Expenditure needs equalization at the local level

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1 Introduction

The reduction of fiscal disparities between sub-national jurisdictions is an acknowledged aim of intergovernmental fiscal policy. Even if it is far from undisputed on economic grounds (Oates, 1999: 1127), fiscal equalization transfers are in many countries an important instrument to pursue interregional solidarity. Yet, several complex issues arise even when there is a basic agreement on the principle of fiscal equalization.

The nature of the inter-jurisdictional differences which should be regarded as disparities and thus be subject of equalization transfers is not self-evident. In order to analyse the causes of fiscal disparities it is judicious to distinguish with respect to the public budget between disparities of revenue capacity from expenditure needs. Different notions have been used to express disparities associated with decentralized public expenditures. Needs or costs disparities and expenditure disabilities are usually given as rationale for equalization. However, assessing and measuring disparities are technically demanding and politically delicate operations in practice. The design of the transfers which seek to reduce these disparities increases the complexity even further.

The disparities of expenditure needs among jurisdictions at the local level of government are the subject of the present paper. Although many issues at the regional level are identical, some further limitations apply for local governments (LGs thereafter). Data availability, the smallness of the constituencies and the openness of their economy are the causes of additional challenges.

The canton of Fribourg recently presented a reform project of its equalization system at the local level. The present paper uses the problems of method and of political implementation as a case study. The technical details of the project are not discussed since a comprehensive description already exists (Dafflon and Mischler, 2007). Founded on this experience and the authors' knowledge on similar situations and difficulties in other Swiss cantons (among them Neuchâtel, Valais and Vaud), this paper draws a parallel between the problems encountered here and the corresponding political economy of expenditure needs equalization in the literature. The aims are to highlight the practical policy problems and to offer methodological guidelines to solve them. "Black-box" formulas of expenditure equalization are impossible in the Swiss policy arena. A system of expenditure needs equalization must be plausible and understood in the democratic debate since, in each Canton,

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the democratic institutions (Parliament, Referenda) have to decide on the reform and its funding.

The paper is structured as follows. Section 2 addresses the causes of expenditure needs of local governments. Section 3 provides an overview of the existing methods of needs assessment. Section 4 examines the practical challenges of using needs variables within the available assessment methods. The funding of the equalization instrument and the evaluation of the transfer effects is discussed in section 5. Section 6 concludes by stating some basic insights with regard to practical implementation of expenditure needs equalization.

Box 1 Reform Project of Local Fiscal Equalization in the Canton of Fribourg (Switzerland)

In the present system of fiscal equalization at the local level in the Canton of Fribourg, the 168 communes are distributed in six groups according to their financial capacity. Financial capacity is evaluated in a mix formula taking into account for 2/3 the tax potential of the communes (a kind of Representative Tax System based on the direct taxation of individual income and wealth and the profit and capital taxation of enterprises) and for 1/3 a mix of needs indicators (population density, population growth and the proportion of work places to the total residents for each commune). This formula has been established in the early 1970s and only marginally corrected since.

Equalization is indirect: according to their classification in the six groups, the communes would have to contribute more (group 1) or less (group 6) to related cantonal expenditures in education (primary school), health and social aid. The municipalities in the groups 4, 5 and 6, would also receive additional transfers from the canton in the form of grants-in-aid.

Following the re-assessment of functions between the Canton and the communes, the changes in the economy due to globalisation and, to a certain extent, to the reform of equalization at the Federal-cantonal levels (Dafflon, 2005), this equalization formula and policy is no longer suitable (Dafflon and Tóth, 2003: 73).

The reform project is founded on two pillars. On the one hand, revenue equalization will be direct and strictly horizontal, in line with a RTS model, based on the eight main tax sources of local governments. LGs with higher-than-average tax potential will contribute to an equalization fund; LGs with lower-than-average tax potential will benefit from this fund. On the other hand, expenditure needs will be explicitly taken into account in a vertical equalization policy, financed by the Canton exclusively. Five functions are considered to evaluate local expenditure needs disparities: primary school, day care and home for elders, social aid, public order and security, road and transportation. Causality criteria are used to construct a synthetic index of local expenditure needs, which in turn serves to distribute the equalization fund.

(Source: Dafflon and Mischler, 2007)

2. The rationale for expenditure needs equalization

As a starting point in the discussion, suppose that any LG is spurred by its electorate to provide local residents with a large range of public services. The volume of provided services depends on both the expenditure needs and the financial resources of the local community. Needs and the available resources in turn depend heavily on geographic, demographic, socio-economic and other factors. Local financial capacities depend both on the tax bases accessible to LGs and on the territorial distribution of those bases. Local needs vary according to the particular preferences of the local residents. They are further determined by legal regulations concerning mandatory public goods and services that local government must provide by all means. Since no country is completely uniform, a fundamental characteristic of a federal (decentralized) state is that LGs have different fiscal capacities and hence are unable to provide the same level of local public services at the same tax burden. Alternatively, when one allows for local preferences, the different levels of taxation in the LGs do not necessarily mirror differences in preferred local public services.

Equalization within a federal or decentralised governmental structure is one of the possible solutions. It refers to attempts made at the reduction of fiscal differences among communes by monetary transfers. Yet, in the situation described in the previous paragraph, two questions arise with respect to implementing equalization schemes:

(i) What sort of "solidarity" among LGs is accepted and who decides it? More solidarity is clearly a trend towards standardisation in the delivery of core local public services, versus local-specific services at comparable tax levels.

(ii) Where to draw the line between local preferences and mandatory local public services? As Boex and Martinez-Vazquez (2007: 293) put it: without a clear demarcation line related to specific standards of services or to some overall envelope of expenditures, perceptions of what may be a need can easily escalate to completely unaffordable expenditure levels.

In a first attempt to delineate what should or should not be included in equalization, Box 2 reviews the possible origins of fiscal differences in the relevant literature. The logic behind this classification in five categories is twofold.

(i) Those items that are within the scope of decision and the fiscal management of LGs should not be taken into consideration for equalization. They belong to the sphere of local autonomy and responsibility.

(ii) "External" items that are outside the scope of local decision should be compensated, at least partly, if they result in a significant spread in the respective fiscal position of governmental units.[1] Beyond Box 2, non voluntary or non chosen differences are referred to as fiscal disparities.

[1] This is also the position of the Expert Panel on the reform of Equalization in Canada: "Expenditure needs should only take into account differences that are not under the control of governments". However, the Expert Group concluded that "this is very hard to establish with precision and can vary from province to province", one of the argument which led them not to recommend taking into account expenditure needs (Vaillancourt, 2006: 48).

Box 2 Possible origins of fiscal differences in local public budget

A.	Differences in the access to resources (Oakland, 1994). It takes two forms: (i) differences in income and wealth of community residents or (ii) differences in communal property and/or natural resources endowment. Taxable resources of local jurisdictions (Dafflon, 1995); tax bases among local jurisdictions (Gilbert, 1996); taxable resources per head (King, 1997); economic position and opportunity (Dafflon and Vaillancourt, 2003); tax bases open to SNGs (for Sub National Government; equivalent to LGs in this paper) and territorial distribution of those tax bases (Bird and Vaillancourt, 2007: 260).
B.	The amount of mandatory public goods that the LGs must provide for exogenous reasons (Gilbert, 1996); needs per head (King, 1997). Cost differences per unit of mandatory public goods that local jurisdictions have to provide (Dafflon, 1995; King, 1997; Dafflon and Vaillancourt, 2003).
C.	Cost differences due to input-output relationship (Break, 1980, cited in Shaw, 1996: 102). Differences in the costs of providing public services; they are due to: (i) differences in input costs, or (ii) to the fact that some populations are more costly to serve than others (Oakland, 1994). Cost differences per unit of standardized public service (Bird and Vaillancourt, 2007: 265): they may arise from climatic or geographic feature, density or distance factors, or differences in labor cost across regions (on the basis of real private sector wages). Cost differences due to the nature of service areas and the composition of the population (Break, 1980). The costs of providing public services are likely to vary across governmental units for four major reasons: differences in the quantity and composition of input necessary to produce the public service, differences in factor or input prices, differences in physical characteristics (environmental factors), and differences in the socio-demographic composition of the residents of each jurisdiction (Reschovsky, 2007: 402). Economies of scale in the service provision (Dafflon, 1995; Dafflon and Vaillancourt, 2003). Need differences in the number of units of standardized service required per capita owing to demographic reasons: age structure, different participation rates in social programs by persons of different ages (Bird and Vaillancourt, 2007: 265).
D.	The necessity to distinguish between inherent cost disabilities and differences that are due to specific tastes of residents in the various LGs or those that are due to policy decisions at the local level (Break, 1980); Local preferences either for optional services or for quantities or quality above the minimum standard level in the provision of mandatory services (Dafflon, 1995; Gilbert, 1996; Dafflon and Vaillancourt, 2003).
E.	Differentials that are attributable to strategic behavior on the part of the (Canadian) provinces in respect of federal transfer payments (Break, 1980); Local preferences between (non-benefit) taxes and user charges (benefit taxes), including the choice – if any – among different forms of taxes (Inman and Rubinfeld, 1996).

Category A concerns resource equalization: taxable resources depend much on the geographic position of government units in the national territory (proximity of urban areas or economic centers, location at the periphery), on the kind of economic activities or clusters, and on communication networks. Within an open market economy, LGs cannot influence these characteristics, thus they must be treated as exogenous variables.[2]

[2] This affirmation is valid on the short term, when one considers annual equalization transfers. In the long term, one can argue that LGs are in a position to increase their attractiveness for activities and newcomers through targeted fiscal operations. In this case, one would consider that a local marketing of this sort is a choice variable in LGs' hands and therefore falls outside the domain of equalization. However, if on the expenditure side local attractiveness depends on the LGs' ability to provide specific different services to attract new residents, on the tax side, this raises the controversial question of tax competition. Whereas the decision to reduce local taxation

Category B refers to the provision of local public goods and services at standard levels that are fixed by higher government tiers – the so-called mandatory functions and decentralized merit goods. It raises the issue of the correspondence principle: the constituency who decides, benefits, and funds the public good should coincide (Oates, 1972: 34). If the motto "he who decides should also pay" is respected, then cost differentials are automatically paid by the higher government layer who decides the standards. But this is by far not always the case: then the issue of needs equalization comes to the heart of the political agenda.

Category C deserves careful consideration on the possible origin of expenditure needs disparities. Cost disparities in input factors (Production Function II in Figure 1 below, compared to Production Function I) most often fall outside the LGs' decision ability and thus should be taken into consideration for equalization. Considering needs disparities is more delicate because it requires to distinguish between a sheer increase in the volume of production or the number of beneficiaries (a move to the right of Production Function I in Figure 1) and higher input costs (a shift to Production Function II). For example, it makes a difference whether the increase in the proportion of primary school children concerns well integrated one-language children (a move along PF I) or immigrant foreign speaking children with heterogeneous school background (a shift to PF II). Another example of potential difficulty is the situation where, other things equal, local governments could cooperate (or amalgamate) in order to benefit from economies of scale. In this case, the decision is a local choice. If cooperation is refused motivated by local autonomy, then LGs should also support the fiscal consequences of their decision and not count on equalization to make up for the differences in costs. "Small is beautiful", but it has a price.

Differences under D and E result from local preferences and hence they need not be compensated by any kind of equalization or transfer payments.

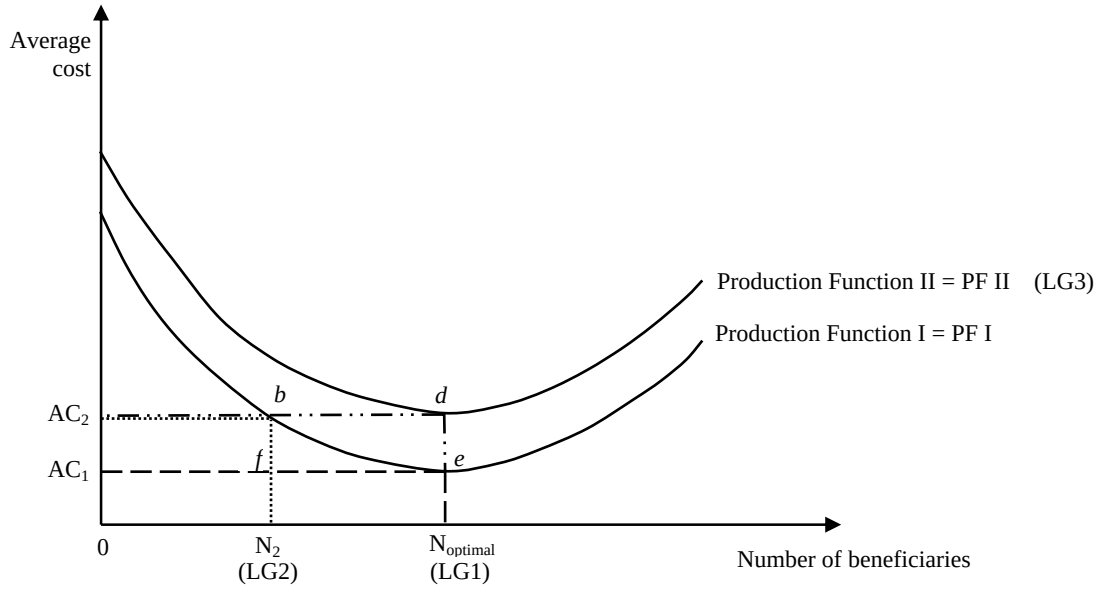
In this paper, we focus on expenditure needs equalization; thus we leave aside differences A (revenue equalization), D and E (preferences).[3] According to Bird and Vaillancourt (2007: 265), three questions arise with respect to implementing equalization schemes incorporating expenditure needs differentials: how are "standardized" expenditures determined,[4] how disparities in needs and in costs are measured? Figure 1 illustrates the nature of the difficulties. It shows that tracing the border line between genuine disparities, on the one side, and local preferences or management abilities, on the other side, is not easy. The first scenario relates to the optimal size of LGs and their own capacity to gain scale economies. The second scenario illustrates the difficulty of distinguishing between higher production costs due to factors that can be legitimately identified and X-inefficiencies.

lies in local hands, the final result depends in fact on the relative position of each LG compared to those others which also are engaged in tax competition – a situation which is outside the control of single local jurisdictions. The policy relation between equalization and tax competition is a real issue, but it falls outside the scope of this paper.

[3] All scholars do not accept this premise and question whether expenditure needs should be incorporated in equalization formula. Reschovky (2007: 399) also mentions that there are only few examples of grant formulas that explicitly account for disparities in expenditure needs or need-capacity gaps among local governments.

[4] The authors disregard at once historical expenditure patterns and the use of observed average costs for various local expenditures (Bird and Vaillancourt, 2007: 266-267). The reasons given are that past observed expenditures may not reflect current policy objectives and because expenditures that seem the same in the data may in fact be quite different. Figure 1 takes up this issue again.

Figure 1 Production functions for a local public expenditure



We start with the usual simplified U-shaped Production Function I for one local collective good S (Reschovsky, 2007: 403). It indicates that the proportion of fixed to variable costs is high so that economies of scale are possible the larger the number of beneficiaries. At point e scales economies are exhausted and average costs raise again. Average costs (AC) are given on the ordinate[5]; the horizontal line indicates the number N of residents who benefit and pay the service on a quid pro quo basis (one resident, one unit of S, one tax unit - no spillover). In this circumstance, the efficient solution for Production Function I is at *e* for a total of $N_{optimal}$ residents served. The *e* solution gives two references: the minimal average cost at AC_1 and the total local public expenditure $0N_{optimal}\ eAC_1$ at the optimal level for this particular Production Function I for the local public service S.

Now, suppose LG2 with N_2 the number of residents, too small to attain $N_{optimal}$ and nevertheless obliged to produce the core service S. Average cost raises to AC_2 with total expenditure at $0N_2bAC_2$. A formula based exclusively on absolute equality would use total observed expenditures: since in the example $0N_{optimal}\ eAC_1 = 0N_2bAC_2$, LG1 and LG2 would receive an equal equalization share if any. But this is not recommendable because the same total outlay does not correspond to similar situation. In Figure 1, the total expenditure for LG2 is equal to LG1, but with less beneficiaries. Why is this so? Is the number of beneficiaries low because of socio-demographic characteristics of the resident population in LG2 (less school-aged children if S is primary school)? Or is LG2 not in a position (for topographic reason,

[5] Of course, economists would prefer working with marginal costs. But this is an impossible task in practice since one would then have to know the individual production functions for each LG and each core service S taken into consideration for expenditure needs equalization. In the case of the communes in the canton of Fribourg, for example, one would have to consider 27 expenditure programmes [S in the text] with an equalization components for 168 communes [LGs in the text] (Dafflon and Mischler, 2007: 13-14). Per capita cost per resident or average cost per beneficiary are the most common relative measures in policy applications (Bird and Vaillancourt, 2007: 266-267; Reschovsky, 2007: 407).

distance or remoteness) to cooperate with other neighbouring LGs in order to increase the volume of production and the number of beneficiaries and thus tend to resemble LG1 or is LG2 not willing (for reason of differences in preferences or the will to remain autonomous) to cooperate on this service with other neighbouring?

A relative measure of this expenditure differential would be better. Per capita equality, using LGs' population, is frequent, but is not necessarily an adequate measure of causality and thus also creates problem (Dafflon and Mischler, 2007: 183-185). If one can clearly identify the beneficiaries of the service, then AC is known: the textbook example is average cost per children for primary school. But such information is not always available. The other textbook example is snow removal in order to guarantee road security. Optimal security correspond to a "no accident" situation: but "no accident" does not give an average cost. The alternative would be to calculate AC according to the length of the roads weighted by the intensity of the traffic: yet this is an input measure, not a target, and a debatable one - what does "intensity of the traffic" mean? In sum, expenditure needs can be determined in relative terms only if causality is clearly traced and identified - but this is not as simple as it sounds because it requires information about the production function of each local public service selected for equalization and the number of unit beneficiaries. And for each service, an adequate number of local production functions must be identified in order to fix the standard within a reasonably representative target.

Consider a third local unit LG3 in this theoretical federation, with PF II characterized by higher costs on the whole range of production. Many different factors linked with cost disparities are proposed in the literature.[6] Some are obvious, such as climate (snowfall), topography (mountainous regions), location (remoteness), and urbanisation. Others are intuitively plausible: the shares in the total population of school age children, elders, new immigrants from different cultural background, for example. In the situation described in Figure 1, even with the optimal number of beneficiaries served, LG3 cannot provide an equal level of service S at the same tax burden [$N_{optimal}$ *d* > $N_{optimal}$ *e*]. If the cost difference AC_1*ed*AC_2 is a genuine disparity, then the situation requires some kind of equalization so that the fiscal balance is restored. This would not only reduce the average cost (tax) of service S facing residents in LG3, it should also reduce migration due to fiscal motivation, thereby enhancing efficiency (Bird and Vaillancourt, 2007: 262).

Other situations can be captured in Figure 1, which all need verification in practice if expenditure needs equalization is on the political agenda. But then questions follow questions in a domino-like sequence. Since AC_2 is the same for LG2 and LG3, there is no reason to differentiate equalization based on average costs: relative equity is respected. Yet LG3, with a PF II, is efficient at *d*, though more expensive than if it could produce at *e* on PF I, whereas LG2 is not efficient and could gain some economies of scale from *b* to *e* on P F I. Average costs would not be the right indicator should equalization consider the "true" difference *ed*, (but not *fb*). But does PF II represent the real costs or does it hide X-inefficiencies. How can one interpret the difference *ed* even though LG1 and LG3 serve the same number of beneficiaries?[7] Can LG2 cooperate or amalgamate with another neighboring LG in order to

[6] Bird and Vaillancourt (2007: 272-275) enumerate 48 disability factors for expenditure needs for six countries (Australia, Brazil, China, Germany, India and Switzerland).

[7] Take the example of primary education. Suppose LG1 and LG3 buy the same number of books for the same number of pupils. Does LG3 overspend on fancier books, try harder to keep up with new pedagogical trends, or teach to a different language group and thus face higher unit costs for otherwise identical books? Yet if one refers to the logic behind Box 1, further questions arise. Is LG3's choice to follow a new pedagogical path an

reduce AC_2 or is cooperation impossible for reasons of distance, topography, language restrictions and the like? If LG2 simply refuses to cooperate for reason of sheer autonomy or heterogeneity in preferences, why should others pay the cost differences?[8]

In sum, there is no practical way to state beyond doubt whether situations *b* and *d* in Figure 1 represent genuine cost differentials between LGs or result from own choices. From this perspective, a policy of expenditure-based equalization is a tremendous challenge. Since expenditure needs equalization is complex and cannot abstract from political value judgments, should we conclude that one should renounce, as the Canadian Expert Panel on Equalization recently proposed (Groupe d'experts, 2006: 46; Boothe and Vaillancourt, 2006: 48)? Or, should we try to design expenditure needs equalization as best as one could with imperfect knowledge, information and data (Boex and Martinez-Vazquez, 2007: 291; Reschovsky, 2007)? The following sections sketch a possible answer.

3. Methods of needs assessment

The previous section questioned the causes of LGs' legitimate expenditure needs. The next important step is the assessment of the needs. In the economic literature, the methods of needs assessment have been regarded either as a necessary criterion which completes the aim of a fiscal equalization scheme or as an instrument of evaluation of the fiscal stress of local governments (Ladd, 1999: 124). The former influences the direction and the amount of intergovernmental transfers, while the latter is one among many purely descriptive means to classify municipalities according to geographical attributes or other disability factors. Mischler (2007: 53) distinguishes between four methods of needs assessment, distributed in two groups. Figure 2 sketches these approaches and provides the related references from the economic literature:

- The first group makes use of the actual local expenditures. Using Ladd's terminology (1994: 29), it is subdivided into the regression based cost approach (RCA) and the representative expenditure system (RES).
- The ad hoc variables approach and the statistical aggregation of variables form the second group which does not make use of actual local expenditure data.

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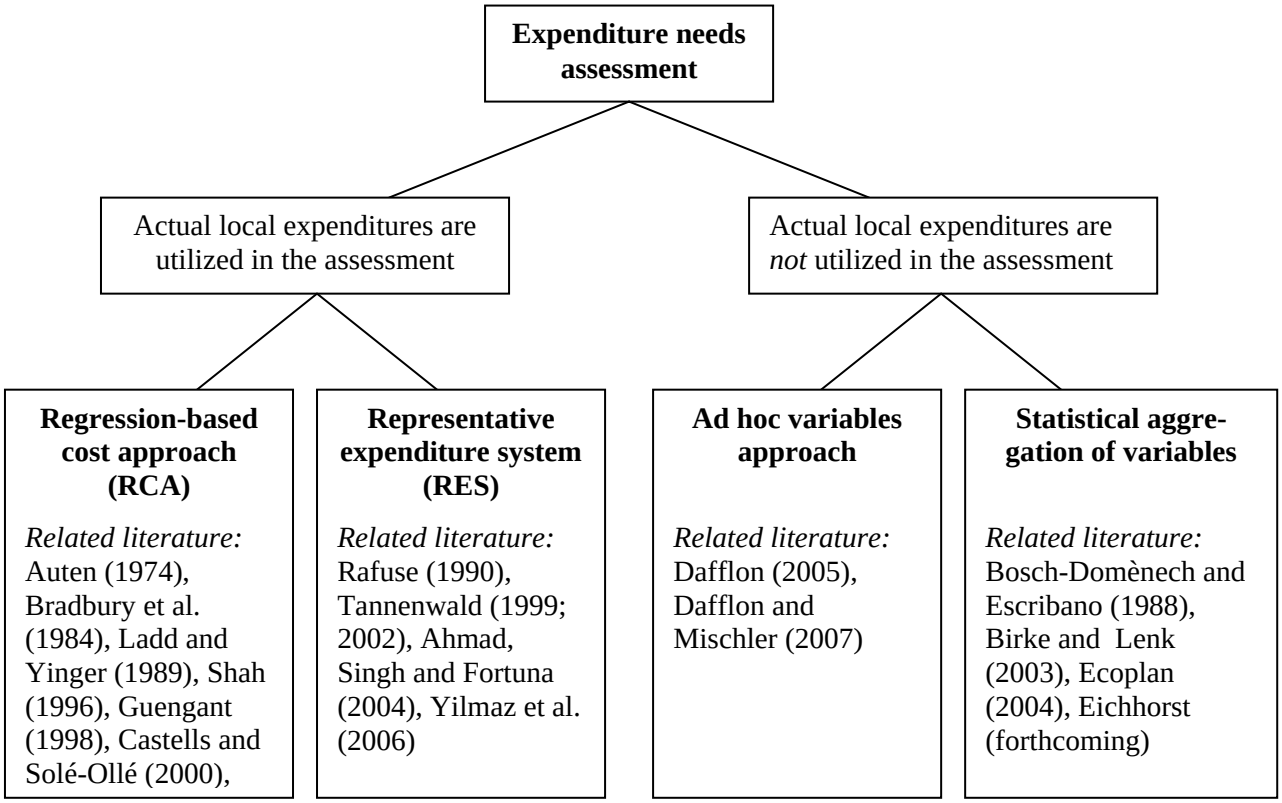
item of laboratory federalism, a decision taken in coordination with other LGs (equalization is acceptable), or is it an own decision following its fancies and specific tastes (no equalization)? If language is different, is the higher government concerned with the protection of minorities (equalization is acceptable) or are language differences not an issue (no equalization)? Not only is it difficult to isolate variables that affects costs from variables that indicate differences in public good preferences, but the answers (to laboratory federalism, and to preoccupation for minorities protection in the example) – and therefore the justification of expenditure needs equalization - belong to politics.

[8] Two situations related to two Swiss cantons can exemplify this dilemma. In canton Fribourg, a reform of the equalization scheme was refused in 1992 with the argument that small communes should first cooperate or amalgamate in order to gain economies of scale before any equalization effort would be made by other wealthier communes (horizontal equalization) or by the canton (vertical equalization). See Canton of Fribourg (1992: 322). The reference corresponds to the minutes of the Parliamentary session when an amendment aiming at postponing the new equalization (so that a cantonal policy for the amalgamation of communes would be introduced first) was accepted (out of 130 MPs, 91 votes for this amendment, and only 10 votes to go on with the draft law proposed by the cantonal executive). In the canton of Valais, expenditure needs equalization has been a well established policy for many years, long before the question of amalgamation of communes was put on the political agenda. In some small municipalities, transfers with an equalization component account for around half the current annual budget: these communes are the stronghold of resistance to any sort of territorial reorganization. See Canton du Valais (2000).

Figure 2 Overview of the methods of needs assessment



Source: own representation

In some countries, past expenditures are directly considered as a measure of expenditure needs (Boex and Martinez-Vazquez, 2007). However, this approach is not included in the above representation even thought it is related to the methods using actual local expenditure. It exemplifies the problems, already discussed in the section 2, of using real expenditures for the needs assessment:

- ✓ These methods link implicitly or explicitly realized demand to expenditure needs, which does not have to be the case automatically (Bramley, 1990: 67). Since public expenditure represent public inputs, concerns about efficiency of public goods provision may also arise. Needs assessments should avoid disincentives on productive efficiency, capacity building and economic development.
- ✓ Furthermore, local government have often far reaching competences for the provision of public services: a room of manoeuvre that leads to different levels of public services which mirror local preferences rather than costs or needs disparities.

The use of actual local expenditures is particularly vulnerable to both criticisms. Whatever the method, needs assessment has to control for disincentive and preferences. However each method has its pros and cons which we discuss below.

Regression-based cost approach (RCA)

A RCA evaluates the cost disparities of local public goods provision. An index of basic needs or cost disabilities can be established by using regression analysis. The disparities in the costs of public service provision usually cannot be examined directly. Instead, public expenditure data are utilized to determine structural cost differences by regression analysis. However, the use of expenditure data requires normally restrictive assumptions about local public goods provision (Ladd and Yinger 1989; Reschovsky 2007). Namely, the competences of service responsibilities need to be comparable and expenditures per quality unit of public services are assumed to be equal.

The regression model tries to explain the variation of expenditures per capita. Demand indicators, input prices of public service provision and environmental variables are considered as explanatory variables in the regression estimation. Inserting real values of the structural cost variables and average values for all the other variables into the estimated regression, provides the estimated expenditures per capita that vary only because of different costs of local public goods provision. This information serves to the same extent as a measure of relative and of absolute expenditure needs. The relative expenditure need is calculated as an index using average values of the explanatory variables as a benchmark. The absolute expenditure need displays the needs in monetary units for each jurisdiction. The results may be utilized as a standard for equalization payments.

Besides the problematic aspect of assuming away difficulties with regard to quality of public services or service responsibilities, the challenge remains how to control for the variety of possible influences of local public expenditures. The specification of the regression formula is crucial and often highly dependent on knowledge about local characteristics. They add to well known technical criticisms as far as the RCA approach is concerned (Lago-Peñas 2001). These problems have been known for a long time now (OECD 1981). Nonetheless they are still important today, since they are inherently linked with the regression method.

- ✓ Multicollinearity: The high number of utilized control variables may come with the problem of high correlation between explanatory variables. In this case it is not possible to identify the individual effects of each variable, which leads to invalid results of the regression.
- ✓ Omitted variable bias: There may be important variables which are not considered as explanatory variables in the empirical model. The error-term which contains the information about the omitted variable is thus correlated with the dependent variable. This leads to biased estimates. Especially the effects of preferences or X-inefficiency are not easy to control for and may lead to biased estimates.

The main advantage of this method is its ability to provide an absolute measure in monetary units of expenditure needs of local jurisdictions by incorporating an important amount of information about local jurisdictions. However, there are disadvantages too. Linked with technical difficulties of the regression approach, the complexity of this method rises quickly and makes indispensable decisions about equalization policy ever more the issue of technicians although highly political questions need to be answered with regard to practical systems of equalization.

Representative expenditure system (RES)

A RES assumes standardized expenditures per physical workload factors. This expenditure per workload-unit can be determined using average expenditures or normatively defined

"necessary" expenditure. Average spending per workload unit is often considered to be the basic benchmark (Rafuse 1990). The standardized expenditures are determined by multiplying the average spending per workload unit with the observed workloads in the jurisdictions. A local jurisdiction is considered needy under this approach when they face higher standardized expenditures per capita as the average jurisdiction. If information is available, the workload factor may be weighted by an input cost index (Tannenwald 1999).

The RES approach seems to be convincing if structural community characteristics cause public expenditure. A good example may be the number of pupils which are linked to expenditures for primary education. However, this link cannot be tested in a statistical way. The method uses basic intuition or plausibility for the selection of workload factors. Furthermore, for some expenditure categories a plausible relation to public goods provision through structural indicators cannot easily be established.

Since the RES method uses also actual expenditures for the needs assessment, the expenditure needs can be determined in both absolute and relative terms. The average expenditure per workload unit serves as the relevant benchmark. In some cases there are also normative standards employed instead of average expenditures. Operational accounting standards may provide useful information about local jurisdiction which leads to the conclusion how much money local jurisdiction should spend for respective public services. There are also other possible means to determine normative expenditure standards per workload unit; expert evaluation is a frequently cited example. In cases of mandatory functions, where higher levels of government require minimum standards for public service provision, normative benchmarks may also be used.

The RES approach has intuitive appeal and may lead to reasonable results for some tasks. Yet, the use of average expenditure as the relevant benchmark for the assessment of needs leads to incentive problems with regard to distribution of a common pool of expenditure. Normative benchmarks are not discussed in detail since they do not rely on an attempt to assess objective needs but depend on an a priori optimal amount of spending, often based on expert judgements or political decision.

Both the RCA and RES approaches face the challenge of controlling for the present system of expenditure equalization when new approaches are tested not starting from scratch but to reform the system in force. If the public expenditures accounted in LGs' books, already contain elements of an equalization system that is obsolete and must be changed, they cannot be considered without correction – that is expurgating actual accounted expenditures from the equalizing component. This obliges to trace back to the criteria of causality, a challenging process which does not often succeed in practice (Dafflon and Mischler, 2007: 173-174).

The other group of methods does not refer to actual local expenditure in order to determine expenditure needs of the jurisdiction. The ad hoc variables approach and the statistical aggregation of variables have been associated in this context.

Ad hoc variables approach

This approach links expenditure needs directly to particular community characteristics. The most common example is the assumption that needs are identically distributed per capita. Equal per capita needs for public services are often implicitly applied e.g. in revenue sharing schemes with equal per capita transfers. Ad hoc variables, such as population, may be weighted too. The main argument is that needs are not in a linear relationship to the relevant

ad hoc variable. They may be increasing or decreasing relations. A well known example is the population weighting scheme in the German equalization system, where populous jurisdictions are judged to have relatively higher expenditure needs per capita (Birke and Lenk, 2003). Another example is population density which may be associated with needs in different ways. There may be a negative relationship between density and needs (e.g. for services using a network, like water and sewage facilities) but also a positive one is conceivable (e.g. for law enforcement and fire protection).

Other priorities in public policy may lead to different choices of ad hoc variables. For example, Switzerland has traditionally aimed at reducing the hardship of living in the mountain regions by improving local public goods provision in these areas. Therefore low population density and the portion of agricultural land in the mountain region have been used as ad hoc needs criteria in the equalization scheme (Dafflon, 1995: 68). The selection of the relevant ad hoc variables may be inherently driven by political priorities. However, there may be severe incentive problems when needs are purely political definitions and linked to equalization transfers. Beside the political choices involved in the selection of the relevant variables, there may be also other arguments: expert judgments, independent technical evaluations or institutional design (Bramley 1990).

Since the ad hoc variables approach does not refer to actual local expenditures, the absolute value of expenditure needs as a monetary amount cannot be determined. It is only possible to determine the expenditure needs relative to the jurisdictions of the same level of government and thus only relative needs may be used for the design of the equalization scheme. This leads to the open question how to evaluate the funding of the equalization programme. Moreover, the advantage of simplicity and intuitive understanding of this method is soon put into question when more than one variable is necessary to describe the expenditure needs; the variables have to be weighted, although there are no criteria provided by the method.

Statistical aggregation of variables

The statistical aggregation of variables is the second method which does not make use of the actual expenditures for the needs assessment of the local jurisdictions. Unlike the ad hoc variable approach which tries to use as few indicators as possible, the statistical aggregation of variables aims at exploiting the information of as many variables as possible. A principle component analysis can be applied to reduce the information to one orthogonally transformed component which is able to explain the most important part of total variation of all the variables. If more than one component is utilized, the components have to be interpreted according to the scores of the variables. This interpretation is usually a difficult task since each variable has a distinct impact on every component.

However, this approach is only possible if the considered variables are strongly correlated. As soon as uncorrelated indicators are considered to have an effect on expenditure needs, the statistical aggregation of variables with the principle component analysis is not possible anymore (Bosch-Domènech and Escirbano, 1988).

An index of relative needs may be determined by using the standardized scores of the most important components as weights for the considered variables. If more than one single component is applied the question of aggregation of those values is once more open to debate, comparable with the situation when ad hoc variables need to be weighted. The statistical aggregation of variables, like the ad hoc variable approach is unable to determine the absolute

expenditure needs of the jurisdictions in monetary units. The approach provides only a relative measure of LGs' expenditure needs.

4 Needs variables and disability factors

This fourth section highlights the fact that the needs assessment of LGs is a delicate task. In practice political consensus is necessary for numerous aspects of the assessment. The practical implementation of expenditure needs equalization requires the use of variables[9] which provide information about the needs and costs of service provision. The four methods of needs assessment face comparable challenges with regard to the utilization of these variables. Some are more conceptual, others more technical or practical in nature. These aspects will be exemplified by the case of the local fiscal equalization reform project in the Swiss Canton of Fribourg. Aspects of this example are presented in boxes within the text.

4.1 Selection of variables

A first important challenge comes with the selection of the relevant disability factors. The needs assessment has to be targeted at specific public services. This requires a statement about political priorities in local public sector activity. In section 2 the argument refers to the difficulty of determining legitimate expenditure needs. In practice, the decisions with regard to the variable selection are essentially guided by the institutional structure, namely the existing assignment of functions at the local level and the political consensus. Though partially guided by the needs assessment methods themselves, the information about the inclusion or exclusion of variables is basically linked with the mentioned expenditure policy priorities. However, the tension between uniform priorities at the higher level of government and local autonomy with regard to decentralized service provision may be problematic (Boadway, 2006: 370). Bird and Vaillancourt (2007: 272-275) provide a summary of 48 utilized needs variables in six selected countries. This study also reveals the variety of indicators applied in different country settings. The diverging degree of detail is particularly manifest in the comparison of different systems, with Australia as a well known example of an elaborate system which assesses 41 expenditure categories (Rye and Searle, 1997: 164).

The selected variables should respect several requirements to be considered in the procedure of needs assessment. The data must to be "structural" in the sense that it cannot be influenced by local governments. Moreover, the data must represent a plausible or statistically significant link to the targeted notion of expenditure needs. As the description of Bird and Vaillancourt (2007) shows, needs variables are utilized in different countries within various methods of needs assessment. While the selection of the indicators may be endogenously guided in some methods like the RCA, other approaches may not be able to achieve this. Even if the exclusion of variables is possible for example by statistical inference, the exploratory process of considering needs variables is usually guided by a priori assumptions about expenditure needs. Plausible reasoning or simple analysis of statistical correlation is often inevitable for the selection of variables.

The four methods described in section 3 share the requirement of a sound selection of relevant needs criteria. Each approach utilizes physical criteria which determine the needs of a jurisdiction. On the one hand, the RCA and the statistical aggregation of variables apply a

[9] Bird and Vaillancourt (2007: 272) call them disability factors.

"top-down" approach, by starting with a maximum number of variables which may be associated with expenditure needs. The next step is the elimination of variables through test statistics or statistical data aggregation. On the other hand, the RES and the ad hoc variables approach use a "bottom-up" strategy by using only one "causal" variable for each expenditure need. Since this is a difficult task for many public services, using additional approximate variables could be necessary. In this case weighting the separate variables is an additional difficulty: the issue of weighting will be addressed below.

Box 3 Reform project in the Canton of Fribourg: Variable Selection

Five functions are considered to evaluate local expenditure disabilities: primary school, day care and home for elders, social aid, public order and security, road and transportation (Box 1). The ambiguity of variable selection is demanding even if the policy area of needs assessment is restricted to compulsory education. Since meaningful outcome variables are not available there is a need to utilize reliable measures of output. The number of classes, the number of pupils and the population aged 5 to 14, were considered as indicators of expenditure needs (Dafflon and Mischler, 2007: 191-192).

Compulsory education policy in the canton of Fribourg assumes "standardized" class size of 22 pupils, with minimum and maximum limits at 14 and 27 pupils for obtaining cantonal subsidies (including in the present system an equalizing bonus or malus). Due to significant fixed costs because of indivisibilities (school buildings and teaching equipment) and the teachers' salaries per class whatever the number of pupils within the limits, the number of classes would be a good approximation of total cost per school. Yet, the marginal cost for one additional schoolchild could be almost zero if the number of pupils in one class does not reach the upper limit, to a full-cost new class if it overpasses the limit. Also due to the small number of total pupils in several municipalities, communes cooperate in school districts. Since it is not possible to distribute full classes between the communes of a school district because it does not make sense with high fixed costs, the number of pupils is the next best indicator of causality for measuring disparities for the purpose of equalization between LGs (and not between service precincts). With the two characteristics of institutional cooperation and an average number of pupils per class with two limits, it is questionable whether costs per pupil are approximately proportional and the adequate measure.

In addition, the educational policy in this canton aims at integrating special individual situations in normal classes and, for this purpose, weights pupils differently. The reason thereof may be non-native speakers, immigrant children with different cultural and social background or disabled children who cause additional educational effort in the form of remedial teaching. The proposition is that pupils with particular characteristics lead to additional expenditure needs. Disabled pupils count for three, other cases for two. Additional costs for non-native speakers and immigrants are pooled between the 168 communes whatever the number of cases in individual municipalities. These arrangements are only possible with in-depth knowledge of the educational sector. Yet, they may still be aligned with normative judgements which are likely to reflect theses and other political priorities. So, for budgetary reasons at the cantonal level, these norms are not always respected and their application varies from one year to another.

In these circumstances, the Experts' proposal has been to use the number of residents aged between six and fourteen (compulsory school age) relative to each LG's total population in order to measure in a comprehensible and verifiable way expenditure disabilities and needs in compulsory education (Dafflon and Mischler, 2007: 191).

4.2 Transformation of the variables

Several variables used in the context of LGs' needs assessment are not linear with regard to expenditure needs: in other words, one cannot assume that the importance and growth of LGs' expenditures in a particular function are strictly proportional to the identified needs variable(s). They have to be transformed in a way that they can be used with regard to the

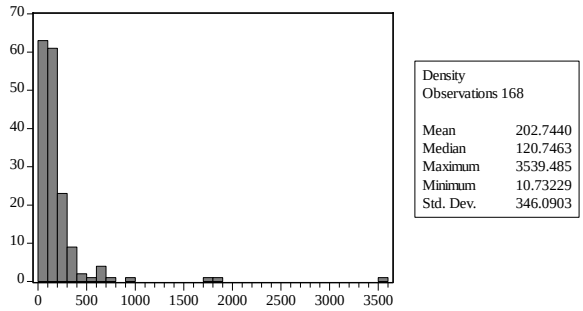
methods of needs assessment. There may be precise a priori information about the nature of this transformation; however, in many cases some form of approximation is inevitable.

Box 4 Reform project in the Canton of Fribourg: Transformation of the variables

A well known example is population density which may, according to the circumstances, lead to higher or lower expenditure needs. Depending on the particular services, population density may have a positive, a negative or even a nonlinear effect on the expenditure needs (Mischler, 2007: 182)

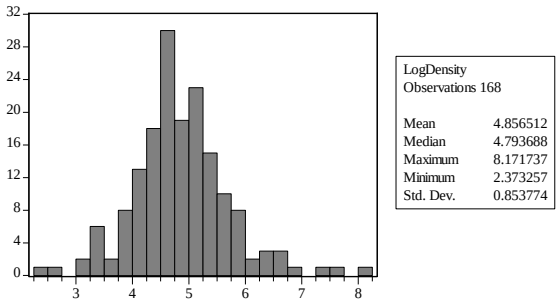
In the canton of Fribourg the argument with regard to the use of population density has changed over time. In the present equalization system (which dates back to the mid 1970s – see Box 1), the jurisdictions with a low population density (used to measure the geographic dispersion of the population) have been supposed to have higher expenditure needs basically because of the implementation costs of networks like water and sewage or roads (Dafflon and Mischler 2007: 166). Meanwhile, this network infrastructure has been established. The problems of the local public sector have shifted towards providing equal services in health, education and welfare in densely populated areas, especially because of the concentration of population segments who cause higher public expenditures (e.g. elders, unemployed, poor people, foreign citizens, etc.). However it is not possible to utilize directly population density as a proxy of expenditure needs: Fribourg, capital city of the canton, has e.g. a population density which is 330 times as high (in 2004) than the municipality with the lowest population density. Yet, it is not convincing that there is a linear relationship to expenditure needs. In this case, the log-transformation assumes increasing needs with population density at a decreasing rate. Graph 1 below provides the absolute frequency distribution of population density (population / km^2) of the 168 municipalities. Graph 2 illustrates the natural logarithm of the same function.

Graph 1: Population density



Source: Canton de Fribourg (2006)

Graph 2: Logarithm of population density



Source: Canton de Fribourg (2006)

4.3 Smoothing data over time

Usually needs variables are stable over time since they represent structural characteristics of the local jurisdictions; in some cases, significant variations may arise from one year to another. Therefore, it may be reasonable to utilize moving averages of the variables in order to smooth out fluctuations over time. However, this is appropriate only if annual changes of the variables do not alter expenditure needs on the short-term but only on a longer term.

Moreover, since statistical data are only available with some delay, equalization payments that are linked to the needs assessment may even have an anti-cyclical effect. Stability of the results of the needs assessments should be a required feature of an equalization system in order to increase the predictability of the transfer system (Boadway and Hayashi 2004; Dafflon and Mischler, 2007: 68). There is another advantage to a situation with a delay in the data availability (two years in Fribourg) and moving averages (three years in Fribourg):

municipalities cannot indulge in strategic behaviours. In fact, they will not take the risk, some (in Fribourg: five to three) years in advance to modify their choice for the sake of a marginal profit in equalization while not knowing the behaviours of the other individual municipalities in the same field and knowing that needs assessment gives their relative position to the other LGs and not an absolute measure of the equalization transfers.

Box 5 Reform project in the Canton of Fribourg: Smoothing the Data

Five functions are considered in order to evaluate local expenditure needs disparities (Box 1). The needs variables are plausible proxies for causality (Boxes 3 and 4), owing to the availability, reliability and sustainability of the statistical data at hand (Box 7). The column "data content" expressed how explicative variables are measured.

Expenditure function	*Needs variable*	*Data content*
1 public order, security	Population density; Population growth; Economic activity	Number of residents per km^2; Rate of growth of population for the last ten years; Number of working places in proportion to total population of the municipality
2 primary and secondary (compulsory) education	Number of school children	Ratio of population aged 5 to 14 to total population
3 elders' care and home	Elders	Ratio of population aged 80 and over to total population
4 social aid and welfare	Population density	See above
5 roads and communication	Population density, Population growth, Economic activity	See above

The stability of the data used for assessing the needs has not been an issue in the reform. The analysis of the data over the past years showed that they were relatively stable over time and not subject to significant changes. Yet, they are normally only available with a delay of at least two years. Unlike the fiscal data which may vary significantly from one year to another (Dafflon and Mischler, 2007: 68), expenditure needs variables could be calculated for one year only. This has been the case in the reform project for reasons of time and collection costs; but for reasons of security and parallelism to revenue equalization, a three-year moving average will be used if the reform is accepted.

4.4 Weighting variables

Except in a situation where there is only one need variable and one disability factor (e.g. compulsory education and population between 5 and 14 years old), the problem of weighting the variables arises. If needs are treated separately for each function, each with its own equalization formula, the result is that weights are de facto given through the relative proportion of equalization transfers assessed for that particular function to the total amount of expenditure needs equalization.

With several functions and sometimes more than one disability factor per function arises the crucial question whether it is possible to combine different areas of needs into a synthesized measure of needs. Is it possible to aggregate the information about expenditure needs into a global or synthesised needs indicator? The methods of statistical aggregation of variables inherently resolve the challenge of weighting. However, the variables have to fulfil

certain requirements. If the correlations between the needs variables are low this approach will not lead to satisfactory results. In this case, the weighting through purely statistical transformation will not be possible and the variables need to be made comparable in other ways.

If it is possible to assess the expenditure needs in absolute terms, the monetary values in different policy areas may be summed up to determine the net value of expenditure needs. On the one hand, this proceeding is possible for the RCA and the RES where such data is provided by the method. On the other hand, the ad hoc variable approach and the statistical variable aggregation cannot synthesize the expenditure needs from different policy areas since they cannot provide absolute measures of needs.

What if there is more than one plausible needs variable? The ad hoc variables and the RES approaches face this challenge. It is evident that even equal weighting of the variables already requires some form of justification. Again, political priorities may be important in practice for a rough judgement with regard to the weighting. Another possibility is the weighting of the criteria according the share of real local expenditures for a certain task. This approach allows the comparison of different fields of public expenditures (e.g. primary education and social welfare) in the aggregate local budgets. However, the problems of using passed real expenditures (local preferences, X-inefficiency and the fact that past local expenditures may contain residual amounts of the equalization system to-be-changed) also arise in the context of weighting.

Box 6 Reform project in the Canton of Fribourg: Weighting the variables

In the reform project, the weighting of five different ad hoc variables [(i) population density of population, (ii) population growth, (iii) economic activity / working places, (iv) elders aged 80 and over, (v) pupils aged 5 to 14 in compulsory education] has been necessary in order to establish a synthesized needs indicator to apprehend globally the needs of each municipality. However, the indicator captures only relative needs and is not able to determine an absolute measure of expenditure needs in monetary units.

Because of the low and for some indicators even negative correlation, an aggregation of the variables applying the principle component analysis is not an option.

Correlation Matrix of the utilized ad hoc variables of expenditure needs

	density	Population growth	jobs	elders	pupils
Density	1				
Population growth	0.131	1			
Jobs	0.379	-0.021	1		
Elders	-0.027	0.001	0.044	1	
pupils	-0.095	0.060	-0.161	-0.313	1

Hence, the weighting of the five indicators by expenditure categories is the only alternative at hand. The variables have been attributed to functional expenditure categories of different degree of detail. Those variables with relatively close relation to a particular service provision (Box 5) use detailed expenditure information. For public schooling, the sum of the expenditures for kindergarten, compulsory education, school transportation and logopaedics serve as a basis for the weighting. If ad hoc variables are not directly linked to particular services they may be related to broader expenditure categories. An example is population density which has been associated with public order, roads and transportation and welfare aid. For the two functions "public order, roads and communication", the argument is that urban areas and communes with higher population density are deemed to support proportionally higher costs than rural or non urban areas. For the function "social aid and welfare", other disability factors have been explored, but could not be used (see Box 7). Population density is used as an approximate variable, with the hope that better data will be elaborated and soon accessible.

All in all, the experts panel proposed that the weighting of the ad hoc variables should be identical to the share of local public expenditures attributed to the relevant function (Dafflon and Mischler 2007: 202-204). The arguments are that these proportions (i) cannot be manipulated by individual municipalities; (2) they will adapt continously to the new expenditures priorities should the latter change. (3) In addition, in the future local expenditures accounting will reflect the true functional costs since indirect equalization is abandoned in the new system (equalization bonus or malus attached to specific local outlays are abandoned for a system of direct needs equalization).

Needs variable	***Expenditure function***	***Weight according to this function expenditure in the total local public expenditures accounting***
Population density	1 public order, security; 5 roads and communication 4 social aid and welfare	} 9.09 % 12,45 %
Population growth	1 public order, security; 5 roads and communication	} 9.09 %
Economic activity	1 public order, security; 5 roads and communication	} 9.09 %
Elders aged 80 and over	3 elders' care and home	13,32 %
Pupils aged 5 to 14	2 compulsory education	46,97 %

4.5 Availability of needs variables

The availability of the data is a serious challenge in practice,. Boex and Martinez-Vazquez (2007: 292) refer especially to emerging or developing countries which may face particularly high data restrictions. However, it is reasonable to say that data collection at the local level may be problematic everywhere, even in a developed federation such as Switzerland or the Swiss Cantons. The frequency of data collection may be problematic, for example when they rely on ten years census; at the local level, data may not be available for every municipality.

In some cases statistics rely on information provided by local jurisdictions which may cause incentive problems if the needs assessment is linked to some form of fiscal transfers. The transparency with regard to data collection in each municipality is crucial and should not be dismissed as a minor issue of practical implementation of needs assessment and equalization. For the small municipalities, privacy issues with regard to statistics in public health, social aid and welfare services may occur. If very few cases appear in the official statistics, for example for welfare recipients, individual cases will be directly identifiable – a situation which is not acceptable with regard to the legislation protecting individual privacy: therefore, even if accessible, the data can neither be published nor be used for the equalization policy. Hence, problems of local and regional governments are likely to be different in this respect.

Box 7 Reform project in the Canton of Fribourg: Availability of Needs Variables

The following three examples reveal difficulties in the availability of needs variables in the reform project of the Canton of Fribourg. They concern the periodicity of data collection, accuracy and restrictions for reason of privacy.

[1] Age groups of the population are a frequently utilized variable in the needs assessment of municipalities (for education expenditures and elders' healthcare, nursing and home, for example). However, in the canton of Fribourg the accuracy of this information is low since a full census of the resident population with age groups takes place only once in ten years (the last time in 2000). In the following years, population data are based on the "legal population". This information is given by the communes on an annual basis (December) according to their own register of habitants.

[2] For the needs assessment in education, following the cantonal policy the expert panel tried to integrate special individual situations: non-native speakers, immigrant children with different cultural and social background or disabled children (see Box 3). This was abandoned for the reason that the data delivered by the school districts were not totally accurate and could not be properly verified (exact number of beneficiaries, duration of remedial teaching, number and occupational time of itinerant teachers in charge of remedial teaching).

[3] The canton of Fribourg encountered problems of using data collected especially in the field of welfare aid: they are obtainable by institution, not on the base of the communal residence of the beneficiaries. Privacy concerns have been also an important restriction, particularly when there are only one or two beneficiaries in small communes so that they can be readily identified. This limits the scope of eligible local needs variables (Dafflon and Mischler, 2007: 192-194).

5 Funding the expenditure needs equalization

If the goal of the needs assessment is eventually the reduction of fiscal disparities in the way it has been addressed in section 2, with the aid of one of the methods presented in section 3, then the last and crucial challenge is the funding of the equalization transfers. The two core questions are: how much and who pays?

5.1 How much expenditure equalization?

The needs assessment is either able to determine relative or absolute expenditure needs. The former compares the position of LGs with regard to an index or another explicative variable, whereas the latter is able to evaluate a monetary value for needs. In the case of relative needs it is not possible to determine how much transfer would be necessary to fully compensate for the expenditure needs disparities. Hence, no economic policy statement about the amount of necessary transfers is possible: it is a political decision about inter-communal solidarity.

If the needs assessment allows a statement about absolute expenditure needs disparities the equalization policy may be directly targeted at reducing the resulting needs values. Depending on whether the measure of needs encompasses one or several functions, these values may also be used in particular needs equalization programs.[10]

[10] At the aggregate level, some authors suggest that a measure of resource capacity may be synthesized with the needs assessment in order to provide a broad measure of fiscal comfort such as the needs-capacity gap (Tannenwald, 1999). Based on past experiences and case studies, other authors consider that it would be judicious to separate needs equalization from revenue equalization. Various reasons are given. For the canton of Fribourg, see Dafflon and Mischler, 2007: 158-163 and 215; for the reform project at the federal level, Dafflon 1995. In the Canadian case, expenditure needs equalization was first discussed separately, then abandoned: see Groupe d'experts sur la péréquation et la formule de financement des territories, 2006, annexe 3: 88-91.

As the previous sections have highlighted, the numerous challenges of needs assessment that have been identified will therefore affect equalization too. It remains an open question whether it is not more judicious to use an approximate form of needs assessment instead of pretending that a precise absolute needs assessment will be an indisputable benchmark for the equalization transfers. Besides the fact that the absolute results depend (i) on the chosen method (RES or RCA ?) and (ii) on the availability, periodicity and accuracy of the data expressing the needs variables, other economic policy dilemmas arise. First, since the distinction between local expenditure choices, X-inefficiencies and true disparities is difficult (section 2), full equalization may give to LGs a false signal that there is no financial (local tax) limit to their own fiscal choices and inhibit LGs to make any progress in management to reduce X-inefficiencies. Second, with full equalization of genuine expenditure needs disparities, there would be no incentive for LGs to adopt in the long run development policies knowing that these disparities will be automatically compensated.

Box 8 Reform project in the canton of Fribourg: Applying RES and RCA for compulsory education

Applying RES and RCA methods for compulsory education provides a good example of the problematic aspects of competing needs assessments. The RCA and the RES approach are both able to determine an absolute measure of expenditure needs and also an index of relative needs comparing municipalities one to the others. In the case of the 168 municipalities in the Canton of Fribourg the same data were available for both methods. The application of RCA and RES showed that the results are likely to vary although the two methods pretend to measure the same thing (Mischler, 2007: 145-150). The differences arise with regard to the relative position of the municipalities and also with respect to the hypothetical amount of transfers needed in order to compensate the expenditure needs in municipalities with higher than the average absolute needs. Total compensation of needs according to the RCA-approach costs CHF 7.631 million whereas the RES-approach triggers transfers of CHF 18.671 million to attain the same goal!

The transfers according to the two approaches do not correspond either at the municipal level. Some of them receive e.g. transfers under one approach but not under the other or vice versa. The number of recipients is far larger under the RES-Approach. A paired t-test and also a Wilcoxon signed-rank test confirmed this observation by rejecting the hypotheses of identical mean of the two relative measures of the two indices.

Since there is no exogenous benchmark for the needs assessment and it is impossible to prefer one method over the other, the question of the funding of expenditure equalization needs to be answered within the framework of one single assessment method. Hence, overcompensation and negative incentives due to this form of expenditure equalization cannot be ruled out completely. The difference in the total funding for the two methods may also induce strategic behaviours from a financial and budgetary point of view. With limited money at disposition, one would favour the RCA approach, which costs less but gives the impression of a hundred percent funding, rather than the RES approach which, for the same amount, offers a mere 41 percent funding. Thus RCA and RES approaches are not discussed on the basis of their own respective technical and equalizing merits, but the result is pre-empted by budgetary considerations.

5.2 Who pays: vertical versus horizontal equalizing transfers?

The funding of equalization is hardly addressed in the economic literature since it is a typical question of practical implementation. However, the distinction between horizontal and vertical equalization which describes the formal transfer direction between the jurisdictions of the same or different levels of government have been widely acknowledged (Dafflon and Tóth, 2003: 42). In vertical equalization the higher government level provides the funding whereas the financing of a horizontal scheme is assumed by LGs which are relatively better off than other LGs of the same level. Horizontal equalization is typically applied in a system which seeks to reduce the fiscal disparities with regard to resource capacity. In these "Robin

Hood" systems of solidarity, high-capacity LGs directly transfer public revenues to an equalization fund serving low capacity LGs.

Horizontal equalization is less conceivable as far as expenditure needs equalization is concerned (Dafflon, 2007: 370-371). This would imply that LGs with relatively low needs and costs of service provision accept a higher tax-price which allows subsidizing other LGs with relatively high expenditure needs. This would distort the relative local tax prices of public services and result in allocative inefficiencies.[11] Other arguments against horizontal expenditure equalization are:

- Many local public services are financed through user charges. If the local "price" does not reflect the benefit from a local public good anymore, the market-like mechanism will be distorted. Consumers will face false price signals.
- Even in an entirely centralized system, LGs will face different costs of service provision (as it is the case in the private sector too; Oakland, 1994). Therefore, horizontal expenditure equalization is not necessary to achieve the equity goal of the transfers.
- When the difference between local choices, X-inefficiencies and genuine disparities is not clear, LGs might indulge in strategic behaviour with the aim of placing themselves in a more favourable equalizing position (in this case, higher costs and more needs).

The funding of equalization may be fixed in different institutional settings. This may be achieved through annual negotiations, multi-year agreements on the funding, or even in a constitutionally defined stetting. This may be either a result of standard procedure of the legislative or the executive branch of government, a special forum of negotiations for the different stakeholders of the equalization process, or an evaluation of a technocratic and independent agency. A wide range of approaches seem to work in practice in different countries around the world. Yet, these systems should be able to provide a stable and predictable outcome of the transfer system. For the same reasons as the smoothing of the data with respect to the needs assessment, the funding should encourage stability-oriented local fiscal policies (Boadway and Hayashi, 2004). Therefore, a constitutionally fixed transfer program is preferable to annual negotiations of the funding. The same reasoning than for revenue capacity equalization applies (Dafflon and Vaillancourt, 2003: 399). The system of expenditure needs equalization should be predictable for the concerned LGs.

Box 9 Reform project in the canton of Fribourg: who pays how much ?

The reform project distinguishes between revenue equalization and expenditure needs equalization (Box 1). Revenue equalization is based on a RTS for the eight more important tax sources at the local level (95 percent of tax sources are thus taken into consideration). It is funded by the communes with higher than average tax potential for a total amount which equals the equalizing incidences of the present system (approximately 1,6 % of the total eight local tax sources). This proportion is fixed in the equalization law so that funding is not questioned each autumn within the budget procedure: it will be a mandatory budget item. Modifying this percentage will necessitate a parliamentary debate to amend the equalization law, a debate which has to take place during a specific session, fixed in advance, which cannot be the one when the next year budget is discussed.

Since expenditure needs equalization is based on the ad hoc method for five functions, disparities in the LGs' position is relative, expressed by a synthetic index of needs. The amount of funding cannot be derived from the method; it has to be politically decided. The reform project proposes to fund it vertically, that is exclusively by

[11] Note that the same arguments have been used against vertical expenditure needs equalization. However, there is a crucial difference in term of geographic equity: with vertical equalization, the burden of equalization falls on the whole community within the higher level of government (this includes the beneficiary jurisdictions in proportion to their tax resources) and not a selection of low-costs low-needs LGs.

a contribution of the Canton, for an amount which is exactly half that of the revenue equalization. Basically, the argument for this proposal is the same than for horizontal equalization:

(1) the funding must be fixed within the Parliamentary debate on equalization and NOT each year in an ad hoc manner during the budget discussion;
(2) the present proportions have been negotiated on a joint cantonal-local committee; with these proportions written in the equalization law, the communes protect them against a change decided unilaterally by the cantonal Parliament for sheer financial reasons in the annual budgets (in particular, the constitutional requirement of a balanced current budget);
(3) The funding of the two equalization funds should be predictable so that the communes may engage in the medium term financial planning of their activities and investment budget.

6 Conclusion

Equalization of expenditure needs at the local level is a delicate issue. The following aspects need to be considered with regard to practical implementation:

- There has to be a political consensus about the local functions, thus the expenditure needs which are subject of any equalization effort. The notion of fiscal disparities is not sufficiently clear cut in order to deduce the areas where the needs assessment should apply and whether there is a rationale for equalization transfers at all. This requirement applies either for minimum standards or for needs and cost measures.
- The needs assessment should not be directly manipulable by local governments and neutral with regard to other local government reform, such as the territorial reorganisation of LGs or a re-assessment of functions between the local and regional levels of government. The selection of needs variables and the incentives caused by the transfers must not alter the incentives for LGs to improve their own situation e.g. by collaborating for certain service provisions or improving public sector management.
- The methods of needs assessment may produce varying results and cannot be easily compared. Each method requires critical assumptions about the relevant needs variables. Selection, availability, weighting, smoothing etc. may be difficult on purely technical grounds. The assessment is essentially driven by the needs variables. It is thus important to distinguish between technical, statistical difficulties and step-by-step economic policy choices in the process of organising equalization. Economic policy choice must be jointly discussed by partners (canton and communes) and not simply fixed by expert panel.
- An objective determination of the necessary equalization transfers is not possible on this basis. An undisputable benchmark for the amount of expenditure needs equalization transfers is not available under these conditions. Political choices are inevitable: economic experts must simply facilitate these choices in a transparent and methodological manner in providing a policy grammar that exclude incoherent, arbitrary and ad hoc decision. Economic efficiency in this matter is efficiency in the process, not in the result.

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