage of showing clearly their similarities and differences. In particular, the simulated grants can be used to test the impact of the various programs on local fiscal capacity. Since the goal of equalization is to compensate for differences in fiscal capacities, one method of measuring the success or failure of the seven programs is to compare their redistributionary impacts.

The GINI coefficient can be used to test the impact of equalization on differences in assessment per household among the sample cities.[9] We assume equalization grants are used to provide local public goods and/or to reduce mill rates so that, over time, these grants are fully capitalized into property values. Thus equalization should raise total equalized assessment per household. Since Ontario has had an equalization program for several years, the equalization grant should already be capitalized into assessment values. Our pre-grant measure of per household assessment is therefore determined by subtracting the capitalized value of the Ontario grant from total equalized assessment for each city. Following Chaudry-Shah (1986) we assume a capitalization factor of 0.2 and an infinite life for the property and the grant.[10]

The GINI coefficient ranks the cities from lowest to highest fiscal capacity, and cumulates the gap between each city's per household assessment and the provincial average. The cumulated gap represents the pre-grant amount of fiscal disparity between the cities. The pre-grant GINI is equal to .0710, indicating small, but clear evidence of vertical inequity. To the pre-grant income measure we then add the capitalized value of the grants under each of the seven programs, and recalculate the GINI coefficient to determine whether the cumulated post-grant gap is smaller or larger. The post-grant GINI ratios, in order of least to most successful at reducing fiscal capacity differentials, are Quebec = .0710 (which equals the pre-grant measure since the Quebec formula gives no grants), New Brunswick = .0703, PEI = .0671, Saskatchewan = .0628, Alberta = .0625, Ontario = .0606, and Nova Scotia = .0317. In percentage terms the change between pre and post-grant GINIs are Quebec (0%), New Brunswick (1%), PEI (5.5%), Saskatchewan (11.6%), Alberta (12%), Ontario (14.6%) and Nova Scotia (55.4%). Clearly, most of the programs do little to reduce disparities in fiscal capacities so that fiscal equity is not achieved. The NS program, on the other hand, significantly lessens these disparities. Since achieving fiscal equity, in theory, is the purpose of equalization, the first three programs would have to be judged failures and the NS program as most successful.[11]

Our second test uses Plotnick's (1981) *HI* index to measure horizontal fiscal capacity

inequalities between municipalities according to the formula:

$$HI = \sum_{1}^{M} | W^{\rho} - W | \; / \; 2 \sum_{1}^{N} | W - \bar{W} |$$

where W is the post-grant fiscal capacity of municipality i, W is the mean post-grant fiscal capacity, $W?$ is the rank-preserving fiscal capacity for i, N is the total number of municipalities and M the number of reranked munici palities. Fiscal capacity is measured by per household assessment. The *HI* index is zero if no communities are reranked ($M = 0$ for complete horizontal equality) and equal to 1 if all cities are reranked ($M = N$ for complete horizontal inequality). Very little reranking occurs in the relative fiscal disparity programs (Alberta, NB and PEI) since their formulas are based on a percentage times a total dollar amount. The Quebec benchmark is so low that it generates no grants. The fiscal need program in Saskatchewan should generate reankings of cities; it does not because the program reduces to a fixed grant plus a per capita grant and hence does little equalizing. The only two programs that do generate significant reankings are the fiscal gap programs, Ontario (*HI* = .074) and Nova Scotia (*HI* = .150). Substantial reranking occurs in these programs as poor cities move up the income distribution replacing middle communities. Since cities cannot receive negative grants, and since fiscal deficiency is measured relative to the provincial average in the Ontario and NS formulas, cities above the average do not suffer declines in rank. Increasing the fiscal capacity of the poorest cities implies that middle cities must suffer a drop in rank. In absolute terms, middle cities are better off since they receive positive grants but in relative terms their fiscal capacity has deteriorated. The reduction in fiscal inequity under the Ontario and NS formulae is thus achieved at the expense of worsening horizontal inequalities.

Summary and Conclusions

The seven provincial-local equalization programs in Canada can be divided into three types based on relative fiscal disparity (Alberta, New Brunswick and PEI), fiscal gaps (Quebec, Ontario and Nova Scotia) and fiscal need (Saskatchewan). Four of the formulas generate similar total and per capita grants when applied to a common data base, and do little equalizing according to our GINI and *HI* tests – Alberta, New Brunswick, PEI and Saskatchewan. A fifth program, Quebec, gives no grants at all under this simulation because its benchmark is so low. The last two programs, Ontario and Nova Scotia, are similar and do achieve substantial reductions in fiscal inequities among local governments.

While the NS formula achieves the greatest amount of fiscal equity according to our simulation, it is not clear that fiscal equity is or should be the dominant objective for all, or even any of the provincial governments. In fact, the limited achievement of fiscal equity and small dollar amounts allocated to these programs suggest that equalization is not a major priority for most provinces. The continued heavy reliance on specific purpose grants suggests that local governments, to a large extent, exist to carry out the specific priorities of their Legislatures. Equalization grants may be used more as a way to reduce the vertical fiscal imbalance between revenues and expenditures at the local level than to offset fiscal capacity differentials. Hence, if many of the programs reduce to relatively constant grants in per capita terms this is not surprising since flat grants are generally used to offset revenue deficiencies, not horizontal fiscal imbalances across municipalities.

Unlike the federal-provincial equalization program which is formally set every five years, local equalization formulas are often adjusted annually on an ad hoc basis in response to individual provincial and municipal circumstances. The variety of formulas reflects each province's special needs and its existing municipal and grant structures. The wide range of schemes can also be partly explained by the lack of formal co-ordination between the provinces on equalization policy. While social security, health and education are all major agenda items at provincial ministers' conferences across Canada (many of which are now formalized), local equalization has not received such high level attention.

Our analysis suggests that the NS program

goes the furthest towards achieving fiscal equity. It does not necessarily follow, however, that the other provinces should substitute the NS formula for their current program. Whether a province would want to adopt another's scheme depends entirely on provincial objectives. Each province has its own needs and government structures. For example, unique political units such as regional and/or two-tier municipal governments may well preclude the application of one provincial formula to another. However, given the strong case for local equalization and the relative success of the NS and Ontario formulas, provinces should consider seriously the merits of moving to a fiscal gap approach.

We conclude that a strong case can be made for provincial-municipal equalization; although to date only minor progress has been made in this direction. Much work remains to be done, both in terms of the theory and its practical application to the financing problems of local governments in Canada.

Notes

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1 Several provinces have non-equalization grants with equalizing features, e.g., BC and Newfoundland. In addition, the North West Territories now provides municipal equalization grants. In this paper we restrict our analysis to the seven explicit provincial-local equalization programs and do not discuss programs with equalizing features since their primary purpose is not equalization.

2 The data base used in this paper was constructed from the MARS base of the Ontario Ministry of Municipal Affairs. The Municipal Analysis and Retrieval System (MARS) consists of a data base of demographic, financial, service and program-related information about the province of Ontario and its municipalities. It is available from the Municipal Management Policy Branch of the Ontario Ministry of Municipal Affairs and Housing. We selected the 23 independent or single-tier cities in Ontario as the sample and used the Resource Equalization Grant (REG) each city actually received in the years 1980 to 1982 as our base case. The total grant pool available for equalization under each formula was constrained to equal the total REG actually paid to the 23 cities. In practice each province imposes its own grant pool; however, in order to make comparisons between the programs we constrain all formulas to the same ceiling. Thus our analysis is an exercise in what economists call 'differential fiscal incidence'. We report only the 1982 results, given limited space and the similarity of results for the three years, so that all formulas are capped by the 1982 total: $586,761,083. Table 2 provides some financial and demographic data for the 23 cities calculated from the MARS tape and unpublished kilometrage data from the Ontario Ministry of Transportation.

3 Boadway and Flatters (1982) argue that fiscal capacities differ whenever governments finance publicly-provided private goods with source-based taxes such as corporate income taxes and natural resource rents. Needs can vary depending on geography and sociodemographic variables, e.g., snow removal expenses are higher in northern communities, older populations require more health care, etc.

4 Our review of the enormous literature on the theoretical rationales for equalization grants is necessarily brief. The arguments as applied to Canadian federal-provincial equalization are spelled out in more detail in Auld and Eden (1983), Boadway and Flatters (1982), Courchene (1984) and Graham (1982).

5 Useful background reading material includes Auld and Eden (1982), Boadway and Kitchen (1984; chap.4), Kitchen (1984), Kitchen and McMillan (1985), Siegel (1980) and various issues of the *Provincial and Municipal Finances* (Canadian Tax Foundation).

6 In such cases, the grant can be decomposed into two elements, a deficiency or flat grant which goes to all municipalities, and an equalization grant which goes only to municipalities with low fiscal capacities.

7 In 1985, 457 Quebec municipalities received a total of $13.3 million in equalization; all but 15 had less than 5,000 population and only one had a population over 50,000. Thus little equalizing occurs in practice in Quebec.

8 The NS formula includes current expenditure; hence, on first glance the program appears to include a fiscal need element. However, since municipalities are not allowed to deficit budget, operating expenditures and revenues must balance. Since the NS formula is a fiscal gap times total expenditures there is no significant difference between it and the federal formula which is a fiscal gap times total revenues. Both programs are revenue equalization formulas.

9 The Saskatchewan program recognizes expenditure need as an influence on the equalization grant in addition to fiscal capacity differentials. The GINI test looks only at the impact of equalization on fiscal capacity and hence cannot account for the impact of grants on fiscal need. Hence the GINI coefficient is not a good test of formulas that incorporate an element of cost disparities.

10 Capitalizing the grant into assessment as a measure of its impact on fiscal capacity inequities is clearly a crude

method subject to many criticisms. We acknowledge this and argue that this measure serves as a crude first estimate.

11 The grant pool can influence the GINI coefficient if some cities receive zero grants. As the pool rises the differential between the zero-grant cities and the positive-grant cities increases since the positive-grant cities receive more money while the others remain at zero. Thus the GINI falls as the grant pool rises. This affects the NS formula since it gives zero grants to three cities; without a grant pool ceiling the NS GINI would be lower than recorded here. This is not true for formulas which give all cities positive grants since differing *F* factors simply scale the grants up and down, leaving the relative proportions between the cities unchanged. (We are indebted to economists at the Ontario Ministry of Municipal Affairs and a referee for pointing out notes 9 and 11.)

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