

Fiscal Need Equalization: Is it worth doing? Lessons from International Practices

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*Working paper draft,
August 31, 2007*

1. Introduction

Fiscal equalization transfers are conceptually justified on fiscal efficiency and regional fiscal equity grounds. Political imperatives to have a shared sense of political and economic union, paves the way for instituting such transfers in most large especially federal countries. There is also a common consensus that conceptually such transfers should equalize to a specified standard both the fiscal capacities and fiscal needs. In practice, implementing such a comprehensive system of equalization transfers represents a difficult challenge especially the difficulties posed by the objective measurement of expenditure needs. This paper reviews the conceptual challenges as well as lessons from worldwide experiences in implementing fiscal need compensation in fiscal equalization transfers with a view to developing guidance for practitioners.

The paper concludes that while in theory a strong case for a comprehensive fiscal equalization can be made. In practice fiscal need equalization as part of a comprehensive equalization program introduces significant complexity which works against the simplicity, transparency and general acceptability of the program. This does not imply that fiscal need equalization should be abandoned in the interest of simplicity and transparency. Instead simplicity, transparency and local autonomy is preserved by having fiscal need equalization through service oriented (specific purpose block transfers) output based fiscal transfers. Such transfers would further enhance citizens' based accountability for results and thereby offering potential for enhancing public confidence in government operations.

The rest of the paper is organized as follows. Section 2 presents conceptual justification of equalization transfers. Section 3 discusses practical considerations in designing fiscal equalization transfers. Special attention is paid to expenditure needs equalization. Section 4 distills lessons from international practices in fiscal needs equalization. A final section presents concluding remarks.

2. Bridging the Fiscal Divide through Fiscal Equalization Transfers – Conceptual Considerations

Fiscal equalization transfers are advocated to deal with fiscal inefficiency and fiscal inequity concerns arising from decentralized decision making (Boadway, 2007). These transfers are also justified on political considerations. Large regional fiscal disparities can be politically divisive and may even create threats of secession (Shankar and Shah 2003). This threat is quite real: since 1975 about 40 new countries have been created by the break-

up of existing political unions. Fiscal equalization transfers could potentially forestall such threats and create a sense of political participation, as demonstrated by the impact of such transfers on the separatist movement in Quebec, Canada.

Decentralized decision making results in differential net fiscal benefits (imputed benefits from public spending minus tax burden) for citizens depending on the fiscal capacities of their place of residence. This leads to both fiscal inequity and fiscal inefficiency in resource allocation. Fiscal inequity arises as citizens with identical incomes are treated differently depending on their place of residence. Fiscal inefficiency in resource allocation results from people in their relocation decisions comparing gross income (private income plus net public sector benefits minus cost of moving) at new locations; economic efficiency considerations warrant comparing private income minus moving costs only without any regard to public sector benefits. A nation that values horizontal equity (the equal treatment of all citizens nationwide) and fiscal efficiency needs to correct the fiscal inequity and inefficiency that naturally arise in a decentralized government. Grants from the central government to states and/or local governments can eliminate these differences in net fiscal benefits if the transfers depend on the tax capacity of each state relative to others and on the relative need for and cost of providing public services. The more decentralized the tax system is, the greater the need for equalizing transfers. Broadway (2007) notes that differential net fiscal benefits may also arise regional/local policy choices in response to local preferences. Such differentials, however, should not be considered for equalization purposes.

The elimination of net fiscal benefits requires a comprehensive fiscal equalization program that equalizes fiscal capacity (the ability to raise revenues from own bases using national average tax rates) to a national average standard and provides compensation for differential expenditure needs and costs due to inherent cost disabilities rather than differences that reflect different policies. Some economists argue that if public sector tax burdens and service benefits are fully capitalized in property values, the case for fiscal equalization transfers is weaker, as residents in rich states pay more for private services and less for public services and vice versa in poorer states. According to this view, as argued by Oates (1982), fiscal equalization is a matter of political taste. This view has gained currency at the federal level in the United States and explains why there is no federal fiscal equalization program there. In contrast, local fiscal equalization drives most state assistance to local governments in the USA, especially school finance.

Conceptually, full capitalization requires a small open area with costless mobility. Most federations and even states in large countries do not fulfill this condition. As a result, criticism of fiscal equalization using the capitalization argument may have only weak empirical support (Shah, 1988a).

3. Designing Fiscal Equalization Transfers

In principle, a properly designed fiscal equalization transfers program corrects distortions that may cause fiscally induced migration by equalizing net fiscal benefits across states.

A reasonable estimate of the costs and benefits of providing public services in various states is essential to measure net fiscal benefits. Measures of differential revenue-raising abilities and the needs and costs of providing public services in different states must be developed. Equalization of net fiscal benefits could then be attempted by adopting a standard of equalization and establishing the means of financing the needed transfers.

Measuring Fiscal Capacity

Estimating fiscal capacity—the ability of governmental units to raise revenues from their own sources—is conceptually and empirically difficult. The two most common ways of doing so are with macroeconomic indicators and the representative tax system.

Macro Indicators

Various measures of income and output serve as indicators of the ability of residents of a state to bear tax burdens. Among the better known measures are the following:

- *State gross domestic product (GDP)*. State GDP represents the total value of goods and services produced within a state. It is an imperfect guide to the ability of a state government to raise taxes, since a significant portion of income may accrue to nonresident owners of factors of production. For example, the Northern Territory has the highest per capita income in Australia, but it is treated as the poorest jurisdiction in federal-state fiscal relations.
- *State factor income*. State factor income includes all income—capital and labor—earned in the state. It makes no distinction between income earned and income retained by residents.
- *State factor income accruing to residents only*. This measure represents a more useful measure, provided states are able to tax factor income.
- *State personal income*. The sum of all income received by residents of a state is a reasonable measure of the state's ability to bear tax burdens. It is an imperfect and partial measure of the ability to impose tax burdens, however, and therefore not a satisfactory measure of overall fiscal capacity.
- *Personal disposable income*. Personal disposable income equals personal income minus direct and indirect taxes plus transfers. This concept is subject to the same limitations affecting personal income.

In general, macro measures do not reflect the ability of subnational governments to raise revenues from own sources. Broadway argues against the use of macro indicators in an equalization formula on the grounds that a macro formula “ignores the fact that fiscal inefficiency and fiscal inequity are the products of the actual mix of taxes chosen by provincial governments” (Broadway, 2002a, 12). This neglect runs the risk of violating the principles of equalization itself. A second major difficulty in the use of macro indicators is the availability of accurate and timely data at subnational levels. Such data become available only with significant lags, and the accuracy of such data may be questionable. Use of these data may therefore invite controversy (see Aubut and Vaillancourt 2001 for a Canadian illustration of this point). Despite these problems, both Brazil and India use macro indicators in their federal-state revenue-sharing programs.

Representative Tax System

The representative tax system approach measures the fiscal capacity of a state by the revenue that could be raised if the government employed all of the standard sources at the nationwide average intensity of use. Estimating equalization entitlements using the representative tax system requires information on the tax bases and tax revenues for each state. Fiscal capacity of the have-not states is brought up to the median, mean, or other norm. Using the mean of all states as a standard, the state equalization entitlement for a revenue source is determined by the formula:

$$E_x^i = (POP)_x \{ [(PCTB)_{na}^i \times t_{na}^i] - [(PCTB)_x^i \times t_{na}^i] \}$$

where E^i is the equalization entitlement of state x from revenue source i , POP is population, $PCTB^i$ is the per capita tax base of revenue source i , t^i is the national average tax rate of revenue source i , subscript na is the national average, and subscript x is state x . The equalization entitlement for a state from a particular revenue source can be negative, positive, or zero. The total of these values indicates whether a state receives a positive or negative entitlement from the interstate revenue-sharing pool. Since data on major tax bases and tax collections required to implement representative tax system are usually published regularly by various levels of government, the representative tax system does not impose new data requirements and can be readily implemented in countries that have decentralized taxing responsibility to sub national levels, as most transition economies do. Of course, implementing such a system will not be feasible in countries with limited tax decentralization (very large vertical fiscal gaps) or poor tax administration.

Measuring Expenditure Needs

The case for fiscal equalization rests on eliminating different net fiscal benefits across states that give rise to fiscally induced migration. Such differential net fiscal benefits can arise as a result of decentralization of taxing authority and decentralized public expenditures. Differences in the demographic composition of the population across jurisdictions will result in differential needs for decentralized public services, such as education, health and social welfare. Differences in age distribution affect the need for schools, hospitals, and recreational facilities. Differences in the incidence of poverty and disease may affect the need for education, training, health, social services, and transfer payments. Jurisdictions with higher need factors would have greater need for revenues to provide comparable levels of public services at comparable levels of taxation. These need differentials are likely to cause substantial variations across jurisdictions in the level and mix of public goods provided, resulting in different net fiscal benefits. A strong case for equalization can be established on grounds of efficiency and equity to compensate for need differentials that give rise to different net fiscal benefits.

The fiscal federalism literature treats differential costs as synonymous with differential needs, but some cost differences may arise from deliberate policy decisions by sub national governments rather than differences in need. Boadway (2004) argues that even for inherent cost disadvantages, such as differences between urban and rural areas, the

equity advantage of more equal provision must be weighed against the efficiency costs. If it is more costly to deliver public services in rural areas than urban areas, it is inefficient for an equalization program to neutralize these cost differences. Even in unitary states, the level of public services in remote, rural, or mountainous areas is usually lower than in more densely populated urban areas. Under a decentralized fiscal system, a policy choice must be made about minimum standards, but there is no justification for providing the same level of services in remote and urban areas, as, for example, the Australian fiscal need equalization program does. Instead, as Broadway suggests, one could stratify locations in all regions by their costs and equalize across regions within comparable strata. Equalization grants should partially offset only inherent disabilities, disregarding cost differences that reflect deliberate policy decisions or differences in the efficiency with which resources are used.

In practice, expenditure need is more difficult to define and derive than fiscal capacity. The difficulties include defining an equalization standard; understanding differences in demographics, service areas, populations, local needs, and policies; and understanding strategic behavior of recipient states. Despite these formidable difficulties, numerous attempts have been made to measure expenditure need. The approaches can be broadly classified into three main categories: (a) ad hoc determination of expenditure needs, (b) representative expenditure system using direct imputation methods, and (c) the theory-based representative expenditure system.

(a) *Ad hoc determination of expenditure needs* uses simple measures of expenditure needs in general-purpose transfers. The factors used and their relative weights are arbitrarily determined. Germany uses population size and population density adjustments, China uses the number of public employees, India uses measures of backwardness.

The Canadian provinces use simple measures of expenditure need in their general-purpose transfers to municipalities. These include population size, population density, population growth factors, road length, number of dwelling units, location factors (such as northern location), urbanization factors (primary urban population and urban/rural class) and social assistance payments (see Shah 1994b). The most sophisticated of these approaches is the one taken by Saskatchewan, where the standard municipal expenditure of a class of municipalities is assumed to be a function of the total population of the class. Regression analysis is used to derive a graduated standard per capita expenditure table for municipal governments by population class.

An interesting example of the application of this approach is South Africa's use of it in its equitable share transfers to the provinces (South Africa 2006). The equitable share formula applicable for 2006–08 focuses almost entirely on need factors, with only a 1 percent weight given to negative needs (per capita GDP). The formula uses the following shares:

- A basic share (14 percent weight) is derived from each province's share of the national population.
- An education share (51 percent) is based on the size of the school-age population (5–17) and the average number of learners (grades R–12) enrolled in public

ordinary schools over the past three years.

- A health share (26 percent) is based on the proportion of the population with and without access to medical aid.
- An institutional component (5 percent) is divided equally among the provinces.
- A poverty component (3 percent) is based on incidence of poverty.
- An economic output component (1 percent) is based on data on GDP by region.

(b) *The representative expenditure system using direct imputation methods* seeks to create a parallel system to the representative tax system on the expenditure side. This is done by dividing sub national expenditures into various functions, determining total expenditures by each jurisdiction for each function, identifying relative need/cost factors, assigning relative weights using direct imputation methods or regression analysis, and allocating total expenditures of all jurisdictions on each function across jurisdictions on the basis of their relative costs and needs for each function (see table 1 for a compilation of need factors used in European countries).

Table 1 Measurement of Fiscal Needs by Service Category in European Countries

Category	Measurement Unit	Per Unit Cost	Components of Adjustment Index
Primary and Secondary Education	population of school ages (e.g, age 7-18)	the country's per capita public expenditure on primary and secondary education	wage index = the ratio of teachers' wage level to the national average; rental cost index = the ratio of per square rental cost to the national average; student disability index = the ratio of the percentage of students with physical disabilities to the national average; poor family index = the ratio of the percentage of students from low-income families to the national average.
Health	total population	the country's per capita public expenditure on health care	health price index = the ratio of health care cost to the national average; infant mortality index = the ratio of infant mortality rate to the national average; inverse life expectancy index = the ratio of national average life expectancy to life expectancy in this region; inverse population density index = the ratio of national average population density to that in this region;
Transportation	total length of roads in this region	the country's per capita public expenditure on transportation	wage index = the ratio of wage level to the national average; grade index = the ratio of average road grade to the national average; snow index = the ratio of annual snowfall to the national average; inverse population density index = the ratio of national average population density to that in this region;
Police and Fire	total population in the region	the country's per capita public expenditure on police and fire protection	wage index = the ratio of wage level to the national average; crime index = the ratio of per capita crime rate to the national average; fire index = the ratio of per capita number of fires to the national average; urbanization index = the ratio of proportion of population in urban areas in the region of municipality to the national average;
Social Welfare	total population in this region	the country's per capita public expenditure on social welfare	minimum wage index = the ratio of minimum wage level to the national average; poverty index = the ratio of percentage of low-income population to the national average; old age index = the ratio of percentage of old population (e.g., age 60 or above) to the national average; unemployment index = the ratio of unemployment rate to the national average; disability index = the ratio of percentage of physically disabled people to the national average;
Other services	total population in this region	the country's per capita public expenditure on other services	wage index = the ratio of wage level to the national average; real cost index = the ratio of per square rental cost to the national average; urbanization index of the region = the ratio of proportion of population in urban areas in the region of municipality to the national average;

Source: Barati and Szalai (2000), p.42.

The advantage of this approach is that it obviates the need for the very elaborate calculations and assumptions needed to quantify the provision of services at some defined level. It does so by using the sum of actual total expenditures as the point of departure for measuring expenditure needs, reducing the problem to one of allocating total need among sub national governments on the basis of selected indicators of need, including proxies for need if desired. The disadvantage of this approach is that it does not necessarily exclude expenses incurred by any of the provinces that go beyond the concept of a “reasonable level of public service.” However, the approach can be adjusted to exclude identifiable excesses from total expenditures (for example gold standards for some services or relatively unaffordable benefits provided by some rich states) in respect of which needs are to be allocated.

A sophisticated variant of this methodology is used by the Commonwealth Grants Commission of Australia, which defines expenditure as the cost of supplying average performance levels for the existing mix of state-local programs. Relative expenditure needs are then determined empirically using direct imputation methods for 41 state-local expenditures. The following hypothetical example illustrates the treatment of welfare expenditures using a crude approach similar to that used by the Commonwealth Grants Commission for establishing expenditure needs under a representative expenditure system.

Assume that there are 10 states in Grantland, that the unit costs of welfare are equal in all states, and that needs for welfare vary based on the percentage of the working-age population that is unemployed, the percentage of the population that is not of working age, and the percentage of families with a single parent. The independent grants commission assigns a 40 percent weight to the percentage of the working-age population that is unemployed, a 35 percent weight to the percentage of the population that is not of working age, and a 25 percent weight to the percentage of families with a single parent. Assume that expenditures by all states for welfare total \$5 billion and that state A accounts for 4.8 percent of the 10-state total for the first factor, 3.0 percent of the total for the second factor, and 2.2 percent of the total for the third factor. State A’s estimated need for a standard level of welfare expenditure would then equal:

$$\$5 \text{ billion} \times (0.048 \times 0.40) + (0.03 \times 0.35) + (0.022 \times 0.25) = \$176 \text{ million},$$

or 3.2 percent of all state expenditures.

Shah (1994a) provides an application of the approach using provincial-local expenditure functions for Canada and uses quantitative analysis in selection and weighting of factors for various expenditure functions (see table 2).

Table 2. Weighting of factors for provincial-local expenditure functions for Canada

Expenditure Category	Need/Cost Factors	Relative Weights
Transportation & Communications	Snowfall (Annual - in centimeters) SNOW Highway Construction Price Index (HCPI) Paved roads and streets per square kilometer of area (RSPR) Non-cultivable area as a proportion of total area (NCAR) Total Index = (0.10*ISNOW + 0.66*IHCPI + 0.0005*IRSPR + 0.24*INCAR)*ISRP	0.1020 0.6580 0.0005 0.2357 1.0000
Post-Secondary Education (PSE)	Full time enrollment in grade 13+(000)(PSS) Percentage of Population having a minority language as mother tongue (ML) Provincial Unemployment Rate (UR) Education Price Index (EPI) Help Wanted Index (HWI) Foreign Post-Secondary Students (FPS)	0.048 0.19 0.018 0.717 0.010 0.017
	Total Index = (0.18*IPSS + .70*IML + .08*IUR + .04*IFPS)*IHWI*IEPI	1.000
Elementary and Secondary Education (ESE)	Population under 18 (PO17) Population Density (PD) Education Price Index (EPI)	0.014 0.017 0.969
	Total Index = (.02*IPD + ,98*IEPI)*IP017	1.000
Health (HE)	Alcoholism (Hospital separations for Alcohol related cases) (ALCO) Urban Population (PU)	0.123 0.877
	Total Index = (0.123*IALCO + 0.877*IPU)	1.000
Social Services (SS)	Single Parent Families (SPF)	1.00
Police Protection	Criminal Code Offenses (CCO) Proportion of Population in Metropolitan (PMAR) Areas	0.39 0.61
	Total Index = (.39*ICCO + .61*IPMAR)	1.00
General Services (GS)	Private sector wages (Industrial composite) (AMW) Percentage of population having a minority language as mother tongue (ML) Population Density (PD) Population (POPF) Snowfall (Annual - in centimeters) (SNOW)	0.769 0.001 0.023 0.039 0.168
	Total Index = (. 001*ML + 0.175*ISNOW + 0.80*IAMW + .024*IPD)*IPOPF	1.000

Note: Calculations based on regression coefficients. The use of a variable prefixed by I means that a relative index of the variable is used.

Source: Shah (1994a)

This approach is highly subjective and therefore potentially controversial. Recent experience in Australia vividly demonstrates the problems that arise if such an approach is followed in practice as discussed in the following section. Some subjectivity and imprecision can be alleviated by using quantitative analysis in choosing factors and weights, as Shah suggests (1994a).

(c) *The theory-based representative expenditure system.* The representative expenditure system can be significantly improved using a conceptual framework that embodies appropriately defined concept of fiscal need and properly specified expenditure functions that are estimated using objective quantitative analysis, as proposed by Shah (1996) for Canada. Under this refined approach, the so-called *the theory-based representative expenditure system*, the equalization entitlement from expenditure category i equals the per capita potential expenditure of state A for category i based on own need factors if it had national average fiscal capacity minus per capita potential expenditure of state A on expenditure category i if it had national average need factors and national average fiscal capacity.

This approach is even more difficult to implement than the less refined approach, but it has the advantage of objectivity and it enables the analyst to derive measures based on actual observed behavior rather than ad hoc value judgments. The relative weights assigned to various need factors and their impact on allocation of grant funds are determined by econometric analysis. Furthermore, this approach yields both the total pool and the allocation of fiscal need equalization grants among recipient units. This method requires specifying determinants for each service category, including relevant fiscal capacity and public service need variables. A properly specified regression equation yields quantitative estimates of the influence each factor has in determining spending levels of a category of public service. This information can be analyzed to determine what each state would actually have spent if it had national average fiscal capacity and but actual need factors. This then can be compared to the standard expenditure for each service based upon an evaluation of the same equation for determining what each state would have spent if it had the national average fiscal capacity and also national average need factors. The sum of differences of these two expressions for all expenditure categories would determine whether or not the state had more (if sum was positive) or less than the average needs (if sum was negative) (see Shah 1996 for a Canadian application of this approach).

The formula for equalization entitlement based on expenditure classification i for state x could be stated as follows:

$$EE_x^i = (POP)_x [(PCSE)_x^i - (PCSE)_{na}^i],$$

where EE_x^i is the equalization entitlement for expenditure classification i for state x , POP_x is the population of state x , $PCSE_x^i$ is the per capita standardized expenditure by state x on expenditure classification i (or the estimated amount the state would have spent

to meet actual needs if it had national average fiscal capacity), and $PCSE_{na}^i$ is the national average per capita standardized expenditure for classification i . This is the estimated expenditure for all states, based on national average values of fiscal capacity and need. The equalization entitlement for a particular expenditure classification could be positive, negative, or zero. The total of these entitlements in all expenditure categories is considered for equalization.

A comprehensive system of equalization determines the overall entitlement of a state by considering its separate entitlements from the representative tax system and the representative expenditure system. Only states with positive net entitlements are eligible for transfers of all or some fraction of the total amount, with the fraction determined by the central government based on the availability of funds.

4. Practical Difficulties in Equalizing Expenditure Needs: A Review of Worldwide Experiences

Australia

The Commonwealth Grants Commission (CGC) of Australia found the theory-based representative expenditure system approach difficult to implement. It opted instead for an alternate representative expenditure system using direct imputation methods that simply equalizes what all states on average actually spend. The use of expenditure need factors is extensive. Several hundred factors specific to 41 areas of expenditures in three broad categories are used: (a) scale factors; (b) demographic factors – these include dispersion, urbanization, social composition and age structure; and (c) environmental factors including physical and economic factors. Overall approach in assessing expenditure needs used by the CGC is highly data and subjective judgment intensive. Continuous refinements over time to accommodate opposing points of view have led to super complexity and non-transparency. Further, the approach assumes that costs are independent of management paradigm and resource use is independent of incentives. As an example, expenditure need for government secondary education is determined separately for government and non-government schools. A mixture of actual and notional enrolments are used with special weights for diplomatic families. Student population from disadvantaged groups are given weights ranging from 1.1 to 1.7. Year 11 and 12 grades receive 20% upward adjustment in costs. Factors used in expenditure need determination include, administrative scale, administrative input costs, service delivery scale, urban influences, humanitarian refugees, cross border students, vandalism, dispersion, isolation, school input costs, wages, accommodation, electricity, rural students and isolation factors. Somewhat different factors and factor weights are used for government and non-government schools. If a private schools have above average costs, additional grant is assessed although state may or may not finance such education.

The Australian system seeks absolute comparability for all 41 state-local services rather than just merit goods (some would question whether this is worth pursuing). Australia's Commonwealth Grants Commission makes these calculations using broad judgments and sampling services. With the single exception of the Northern Territory, which has a large

aboriginal population, there is little cross-state variations in the expenditure needs of the Australian states. A special grant for the Northern Territory would simplify the Australian program while achieving its equalization objectives.

Australia's approach raises several questions. Is equal access to all services in remote areas desirable at any cost? If a rich state decides to buy limousines for its officials, or make higher welfare payments to its aboriginal population, why should equalization payments to poorer states go up? Such an approach diverts states' energies to demonstrate that they "need more to do less" or "money does not buy much" as opposed to "doing more with less." as higher spending is rewarded and cost-saving in delivering improved services is discouraged by the equalization grant formula. Such a system rewards some bad behaviors, including excessive use of some services by specific groups, tax expenditures by states to attract capital and labor, and state assumption of contingent and non-contingent liabilities.

In addition to conceptual difficulties, the Australian program is plagued with measurement problems. The determinants of expenditure needs for various expenditure categories are arrived at based on broad judgments. Arbitrary procedures are used to derive factor weights and combine various factors into functional forms. State disabilities stemming from various factors are multiplied. For highly correlated factors, disabilities are artificially magnified through double counting and multiplication. Table 3 illustrates this point where for government secondary education , category disability is lower than a simple or weighted average of individual disability factors for rich states and vice versa for poor states. Under such a program, use of judgment on factors and weights is inevitable, but such judgments invite controversy and compromise the credibility of the whole program. The results are often disappointing. As the commission acknowledges, "given the number of conceptual and empirical difficulties... and numerous judgments.. different relativities (and grant outcomes) could be just as valid as those presented [here]". (Commonwealth Grants Commission 2000, p.2)

Table 3. An Example of Expenditure Need Determination in Australia: Secondary Education Expenditure Need Factors
Government Secondary Education Factors -

Disability Factors	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Dispersion	0.9973	0.9921	1.0093	1.0106	0.9972	0.9952	0.9885	1.071
Grade Cost	1.0014	1.0028	0.9966	0.995	0.9992	0.9998	1.0016	0.9979
Input Costs	1.012	0.995	0.986	1.003	0.991	0.99	1.008	1.034
Relevant Population	0.9749	0.8874	1.0983	1.1639	0.9679	1.1422	0.975	1.2226
Administrative Scale	0.9946	0.9946	0.9946	1.0065	1.0105	1.0304	1.0463	1.1139
Service Delivery Scale	0.9922	0.9906	1.0031	1.0153	1.0166	1.038	0.9714	1.1141
Vandalism & Security	1.0023	1.0023	0.9973	0.9973	0.9973	0.9923	0.9923	0.9923
Cross-border	0.9965	1.0001	1.0001	1.0001	1.0001	1.0001	1.066	1.0001
Category Disability	0.9692	0.8658	1.0815	1.1941	0.9772	1.1917	1.044	1.6605

Source: Commonwealth Grants Commission, Australia, 1995-96 Review

The Australian experience highlights the practical difficulties associated with implementing fiscal need compensation as part of a comprehensive fiscal equalization approach (see Shah, 2004, 2007).

State-local transfers in Australia follow the CGC methodology and are faced with similar measurement issues although the degree of difficulty may be considerably less as local governments in Australia have extremely limited expenditure responsibilities i.e. mainly roads and rubbish.

Canada

Federal fiscal equalization program is solely focused on fiscal capacity equalization to a specified standard. A recent Government of Canada Panel studied the desirability and feasibility of introducing expenditure need compensation in the equalization formula but concluded against its introduction to preserve transparency and objectivity of the system (see Canada, 2006). However, to compensate for expenditure needs, equal per capita block federal transfers are made available to provinces to finance health and post-secondary education with conditions on minimum service standards and access and no condition on spending and no federal oversight on provincial spending on assisted services.

Federal transfers to the three territories nevertheless takes expenditure needs into account in a crude manner by simply adjusting base year expenditure per capita by the average growth in provincial spending.

The Canadian provinces in allocation of their general purpose transfers primarily focus on fiscal capacity equalization but do take into account only a handful of objective expenditure needs variables primarily demographics especially urban/rural composition of population. This has proven to be manageable and less controversial. Service specific need variables are considered in specific purpose transfers (Shah, 1983, 1994).

Denmark

Central-local equalization program in Denmark uses objective indicators of expenditure needs. This objectivity is based upon three principles: (a) Must have a causal connection: The variable used must be a significant determinant of the expenditure function; (b) Not subject to policy influence; (c) Must be objectively measurable. The formula assigns 70% weight to demographic variables and 30% to socio-economic variables. The weights of a demographic variable is based upon municipal expenditures attributable to that demographic group based upon statistical and econometric analysis. This introduces significant degree of subjectivity as the weights are not invariant to model specification.. The weights of socio-economic variables are arbitrarily fixed by law. Interestingly enough commuting time does not meet the objectivity criteria and yet is considered a demographic variable. Another less objective measure used in socio-economic category

is the number of living years lost. The Danish system has been strongly defended by Ministry of the Interior for the care they have taken in keeping the system as objective as possible. Nevertheless the approach has been criticized for improper use of statistical analysis, and not adequately measuring expenditure needs of small rural local governments (see Mau, 2007 for details).

Japan

Central equalization transfers to local governments, the so-called Local Allocation Tax (LAT) distributes a fraction of central revenues from personal income, corporate income, VAT, taxes on alcohol and tobacco among local bodies in proportion to the difference between standard fiscal need and standard fiscal capacity. Standard expenditure needs equals the number of measurement units multiplied by the unit cost, adjusted by modification coefficients – an approach similar to the one used in Australia. These calculations are done for 24 service functions. Just as in Australia, such a system is subjective and controversial. The Council of the Fiscal System has argued for a simplification of this system by focusing only on fiscal capacity equalization and taking expenditure needs into account in specific purpose grants. The Council has argued that expenditure need equalization provides incentives for wasteful spending (see Mochida , 2007 for details).

Netherlands

Central transfers in Netherlands classify local expenditure into 14 categories and use 24 indicators of needs in grant allocation. In selecting indicators, the following criteria are used: (a) technical quality: The indicator must be objectively measurable and generally available; (b) the level of target orientedness: The indicator must have a global relation with the expenditure needs of municipalities and must not focus on targets; (c) hard versus soft tasks: Indicators must be related to hard expenditures- those required by law; and (d) politically acceptable. The indicators must be politically acceptable. The analysis of differences in expenditures is used o determine differential expenditure needs. This is done first by comparing expenditure on a specific category among “homogeneous” groups of municipalities with varying features of structures. Homogeneity classification is based upon determinant factors for the specific type of expenditure. Next the expenditure differences among homogeneous groups of municipalities are analyzed. Special attention is paid to exogenous circumstances and other explanatory factors. This iterative process continues until satisfactory explanation of differences in expenditures is derived (see Boerboom and Huigloot, 2007, for further details).

By its design the expenditure needs determination method, the so-called Difference Analysis, used by Netherlands is reasonable but subjective and quite open to adversarial challenges.

Switzerland

The new fiscal equalization program introduced in Switzerland effective 2008 has three components: (a) fiscal capacity equalization component (71% of equalization pool) financed by federal government (58.8%) and by rich cantons (41.2%). The formula uses factor incomes as the tax bases for equalization; (b) Cost equalization component (16% of equalization pool) – primarily financed by the federal government and considers the following indicators to calculate equalization entitlements:

- population size;
- population density;
- population, 80 plus years;
- area
- large cities;
- Foreign adults residents for more than 10 years;
- Unemployed;
- People requiring canton social assistance

and (c): cohesion fund (13% of equalization pool) financed by the federal government to provide special compensation for difficult cases.

Switzerland has chosen to focus only on a small set of expenditure need variables to avoid complexity and divisive debate.

United Kingdom

General purpose transfers to local governments in the UK are distributed through the Local Government Finance Settlement comprising (a) revenue support grant ; (b) redistributed business rates; and (c) Police Grant. Overall system is termed as the Formula Grant (FG) The FG is calculated as follows:

FG= Relative Needs (RN) *minus* Relative Resources (RR) *plus* central per head allocation (CA) and *plus/minus* stabilization (floor damping) adjustment (SA)

RN is determined by classifying local expenditures into 6 major service groups: children's services, adults' personal social services, police, fire, highway maintenance, environmental, protective and cultural services. Population, social, economic and physical characteristics of each local authority are used as indicators of need. An attempt is made to keep these indicators to a manageable level. Fixed costs of all services are also taken into consideration. RR is calculated separately for four separate groups (upper tier services, lower tier services, fire authorities, police authorities) of authorities by examining a local authority's (LA) tax base per capita against minimum LA tax base per capita. CA is determined residually as the balance of central grant after compensating for needs. SA adjustment is made to ensure that all LAs receive a guaranteed minimum increase in grant over the previous year (see Ponsford, 2007 for further details).

Overall, UK uses an objective method to assess fiscal capacities and somewhat subjective methods to assess expenditure needs.

United States of America

USA has no formal federal-state and federal-local fiscal equalization program for reasons outlined earlier but state transfers to local governments take both fiscal capacity and expenditure need into consideration – the latter mainly in specific purpose block transfers such as school finance (see Box 1)

Box 1 Financing Schools in the United States

U.S. states have taken various approaches to school finance. The states of Hawaii, Idaho, and Washington fully finance primary and secondary education. In contrast, New Hampshire covers only 9 percent of school finance.

Delaware and North Carolina finance education through bloc grants that are indexed to population, GDP, and inflation growth rates. The grants are derived by calculating equal amounts per unit based on the number of students, teachers, classrooms, courses, classes, and other factors. The units can be standardized using various yardsticks, such as class size and teacher/pupil ratios. Various measures of students, including enrollment, average daily attendance, enrollment weighted by grades, types of programs, and number of students with special needs, are used.

Other states use equalization grants, including foundation grants, percentage equalization grants, and district power equalization grants.

Foundation grants vary inversely with the fiscal capacity of a school board. The grant allocation is based on an application of the representative tax system approach to fiscal capacity equalization per student across school districts. The following formula is used:

$$\text{foundation grant} = (\text{maximum per student grant} - \text{own school district contribution per student based on mandated minimum tax rate applied to per student tax base}) \times \text{enrollment}$$

Forty-two states have adopted variants of this approach, with 22 states specifying the minimum mandated tax rate. Various measures are used to determine enrollment, including the number of students on the rolls on a specified date, average daily attendance, and average attendance over a period. Most states (36) use a scheme that weights enrollment by grade, program, and student disabilities.

Rhode Island uses a *percentage equalization grant*—a matching cum equalization grant for school spending based on the following formula:

$$\text{grant per student} = [1 - \text{matching rate} \times (\text{per capita tax capacity in the district/ state average district tax capacity per capita})] \times \text{district spending per capita}$$

District power equalization grants, used in Indiana and Washington, include incentives for increased tax effort in an equalizing grant. The formula used is:

$$\text{grant} = (\text{per capita average fiscal capacity} - \text{per capita fiscal capacity of the district}) \times \text{district tax rate}$$

Source: Vaillancourt (1998) cited in Shah (2007).

5. Conclusions regarding the Practice of Fiscal Need Equalization

Fiscal capacity equalization is relatively straightforward to comprehend and feasible (with some difficulty) to implement once a (political) decision is made on the standard of equalization. Fiscal need equalization is a complex and potentially controversial proposition, because by its very nature it requires making subjective judgments and using imprecise analytical methods. An analytical approach such as regression analysis using historical data is inappropriate when underlying structures are subject to change due to technology and other dynamic considerations. Great care is needed to specify determinants of each service. An ideal fiscal need equalization system- theory based representative expenditure system as outlined earlier – is difficult to implement and therefore for good reasons has not been implemented anywhere in the world. Instead partial and ad hoc equalization is quite common place and appears politically popular yet controversial. Such methods tend to make the system opaque and in the long run invite citizens' distrust of government operations.

This need not be the case. Fiscal need compensation can be more simply and objectively achieved on a service by service basis for major services through output-based national minimum standards grants as done in Canada for health and post-secondary education. Such grants can use simple and objective service based indicators such as school age population for school finance (see Box 2), weighted population with greater weights for infants/children and senior citizens for health finance etc. Continuity of finance can be assured by maintaining minimum standards of access and service quality. Such transfers will preserve local autonomy while enhancing simplicity, transparency and citizens' based accountability for service delivery performance (see Shah, 2007 for details).

Box 2. Fiscal need compensation through output based transfers for school finance - An illustrative example

Allocation basis to state/local governments: school age population – population aged 5-17,

Distribution basis for service providers: Equal per pupil to both government and non-government schools.

Conditions: Universal access to primary and secondary education. Non-government school access to poor on merit. Improvement in achievement scores and graduation rates from baseline. No conditions on the use of funds.

Penalties: Public censure, reduction of grant funds and risk of termination with persistent non-compliance. Grant funds automatically decrease if parents pull out their children from non-performing school.

Incentives: Grant funds increases automatically as school attracts more students. Retention of savings for optional use from better management of resources.

Impact implications: Encourages competition, innovation and accountability to citizens for improving quality and access. Automatic monitoring and enforcement provisions through parental choices

Source: Author

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