



IMF Working Paper

Intergovernmental Grants Systems and Management: Applications of a General Framework to Indonesia

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Fiscal Affairs Department

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Abstract

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Intergovernmental equalization grants have been described as “the glue that holds a nation together.” Getting the grants system right is critical to countries as they decentralize. This paper illustrates general principles with an example based on Indonesia in 2000. A general grant should be used to supplement own revenues and to finance local service provision where there are no central mandates. The special needs of backward regions would be better provided for by specific grants. Specific grants need to be taken into account in the general grants scheme.

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| | Contents | Page |
|------------------|--|------|
| I. | Grants System | 3 |
| | A. The Indonesian Context | 3 |
| | B. Key Issues in Establishing a General-Purpose Grants System | 6 |
| | C. Organization and Procedures | 8 |
| | D. Information and Data Requirements | 10 |
| | E. Assessment Models and Formulas | 12 |
| II. | An Equalization Transfer System: Model and Simulation | 14 |
| | A. Formulas for Equalization Transfers..... | 14 |
| | B. Application to Indonesia | 17 |
| | C. Does the Transfer System Equalize?..... | 23 |
| | D. Steps Toward an Effective Equalization Model | 26 |
| Tables | | |
| 1. | Pre-Reform Central-Regional Grants | 4 |
| 2. | Provincial Expenditure, by Category, 1997/1998 | 20 |
| 3. | Provincial Governments: Estimation of Expenditure Needs, 1999/2000 | 24 |
| 4. | Provincial Governments: Expenditure Needs, Revenue Capacities, and Transfers, 1999/2000 | 25 |
| 5. | District-Level Balance Sheet | 27 |
| Figures | | |
| 1. | Equalization of a New Transfer System | 26 |
| References | | 30 |

I. GRANTS SYSTEM

In this paper, we develop general principles for the design and application of intergovernmental grants systems⁵ and illustrate with an application to the reform of intergovernmental fiscal relations initiated in Indonesia in 1999/2000.⁶ Once one of the most centralized countries in the world, following enactment of the decentralization legislation, Indonesia assigned most expenditure functions to around 350 districts. In 2000, own-revenue generation capabilities of district-level governments were negligible.

In Indonesia, the main sources of finance at the district level are shared revenues, including the property tax (albeit with rates set by the center) and natural resource revenues. The latter accrue mainly to producing districts and provinces, most of which are already among the better-off regions. The net effects of the new revenue-sharing arrangements, that will include oil and gas revenues, will be to exacerbate existing horizontal imbalances across Indonesian provinces and districts. However, a system of “equalization” grants is envisaged in the legislation to ensure that regions have the capability to provide public services at similar levels of revenue effort. This paper illustrates how such a grant system could be designed and simulates its effects.

A. The Indonesian Context

Intergovernmental grants or transfers form the main means of financing local government in Indonesia. The 1999 law requires the central government to transfer at least 25 percent of domestic expenditure revenues through the general grant or, on the basis of FY1999/2000 figures, some Rp 36 trillion, exceeding amounts (roughly Rp 4-5 trillion) in shared-resource revenues. It is also considerably larger than the previous general transfers (Subsidi Daira Otonom (SDOs) and Regional Development Funds—see Table 1. Moreover, despite the consolidation of many specific grants into the development funds for the regions and villages, these grants mainly operated as specific grants. Only part of the development funds could be considered to be genuine general-purpose grants.

Because of the legal obligation to transfer at least 25 percent of revenues to lower levels of government, and the need to contain the overall deficit, the central government faced difficult trade-offs. A critical decision is whether the general grant should be used for capital, as well as recurrent spending. Another decision concerns the role of earmarked grant programs in light of the decentralization process. Central recurrent expenditures are expected to be cut because of functions being devolved to lower levels and to ensure that the decentralization

⁵ See Ahmad (1997).

⁶ Law 22/99 of 1999 (on Regional Autonomy) and Law 25/99 of 1999 (on Fiscal Balance) set out the main axes of the reform of Indonesian intergovernmental fiscal relations.

process does not increase general government deficits. Also, the central government needs to decide on the scope of its own centrally managed capital programs.

Table 1. Pre-Reform Central-Regional Grants

| Grant Program | FY 1999/2000 Budget |
|--|---------------------|
| SDO grant | 19,498 |
| Development fund for villages | 811 |
| Development fund for regencies | 5,775 |
| Development fund for provinces | 3,183 |
| Total transfer from central government | 29,207 |

Source: BAPPENAS.

In practice, a number of types of grants will be needed in Indonesia, involving a combination of general and some specific-purpose transfers.

General grants

A general grant should be used to supplement own revenues and to finance local-service provision where this does not affect neighboring jurisdictions. Central mandates or requirements might be better financed by special-purpose grants, and, in the past, Indonesia relied mainly on such grants. However, given the devolution process, many of these grants could be rolled into a general-purpose grant. Such special-purpose grants include:

- **At the district level:** grants for basic education and preventive health care, district road development, basic infrastructure, district markets, and small-scale industry development, and the block grant for subordinate area development.
- **At the provincial level:** grants for provincial road improvement, development of regional art and culture, and rural extension services.

The general grant should be able to cover working capital requirements and recurrent needs. The grant should also be sufficient to cover the minimum service requirements as defined by central government.

General grants are less suited for financing the needs of backward regions that, for instance, lack school buildings or roads. Such special needs would be better covered by specific grants. Some countries—for example, India—have a separate grants program for the poorest states, because their needs are substantially different from those of the average state covered by the

general grant scheme—but there have been difficulties in monitoring such grants (see Rao, 2002).

Given the state of the statistical system in Indonesia in the early 1990s, a grant formula could be based on only a fairly broad approximation of expenditure needs of the regions. Therefore, if many expenditure functions are to be covered by the general grant, and if this grant is to cover regions with widely different needs for both revenue and expenditures, there is a risk of a mismatch between actual needs and grant allocation. With the limited revenue-raising possibilities of the regional governments,⁷ the central government could be forced to continue to foot the bill for some functions in some regions, exacerbating general government deficits.

As the general grant is phased in, specific grants may, at least in the short run, be needed to cover the costs of staff transferred to district-level control, for functions such as education and health care. A specific formulation for the phase-in of the general-purpose grant may be needed and is developed below.

Specific grants

Some specific grants that were previously provided to provinces could perhaps be better provided to districts, if at all, because they are aimed at financing district level functions. Among those are special-purpose grants for elementary school improvements and health facilities.

If a central government feels strongly about minimum standards of service delivery (e.g., in the area of education, health, and environmental protection), it could issue regulations and also provide financial incentives by means of a specific grant. However, the government should be wary of too many specific grants or too stringent a set of conditions, not only because of the difficulty in effective monitoring of such grants, but also because they can easily become an excuse for line ministries to hold on to the power they would lose in the course of decentralization. Further, unfunded mandates can undermine a system of responsible local government finance.

Specific grants to regions issued in pursuance of central objectives, for example, for household support, may not be appropriate. Local compensation to individuals may be needed to offset centrally determined policy changes. In Indonesia, for example, the energy price changes were centrally determined, and the center also determined the target groups for compensation. In this case, there would appear to be little justification for requiring local

⁷ The term regional government is used to cover both district governments and provinces.

co-financing (either in terms of defraying administrative costs, or the benefits provided). To ensure effective governance, it is thus critical that the design of the compensation mechanism take account of diverging interests and include adequate incentives for local governments.⁸

Specific grants that meet part of the expenditure needs assessed by the general allocation formula should best be taken into account in the general grants scheme as a source of revenue. This requires that these special grants be determined before the general grants allocation is made.

B. Key Issues in Establishing a General-Purpose Grants System

One of the key questions for the design of a grants mechanism is the **operation of a general-purpose or equalization grants system**.

The case for fiscal equalization is based on the simple proposition that all people of a nation are entitled to a reasonably similar standard of government services so that people in remote regions can have access to, say, educational opportunities and healthcare at a standard similar to those in the larger cities. Indeed, one of the objectives of the Fiscal Balance Law is to lessen differences between regions in their ability to finance services for which they are to have responsibility.

There are a number of important issues to be decided in designing an equalization system. First, a decision is needed on the **quantum of funds to be devoted to equalization grants**. Should the size of the transfer be specified in national legislation? The certainty entailed for local governments comes at the cost of macroeconomic rigidity, as in a number of Latin American countries. Some countries, such as Australia, have abandoned the legislated floor-on-transfers after only a few years, because it did not allow sufficient flexibility in national fiscal policy. A different approach has been developed by Canada, which specifies an upper limit as a percentage of national GDP for the general-purpose grants.

An issue related to the size of the transfer is the **scope of equalization** in terms of expenditure responsibilities. Is it to be confined to recurrent expenditures or will it also take some account of capital needs? In case of the latter, it is generally not wise to take the need for major capital works into account, since these can create distortions in the annual distribution of capacities to provide recurrent services and are best approached on a broader basis, perhaps through a nationwide development budget. But equalization can well extend to ongoing and minor capital works programs, such as for schools and local roads.

A key question will be whether to address **absolute needs or relative needs**. In many countries, equalization is a relative process. In Australia, for example, the capacities of the states are equalized to the average level (per capita) of service provision, assuming the

⁸ For a more detailed discussion of the specific issues involved, see Ahmad and Leruth (2000).

application of average effort to raise revenue. It would, however, be possible to equalize to an absolute or minimum standard (such as the provision of nine years of education), which all regions should achieve. But it is usually more practical to use special-purpose grants to raise standards where they fall short of national minima.

This raises the question of **accountability**. Untied grants enable different units of government at the same level to develop different methods of service provision most suited to their cultural, economic, and environmental circumstances and the aspirations of their people. There may be a question whether, in a country such as Indonesia, there can be adequate accountability for the equalization transfers at the district level. Local elections, proper expenditure management, and monitoring would help in the process.

In most countries, some degree of **flexibility** in local service provision is considered necessary. For example, for small regions, it may well be desirable to give them scope for cooperative efforts with neighboring jurisdictions in service provision. A very small district could also contract out some services to neighboring regions or to another level of government (or the nongovernmental or private sector).

The equalization systems of developed countries generally rely on the identification and estimation of **disabilities** (influences beyond a government's control that affect what it needs to spend on providing services or can raise from a particular kind of taxation). Australia has developed a very elaborate system of quantifying disabilities for both expenditures and (implicitly, through the estimation of revenue bases) revenues, but even then, considerable judgment is still required. Most developing countries, however, lack the statistical base for such complex methods. Particularly in the early stages of development of an equalization system, the use of a few simple **indicators** (such as area, or the proportions of relevant populations, like school age children or the elderly) is likely to be all that is feasible. Such systems can be elaborated over time as databases, administrative capabilities, and technical expertise are developed.

It is unusual, and not generally very helpful, to specify in legislation, the variables that are to be used for general-purpose transfers. If such guidelines are to be provided, they should be specified in only the most general terms. The agency doing the task should develop its assessment methods as it gains experience and confidence in the information available to it.

Whatever approach is used, it is vital to maintain the **neutrality** of the system between the units of government. **It is fatal to confidence in the system if governments can manipulate it to their own advantage.** This means, among other things (see below), that the indicators to be used must be free from government influence. Where this is not considered to be feasible, either to maintain stability (such as the use in China of the number of public servants in each region) or for other reasons, a policy-neutral system should be developed.

C. Organization and Procedures

A **system of determining and administering the equalization grants** needs to be devised in which the recipient subnational governments and outside observers (such as interested academics) can have confidence.

There are many approaches to this issue around the world. In a number of countries, a **government department** (often the finance ministry, as in Canada and China) operates the general-purpose grants equalization system. This can work quite well, provided that there is confidence in the integrity of the department, that its methods are fully transparent, and that outcomes are seen as free from political influence. It is helpful if the decision-makers are known and are not anonymous civil servants. There is a question to be answered here about the status of submissions on equalization issues that are made by central government agencies, and how these are treated in comparison with those of recipient governments or associations of recipient governments. It may or may not be considered appropriate to give higher status to central government submissions, but if not, the appearance of impartiality under a departmental structure may be hard to achieve. If equal status is to be given to all submissions, the establishment of an independent authority is an advantage.

The Indonesian Governance Law specifies that the secretariat operating the equalization system should do so with integrity, expertise, and independence. This objective may be easier to achieve through an **independent agency, outside the departmental structures**. Such an agency, the Commonwealth Grants Commission (CGC), is used in Australia. In South Africa, the Financial and Fiscal Commission (FFC), the agency administering the grants system, has constitutional status, and this may be helpful in some circumstances. This is not the case in Australia where the CGC, with 66 years of experience, is accepted as both impartial and professional.

If there is to be some sort of grants commission, the first question relates to **membership**. Indonesia's legislation indicates that this will be a matter for presidential decree. This should specify how many members there are to be. It should also decide whether districts or provinces would nominate members, and whether the commission is to be a standing body or to be replaced (as in India) after a fixed-term. While practices vary widely, some conclusions can be drawn for Indonesia.

- (i) Large commissions, particularly if their members are part-time, are likely to operate in a different way from small commissions. South Africa's FFC has around 20 members, but some are full time, and there is only a relatively small secretariat. Australia's CGC has only four members (it has had as few as three in the past), but meets more often and has a larger secretariat of up to 50. Decision-making is likely to be easier with a small commission and, for this reason, the secretariat staff of the larger commission may have greater influence on outcomes.
- (ii) There is no reason why individual governments, levels of government, or associations should not nominate grants commissioners, provided that those nominated have the

required skills, are of sufficient standing, and are broadly acceptable to both the granting and recipient governments. Governments may, indeed, have more confidence in a commission if they have some say in its membership. But it is obviously essential that commissioners are not beholden to any individual government (particularly recipient governments).

- (iii) There are considerable advantages in a standing commission over a term commission. The experience of India, where not only the commission but also its secretariat is replaced after each inquiry (usually every five years), leading to each successive commission reinventing the wheel is to be avoided.

Perhaps even more important than these sorts of questions are the operating practices of the grants authority, whether a department or a commission. It would be hard to overstate the need to give recipient governments full opportunity to make their problems and views known or for transparency in both operations and outputs. In its full-scale reviews (with reports each five years or so), the CGC:

- (i) provides discussion papers simultaneously to all state governments and the national Treasury, and ensures that all responses and other submissions are distributed to all parties;
- (ii) provides for successive rounds of submissions from the states and the national Treasury so that each has full opportunity to comment on the arguments of others;
- (iii) holds conferences on functional or more general issues, which allow state and national government experts in such areas as education and health to exchange views with each other and the CGC;
- (iv) visits each state in turn to conduct discussions with officials in their capital cities and in city and country areas (including, often, very remote areas) to talk with service providers at schools, hospitals, police stations, goals, and so on to get their “on the ground” views on service provision and cost issues;
- (v) makes shorter follow-up visits to state capitals later in the review period to allow states to provide supplementary views;
- (vi) sends out its reports simultaneously to all governments;
- (vii) supplements its reports, as soon as possible after their release, with extensive working papers providing full details of CGC decisions and the reasons for them, and a program enabling those that are interested to make alternative calculations; and
- (viii) opens conferences to the public and provides reports and extracts of working papers free of charge to researchers (though charges have recently been introduced for those using CGC materials for profit).

It is worth noting that even in the preparation of its more routine annual update reports, the CGC provides an opportunity for the parties to comment on how it proposes to treat changes in state administrative structures and financial relations between the national government and the states (e.g., the transfer of functions from one level to another).

Indonesia's grants system will have little chance of acceptance if there is a belief that it has simply been imposed from the top. Clearly, it will take much time and much patient consultation to build up confidence in the system.

D. Information and Data Requirements

The assessments on which a grants commission might recommend a distribution used for the grant allocations can be as narrow or as extensive as the available data permits.⁹ In Australia, the assessments now cover all recurrent expenditures and revenue sources of the states, but such a wide scope is not essential. In China, for example, where the system is still being developed, the range of assessments is being expanded and is yet far from complete in its coverage. As long as the intention to expand is indicated and the assessments that are done are not thought to take the distribution away from what might be the end result, taking short-cuts is an acceptable and often necessary procedure.

The data required to make a grant distribution system are of two types—those relating to the accounts of the recipient units of government, and those relating to the assessments of expenditure needs and revenue capacities. Unless absolutely necessary, it is better if the accounting data of the recipient governments are not used to influence the assessments, except to the extent that they are inputs into decisions about current average levels of service or revenue raising. As noted earlier, it is important to avoid “grant design inefficiencies” under which recipient governments can influence the size of their grant funding by changing their policies.

Data used in assessments can be from any source as long as they can be truly used to measure either differences in revenue bases, differences in the possible demand for services, or differences in the unit costs of providing services. However, there are several attributes apart from their relevance to the assessments that make some data more appropriate than others for the task. They are:

- That data should be **available for each unit of government**. If not, it must be possible to use the data for one region as also being an appropriate indicator of need in others. This is more often possible when quantifying differences in unit cost, than differences in demand or revenue capacities.

⁹ See also Rye and Searle (1997).

- That data should be **comparable across units of government**. This is important to the end result and is usually a very time consuming task. Lack of comparability and inaccuracies in the data can have major distributional consequences.
- That data should preferably be **sourced to an independent authority**. This is important to minimize “grant design inefficiencies” and most countries use their central statistical agencies extensively as a source of these data. The Indonesian Central Statistical Bureau has many good data sets available.
- That data should be known to be **updated annually or on some other known frequency**, such as at the time of a population census, data from which will usually be a major source of information. It is important that the system not be subject to either constant changes due to data factors or changes in assessment methods. Stability of data sources usually gives greater stability of results.

The data used for revenue assessments will often need to be tailored to the legislative base of the revenue source being assessed. In evaluating local tax bases, the actual value of land, based on standard valuations, can be collected. It might be acceptable in such cases to derive the data from the recipient governments if it is known to be sufficiently comparable and free of manipulation.

In some cases, direct measures of a revenue base are not available and general measures of economic activity, such as GDP per capita, household income, or value added by an industry sometimes need to be used. Such data are often unreliable at anything less than the “national” level and should be looked at closely for comparability before being used at a provincial or regional level.

When looking at data on which to base expenditure needs assessments, those relating to differences in demand are much more likely to be available than those relating to unit cost differences. Influences on regions’ unit costs differ widely and are difficult to measure. Data on demand for services is often used as a management tool, and similarities between regions in their management task will often create similarities in the data they collect. Even on the demand side, however, it will be easier to get data on raw measures of demand, such as the number of school age children, than it will be to get information on the extent to which different types of students in the appropriate age group might have different demand patterns. It is easy enough to show that old people use more hospital services per capita than the average, and to count the relative number of old people in each region’s population, but much harder to decide what weighting to use when calculating their relative impact on demand for services.

Before the assessments are finalized, it is beneficial to give them a “reality” check to make sure they are sufficiently robust to be accepted in the regions. It is particularly important here to see that the assessments of those regions that are to be detrimentally affected can be justified. The best way to do this reality check is to have policy information on at least the

big issues in each function and know why a region's per capita expenditure or revenue might be expected to be greater or less than in other regions. It is particularly important, where relevant, to be able to show that a region has particularly a low or high figure because of a different policy approach. Making such information available is part of the transparency of the system that is vital to its acceptance. In Australia, the information on policy differences was originally collected by the CGC because no other government agency had a need for it. However, it is now seen as critical to improving national public sector efficiency and is collected by the Productivity Commission.

Australian states now habitually look at the comparable financial and nonfinancial data when preparing their budgets. Central government agencies responsible for distributing special-purpose funds between the states also use it.

E. Assessment Models and Formulas

The first question faced by many designers of assessment-based grants distribution systems is whether the assessments are to cover both **revenue capacities and expenditure needs**. In countries that have large areas with widely varying costs of providing services, it is better to include both. This is the approach taken by Australia. In Indonesia, the Fiscal Balance Law also requires that expenditure needs as well as revenue capacities be assessed.

The question of the **standard** to which the regions are to be equalized is also very important. In Canada, because the provinces have greatly different per capita capacities to raise oil revenue, the revenue standard is the average of the middle provinces, and thus the rich provinces keep the benefit of some of their "excess" capacity. This works well for Canada, but it means that equalization is only partial, and that some provinces will always be able to provide better services or have lower taxes than others. Such an outcome is likely in Indonesia if the oil and gas rich regions are to share in the resource revenues as outlined in the Law.

The planned revenue sharing in Indonesia could create even more inequalities in revenue capacity than existed prior to the reforms in 2000. Unless the oil rich provinces are found to have very high expenditure needs, the **amount of funds available for the general allocation distribution will probably not be sufficient to overcome the revenue capacity differences, and "negative" grants will be indicated**. Such an outcome would indicate that these provinces were receiving too much funding from revenue sharing alone and that some of the resource-based revenue should be repaid. This would no doubt be politically unacceptable.

A more practical approach would be to leave the excess with the recipient provinces (as in Canada), but **begin to phase it out over time**, either by changing the revenue sharing arrangements or by increasing the funds available for the general allocation distribution.

While some **phasing-in arrangement may well be necessary**, it would be highly desirable to indicate to the regions that the longer-term objective is to equalize to the national average.

They would then know that their levels of funding are likely to be changed in relative terms over a given period, and could plan and budget accordingly.

There are **several approaches** that can be taken to measuring the differences between regions in revenue capacity and expenditure needs. The appropriateness of using them changes as a grants system matures, and the data and other information systems improve.

At the extremes, the assessments can be based on either **per capita differences (PCD)** or **equal per capita (EPC)** methods. The PCD approach assumes that all the differences in per capita expenditure or revenue are due to differences in need and the actual levels of expenditure or revenue can be used as indicators of need. In applying EPC, the assumption is that all the differences in per capita expenditure or revenue are due to policy differences and that the assessment of each region's needs should be the same in per capita terms. In different circumstances, either of these approaches may be appropriate.

In the early stages of a system's implementation, it is probably better to have all functions included in the equalization budget and, where necessary, make a simple assessment, such as PCD or EPC, rather than leave some functions out of the process. If it is likely that a new system will result in dramatic redistribution that will be difficult for regions to manage, it is better to err on the side of PCD assessments because these tend to be similar to the pre-existing distribution. In these circumstances, however, it is also probably beneficial to discuss with regions the increase in the degree of equalization over time.

Only part of the difference between regions' levels of expenditure and revenue is due to disabilities or influences beyond regions' control. Assessments to identify these disabilities are demanding of data and time, but result in a more equitable distribution, and are also likely to be more acceptable than PCD or EPC to the regions. The **factor assessment method (FAM)** used in Australia is based on a standard level of services, adjusted by a region's demand for services and the unit cost of providing services. Similarly for revenue assessments, a national average per capita revenue given average rates of tax is adjusted by the region's revenue base variation in per capita terms.

Obviously, judgment is used for all assessments, even those involving the PCD and EPC approaches. This is not a concern as long as the recipient governments have confidence in those making the judgments, and the results of the judgments are made sufficiently transparent. The important thing is to use whatever data are available and to open the results to discussion to see whether better data can be provided.

II. AN EQUALIZATION TRANSFER SYSTEM: MODEL AND SIMULATION

This section discusses the technical steps needed to develop an equalization transfer model for Indonesia, and presents some simulation results using provincial level data.¹⁰ It first provides the general framework of the transfer formula, which aims to ensure that provinces with similar levels of revenue capacity are able to provide similar levels of public services. It then details the procedure for estimating revenue capacities and expenditure needs of 26 provincial governments (excluding Jakarta). The exercise results in a set of hypothetical transfers from the center to the provinces using the parameters of the 1999/2000 budget. These results are then compared with the actual transfers made to the provinces (based on 1997/98 data) to assess the formula's ability to reduce regional disparities.

The method used to calculate the provincial revenue capacities and expenditure needs in this section may be considered overly simplified and the quality of data can certainly be improved. It should be noted, however, that the exercise carried out here is only intended to provide an illustrative example of how an equalization transfer formula (for general allocations to provinces or districts) with a minimum data requirement can be constructed, rather than providing the exact model for Indonesia. The following sections discuss the methodology and the results. The final section provides some suggestions on the short- and medium-term strategy to improve the equalization model.

A. Formulas for Equalization Transfers

Roughly speaking, there are four possible types of formulas for equalization transfers:

Type A: *Formulas that consider not only the equalization of revenue capacities, but also adjust for the expenditure needs of different regions.* Applications of this type of formula can be found in Australia, Germany, Japan, Korea, and the United Kingdom. Such formulas are demanding in terms of data requirements, particularly those on expenditure needs.

A typical formula of this type is as follows:

$$TR_i = N_i - C_i - OTR_i \quad (1)$$

where N_i is the expenditure need of the i^{th} region, and C_i is the revenue capacity of the i^{th} region. $N_i - C_i$ measures the gap between the expenditure need and revenue capacity. OTR_i represents other transfers (e.g., specific purpose transfers) the i^{th} region receives from the center that are used to meet part of the expenditure needs assessed (by the model). This formula states that the central government transfer will fill the difference between each region's expenditure need and revenue capacity to ensure that a region with standard tax effort will be able to provide a standard level of public services.

¹⁰This exercise could be replicated using district-level data.

There is a question of how to match the sum of the entitlements ($\sum_i TR_i$) calculated from the above formula with the available pool for transfers. The pool can either be larger or smaller than the total entitlement. A commonly used method is to adjust the size of the transfer proportionally according to the size of the pool. Let TT be the size of pool for transfers. Then the actual transfer to the i^{th} region is:

$$ATR_i = (TT / \sum_i TR_i) TR_i, \quad (2)$$

where ATR_i stands for actual transfer to the i^{th} region, and TR_i is calculated using equation (1).

Another way to match entitlements with funds available is to use a coefficient, α , to adjust the fiscal gap, $(N_i - C_i)$:

$$TR_i = \alpha(N_i - C_i) - OTR_i, \quad (3)$$

where α is chosen in such a way that $TT = \sum_i TR_i$. A variation of this method is to apply this coefficient to N_i , instead of $(N_i - C_i)$, that is,

$$TR_i = \alpha N_i - C_i - OTR_i, \quad (4)$$

where α is chosen in such a way that $TT = \sum_i TR_i$.

A third way to match entitlements with funds available is to include a “standard transfer” in the formula:

$$TR_i = ST_i + N_i - C_i - OTR_i, \quad (5)$$

where ST_i is the standard transfer to the i^{th} region. It is calculated by multiplying a standard amount of per capita transfer with the population in region i . The standard per capita transfer can be positive or negative, and its magnitude is determined in such a way that $TT = \sum_i TR_i$.

Type B: *Formulas that consider only the equalization of revenue capacities.* This model is used in Canada. This formulation has a relatively low data requirement, is easy to implement, but ignores potentially large differences in expenditure needs or cost variations across regions.

A typical formulation of this type (often called a representative tax system) is as follows:

$$TR_i = P_i(B/P - B_i/P_i)t, \quad (6)$$

where TR_i is the transfer from the center to the i^{th} region, P_i is the population of the i^{th} region, B_i is the tax base of the i^{th} region, P is the total population of the country, B is the total tax base of the country in terms of the tax relevant to the recipient level of government, and t is the country's average effective tax rate on the tax base. $B/P - B_i/P_i$ measures the gap between the national average per capita tax base and the i^{th} region's per capita tax base. This formula states

that the central government transfer will bring the revenue capacity of the below average region up to the national average.

In Canada, regions with below average capacities ($TR_i > 0$) receive transfers from the central government, and regions with above average capacities ($TR_i < 0$) receive no transfer but are not required to contribute to the pool for transfers. In Germany, the interstate equalization transfers are made directly across states—states with above average capacities contribute funds to a pool that is distributed to below average states.

In the Canadian variation of this formula, the national average B/P is replaced by the average of a group of regions, excluding oil-rich regions. The selection of this group can be used as an instrument by the central government to adjust the intensity of the equalization effort. If the central government selects a group that yields a group average lower than the national average, the transfer scheme becomes less than “full” equalization and requires a smaller pool of fiscal resources.¹¹

An equalization transfer scheme based on revenue capacities alone assumes that per capita expenditure needs of all the regions are the same. This is an oversimplification and may create a new source of regional disparity and tension in the nation if the costs of providing public services differ vastly across regions. However, if data on service demand cost differentials are not available, this formula may be a convenient option to consider.

Type C: *Formulas that distribute equalization transfers based on some “needs” indicators.* Revenue capacity is not considered in these formulas, often because such data are difficult to obtain. India uses this type of formula. There are varieties of indicators that can reflect the expenditure needs of regions, and the choices are very much dependent on the expenditure assignments and the government’s objectives. Typical indicators (often used in combination with weights) used to determine regions’ expenditure needs include: per capita income level; poverty incidence; unemployment rate; population density; area; infant mortality; life expectancy; school enrollment rate; infrastructure (e.g., length of roads and railways); other indicators of development level (e.g., electricity consumption and number of telephone lines).

Type D: *Formulas that distribute equalization transfers on an equal per capita basis.* Such formulas are used in Germany’s VAT sharing, and in a number of Indonesia’s general-purpose grants under Inpres. Compared to the above three types of transfers, an equal per capita transfer is least demanding in terms of data, but has relatively weak equalization effects.

¹¹ Full equalization is rarely, if ever achieved, but **cannot** be achieved when an adjusted average standard is applied.

A comparison of the four types of formulas

The Type A formula has the potential for full equalization. Compared with other types of formula, it is the most complex but most accurate in measuring horizontal fiscal resource needs, but is very data intensive. Types B and C each ignore a major aspect (capacity or need) of the horizontal equalization, and thus are less effective in addressing regional disparities. However, they require less data and may be appealing for countries that intend to start an equalization transfer system on an experimental basis. Type D is probably least effective in terms of equalization, but is also least demanding in terms of data.

B. Application to Indonesia

Data that are readily available and can potentially be made available for an Indonesian grants commission would permit the use of a simple version of a Type A formula. In the rest of this section, we will employ equation (3) as the equalization formula for simulation.

Measuring revenue capacities

This section discusses the methodologies for estimating local governments' revenue capacities (C_i). The next section will discuss the estimation of expenditure needs (N_i).

Revenue capacity is defined as the ability of a government to raise revenues from its own sources and revenue sharing arrangements. There are several ways to measure the revenue capacity of a subnational government. In many developed countries, relative revenue capacity is measured using data on major tax bases and standard (average) tax rates. This method measures the revenue capacity of a region by the revenue that could be raised in that region if the regional government taxes all the standard tax bases with the standard tax effort. The formula is as follows:

$$C_i = \sum_j B_{ij} * t_j, \quad (7)$$

where C_i is the i th region's tax capacity, B_{ij} is the i th region's j th tax base, and t_j is the standard (e.g., national average effective) tax rate on the j th tax base. It is important to apply the standard tax rate to the region's tax base rather than the region's own effective tax rate, in order to ensure that the regions with high tax efforts are not penalized and regions with low tax efforts are not rewarded. In other words, if the region's effective tax rates are higher than the national averages, the transfer it receives does not decrease as a result; if the region's effective tax rates are lower than the national average, the transfer it receives does not increase as a result. The "below-standard" level of tax effort is not "subsidized" by other governments. The "below-standard" level of tax effort is not "subsidized" by other governments.

Applying this method involves several steps:

Step 1: *Select the tax bases.* In practice, information on some tax bases may not be available or is costly to obtain. Therefore, instead of determining all the tax bases, revenue capacity is often measured using major tax bases as a proxy. In the case of Indonesia, at least in the short run, the vehicle tax, vehicle transfer tax, and land and building tax could be used to estimate provincial governments' revenue capacities, and the development tax, street lighting tax, land and building tax, and land rents could be used to estimate district governments' revenue capacities.¹²

Step 2: *Collect data on the selected tax bases.* One can use the previous year's (or several years' average) data on tax bases. In some cases tax bases (e.g., a property tax) may be assessed every few years since an annual assessment may be too costly. Some of these data may be readily available from various departments of the central or subnational governments. If the data are provided by subnational governments, it is important to have well-established rules on the reporting and auditing procedures, as well as penalties for false reporting.

Step 3: *Select the standard tax rates.* There are many different ways to calculate the standard tax rate for a given base. Examples include: (1) the effective tax rate for the whole country; (2) the arithmetic mean of all regions' effective tax rates; (3) the arithmetic mean of selected regions' effective tax rates.

Step 4: *Calculate revenue capacities using equation (7).*

The method described above requires detailed and accurate information on major tax bases, which may not be readily available in many countries, including Indonesia. In some countries, revenue capacities may be measured indirectly by employing some income or output indicators. Frequently used indicators include: (a) Gross Domestic Product (GDP) of the region; (b) the personal income (sum of all incomes received by the residents) or disposable personal income of the region; or (c) total retail sales of the region. Since Indonesian local governments do not derive income from any of the major tax bases (e.g., the VAT, sales tax, or income taxes), it is not justifiable to apply these proxy measures to estimate local revenue capacities. Better proxies for estimating Indonesia's local revenue capacities, given existing assignments, include gasoline or electricity consumption, and retail sales.

In the following simulation exercise, we use 1997/98 actual revenue collections as the basis for estimating provincial revenue capacities. We assume that each province's revenue capacity in 1999/2000 is proportional to its actual collection in 1997/98, and apply the estimated national average revenue growth rate to all provinces.

¹² Note that the main tax revenue at the district level is the land and property tax, which is not strictly under the control of district level governments at present. It is currently akin to shared revenue—which merely reduces the amount of equalization transfer, without leading to an incentive to improve local tax collection.

It is important to note, however, that ideally one should not use the local governments' actual revenue figures for past years to measure their revenue capacities. If actual figures are used, the transfer a local government receives from the center becomes largely a variable controlled by the subnational government's own tax effort. Local governments would thus have an incentive to lower collections from own-taxes in order to attract more transfers from the center—thus passing the burden of additional local expenditures to the center or other local jurisdictions.

In some countries, this system has encouraged subnational governments to shift budgetary revenues to incomes outside the budgetary system.¹³ Nevertheless, if a country has to develop an equalization transfer system before accurate information on tax bases becomes available, actual revenue collections is often the second best choice. China, in the first few years of implementation (1996/97) of the equalization transfer system, used actual revenue collection as a proxy for revenue capacity. Over the past two years, it has developed a better database on tax bases and applied more advanced methods of revenue capacity estimation, as described above.

Measuring expenditure needs

This section discusses a commonly used method to determine expenditure needs of subnational governments. The total expenditure of a subnational government is divided into many different categories, and for each category estimates are made for this government. The total expenditure need of a subnational government is the sum of the estimated needs for all these categories. Many countries, including the United Kingdom, Australia, Japan, and Korea, use this method.

In our exercise on Indonesia, the expenditure need of each province is broken down into five categories: education, health and social welfare, government administration, infrastructure, and economic development. These five categories are derived from consolidating the 20 sectors under the Indonesian economic classification. For each category, we develop a formula to estimate the expenditure needs of the provinces. The variables used in these formulas are considered the most important determinants of the demand for services and are those for which data are readily available, but do not try to take account of cost differences between regions.

The variables used to determine the needs under the five categories are: (1) **education**: number of school age children, average number of years of education; (2) **health and social welfare**: population, proportion of old age population, average life expectancy, infant mortality; (3) **government administration**: population, percentage of urban population; (4) **infrastructure**: length of local roads, share of poor roads in total length of local roads, population density; and (5) **economic development**: population, per capita GDP, poverty head count ratio.

Determining our estimated expenditure need of each province involves three steps:

¹³ For "equalization" purposes, the scope of the equalization budget (which could include extrabudgetary accounts) is more important than the budgetary system per se.

Step 1: *Determine the share of each expenditure category in total expenditure.* The share of each expenditure category in total expenditure (including routine and development expenditures) is calculated using actual expenditure data for 1997/98 (see Table 2 below).

Table 2. Provincial Expenditure, by Category, 1997/1998

| | Actual Amount | Share (in percent) |
|--|---------------|--------------------|
| Education, culture, religion, and sports | 2,262 | 18.9 |
| Health and social welfare | 441 | 3.7 |
| Government administration | 5,893 | 49.1 |
| Infrastructure | 1,588 | 13.2 |
| Economic development | 1,808 | 15.1 |
| Total | 11,992 | 100.0 |

Source: Calculated using data from the Ministry of Finance. As the government wage bill is not included in Indonesia's current sectoral classification of expenditure, it is assumed that its distribution across sectors is identical to that of routine expenditure.

The total expenditure need of 26 provinces in category k (k = education, health, etc.) equals the weight (α_k) multiplied by the total expenditure need of all categories. Denoting total provincial need of all categories by TN , the total expenditure need in category k is

$$TN_k = \alpha_k * TN .$$

Step 2. *Calculate the expenditure need for each category, for each province, and then sum up these needs to get the province's aggregate expenditure need.* The general formula for calculating expenditure need in category k can be written as:

$$N_{ki} = \text{Measurement Unit}_{ki} * \text{Average Per Unit Cost}_k * \text{Adjustment Coefficient}_i,$$

where k standards for the k^{th} expenditure category, such as education, health and social welfare, government administration, etc. Measurement unit refers to the number of units that receive services from the provincial government. Average per unit cost is defined as total provincial expenditure on category k divided by the measurement unit (e.g., the average per unit cost of education is the ratio of the total expenditure on education to the total number of school age children in all provinces). We use the most recent data available for this calculation. The adjustment coefficient is a combination of factors that differentiate the unit cost of the service in the province from the national average.

Step 3: *Determine the expenditure need of each province in category k .* For education ($k=E$), the expenditure need of province i is calculated using the following formula:

$$\begin{aligned} N_{iE} &= (TN_E / U_E) * U_{iE} * (0.2(E_i - 1) + 1) * C_i \\ &= \alpha_E * TN * / U_E * U_{iE} * (0.2(E_i - 1) + 1) * C_i, \end{aligned} \quad (8)$$

where N_{iE} is province i 's expenditure need for education, $\alpha_E=0.189$ is the weight assigned to education, TN_E is the 26 provinces' total expenditure need for education, U_E is the total school age population in 26 provinces, U_{iE} is the school age population in province i , E_i is the ratio of the national average number of years of education to that in province i , and C_i is ratio of province i 's living cost to the national average. Note that the coefficient of 0.2 on E_i is intended to discount the magnitude of adjustment to the unit cost (TN_E/U_E) demanded by E_i and ideally should be determined by a regression using actual educational expenditure data by province. Since such data are not available, we simply assume the coefficient to be 0.2 for illustrative purposes.

For health and social welfare ($k=H$), the expenditure need of province i is calculated using the following formula:

$$\begin{aligned} N_{iH} &= (TN_H / P) * P_i * (0.3(LE_i - 1) + 1) * ((0.2(IF_i - 1) + 1) * (0.4(OLD_i - 1) + 1) * (0.6(C_i - 1) + 1)) \\ &= \alpha_H * TN * / P * P_i * (0.3(LE_i - 1) + 1) * ((0.2(IF_i - 1) + 1) * (0.4(OLD_i - 1) + 1) * (0.6(C_i - 1) + 1)) \end{aligned} \quad (9)$$

where N_{iH} is province i 's expenditure need for health and social welfare, $\alpha_H=0.037$ is the weight assigned to health, TN_H is the 26 provinces' total expenditure need for health and social welfare, P is the total population in 26 provinces, P_i is the population in province i , LE_i is the ratio of the national average life expectancy to that in province i , IF_i is the ratio of province i 's infant mortality rate to the national average, OLD_i is the ratio of the percentage of elderly population (over age 60) in province i to the national average, and C_i is ratio of province i 's living cost to the national average. Again, the coefficients on IE_i , IF_i , OLD_i , C_i are assumed in our simulation, but should ideally be determined by regressions using actual health and welfare expenditure data by province.

For government administration ($k=G$), the expenditure need of province i is calculated using the following formula:

$$\begin{aligned} N_{iG} &= (TN_G / P) * P_i * (5 \log^2(UBN_i) + 1) * (0.6 * (C_i - 1) + 1) \\ &= \alpha_G * TN / P * P_i * (5 \log^2(UBN_i) + 1) * (0.6 * (C_i - 1) + 1) \end{aligned} \quad (10)$$

where N_{iG} is province i 's expenditure need for government administration, $\alpha_G=0.491$ is the weight assigned to government administration, TN_G is the 26 provinces' total expenditure need for government administration, P is the total population in 26 provinces, P_i is the population in province i , UBN_i is the ratio of percentage of urban population in this province to the national

average,¹⁴ and C_i is ratio of province i 's living cost to the national average. Again, the coefficients on IE_i, IF_i, OLD_i are assumed in our simulation, but should ideally be determined by a regression using actual health and welfare expenditure data by province.

For infrastructure ($k=I$), the expenditure need of province i is calculated using the following formula:

$$\begin{aligned} N_{iI} &= (TN_I / LR) * LR_i * (\log^2(PD_i) + 1) * SPR_i \\ &= \alpha_I * TN * / LR * LR_i * (\log^2(PD_i) + 1) * SPR_i \end{aligned} \quad (11)$$

where N_{iI} is province i 's expenditure need for infrastructure maintenance and development, $\alpha_I=0.132$ is the weight assigned to infrastructure, TN_I is the 26 provinces' total expenditure need for infrastructure, LR is the total length of provincial roads in 26 provinces, PD_i is ratio of the population density of province to national average, LR_i is the length of provincial roads in province i , SPR_i is the ratio of poor quality roads as percentage of the total length of provincial roads to the national average.

For economic development ($i=D$), the expenditure need of province i is calculated using the following formula:

$$\begin{aligned} N_{iD} &= (TN_D / P) * P_i * (0.3(PGDD_i - 1) + 1) * (0.3(PVT_i - 1) + 1) \\ &= \alpha_D * TN * / P * P_i * (0.3(PGDD_i - 1) + 1) * (0.3(PVT_i - 1) + 1) \end{aligned} \quad (12)$$

where N_{iD} is province i 's expenditure need for economic development, $\alpha_D=0.151$ is the weight assigned to economic development, TN_D is the 26 provinces' total expenditure need for economic development, P is the total population in 26 provinces, P_i is the population in province i , $PGDP_i$ is the ratio of national average per capita GDP to that of province i , PVT_i is the ratio of poverty headcount ratio of province i to the national average.

Step 3. Sum up province i 's needs in the five categories to get the total expenditure need of the province:

$$\begin{aligned} N_i &= TN * [\alpha_E * TN * / U_E * U_{iE} * (0.2(E_i - 1) + 1)] * C_i \\ &+ \alpha_H * / P * P_i * (0.2(LE_i - 1) + 1) * (0.3(IF_i - 1) + 1) * (0.4(OLD_i - 1) + 1) * (0.6(C_i - 1) + 1) \\ &+ \alpha_G * / P * P_i * (5 \log^2(UBN_i) + 1) * 0.6 * ((C_i - 1) + 1) \\ &+ \alpha_I * / LR * LR_i * (\log^2(PD_i) + 1) * SPR_i \\ &+ \alpha_D * / P * P_i * (0.3(PGDD_i - 1) + 1) * (0.3(PVT_i) + 1) \end{aligned} \quad (13)$$

¹⁴The logarithmic formulation is used to generate a U-shaped relationship between variables—that is, higher unit costs obtain for extremely low and very high densities.

where N_i is the total expenditure need of province i .

Table 3 presents the calculation results of provincial level expenditure needs and the adjustment coefficients for the five expenditure categories.

The simulation results

Using equation (3), and assuming total transfer to province i (T_i) consists of general purpose transfer and specific transfers that meet certain needs assessed by the formulas in Section C, the entitlement of province i is:

$$T_i = N_i - C_i \quad (13)$$

where N_i is given by equation (12). Since because of our simplifications, the available funds for distribution (TT) will be different from the sum of all provinces entitlements ($\sum_i T_i$), we have applied coefficient \exists to each N_i so that $TT = \sum_i (\exists N_i - C_i)$. The amount of transfer that should be received by province i is:

$$T_i = \beta N_i - C_i \quad (14)$$

Using the above formula, a few provinces (e.g., Riau) may receive negative transfers, as their revenue capacities exceed their expenditure needs adjusted by \exists . Assuming that negative transfers are politically not acceptable, we have imposed a zero minimum transfer to these high capacity provinces, and scaled down other provinces' transfers proportionally. Column 6 of Table 4 shows the amounts of transfers calculated using the above formula with a zero \exists minimum provincial transfer. For comparison, the actual transfers in 1997/98 are also presented in column 7 of Table 4.

C. Does the Transfer System Equalize?

The transfer model presented above aims to equalize the provinces' abilities to provide public services at similar levels of tax effort. While equalizing per capita income is not the direct objective, due to a high positive correlation between income and revenue capacity, and a negative correlation between per capita income and expenditure need, a transfer system like the one suggested above should also have strong redistributive effects on per capita income.

The following regression is used to test the hypothesis that the transfer system based on the proposed formula equalizes per capita income across provinces:

$$PCT_i = a_0 + a_1 PCGDP_i \quad (15)$$

where PCT_i is the per capita transfer to province i , and $PCGDP_i$ is the per capita GDP of province i . If a_1 is negative and statistically significant, it means that the system has a significant equalization effect.

Table 3. Provincial Governments: Estimation of Expenditure Needs, 1999/2000
(In billions of rupiah)

| Province | Edu. Adj. Coef. | Education | Health Adj. Coef. | Health & Social Welfare | Adm. Adj. Coef. | Administration | Inf. Adj. coef. | Infrastructure | Econ. Adj. Coef. | Econ. Dev. | Dati I |
|----------|--------------------|-----------|----------------------|----------------------------|--------------------|----------------|-----------------|----------------|------------------|------------|---------|
| Total | 0.97 | 1,751.30 | 1.00 | 341.24 | 0.93 | 4,561.68 | 0.75 | 1,229.03 | 1.00 | 1,399.75 | 9,283.0 |
| Di Aceh | 1.07 | 41.80 | 1.08 | 7.63 | 1.00 | 94.30 | 0.95 | 62.9 | 1.00 | 29.1 | 235.8 |
| Sumut | 1.00 | 116.99 | 1.07 | 21.96 | 0.99 | 271.58 | 1.20 | 106.3 | 0.89 | 74.5 | 591.3 |
| Sumbar | 1.08 | 46.54 | 1.14 | 9.00 | 1.01 | 106.57 | 0.38 | 14.3 | 0.93 | 30.1 | 206.6 |
| Riau | 1.23 | 47.87 | 1.16 | 8.31 | 1.12 | 107.71 | 0.67 | 30.3 | 0.93 | 27.3 | 221.4 |
| Jambi | 1.06 | 24.90 | 1.07 | 4.68 | 1.04 | 60.64 | 0.35 | 10.7 | 0.97 | 17.4 | 118.4 |
| Sumsel | 1.00 | 80.34 | 1.11 | 14.75 | 0.94 | 166.96 | 0.18 | 12.3 | 0.97 | 52.7 | 327.1 |
| Bengkulu | 1.06 | 86.94 | 1.09 | 2.82 | 1.05 | 36.40 | 1.81 | 65.2 | 1.04 | 11.1 | 202.5 |
| Lampung | 0.93 | 62.88 | 1.01 | 12.37 | 1.04 | 170.27 | 0.60 | 38.9 | 1.16 | 58.2 | 342.5 |
| Jabar | 0.98 | 332.24 | 1.02 | 73.47 | 0.94 | 903.10 | 2.25 | 174.2 | 0.93 | 276.3 | 1,759.3 |
| Jateng | 0.86 | 229.09 | 0.80 | 43.78 | 0.89 | 646.90 | 0.33 | 22.3 | 1.09 | 244.2 | 1,186.2 |
| Di Yogya | 0.95 | 20.42 | 0.82 | 4.40 | 0.93 | 66.74 | 0.59 | 9.8 | 0.94 | 20.8 | 122.2 |
| Jatim | 0.90 | 243.63 | 0.91 | 56.37 | 0.88 | 730.76 | 0.10 | 5.4 | 0.96 | 244.9 | 1,281.1 |
| Kalbar | 1.19 | 43.34 | 1.19 | 7.95 | 1.04 | 93.00 | 0.63 | 33.8 | 0.92 | 25.4 | 203.5 |
| Kalteng | 1.27 | 21.87 | 1.17 | 3.50 | 1.30 | 52.18 | 1.84 | 25.5 | 0.91 | 11.2 | 114.2 |
| Kalsel | 1.11 | 29.25 | 1.18 | 6.27 | 1.03 | 73.49 | 0.70 | 17.6 | 0.92 | 20.1 | 146.7 |
| Kaltim | 1.21 | 24.29 | 1.06 | 4.51 | 2.03 | 115.32 | 2.96 | 120.6 | 0.80 | 13.9 | 278.7 |
| Sulut | 1.03 | 22.28 | 0.97 | 4.71 | 1.00 | 65.12 | 0.66 | 16.3 | 1.05 | 21.1 | 129.4 |
| Sulteng | 1.04 | 19.33 | 1.16 | 4.13 | 1.05 | 50.05 | 0.78 | 36.9 | 1.13 | 16.6 | 127.0 |
| Sulsel | 1.17 | 75.99 | 1.08 | 15.02 | 1.12 | 208.41 | 0.88 | 43.6 | 1.04 | 59.3 | 402.3 |
| Sultra | 1.23 | 22.72 | 1.29 | 3.96 | 1.35 | 55.28 | 0.97 | 38.0 | 1.20 | 15.1 | 135.0 |
| Bali | 1.05 | 21.73 | 0.89 | 4.73 | 1.09 | 77.46 | 2.24 | 50.1 | 0.93 | 20.2 | 174.2 |
| Ntb | 0.91 | 33.12 | 1.21 | 7.42 | 1.11 | 91.24 | 1.07 | 52.6 | 1.25 | 31.6 | 216.1 |
| Ntt | 1.08 | 36.74 | 1.10 | 7.37 | 1.59 | 142.42 | 0.06 | 4.9 | 1.40 | 38.5 | 229.9 |
| Maluku | 1.18 | 27.36 | 1.28 | 4.92 | 1.10 | 56.55 | 0.80 | 42.7 | 1.11 | 17.4 | 149.0 |
| Irja | 1.55 | 28.02 | 1.37 | 4.90 | 1.74 | 83.27 | 3.75 | 166.1 | 0.95 | 13.9 | 296.3 |
| Timtim | 1.63 | 11.60 | 1.50 | 2.31 | 1.74 | 35.96 | 0.96 | 27.8 | 1.41 | 8.9 | 86.6 |

Source: IMF staff estimates

Table 4. Provincial Governments: Expenditure Needs, Revenue Capacities, and Transfers, 1999/2000
(in billions of rupiah)

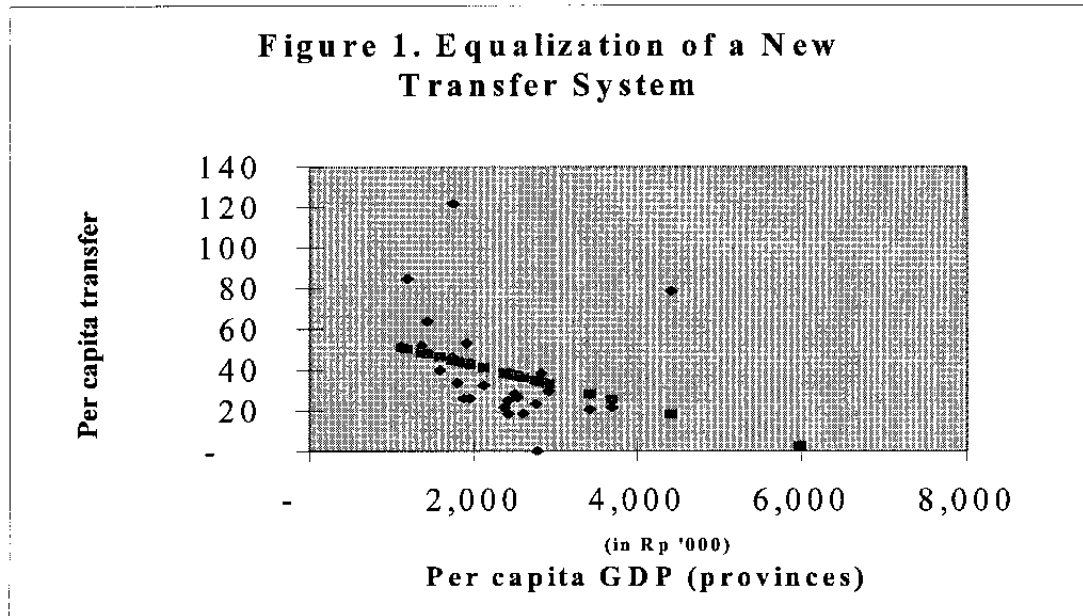
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|----------|-------------------------------|---------------------------------|------------------------|-----------------------------|------------------------------|--------------------------------|-------------------------------|-----------------------------------|----------------------------------|-------------------|
| | Total Expenditure Needs | Existing Revenue Capacity | Oil and Gas Revenue | Total Fiscal Capacity | Formula Based Transfer | Formula Transfer (min=0) | Actual Transfer 1997/98 | Per Capita Formula Transfer | Actual Per Capita Transfer | Per Capita GDP |
| Total | 9,283 | 3,661 | 382 | 4,043 | 5,240 | 5,240 | 5,826 | 28 | 31 | 2,400 |
| Di Aceh | 236 | 73 | 64 | 137 | 99 | 96 | 177 | 25 | 46 | 2,414 |
| Sumut | 591 | 252 | 1 | 253 | 338 | 329 | 507 | 30 | 46 | 2,908 |
| Sumbar | 207 | 80 | 0 | 80 | 126 | 123 | 81 | 28 | 19 | 2,497 |
| Riau | 221 | 209 | 158 | 368 | (146) | 0 | 83 | 0 | 21 | 2,777 |
| Jambi | 118 | 51 | 4 | 55 | 64 | 62 | 71 | 26 | 30 | 1,874 |
| Sumsel | 327 | 146 | 21 | 167 | 160 | 156 | 102 | 22 | 14 | 2,376 |
| Bengkulu | 203 | 26 | 0 | 26 | 176 | 172 | 70 | 122 | 50 | 1,745 |
| Lampung | 343 | 69 | 0 | 69 | 273 | 266 | 95 | 40 | 14 | 1,585 |
| Jabar | 1,759 | 660 | 26 | 686 | 1,073 | 1,044 | 921 | 27 | 23 | 2,530 |
| Jateng | 1,186 | 395 | 0 | 395 | 791 | 770 | 1,047 | 26 | 35 | 1,951 |
| Di Yogya | 122 | 67 | 0 | 67 | 55 | 54 | 138 | 18 | 47 | 2,421 |
| Jatim | 1,281 | 623 | 12 | 635 | 646 | 628 | 1,153 | 19 | 34 | 2,604 |
| Kalbar | 203 | 60 | 0 | 60 | 143 | 139 | 90 | 38 | 25 | 2,822 |
| Kalteng | 114 | 78 | 0 | 78 | 36 | 35 | 153 | 21 | 94 | 3,692 |
| Kalsel | 147 | 77 | 0 | 77 | 69 | 68 | 72 | 23 | 25 | 2,755 |
| Kaltim | 279 | 181 | 91 | 272 | 7 | 7 | 92 | 3 | 40 | 5,990 |
| Sulut | 129 | 41 | 0 | 41 | 88 | 86 | 86 | 32 | 32 | 2,119 |
| Sulteng | 127 | 35 | 0 | 35 | 92 | 90 | 168 | 46 | 87 | 1,731 |
| Sulsel | 402 | 140 | 0 | 140 | 262 | 255 | 100 | 34 | 13 | 1,791 |
| Sultra | 135 | 26 | 0 | 26 | 109 | 106 | 77 | 64 | 46 | 1,431 |
| Bali | 174 | 113 | 0 | 113 | 61 | 60 | 56 | 21 | 19 | 3,418 |
| Ntb | 216 | 37 | 0 | 37 | 179 | 174 | 86 | 52 | 26 | 1,360 |
| Ntt | 230 | 37 | 0 | 37 | 192 | 187 | 95 | 52 | 26 | 1,123 |
| Maluku | 149 | 35 | 0 | 35 | 114 | 111 | 87 | 53 | 42 | 1,906 |
| Irja | 296 | 135 | 4 | 139 | 157 | 153 | 142 | 79 | 73 | 4,419 |
| Timtim | 87 | 13 | 0 | 13 | 73 | 71 | 76 | 85 | 91 | 1,186 |

Sources: Ministry of Finance; and IMF staff estimates.

The regression result confirms the hypothesis, with a_1 being significantly negative. From the fitted line shown in Figure 1, one can see a clearly negative relationship between per capita transfer and per capita GDP, indicating a significant redistributive effect of the proposed transfer system. The regression results are as follows

$$\text{Regression I: } PCT_i = 62.0 - 5.02 PCGDP_i \\ (-0.01) \quad (-2.13)$$

R-square = 0.16, No. of observations = 27, Degrees of freedom = 25.



For comparison, we also used the actual transfer figures in 1997/98 to run the same regression. The resulting a_1 is statistically insignificant and the R -square is only 0.01, showing not even a slight correlation between per capita transfers and per capita GDP levels. This suggests that the pre-reform transfer system has not effectively achieved any redistributive goal. The regression results are as follows:

$$\text{Regression II: } PCT_i = 33.2 - 0.54 PCGDP_i \\ (0.002) \quad (-0.01)$$

R-square = 0.01, No. of observations = 27, Degrees of freedom = 25.

D. Steps Toward an Effective Equalization Model

Moving from a transfer system based on special grants to a “full equalization” system may not be feasible in the short run due to political constraints, resource constraints, and lack of data. It may not also be desirable since it would induce large changes in public expenditure patterns—which could generate arrears or wasted resources. A pragmatic approach would be to improve the database that supports the operation of the equalization system, adjust the formula (including better selection of variables and coefficients), and expand the size of the transfer scheme gradually to achieve a better equalization result.

A phased approach for introducing a new grants system

A special-purpose transfer system cannot be done away with overnight. Any new system of intergovernmental transfers based on equalizing criteria will result in some local governments receiving less than they did previously, while others, which were previously underfunded, will receive increased funding. If this happened, it is likely to cause fiscal disruption at the local level. According to many international experiences, the new system of formula-based transfers should be phased in incrementally over a number of years.¹⁵

The new functions should be costed according to the actual central expenditures at the district level. Initially, no region should receive less for providing any given service than was being spent on that service prior to decentralization. In this way, the grant scheme would, at the outset, be based essentially on the existing payroll and operating and maintenance expenditures. It would thus minimize the risk that public services would be disrupted by the decentralization.

If this approach were adopted, a balance sheet could be prepared at the district level as in Table 5.

Table 5. District- Level Balance Sheet

| Own and Shared Revenues (District i) | Values (in millions of rupiah) | Central Government Expenditures in District i, for the assigned functions | Values (in millions of rupiah) |
|--------------------------------------|--------------------------------|---|--------------------------------|
| Own Taxes | - | Agriculture | - |
| Shared Revenues (natural resources) | - | Health | - |
| Other revenues (charges etc.) | - | Communication | - |
| | | Other headings envisaged in the Draft Regulation | - |
| Total own and shared revenues | <i>OREV</i> | Total central government expenditures | <i>CEXP</i> |
| | | Current District expenditures | - |
| | | Agriculture | - |
| | | Health | - |
| | | Communication | - |
| | | Other headings... | - |
| | | Total District current expenditures | <i>DEXP</i> |
| DAUHIS ₁₀ in year zero | $(CEXP + DEXP) - OREV$ | Total district expenditures after devolution | $CEXP + DEXP$ |

A first approximate balance sheet for each district would have to be determined with the expenditure data available from the regional offices of the Treasury (KPKN) and the revenue data from Directorate General of Financial Institutions and DG Tax.

¹⁵ In addition, other special transfers to local government should be phased out and incorporated in the general transfers.

After “year zero,”¹⁶ a phased approach would envisage a steady reduction of the transfer based on current parameters, to be absorbed in a new Equalization Fund and distributed eventually according to the equalization formula. Assuming a constant reduction of 20 percent a year (reaching a coverage of 90 percent of the original grant, plus its yearly increment for equalization over five years):

$$DAUHIS_{it} = DAU_{i0} - 0.20tDAU_{i0}DAUHIS_{it} \quad (16)$$

with $t=1, \dots, 5$ (number of years), $i=1 \dots, n$ (number of districts)

The equalization component for the District i in the year 1 will be

$$DAUEQ_{i1} = r_i \sum_{i=1}^n 0.20_1 (DAUHIS_{i0} + \Delta DAUHIS_{i0}) DAUEQ_{i1} \quad (17)$$

with r_i = share of the District i determined through the formula.

$\Delta DAUHIS_{i0}$ = increment in the general allocation fund allocated in the district budget, ABPN, for year 1

The total grant for the District i in year t will be:

$$DAU_{it} DAU_{it} = DAUHIS_{it} DAUHIS_{it} + DAUEQ_{it} \quad (19)$$

with $DAU_{it} > DAUHIS_{i0}$, if $DAUEQ_{it} > 0.20tDAU_{i0}DAU_{it} > DAUHIS_{i0}$, if $DAUEQ_{it} > 0.20tDAU_{i0}$

This general frame is flexible and can offer many alternatives: (1) different timeframes for equalization; (2) maintenance of a fixed share of the historical grant (reducing the amount of the grant in year 0 to say only 80 percent of the historical amount); and (3) possible adjustments of the formula with minor impact on service delivery.

Implementation of a grants mechanism

Implementation mechanisms would also include the establishment of a joint working group to construct a database for future use of the equalization transfer system. Alternative models should generate simulations under various assumptions regarding revenue and expenditure assignments. The database and staff of the working group can be transferred to a Grants Commission when it is formed later.

A Grants Commission would prepare detailed revenue and expenditure estimates by province (district) and by sector should be collected and used to estimate the adjustment coefficients on unit costs. Once such data become available, various revenue—capacity and

¹⁶ A combination of SDO grants, general and specific INPRES grants, or a new block grant, could be used initially, according to the functions transferred, to be substituted gradually by an equalization scheme. Besides, the local tax base could be expanded through the reform of Law 18/97.

expenditure—needs measures should be tested in order to select the most significant factors that influence unit costs. In the initial stages, the model can use a relatively small number of indicators, and expenditure and revenue categories, for simplicity and transparency. Addition of new variables to the model should typically be justified by evidence that the influence of these variables on the transfer system is statistically significant.

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