Intergovernmental Fiscal Transfers in Asia: Current Practice and Challenges for the Future

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Indonesia

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A. Introduction

The Republic of Indonesia is the fourth largest country in the world with a population of over 200 million people. It is an extremely socially and culturally varied nation: there are more than 300 ethnic groups, each with its own language, customs, and form of social organization.[2] Population and attendant social, political, and economic activities are dispersed across a collection of nearly 14,000 islands, spanning more than 3,000 miles.

Indonesia is a unitary country comprising central, provincial, and local levels of government. Until recently, the regional administration of public affairs operated via a hierarchical, multitiered, and parallel system of deconcentrated central government agencies and nominally autonomous subnational units. Throughout most of its history, Indonesia's public sector has been counted among the most centralized in the world.[3]

Many observers would date Indonesia's modern administrative and fiscal decentralization program to Law No. 5 of 1974.[4] And this law did indeed provide a basis for a greater involvement of decentralized subnational governments in the provision of public services that existed until that time. Although in the early 1990s some implementing regulations were written and a pilot

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1. The author currently serves as Senior Adviser to the Ministry of Finance (MOF) under a project financed by the United States Agency for International Development (USAID). The views expressed here are those of the author and should not be attributed to either MOF or to the USAID.

2. Guinness (1994).

3. See Smoke and Lewis (1996) for a review of the intergovernmental fiscal framework prior to decentralization and a description of earlier decentralization efforts.

4. The legal basis for decentralization existed prior to that law. See Ford (2000) for a brief review of the constitutional and other early legal underpinnings of decentralization.

program for regional autonomy was undertaken,[5] little real progress was made in operationalizing the general principles outlined in the early legislation over the succeeding 25 years.

Decentralization became more of a political imperative in the late 1990s. The impetus to move forward in a more assertive fashion derived from a special session of the Peoples Consultative Assembly (MPR) with the issuance of an important decree.[6] As a result of the MPR mandate, Indonesia has embarked upon an ambitious program of fiscal decentralization. The effort has its genesis in two laws, both promulgated in May of 1999, one on administrative matters and the other concerning fiscal and finance issues.[7] These two laws have been followed up with a large number of implementing regulations and presidential and ministerial decrees.

As a consequence of the recent legislation, the deconcentrated agencies of central government have, for the most part, been abolished[8] (although provinces continue to represent the center in certain instances) and the hierarchical relationship between autonomous provincial and local governments has been eliminated. For the first time, governors (of provinces) and mayors (of local governments) are elected by and accountable to regional parliaments.[9]

In addition, starting in FY2001, provincial and local governments assumed major new expenditure responsibilities. Substantial functions for provinces have been outlined in a recently issued government regulation.[10] Local government *(kabupaten/kota)* responsibilities, regrettably, have been only rather vaguely defined via a negative list; that is, kabupaten and kota essentially are

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5. See Beier and Ferrazzi (1998) for a description of the pilot program, among other things.

6. MPR Decree No. XV of 1998 regarding the Implementation of Regional Autonomy: A Just Regulation: Division and Utilization of National Resources and the Balancing of Central-Regional Finances within the Unitary Republic of Indonesia.

7. See Law 22/1999 regarding Regional Administration *(Undang-Undang 22/ 1999 tentang Pemerintahan Daerah)* and Law 25/1999 regarding Financial Balance between the Center and Regional Governments *(Undang-Undang 25/99 tentang Perimbangan Keuangan antara Pemerintah Pusat dan Daerah).*

8. Deconcentrated offices may continue to operate in the regions, where relevant, for those functions that the central government retains: foreign affairs, defense, justice, monetary and fiscal affairs, and religion, among others.

9. As of this writing, there are 348 kabupaten/kota and 30 provinces in Indonesia. Kabupaten is generally translated as regency or district and kota means city.

10. See Government Regulation 25/2000 regarding Central Government Authorities and Autonomous Provincial Government Authorities *(Peraturan Pemerintah No. 25 Tahun 2000 tentang Kewenangan Pemerintah dan Kewenangan Propinsi sebagai Daerah Otonom).*

responsible for all public services that the central and provincial governments are not explicitly charged with delivering.

At the same time, the law has highlighted 11 important areas of local government service responsibility: public works, health, education and culture, agriculture, communications, industry and trade, capital investment, environment, land, cooperatives, and labor. This list makes up the so-called obligatory authorities of kabupaten/kota governments. As is clear, most of the items on this list are perhaps more analogous to sectors than they are functions per se. As such, it has been widely assumed that central and/or provincial governments must retain at least some responsibility for service delivery in the designated areas. This general approach to the assignment of local public services has generated confusion among concerned parties at both the central and regional levels. In any case, regional government expenditure responsibilities are now evidently considerable. In FY2001, for example, it was estimated that subnational governments made up around one-quarter of total public spending.[11]

Regional governments have not, unfortunately, been awarded new authority over any major tax bases. Subnational governments, as a whole, retain the right to levy essentially the same taxes and charges as before the new decentralization legislation took effect, although the distribution of tax bases across provinces and kabupaten/kota have been restructured to a certain extent. Provinces have at least some authority over taxes related to motor vehicles, change of title of motor vehicles, fuel, and ground water extraction and use (the latter being formerly under the control of kabupaten/kota). Tariffs over these taxes are set at uniform rates across the country by the central government. Local governments exercise control over taxes concerning hotels, restaurants, entertainment, advertisement, street lighting, some (class C) mineral exploitation, and parking (newly created). Kabupaten/kota control the tax rates below centrally specified ceilings.[12] Both provinces and kabupaten/kota may collect user charges and fees of various sorts.

In addition, kabupaten/kota (but not provinces) are now allowed to create their own taxes through local bylaws, if they satisfy a number of good tax criteria and central government approval.[13] As it turns out, both local

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11. The subnational share of total public sector spending reaches nearly 35% if central government debt service payments are ignored. See Ministry of Finance (2002).

12. By law, provinces must share 30% of the motor vehicle-based taxes and 70% of the fuel and ground water taxes with kabupaten/kota. The latter must share 10% of their total own-source tax revenues with villages. See Law 34/2000 regarding Changes to Law 18/1997 regarding Regional Government Taxes and Charges *(Undang-Undang 34 Tahun 2000 tentang Perubahan atas Undang-Undang 18 Tahun 1997 tentang Pajak Daerah dan Retribusi aerah)* for the details.

13. Again, see Law 34/2000.

governments and the center have very broadly interpreted these criteria. Kabupaten/kota have set about creating new taxes in a rather aggressive fashion. Some observers have judged most of the newly created taxes to be either nuisances or economically harmful in some way.[14] Nevertheless, the central government has done little to forestall the rapid formation of these new local revenue instruments. The new local taxes notwithstanding, public revenues apparently remain heavily centralized in Indonesia. Recent estimates put the subnational government share of total national revenues at only around 4%.[15]

As part of the new decentralization initiative, the system of intergovernmental transfers has also been significantly restructured and expanded. Regional governments now gain greater access to substantial amounts of natural resource revenues than before and, in addition, receive a share of the personal income tax. Furthermore, two new and important intergovernmental grants have been created: *Dana Alokasi Umum* (DAU—General Purpose Fund) and *Dana Alokasi Khusus* (DAK—Specific Purpose Fund). These two transfers together replace the old system of *Subsidi Daerah Otonom* (SDO—Autonomous Government Subsidy) and *Instruksi Presiden* (INPRES—Presidential Instruction) grants.[16]

The basic purpose of this chapter is to review the emerging system of intergovernmental transfers in Indonesia. After the introduction, we provide a brief appraisal of transfers that existed before the country's new decentralization program began implementation. Next, we examine the current scheme of intergovernmental transfer mechanisms. As noted above, the new system comprises an array of revenue sharing and general- and specific-purpose grant instruments. In this section of the chapter, each of the various types of transfers is described and analyzed. Some of the more important emerging problems with the system are highlighted throughout. The chapter closes with a summary of the principal points and offers some policy recommendations for improving the system of intergovernmental transfers in Indonesia.

B. Intergovernmental Transfers in Indonesia before Decentralization

Prior to the implementation of the new decentralization legislation, intergovernmental transfers in Indonesia comprised a limited amount of revenue

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14. See Ray (2001) for an inventory of such tax instruments that are trade-distorting.

15. Ministry of Finance (2002).

16. It should be mentioned that, in addition to the decentralization initiatives briefly catalogued here, the government has also structured special autonomy arrangements with the provinces of Aceh and Irian Jaya. The measures taken have awarded more responsibility and fiscal resources to the two provinces than to other places in Indonesia. These special provisions are not further discussed in this paper.

sharing as well as significant routine and development grants. Shared property taxes accounted for most of total revenue sharing, although shared forestry revenues (forestry licensing fees and royalties) were also occasionally important over the years. Other national revenues, for example, from mining (land rents and royalties) and/or from clove and copra (cesses) were also at times shared with regional governments but not consistently and the amounts were relatively insignificant. The SDO was the basic routine-side grant for more than 30 years prior to FY2001 when it was disbanded. Development grants over the past three decades comprised a vast and, at times, bewildering array of general- and special-purpose INPRES transfers.[17]

For an illustration of the relative importance of these various transfers in regional government budgets, see Table 1 which provides aggregate data on own-source revenues, shared revenues, and grants for regional governments, in total, and for provincial and kabupaten/kota governments over the period 1995–1996 through 1999–2000. The table demonstrates the overall importance of transfers to regional government budgets. Transfers made up about 75% of total regional government revenues, on average, over the period, including just less than 60% of provincial and approximately 85% of kabupaten/kota revenues. SDO transfers were most important, in general (38% of total regional government revenues), and for both provinces (31%) and kabupaten/kota (43%), followed by INPRES (23% of total regional government revenues and 6% and 28% of provincial and kabupaten/kota revenues, respectively) and revenue sharing (13% of total subnational revenues and 12% and 14% of total revenues for provinces and kabupaten/kota).

Property taxes, the dominant form of revenue sharing until recently, underwent relatively little change in structure, administration, distribution, and use over the years since 1985. The latter is the year in which the current and principal property-related tax, PBB *(Pajak Bumi dan Bangunan)*,[18] was created and replaced the then large number of land and building taxes. Since that time, property taxes have been levied in five different sectors: rural, urban, estates, forestry, and mining. Property taxes were and continue to be administered and collected, for the most part, by central government, although local governments assist with collections in rural and urban sectors. Until just recently, the central government retained 10% of the total tax for its own use, 9% was provided to local tax offices to assist with collections, 16% was assigned to provincial governments, and 65% was distributed to local governments. Regional shares were

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17. See Shah and Qureshi (1994) for an early and comprehensive description and discussion of intergovernmental transfers in Indonesia.

18. The other property related tax is the *Bea Perolehan Hak atas Tanah dan Bangunan* (BPHTB). The BPHTB is a tax on the transfer of title on land and buildings.

TABLE 1
Regional Government Revenues, By Source 1995–1996 through 1999–2000
(Rp Billions)

	1995–1996	Share	1996–1997	Share	1997–1998	Share	1998–1999	Share	1999–2000	Share	Ave Share
Province											
Own-Source	3,854.23	0.342	4,318.93	0.346	4,648.29	0.366	3,100.93	0.344	3,226.20	0.310	0.343
Revenue Sharing	986.54	0.088	1,189.11	0.095	1,255.54	0.099	1,882.82	0.209	1,466.25	0.141	0.121
SDO	4,145.09	0.368	4,457.03	0.357	4,605.89	0.362	1,794.42	0.199	2,264.51	0.218	0.309
INPRES	1,343.89	0.119	1,468.79	0.118	1,596.90	0.126	1,818.53	0.202	2,963.15	0.285	0.165
From Prior Year	926.24	0.082	1,046.19	0.084	605.27	0.048	413.81	0.046	489.59	0.047	0.062
Total	11,255.99	1.000	12,480.05	1.000	12,711.89	1.000	9,010.51	1.000	10,409.70	1.000	1.000
Kabupaten Kota											
Own-Source	1,531.16	0.138	1,827.35	0.142	2,076.81	0.131	2,248.63	0.109	2,354.69	0.097	0.119
Revenue Sharing	1,716.24	0.155	2,162.43	0.168	2,342.35	0.148	2,988.62	0.145	2,886.78	0.119	0.143
SDO	3,841.52	0.347	4,439.46	0.344	6,016.93	0.381	9,688.34	0.469	12,492.75	0.515	0.431
INPRES	3,636.40	0.328	4,089.01	0.317	4,873.00	0.308	5,172.78	0.251	5,964.33	0.246	0.280
From Prior Year	357.71	0.032	382.28	0.030	503.40	0.032	539.76	0.026	551.49	0.023	0.028
Total	11,083.03	1.000	12,900.53	1.000	15,812.49	1.000	20,638.13	1.000	24,250.04	1.000	1.000
All											
Own-Source	5,385.39	0.241	6,146.28	0.242	6,725.10	0.236	5,349.56	0.180	5,580.89	0.161	0.208
Revenue Sharing	2,702.78	0.121	3,351.54	0.132	3,597.89	0.126	4,871.44	0.164	4,353.03	0.126	0.134
SDO	7,986.61	0.358	8,896.49	0.351	10,622.82	0.372	11,482.76	0.387	14,757.26	0.426	0.382
INPRES	4,980.29	0.223	5,557.80	0.219	6,469.90	0.227	6,991.31	0.236	8,927.48	0.258	0.234
From Prior Year	1,283.95	0.057	1,428.47	0.056	1,108.67	0.039	953.57	0.032	1,041.08	0.030	0.041
Total	22,339.02	1.000	25,380.58	1.000	28,524.38	1.000	29,648.64	1.000	34,659.74	1.000	1.000

Note: The Indonesian currency is the rupiah (Rp).
Source: Government of Indonesia *Nota Keuangan*, various years.

and continue to be, for the most part, distributed on a derivation basis. Use of shared property taxes has been completely at the discretion of regional governments since 1985 to the present.[19]

The major concern with the property tax over the years pertains to its shared nature. While in most countries the property tax is an important local tax (arguably for good reasons related to adequacy, efficiency, fairness, and accountability), in Indonesia it has steadfastly remained under the control of central government. Proposals for decentralizing the property tax have been made and reviewed frequently over the last 15 years and the central government is now, yet again, considering partial decentralization (i.e., control over the effective tariff) of property-related taxes to local governments.

The SDO grant was also altered relatively little since its inception over 30 years ago until it was dropped in FY2001. The SDO grant was not actually a single grant but a compilation of transfers. The most important component of SDO funding was for regional government employee remuneration and it covered almost the entire amount of regional civil servant salaries and allowances, including those of primary school teachers. Other smaller components of the SDO funded various additional regional government routine expenditures, including the operations and maintenance of school buildings, and sub-kabupaten/kota (i.e. *kecamatan* and village) administrative expenditures. Central government allocation of the SDO was based, for the most part, on the number and years of experience of regional civil servants in various job classifications. Regional governments tended to take the lead on recruiting staff, although the center had responsibility for officially approving regional staffing levels, in general, and additions to such, in particular. It appears that the central government did not always make a serious attempt to discern real staffing needs, however, and regional proposals for additional staff were often approved in a pro forma manner.[20]

Many observers have found the SDO to be little more than an instrument of central control over regional governments. It is certainly clear that the grant did little to directly promote the autonomy of regional governments. At the very least, SDO operations made civil servants appear to be "free goods" to the regional governments for whom they worked. As such, the grant offered little in the way of incentives for regional expenditure efficiency.[21]

INPRES grants changed a great deal in structure and function over the last three decades until their recent demise. INPRES started out in the late 1960s

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19. See Kelly (1993) for an early description of property taxes in Indonesia.
20. See Rohdewohld (1995) for a good description of central and regional government civil service as it existed prior to FY 2001.
21. See Davey (1989) for an early discussion of the SDO.

as a rather simple block grant but, by the late 1990s, the transfer had evolved into a fairly complicated system of general- and specific-purpose grants. While the size of general-purpose component of the system grew quite quickly during the last decade of INPRES existence, the number of specific-purpose grants also multiplied rapidly, and growth of associated funds outstripped increases in the block element. By the time INPRES grants were dissolved, there were at least 15 different specific-purpose transfers, including those for primary schools, primary health care, roads, other urban infrastructure, urban re-greening, agricultural extension, and environmental impact assessment. By FY2000, funds attendant to specific-purpose transfers were well over twice as large as those for the general-purpose grant.

Overall, most analysts seem to have concluded that the INPRES system had a relatively positive impact on regional social and economic development in Indonesia over the course of more than three decades.[22] At least the funds assisted in the development of a significant amount of regional infrastructure. These positive points notwithstanding, a number of important criticisms have been raised over the years, particularly with regard to the system's general complexity and specific lack of transparency in allocation procedures, excessive central control and attendant lack of support for regional autonomy, lack of incentives for revenue mobilization, and negative performance vis-à-vis equalization objectives, among others.[23]

At least partly as a result of the various criticisms noted above, the Indonesian system of intergovernmental transfers has now been significantly redesigned. The new structure of transfers between central and regional governments is described and examined in the next section.

C. The Current System of Intergovernmental Transfers in Indonesia

Transfers in Indonesia continue to comprise both revenue sharing and grant instruments. Revenue sharing now includes shares of property-related taxes, natural resource revenues, as well as income tax, and grants consist of a single grant mechanism each for general- and specific-purposes. Transfers, in general, remain highly significant sources of revenue for regional governments. In fact, they have grown even more important to regional budgets than they were prior to decentralization. Data for FY2001 show that all transfers together accounted for just less than 90% of total regional government revenues.

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22. See Shah and Qureshi (1994) for a largely positive evaluation of INPRES grants.

23. Schroeder (1995) discusses some of these less positive features of the old INPRES system.

Table 2 details the relative importance of the various types of transfers, along with own-source revenues, in provincial and kabupaten/kota budgets for FY2001. As can be seen from the table, the DAU is far the most important source of revenue for regional governments, funding almost two-thirds of subnational government budgets. Revenue sharing is not unimportant, however, and it makes up more than one-fifth of regional government financial resources. Own-source revenues remain the smallest source of funds for regional governments and account for just over 10% of total regional government revenues. We now turn to an examination of revenue sharing and grant making in the new decentralized environment in Indonesia.

TABLE 2
Estimated Regional Government Revenues, FY 2001
(Rp Billions)

Source	Provinces	Percent	Kab/Kota	Percent	Total	Percent
Own-Source Revenues	6,400	34.5	4,100	5.6	10,500	11.4
Total Revenue Sharing	5,928	31.9	14,792	20.0	20,720	22.4
Property-Related Taxes	2,252	12.1	3,812	5.2	6,064	6.6
Natural Resource Revenues	2,565	13.8	9,312	12.6	11,877	12.8
Personal Income Tax	1,111	6.0	1,667	2.3	2,779	3.0
DAU	6,238	33.6	54,279	73.5	60,517	65.5
DAK	n.a	n.a	701	0.9	701	0.8
Total Transfers	12,166	65.5	69,772	94.4	81,938	88.6
Grand Total	18,566	100.0	73,872	100.0	92,438	100.0

Source: Based on Lewis (2001).

1. Revenue Sharing

As noted above, there are currently three types of revenue sharing in Indonesia. Shared sources include those for property-related taxes, natural resource revenues, and the income tax. Property-related shares comprise those for the land and buildings tax and the transfer of title on land and buildings tax. There are now eight natural resource revenue-sharing instruments: two each for forestry, mining, and fisheries along with those for oil and natural gas. The income tax shares are derived from the personal (as opposed to the business) income tax.

As demonstrated in Table 2, shared revenues account for about 22% of total regional government revenues. In general, the most important shared revenues are those derived from natural resources (13% of total regional revenues), followed by those for property taxes (7%) and then personal income taxes (3%). The relative significance of the various instruments varies across provinces and kabupaten.

Shared revenues are distributed across regional governments by various means. Table 3 lists revenue-sharing instruments along with the methods by which the shared sources are allocated across provinces and kabupaten/kota. As can be seen from the table, all shares to provinces are allocated exclusively by derivation. Shared revenues are distributed to kabupaten/kota both by derivation and, not infrequently, in equal amounts across places.

As previously indicated, property-related taxes have been shared with regional governments in Indonesia for many years now. As can be seen from the table, now all property tax revenues, including central shares are, in the event, distributed to regional governments (with the exception of 9% for collections). At least several of the natural resource revenues had already been shared with regional governments as well prior to FY2001, especially those related to forestry and mining, although sharing arrangements have been revised in many instances. The shared revenues for fisheries, oil, gas, and personal income taxes are new, however.

The main objective of revenue sharing, especially that related to newly shared revenues, is to respond to regional aspirations for increased access to and control over certain revenues. As is well known, many regions in Indonesia have long felt that they have not benefited sufficiently from the significant revenues generated in their areas and these sharing schemes constitute a real attempt to meet these demands. One problem with the attainment of this objective is that many in the regions remain unconvinced that they are getting their fair share of revenues in question. This is in part because the central government calculation of amounts of revenue to be shared is done in a less-than-transparent manner, and the regions suspect dishonest practices. Another problem concerns the timing of distribution to the regions. Although such transfers should, according to law, be made quarterly, in FY2001, the first payments on natural resource revenues were not made until July.

Revenue sharing is also intended to address fiscal imbalances between the central and regional governments. To what extent has revenue sharing been able to address such vertical imbalances? A somewhat naive, but typical, approach to the analysis of this question is to compare expenditure shares of central and subnational governments to their revenue shares before and after transfers. Before transfers, of course, subnational governments typically experience deficits. To the extent that deficits are reduced by adding transfers, then vertical imbalances are ameliorated.[24] Table 4 provides some pertinent information on vertical imbalances for Indonesia for FY2001.

As the table shows, before transfers are made, subnational governments

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24. See Shah (1994) for a discussion of vertical imbalances and the presentation of some evidence on the same for a number of developing and developed countries.

TABLE 3
Revenue-Sharing Instruments and Distribution, Starting FY 2001

Shared Revenue	Central Share	Provincial Share	Local Share
Property Tax. (PBB: *Pajak Bumi dan Bangunan*)	10%. Distributed to kabupaten/kota: 6.5% in equal amounts across all localities and 3.5% to places based on their attainment of previous year's (urban and rural) PBB target.	16.2%. By derivation.	64.8%. By derivation (except oil and gas sectors)[a]
Property Title Transfer Tax. (BPHTB: *Bea Perolehan Hak atas Tanah dan Bangunan*)	20%. Distributed to all kabupaten and kota in equal amounts.	16%. By derivation.	64%. By derivation.
Forestry Right to Operate Levy. (IHPH: *Iuran Hak Pengusahaan Hutan*)	20%	16%. By derivation.	64%. By derivation.
Forestry Resources Commission. (PSDH: *Provisi Sumber Daya Hutan*)	20%	16%. By derivation.	32% by derivation; 32% in equal amounts across all localities within province.
Mining Sector Land Rent. PIT: *(Penerimaan Iuran Tetap)*	20%	16%. By derivation.	64%. By derivation.
Mining Sector Royalties. (PIE: *Penerimaan Iuran Eksplorasi dan Exploitasi*)	20%	16%. By derivation.	32% by derivation; 32% in equal amounts (for all places within province).
Tax Revenue on Fisheries Operations. (*Penerimaan Pungutan Pengusahaan Perikanan*)	20%	0%	80%. Equal amounts for all kabupaten and kota in country.

TABLE 3 (cont.)

Shared Revenue	Central Share	Provincial Share	Local Share
Tax Revenue on Fisheries Output. *(Penerimaan Pungutan Hasil Perikanan)*	20%	0%	80%. Equal amounts for all kabupaten and kota in country.
Oil Revenues. *(Minyak)*	85%	3%. By derivation.	6% by derivation; 6 % in equal amounts (within province).
Natural Gas Revenues. *(Gas Alam)*	70%	6%. By derivation.	12% by derivation; 12% in equal amounts (within province).
Personal Income Tax. (PPh: *Pajak Penghasilan*)	80%	8%. By taxpayer location.[b]	12%. Distribution by provincial choice.

Notes: [a] Remaining 9% of property tax revenues reserved for support of tax collections carried out by central and local governments.
  [b] Taxpayer location, according to the legislation, may be employee residence, place of business activity, or employer home office location. In practice, it appears, most often, to be the latter.
Source: Government Regulation 104/2000 and Law 17/2000.

are in substantial deficit (23.4%). Vertical imbalances are less severe for provinces (deficit of 3.3%) than for kabupaten and kota (deficit of 20.1%). After the addition of shared revenues, the overall subnational deficit is narrowed to 16.8% and the deficits for provinces and kabupaten are reduced to 1.4% and 15.4%, respectively. Remaining fiscal imbalances at the subnational level are completely removed by the distribution of grants. In fact, as the table shows, subnational governments experience a surplus balance after the transfer of DAU and DAK and the central government moves to a deficit position. More will be said below about this implied overallocation of grants.

While helpful in addressing aggregate vertical fiscal imbalances, a real and well-known problem with natural resource revenue and personal income tax sharing in Indonesia is that such revenues are distributed very unevenly across regions. According to Ministry of Finance data, over 50% of the personal income tax shares, for example, are allocated to Jakarta alone. And over 75% of the total natural resource revenues shared with kabupaten/kota are distributed to just 30 places in Aceh, Riau, and Kalimantan Timur; similarly, these three places account for three quarters of the natural resource shares allocated to provinces as well.

TABLE 4
Vertical Imbalances, FY 2001
(Percentages)

	Revenue Share (1)	Expenditure Share (2)	Imbalance (1) – (2)
Own-Sources			
National	0.966	0.732	0.234
Subnational	0.034	0.268	(0.234)
Provincial	0.021	0.054	(0.033)
Kabupaten/Kota	0.013	0.214	(0.201)
Total	1.000	1.000	0.000
After Shared Revenues			
National	0.899	0.732	0.168
Subnational	0.101	0.268	(0.168)
Provincial	0.040	0.054	(0.014)
Kabupaten/Kota	0.061	0.214	(0.154)
Total	1.000	1.000	0.000
After Grants			
National	0.702	0.732	(0.030)
Subnational	0.298	0.268	0.030
Provincial	0.060	0.054	0.006
Kabupaten/Kota	0.238	0.214	0.024
Total	**1.000**	**1.000**	**0.000**

Source: Author's own calculations based on national and regional budget data.

Thus, there are severe problems regarding distributional equity of natural resource revenue and personal income tax sharing. This is typical throughout the world where such revenues are shared and a major reason many analysts argue against the idea of sharing these revenues on an origin basis. Theoretically, of course, the inequitable nature of these transfers could be mitigated, at least to a certain extent, by an equalization grant. We turn now to a discussion of Indonesia's main equalization tool, the DAU.

2. Dana Alokasi Umum (DAU)

The DAU is the most important source of revenue for regional governments. As Table 2 above shows, DAU allocations account for about two-thirds of total subnational government revenues. The DAU is especially significant for kabupaten/kota for which it makes up nearly 75% of total revenues. The transfer is not unimportant to provinces as well; DAU distributions account for around one-third of total provincial revenues.

The legislation states that the annual DAU pool of finance is to be based on a minimum 25% of total domestic revenues, where the latter is net of those

amounts to be shared with regional governments via the mechanisms described above. Sharing arrangements between subnational levels of government are also governed by law and 10% and 90% of the total funds are to be distributed to provinces and kabupaten, respectively. An important goal of the DAU is to address vertical imbalances. That is, it is the intention of the DAU, together with revenues from other sources of finance, to assist provincial and kabupaten/ kota governments in meeting their total respective expenditure requirements.[25]

For some evidence on questions related to the overall adequacy of DAU and other sources of finance vis-à-vis fiscal needs, consider Table 5 below. The table provides estimates of aggregate revenues available to and expenditure needs of provincial and kabupaten/kota governments for FY2001. Own-source revenue estimates are based on historical regional government budget (APBD) data (before decentralization) and shared revenues are based on FY2001 state (APBN) budgeted amounts. Regional government (routine and development) expenditure needs estimates are derived from provincial and kabupaten/kota APBDs (again, prior to FY2001) and from Kanwil and Kandep DIK (Daftar Isian Kegiatan—routine) expenditures for FY2000. Kanwils and Kandeps are the former deconcentrated offices of central level agencies, the routine operations of which were transferred to regional governments before and during FY2001.[26]

TABLE 5
Estimated Regional Government Fiscal Capacities and Expenditure Needs
FY 2001
(Rp Trillions)

Fiscal Capacity	Provinces	Kab/Kota	Total
Own-Source	6.4	4.1	10.5
Shared Revenues	5.9	14.8	20.7
DAK	n.a	0.7	0.7
DAU	6.2	54.3	60.5
Total Revenues	18.6	73.9	92.4
Expenditure Needs			
Routine, Based on FY 2000	8.4	23.2	31.6
Development, Based on FY 2000	5.5	9.4	14.9
From Kanwil and Kandep FY 2000	3.2	15.0	18.2
Total Expenditure Needs	17.1	47.6	64.7
Surplus	1.5	26.3	27.7

Source: Based on Lewis (2001).

25. See Ministry of Finance (2002) for a discussion of the goals of the DAU and other transfers.

26. Note that fiscal needs estimates derived from ex-Kanwil and ex-Kandep operations do not include development expenditures (Daftar Isian Proyek—DIPs). The

The above table implies that the DAU and other sources of finance, in general, appear to result in a significant funding surplus for regional governments. Given all sources of revenue, regional governments, on the whole, appear to have almost Rp28 trillion more than they require to meet their expenditure needs. The data suggest that kabupaten/kota seem to have access to substantially more funds (a surplus slightly more than Rp26 trillion) than they need to carry out their assigned duties. On the other hand, it appears that provincial level funding, while apparently still in surplus (in the amount of Rp1.5 trillion), is at least close to required levels.

In any case, the implication here is that the pool of finance available to the DAU, taking other sources of revenue as given, is too large relative to expenditure requirements. That is, arguably, the central government has, on balance, transferred too much DAU to the regions; or, alternatively, it has transferred too little in the way of expenditure responsibilities. While it may have been politically difficult to do otherwise, the economic appropriateness of making such large relative transfers to the regions, at time of rather significant pressure on the central budget, can at least be questioned.[27]

It must be emphasized that these conclusions are very tentative and more research on these questions is needed. On the fiscal capacity side, additional efforts would concentrate on developing better estimates of potential own-source revenues and would be based on a more thorough examination of the tax bases to which local governments currently have access as well as normal tax rates applied to those bases. (The estimation of other sources of subnational revenue—transfers—is rather straightforward.) Improving estimates of real expenditure requirements is more problematic. Here, needed research would be based on an examination of assigned service responsibilities of subnational levels of government and a derivation of the legitimate costs related to carrying out those responsibilities at specified standards. Such a rigorous examination is not currently possible given a lack of clarity about subnational expenditure assignments and service standards and lack of sufficient data on service delivery costs, among other things. We will return to this question of the adequacy of DAU funding below after the DAU allocation methods are described.

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latter have not yet been decentralized to regional governments, although by law they should have been.

27. The planned central budget deficit for FY2001 was 3.7% of GDP or approximately Rp54.3 trillion. In the event the deficit appears to have been smaller, preliminary data suggest that the actual deficit amounted to just 2.3% of GDP or about Rp34.2 trillion.

3. Kabupaten/Kota DAU Allocation Methods

Provincial and kabupaten/kota DAU is allocated by formula. The methods employed to distribute DAU across kabupaten/kota in FY2002 are described and discussed next. Procedures used for the allocation of DAU to provinces are similar and briefly described later. It should be noted that DAU allocation techniques are still evolving and the distribution methods for FY2002 differ significantly from those used for FY2001, the first year of operations.[28] Where appropriate, differences in approach between the two years are noted. In addition, the appendix to this chapter examines, in tabular format, issues and outcomes related to DAU, especially regarding differences in aggregate amounts available, allocation procedures, and equalization impacts in FY2001 and 2002.

Kabupaten/kota DAU allocations may be written:

$$DAU_i = LSA_i + BFA_i + FA_i \tag{1}$$

where LSA is the lump sum amount, BFA is the balancing factor amount, and FA is the formula amount. The subscript i refers to kabupaten/kota governments.

The lump-sum amount is:

$$LSA_i = \frac{0.10 \bullet DAU_T}{n} \tag{2}$$

where DAU_T refers to the total pool of finance for kabupaten/kota. In monetary terms, the lump-sum amount provided to each local government in FY2002 is Rp17.87 billion.

The balancing factor amount may be written as:

$$BFA_i = \frac{Wage_i}{\sum_i Wage_i} \bullet 0.50 \bullet DAU_T \tag{3}$$

where Wage is the estimated wage bill for kabupaten/kota civil servants for FY2002. It is perhaps useful to note that the above formulation results in the funding of 77% of each local government's civil servant wage bill this fiscal year.

Note that equations (2) and (3) taken together indicate that 60% of DAU allocations are based on the lump sum and balancing factors, so that just 40% of the DAU is allocated via the fiscal gap formula as defined below. In FY2001, lump sum and balancing factor distributions accounted for just over 80% of

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28. See Lewis (2001) for a description and analysis of the DAU distribution mechanism for FY2001.

total kabupaten/kota DAU allocations. Some government officials have argued that the decrease in relative magnitude of the lump sum and balancing factor amounts this fiscal year implies an intention to phase out the use of these elements over the next couple of years.

The lump sum last year was derived simply as a residual and resulted from adjustments made to the total pool of finance for the DAU during state budget discussions with the parliament. The exact purpose of this year's lump sum is uncertain. Obviously, its significance is greater for relatively smaller places. As such, many observers have argued that the lump sum provides some, albeit limited, incentive for the creation of new (smaller) kabupaten out of established (larger) places. The extent to which the lump sum operates as such an incentive is unsure, but it is clear that the creation of new places continues in rapid fashion and strains the transfer system's ability to keep apace.

The balancing factor last fiscal year was a function of the previous year's SDO and INPRES allocations and was intended to operationalize a "hold harmless" provision. As result, in FY2001, kabupaten/kota governments were assured of a minimum 40% increase in grants compared with FY2000. The purpose behind the balancing factor this year is somewhat unclear. (Hold harmless provisions still remain but have been structured differently, as further described below). However, the fact that the BFA is based on civil servants' wages certainly suggests a different objective from the previous year. Indeed, many officials at the central and regional government level would very much like to see the balancing factor separated from the rest of the allocation mechanism with a view to creating an SDO-like transfer to fund local civil servant costs.

In equation form, the formula amount (FA) for kabupaten/kota can be written:

$$FA_i = \left(DAU_T - \sum_i LSA_i - \sum_i BFA_i \right) \bullet \frac{FG_i}{\sum_i FG_i} \qquad (4)$$

where FG is the fiscal gap.

The fiscal gap is defined as the difference between expenditure needs (EN) and fiscal capacity (FC). That is:

$$FG_i = EN_i - FC_i \qquad (5)$$

It is important to note that if the difference between expenditure needs and fiscal capacities is negative for a particular region, the fiscal gap, as defined in equation (5) above is set equal to zero; that is, the Indonesian system does not allow for negative grants.[29] This has significant implications vis-à-vis

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29. In the current context, a grant would only be negative if fiscal capacity

the system's equalization performance, as discussed more fully below. The DAU formula defines expenditure needs as the product between total local government expenditure and the expenditure needs index. Expenditures are actual amounts from FY2001 local government budgets (APBD). The needs index is a function of population, area, poverty, and a cost element. Data for these variables are from the most recent years available.

More specifically, expenditure needs can be expressed in equation form as:

$$EN_i = APBDEXP_T \bullet \left(0.4 \frac{Pop_i}{\sum_i Pop_i} + 0.1 \frac{Area_i}{\sum_i Area_i} + 0.1 \frac{PovGap_i}{\sum_i PovGap_i} + 0.4 \frac{Cost_i}{\sum_i Cost_i} \right) \quad (6)$$

where $APBDEXP_T$ is total local government expenditure from the previous year, Pop is population, Area is surface area, PovGap is the so-called poverty gap, and Cost is a cost index.

The first term on the right hand side of equation (6) illustrates very clearly one of the most obvious weaknesses of the DAU allocation formula. It makes apparent that, at the aggregate level, expenditure needs are simply assumed to be equivalent to actual expenditures. The problem, of course, is that kabupaten/kota governments may not actually need what they spend. Or, they may need more. In any case, real expenditure requirements can only be derived based on a thorough examination of the true costs of discharging a clearly defined set of service responsibilities at some predetermined standard or level of quality. None of these things is known with any degree of certainty in Indonesia and so there is little choice but to opt for an approach such as the above, at least temporarily.

The needs index itself is comprised of variables that ostensibly influence the demand for and/or cost of delivering local public services. Population, for example, clearly influences the need or demand for public services—the greater the population, the greater the aggregate demand for services, all other things being equal.

Area also appears to have an indisputable influence on expenditure needs, at least for rural areas. One might plausibly argue that, all other things remaining the same, larger rural places are relatively more in need of roads, school buildings, and health centers, for example, among other services. Area is probably less relevant for urban areas, however. The fact that the DAU allocation

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exceeded expenditure needs by an amount that was greater than the lump sum and balancing factors. The policy until now has been to guarantee DAU grants to be at least as large as lump sum and balancing factor amounts. If and when the latter two are phased out, then the stated "no negative grants" policy would take on more meaning.

procedure treats urban and rural places in a similar manner here and, in general, is of concern.

The need for including a poverty measure in determining relative local government expenditure requirements is not completely obvious. While the amount of poverty undeniably influences need for poverty-reduction programs, the level of government responsible for such efforts in Indonesia is still uncertain. It may well be that the central government has overall responsibility for poverty reduction. The impact of poverty on need for other local services, such as education, water, and roads is less than clear. While a direct relationship may exist between the extent of poverty and expenditure needs for services other than pure poverty-reduction ones, Indonesian analysts have not yet made a strong case for it.

The choice of poverty variable is also somewhat unusual. Last year, DAU designers employed the number of poor people as the poverty variable to help determine expenditure requirements. This at least makes some intuitive sense. This year the so-called poverty gap is used. The poverty gap is defined as the average proportionate distance of the poor from the poverty line across the whole population. More precisely:

$$P_1 = \frac{1}{n} \sum_{i=1}^{q} \frac{z - y_i}{z} \tag{7}$$

where P_1 is the typical notation for the poverty gap, n is total population, z is the poverty line, y_i is total expenditure of the ith person, and q is the number of people who fall below the poverty line. It is usually argued that the poverty gap measures of the depth of poverty.

No explicit reason was given for the change in formulation. Assuming that poverty is relevant in determining expenditure needs, it is hard to see how a measure of the depth of poverty would be more appropriate than the number of poor people.[30] In any case, this is clearly an area in which more research is needed.

The cost index employed in equation (6) above is intended to measure unavoidable differences in costs faced by local governments. Its derivation is based on differences in building construction costs across regions.[31] These costs

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30. Direct poverty reduction programs in Indonesia, such as rice subsidy programs and school food programs, for example, focus on allocating benefits to people or families classified as poor; benefits are standardized and are not adjusted for the depth of poverty as defined here.

31. This may not be the most appropriate index for measuring regional variation in the cost of delivering infrastructure services. Unfortunately, there is as of yet no better alternative. The Central Statistics Bureau is currently in the process, however, of

are assumed to be positively related to expenditure requirements associated with delivering local public services. Internationally, compensation for differences in such costs (as opposed to those that might arise from local policy decisions) is often defended on equity grounds. While this may be legitimate, it must be admitted that the influence of cost differentials has been formulated in a somewhat odd manner here. Typically, a cost index is structured into an allocation formula with a view to adjusting total expenditure needs directly (i.e. multiplicatively), after accounting for other needs factors. Thus, in the current context, ignoring for a moment problems related to the use of the area and poverty gap measures as discussed above, the influence of cost differential might be structured as:

$$\text{EN}_i = \left[\text{APBDEXP}_T \bullet \left(\alpha \cdot \frac{\text{Pop}_i}{\sum_i \text{Pop}_i} + \beta \cdot \frac{\text{Area}_i}{\sum_i \text{Area}_i} + \chi \cdot \frac{\text{PovGap}_i}{\sum_i \text{PovGap}_i} \right) \right] \bullet \frac{\text{Cost}_i}{100} \quad (8)$$

where $\alpha + \beta + \chi = 1$ and all other variables are as previously defined.

In the allocation method used to actually distribute DAU, the cost index is first averaged with noncost factors and then applied to expenditure needs. There is no clear economic rationale for this.

Finally, a brief comment is warranted on the weighting of needs factors in equation (6) above. Last year, each of the four needs factors was weighted equally. Many analysts were unhappy with that weighting scheme; it was argued, in particular, as a function of an empirical analysis of regional expenditures in Indonesia, that the weight accorded population was not commensurate with its influence on expenditure needs. So, the present scheme was adopted, at least partly in response to this criticism. Whether the adjustment is sufficient on these grounds is uncertain, but based on the earlier mentioned analysis, it seems less than adequate. In the end, the true influence of various needs factors, including population, can only be ascertained by more thoroughly disaggregated sectoral and spatial analysis.

This fiscal year's operationalization of fiscal capacity constitutes perhaps the greatest improvement over last year's procedures. Fiscal capacity is now straightforwardly defined as the sum of potential own-source revenues and other transfers (somewhat reduced). In equation form:

$$\text{FC}_i = \hat{\text{OSR}}_i + \text{SPT}_i + \text{SIT}_i + 0.75 \bullet \text{SNR}_i \quad (9)$$

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developing an index that might better measure differentials in the full range of costs associated with producing and providing subnational public services.

where SPT is shared property tax revenue, SIT is shared personal income tax revenue, and SNR is shared natural resource revenues. $\hat{OSR}$ in equation (9) is potential local own-source tax and nontax revenue, which is derived as the predicted value based on a regression of actual own-source revenue (OSR) for the most recent year available against gross regional domestic product from the services sector (GRDPS). That is:

$$OSR_i = \beta_0 + \beta_1 GRDPS_i + \varepsilon_i \qquad (10)$$

Potential own-source revenues are thus defined as a function of standard tax effort. The intention behind this formulation was, at least in part, to serve as an incentive to regional governments to mobilize revenues. It must be admitted, however, that regional officials do not understand well this feature. This lack of understanding detracts from possible incentive effects.

Note the natural resource revenue share coefficient limits a region's estimated fiscal capacity resulting from these transfers to 75% of the totals actually received. This unfortunate formulation resulted from the successful lobbying efforts of local government and local parliamentary associations. It is not a coincidence, of course, that the current heads of these associations are, for the most part, mayors and councillors from natural resource-rich kabupaten/kota.

Some mention might be made of missing transfers in equation (9). It is often argued that all sources of revenue should show up on the right-hand side of an equation defining fiscal capacity. And, in this regard, many analysts have argued that the DAK, for example, should be included in the definition of fiscal capacity of regional governments. The central government has asserted, however, that the DAK is reserved to fund atypical or extraordinary local expenditure needs. As such, they have explicitly rejected the inclusion of the DAK as a component of regional government fiscal capacity. On the other hand, analysts and central officials recognize that transfers made by provinces to kabupaten/kota (as mentioned above) should probably be included in the measure of the latter's fiscal capacity. Currently, however, a dearth of data prohibits such a formulation.

4. Hold Harmless Adjustments to Kabupaten/Kota DAU Allocations

Employment of the system described above generated the so-called original DAU allocations; that is, those that were presented to Parliament in the context of state budget negotiations. Parliament approved of the distribution methods, in general, but insisted, at the same time, that no local government should receive less in DAU in FY2002 than it received the previous year. This stipulation, of course, required some adjustments to the original DAU allocations.

The modifications were implemented by first comparing each place's

originally derived DAU allocation to that received the previous year and noting any associated surplus or deficit. Allocations of individual surplus regions were then reduced, where the amounts subtracted were equal to each place's share of the total surplus times the aggregate deficit. This total was then distributed across deficit regions to bring each of the latter's allocations up to previous year's amounts.

Subsequently, about Rp800 billion derived from the state budget contingency fund for FY2002 was used to add some amounts back into surplus regions' depleted allocations heretofore (where additional sums were based on relative size of earlier contributions). This compensation scheme made up for part, although not all, of amounts that were earlier taken away. In the end, so-called surplus regions lost a total amount of approximately Rp2 trillion in DAU allocations due to the adjustment procedures, while deficit regions gained approximately Rp2.8 trillion. What may not be immediately obvious is that those surplus regions were, as a group, relatively less well off than deficit regions. In any case, it is now clear that the adjustment procedures related to the implementation of hold harmless condition insisted upon by Parliament were unequalizing in their impact. More will be said about this later.

5. Provincial DAU Allocations

Provincial DAU allocations were derived in basically the same manner as just presented above for kabupaten/kota except that the lump sum and balancing factor amounts were based on 20% and 30% of total provincial DAU. This resulted in a lump-sum allocation of Rp46.8 billion to each province and a funding of 31% of each province's civil servant wage bill. Overall, therefore, the fiscal gap formula was used to allocate 50% of the total provincial DAU compared to 40% for kabupaten/kota. The reasons behind the different approach employed for provincial distributions have not been clearly stated and appear to be ad hoc. Provincial distributions were also subject to parliament's hold harmless stipulations, and an adjustment procedure similar to that outlined for kabupaten/kota was used.

6. Vertical Imbalances Revisited

Having explained and operationalized the concept of the fiscal gap, we are now in a better position to undertake another approach to estimating the adequacy of the DAU pool of funds (together with other revenues) relative to aggregate expenditure needs. This method compares regional government DAU funding to the sum of regional government net fiscal requirements, where the latter are defined as the difference between expenditure needs and fiscal ca-

pacities. We use the same definitions of expenditure needs and fiscal capacities as described above except that for the latter we set the coefficient of natural resource revenue shares equal to one (assuming that the current formulation, in this regard, lacks economic merit). Given the criticisms regarding the current measures of expenditure needs noted in the earlier discussion, this procedure might best be viewed as a check of the internal consistency of government procedures in deriving the DAU pool of funds, on the one hand, and allocating those funds, on the other.

The most important difference between this technique and the method previously used is that here aggregate net requirements are "built from the ground up", as it were. In summing up these needs, regions with negative net requirements (i.e., greater fiscal capacities than expenditure needs) are first zeroed out (as they are in the determination of DAU allocations). Such a technique results in estimates of net fiscal needs that are larger than those that will be derived from a strictly aggregate examination of requirements and capacities. See Table 6 below for the output of this method using FY2002 DAU data.

TABLE 6
Net Fiscal Needs and DAU Amounts, FY 2002
(Rp Trillions)

Level of Government	Net Fiscal Needs	Share	DAU Amounts	Share
Provinces	7,285.9	0.143	6,911.4	0.100
Kabupaten/Kota	43,707.8	0.857	62,202.7	0.900
Total	50,993.7	1.000	69,114.1	1.000

Source: Author's own calculations based on MOF data.

As can be seen, total net regional fiscal needs, estimated in this manner, are just less than Rp51 trillion while actual DAU allocations are just greater than Rp69 trillion. This again suggests that the DAU is too large relative to what is needed. In addition, the information in the table implies that a more appropriate share of net domestic revenues for the DAU is around 18% rather than the current (minimum of) 25%. Also, the table suggests that provinces do not, in fact, receive enough DAU compared to what they require. And, as before, the data here imply that kabupaten/kota receive significantly more than needed. Finally, the data suggest that a more appropriate split of the DAU for provinces and kabupaten/kota might roughly be 15% and 85%, as opposed to the current distribution of 10% and 90%, given the assumptions here.

7. Equalization Performance of DAU

The goal of the DAU transfer scheme in terms of equalization, as stated in the law, is to "make even the fiscal capacities of regional governments to finance their expenditure needs." This makes clear that a proper test of the mechanism's equalization effects requires, in the first instance, the existence of good measures of regional expenditure needs and fiscal capacities. But the above examination of the DAU formula suggests that the current methods of estimating needs and capacities are at least somewhat flawed.[32]

The first approach to examining the equalization performance of the DAU ignores these complications and instead focuses on the variation in actual per capita revenues of kabupaten/kota. If DAU transfers were to equalize, it might be reasonable to expect, at a minimum, that the variation in the per capita revenues among local governments would be smaller after transfers were made than before. Table 7 below provides some information on the variation of actual revenues for FY2002.[33]

The table shows maximum and minimum per capita revenues across kabupaten/kota and the ratio between the maximum and minimum, along with the coefficient of variation (i.e., the standard deviation divided by the average) of per capita revenues. The assumption is that the smaller the ratio of maximum to minimum values and the smaller coefficient of variation of per capita revenues, the greater the equalization. The base case relates to local government own-source revenues. To these own-source revenues are added, in succession, property-related shared taxes, shared personal income taxes, shared natural resource revenues, DAU balancing factor amounts (including lump-sum amounts), DAU formula-derived amounts, and, finally, adjustments to original DAU made to operationalize the hold harmless condition.

The table shows that the variation in per capita revenues, as defined by the ratio of maximum to minimum values and the coefficient of variation, is lower after DAU allocations are made than before such transfers are added. In other words, the distribution of per capita revenues is more equal after the transfers than before. (The maximum to minimum ratio and coefficient of variation

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32. A proper examination of equalization performance might also incorporate an analysis of direct central government expenditure in the regions. As noted above, the central government continues to make expenditures on essentially regional functions via the so-called regional DIPs. Unfortunately, there are no reliable regionally disaggregated data on such expenditures.

33. The own-source revenues here are actuals, adjusted for inflation, for the most recent year available, FY2000. Revenue-sharing figures are estimated actual amounts for FY2002. DAU amounts are actual allocations for FY2002.

of 387.0 and 2.559, respectively, before DAU transfers, declined to 45.8 and
1.030, respectively, after DAU transfers.) The general conclusion that can be
drawn from this analysis, therefore, is that DAU transfers appear to be equaliz-
ing, at least under the admittedly somewhat weak standard considered here.

Furthermore, the table suggests that the formula component of the trans-
fers is somewhat more equalizing than the balancing amount. (That is, the rel-
evant measures decline after formula amounts are added to balancing factor
distributions.) The table also shows that the hold harmless adjustments to the
original DAU allocations are unequalizing under the assumptions here. The
table provides other interesting results as well. It shows, for example, that
the transfer of property-related taxes tends to equalize the distribution of own-
source revenues and that, somewhat surprisingly, the personal income tax tends
to equalize per capita revenues at the local level even further.[34] The table also
demonstrates the rather extreme unequalizing nature of the natural resource
transfers.

TABLE 7
Variation in Per Capita Revenues Across Local Governments
FY2002

Revenues	Max	Min	Max/Min Ratio	Coefficient of Variation
	(Rupiahs)			
Own-Source Revenues	855.3	0.3	2,835.9	2.245
+ Property-Related Transfers	918.3	10.2	90.1	1.323
+ Personal Income Tax Transfers	924.5	11.2	82.2	1.261
+ Natural Resource Revenue Transfers	4,916.4	12.7	387.0	2.559
+ DAU Balancing Factor Amounts	5,732.7	98.5	58.2	1.152
+ DAU Formula Amounts	7,108.8	160.4	44.3	0.958
+ Hold Harmless Adjustments	7,090.9	154.9	45.8	1.030

Source: Author's own calculations.

There are at least two possible criticisms of the above methodology. The
first is that it has not incorporated, in an adequate way, notions of local expen-
diture needs and fiscal capacities (i.e., potential own-source revenues together
with transfers).[35] One way to get around this is to examine the variation in the

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34. Recall that the allocation of the shared personal income tax revenues across
kabupaten/kota is carried out by the province. Unfortunately, there is, as of yet, no
information on the methods employed by provinces to distribute such revenues.

35. The implicit assumptions are that per capita expenditure needs are the same

distribution of the ratio of potential revenues to expenditure needs across all local governments before and after transfers. While it may be relatively easy to plausibly estimate potential revenues, the difficulties associated with deriving a single measure of expenditure needs would seem to prohibit such an approach, at least for the time being.

The second and related concern is that the method ignores the important simultaneous relationship between expenditure needs and fiscal capacities, on the one hand, and transfers, on the other. That is, in examining the equalization performance of the DAU allocation scheme, it is useful to know how transfers vary in amount with respect to variations in expenditure needs and/or fiscal capacities. More particularly, from an equalization point of view, it might be expected that as expenditure needs rise, transfers should increase, with fiscal capacities remaining the same. And as fiscal capacities increase, it might be argued that transfers should be smaller, holding expenditure needs constant. This is perhaps a slightly stricter standard of equalization than the one employed above.

The difficulty, again, concerns estimating expenditure needs. While it may not be possible to derive a plausible single measure of expenditure needs, some of the factors that are important in determining needs, in general, are at least known. And some of these determinants were used in the current DAU methodology to estimate needs; that is, population, area, poverty, and relative cost factors, in some weighted combination, all at least conceivably help determine real requirements and therefore transfers.[36] The approach used directly below assumes that these four variables, along with urban status, help determine expenditure requirements and influence allocations. But rather than specifying exactly how they do this a priori, as the current DAU formula mechanism does, the method employed here is "let the data decide."

Defining an appropriate measure of fiscal capacity is less controversial. Fiscal capacity is defined only slightly differently from the way in which it is defined under present DAU allocation procedures. There are two minor, although conceptually important, differences. First, in the estimation of potential own-source revenues, a dummy variable to indicate urban status is added to the right-hand side of the regression equation (10) to operationalize the notion that urban own-source revenues tend to be larger than those of rural places, all other things being equal. Second, the coefficient of natural resource revenues is set

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across all places and that own-source revenues are equivalent to potential own-source revenues. Both assumptions are obviously unrealistic.

36. The analysis holds in abeyance final judgment about the relationship between poverty and expenditure requirements. For purposes of argument, the examination here simply adopts the basic assumptions of the DAU designers; that is, that poverty is generally important in influencing expenditure needs of regional governments.

equal to one instead of 0.75 in equation (9), under the assumption that the latter specification is the result of a political deal and has no economic basis.

Transfers are posited to be a function of fiscal capacity and expenditure needs and a simple linear regression technique is used to operationalize the relationship. Both original DAU (DAUPC) and adjusted DAU (AdjDAUPC) transfer allocations are considered. In addition, the two major components of the DAU—the balancing factor (BALPC) and formula amounts (FORMPC)—are treated separately. Per capita transfers, variously defined, are regressed against per capita fiscal capacity (FISKPC); cost-index adjusted[37] population (POP•CST), area (for kabupaten only—AREA•CST•KAB, where KAB is a dummy variable for kabupaten), and poverty rate (POV•CST);[38] and a dummy variable for urban status (KOTA, set equal to 0 for kabupaten and 1 for kota). The latter variable is intended to operationalize the assumption that urban places are, de facto, charged with delivering a broader range of services than nonurban places and that therefore they have greater expenditure requirements than rural places, all other things being equal.[39] The multiplicative specification of the influence of the basic needs variables is suggested by the standard employment of a cost index, as argued above. All variables (except the dummy) are entered into the equation in logarithmic form.

The assumption here is that, for transfers to be equalizing, per capita allocations should be positively related to expenditure need variables (cost-adjusted area and poverty and urban status) and negatively related to per capita fiscal capacity. There is no a priori expectation regarding the influence of cost-adjusted population. Table 8 provides the results of the ordinary least squares regression.[40] For each of the four dependent variables, the table shows the

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37. The costs employed here are the Rupiah costs (in thousands) per square meter of constructing a standard type of building and a standard type of fence around that building. The cost index is calculated by dividing each place's cost figure by the average for the entire sample and multiplying by 100. The current DAU allocation mechanism uses the same cost figures but the cost index was derived somewhat differently.

38. The incidence of poverty is used instead of the number of poor people or the poverty gap to operationalize poverty. This is the more straightforward approach and it also has the benefit of avoiding potential multicollinearity problems with population.

39. The problem with this dummy variable approach is that it ignores the fact that many kabupaten have significant urban populations. As such, it might be better to use a variable that denotes the percent of a local government's total population that is urban. Unfortunately, there are no up-to-date and reliable data on the proportions of kabupaten populations that are urban. This dearth of data is largely a function of statisticians' inability to keep up with the rapid creation of new local governments over the past several years.

40. The OLS technique results in no obvious problems of heteroscedasticity or autocorrelation.

estimated regression coefficients for the set of independent variables. The absolute values of the t-statistics are located in parentheses under each respective coefficient; in addition, the table notes whether the estimated coefficient is statistically different from zero at the 0.05 level. The adjusted R^2 for each regression is found along the bottom row of the table.

TABLE 8
Equalization Analysis Regression Results

Independent Variable	BALPC	FORMPC	DAUPC	Dependent Variable AdjDAUPC
Constant	8.477 *	17.294 *	9.972 *	8.297
	(34.067)	(19.302)	(36.987)	(38.357)
FISKPC	–0.030	–0.986 *	–0.165 *	0.019
	(1.625)	(14.906)	(8.303)	(1.196)
POP*CST	–0.556 *	–1.690 *	–0.755 *	–0.586
	(22.578)	(19.059)	(28.278)	(27.354)
AREA*CST*KAB	0.035 *	0.304 *	0.105 *	0.079
	(2.480)	(6.051)	(6.969)	(6.504)
POV*CST	0.040	–0.037	0.090 *	0.106
	(1.910)	(0.488)	(3.942)	(5.809)
KOTA	0.317 *	2.516 *	0.884 *	0.575
	(2.619)	(5.768)	(6.733)	(5.461)
Adjusted R^2	0.804	0.532	0.823	0.886

The table shows that per capita balancing factor transfers are significantly and positively related to (cost-adjusted) area (i.e., for kabupaten) and to urban status. Such transfers are not related to cost-adjusted poverty at the standard 0.05 level but are statistically significant at just a slightly lower level (0.056). Balancing transfers are not significantly related to per capita fiscal capacity. These results indicate that balancing factor transfers are partially equalizing with respect to expenditure needs, as defined above, but not with regard to fiscal capacity, under the assumptions employed here.

　　　Per capita formula amounts are significantly and positively related to (cost-adjusted) area and urban status but not to (cost-adjusted) poverty. Formula-based transfers are significantly and negatively related to per capita fiscal capacity. The equalization impact of formula allocations is, therefore, again somewhat mixed with regard to expenditure needs but unambiguous with regard to fiscal capacity.

　　　Overall, original DAU transfers perform rather well by the standards under discussion here. Per capita DAU transfers, before adjustments, are significantly and positively related to (cost adjusted) kabupaten area and poverty

variables[41] as well as to urban status. In addition, per capita allocations are significantly and negatively related to fiscal capacities. These results suggest that, overall, DAU transfers are equalizing with respect to both expenditure needs and fiscal capacities.

Unfortunately, the same cannot be said for per capita adjusted DAU transfers. While per capita adjusted allocations are positively related to all expenditure needs variables, they are not significantly related to fiscal capacities. It is reasonable to conclude that adjustments related to the hold harmless stipulation insisted upon by the Indonesian parliament resulted in transfers that were less equalizing than they otherwise would have been, at least given the assumptions employed here.

As mentioned above, there are no a priori expectations regarding the significance or sign of the coefficient of the (cost-adjusted) population variable. As it turns out, population is the most important variable overall in explaining variation in per capita transfers (as judged by the values of the standardized beta coefficients—not shown in the table) and the results here are indicative of an assumption of economies of scale in the provision of services financed by transfers; that is, as population increases, per capita transfers decrease, all else remaining the same. Of course, much more detailed analysis needs to be done to confirm the existence of such economies of scale for particular services and/or in general.

8. Dana Alokasi Khusus (DAK)

The DAK is Indonesia's new special-purpose transfer. It comprises two distinct elements. One is based on the allocation of national reforestation revenues. Forty percent of state reforestation levies on companies engaged in the sector are returned to the kabupaten of origin and are to be used exclusively for local reforestation activities. This is really nothing more than a simple revenue sharing transfer of the kind that was discussed above. Its attachment to the DAK is an artifact of the negotiations between government and parliament attendant to the ratification of Law 25 of 1999.

The second component of the DAK is the real special-purpose grant. But there will probably not be just one such DAK; most likely, there will be many,

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41. The fact that the poverty variable is significant here may be considered somewhat of a statistical fluke as it does not appear among the statistically significant variables for either of the two components of DAU transfers (i.e., balancing and formula amounts).

one for each of the important line ministries, such as health, education, and infrastructure, among others. In any case, these DAKs are intended for use in financing expenditures on national priority infrastructure services that are outside the scope of DAU funding.

The specific focus of this particular grant component is on financing capital expenditures, although operations and maintenance can also be funded through the grant, at least for a limited period of time (three years). This element of the DAK is specified as a matching grant and government regulations insist that the region's contribution should be no less than 10% of total project expenditures. The allocation of the DAK is to be based on proposals from the regions. A recent Ministry of Finance policy paper notes that DAKs are intended to promote minimum standards and compensate for benefit/cost spillovers.[42]

Only the reforestation component of the DAK has been made operational so far. Funding related to this element of the DAK is quite limited, as shown in Table 2. The other major component of the DAK has not yet been put into effect and so it is not possible to comment on its performance vis-à-vis specific stated or more general objectives. Based on its current design, however, at least three important issues can be raised.

The first concern relates to the transfer's intended support for the attainment of minimum service standards. While the DAK hopes to promote minimum standards, somehow defined, it apparently will do so only for the construction of national priority infrastructure and possibly for limited operations and maintenance activities related to such infrastructure. The promotion of minimum standards for other sorts of (non-national priority) infrastructure investment and/or other kinds of longer-term operations and maintenance or service delivery activities will not, it appears, receive support via the DAK. This seems to be a rather uneven and inconsistent approach to the promotion of infrastructure service delivery standards.

The second and related issue concerns DAK incentives to local governments for the delivery of services with benefit spillovers. It is usually argued that subnational governments tend to underprovide (from a national point of view) services with significant interjurisdictional spillovers because they only care about benefits that accrue to their own populations. The allocation of intergovernmental transfers to regions to encourage the appropriately increased delivery of such services is one way of overcoming the potential inefficiencies. Now, the DAK apparently intends to provide incentives to regions to build infrastructure that is adequate (in size and scope) to deliver services at the nationally desired level. But such support will appear to cease after the assets have been developed (and the three-year time limit on support for operations

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42. See Ministry of Finance (2002).

and maintenance has expired). This leaves regions without an incentive to actually deliver services at the desired level. Inefficiencies would be expected to ensue.

A final concern relates to the possible establishment of formal linkages between the DAK and loan finance for regional infrastructure development. Theory suggests that blending grants and loans in infrastructure finance might have many benefits, including supporting fiscally weak governments to borrow.[43] While the current DAK design documentation does not appear to prohibit the development of such linkages between the DAK and regional borrowing, neither does it elucidate the possibilities. This is an issue that merits increased thought and discussion.

D. Summary and Policy Recommendations

Indonesia has recently begun the implementation of a major fiscal decentralization program. As part of that effort, the system of intergovernmental transfers has undergone significant changes. Revenue sharing has been considerably expanded in scope and level, central-local transfers have been rationalized, and attendant pools of finance have been substantially increased.

The most important goals of the new system of transfers are to address regional aspirations for increased access to revenues and more control over the use of finance and to correct vertical and horizontal fiscal imbalances. There are also other objectives for the transfer system, such as supporting minimum service standards and compensating for benefit spillovers. These latter objectives are, however, linked specifically to the DAK which, as noted above, is not yet operational. It should be a priority of the government to further develop this important intergovernmental fiscal tool. In the course of doing so, the government would be wise to revisit the notion of limiting (for the most part) DAK to the support of regional capital expenditures. Keeping such restrictions would constrain the full attainment of goals related to minimum standards and benefit spillouts.

Meeting regional government aspirations and demands for more money has, in fact, been the driving force behind Indonesia's decentralization program. The regional assignment and delivery of new service responsibilities have, by comparison, been given rather short shrift. This is unfortunate and points to a major problem with fiscal decentralization in Indonesia today. The lack of clarity on service assignment hinders the appropriate assignment of revenues and constrains accountability at the regional level. The government is now developing a program to clarify regional government service assignments and to

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43. See Smoke (1999) for a discussion of grant-loan linkages in the Indonesian context.

outline standards for service delivery. It is too early to judge the success of this important effort.

Revenue sharing has been the major instrument for central government to address regional fiscal demands. The focus on revenue sharing is a function of the historical unhappiness of many in the regions who have felt that they have not sufficiently benefited from revenues that are derived from "their land" in the first instance. Apparently, many Indonesians strongly hold the view that what is produced on or under their soil is theirs. Many officials and others in the regions remain unconvinced they are receiving adequate amounts of revenues in question.

While an expansion of revenue sharing would probably not be fiscally prudent from a macroeconomic perspective, several efforts might be undertaken to address current worries along these lines. For natural resource revenues, concerns could, at least in part, be addressed by making payments directly to the regions, instead of first collecting total revenues at the central level and then distributing them back to regions, as is the current practice. At the very least, central officials could carry out calculations of total natural resource revenues earned and shared in a more transparent manner. Distribution of the income tax will be improved by allocating it to regions based on the place of residence of the income earner rather than on location of the employer, as is apparently currently done. An even better approach to sharing the personal income tax is to restructure the transfer as a tax base sharing instrument—that is, by using a "piggyback" mechanism. In addition, the property taxes should be decentralized to regional governments. The transfer of these taxes could begin more or less immediately with devolution of tariff control but should probably eventually extend to all relevant administrative functions.[44]

Of course many would, on the contrary, advocate an outright reduction in revenue sharing from its current levels. While on paper this may seem like a good idea, it does not seem to be a real possibility, at least in the present politically charged environment. More likely, Indonesians and others will have to learn to accept the considerable downside associated with revenue sharing, as it is currently designed, at least in the near- to medium-term.

Revenue sharing and grants together have been successful in addressing vertical fiscal imbalances at the regional government level. In fact, intergovernmental transfers may have gone too far in this respect; that is, at the aggregate level, at least some evidence suggest that too much money may have been allocated to regional governments vis-à-vis their expenditure needs. Of course,

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44. Restructuring the personal income tax sharing via piggyback methods and decentralizing the property tax are both now under discussion in the Ministry of Finance. See Ministry of Finance (2002).

more research is needed to confirm this. If true, however, this would be a particularly important problem for the central government to address head-on, especially at a time of not insignificant pressure on the state budget.

As suggested above, it is probably not politically feasible at this time to resolve this difficulty by reducing aggregate revenue sharing or DAU allocations to the regions. Another, perhaps more feasible, approach to addressing the (potential) problem of overallocation of transfers, is to devolve greater central government expenditures in the regions (i.e., regional DIPs) to the regions themselves—without decentralizing additional finance. Many central agencies have retained expenditure authority over what are now essentially local functions. The decentralization of an appropriate amount of these expenditure responsibilities to subnational governments could, theoretically at least, have the effect of bringing central and aggregate regional fiscal mismatches back into balance.

Although regional governments, in general, may have been allocated more fiscal resources than needed, this may not be true for provinces. As noted above, some evidence suggest that provinces may not have been given sufficient access to resources to meet their expenditure requirements. This again requires more study. If true, however, it suggests that the methods by which revenues are shared between provinces and kabupaten/kota and by which provincial and local DAU pools of finance are determined might need to be revisited. A modification of arrangements for distributing shared revenues and grants between levels of subnational government will not be politically uncomplicated, of course, but it may be more feasible than making outright cuts to such transfers.

It is basically the job of the DAU to correct horizontal imbalances. This task is made more difficult than it otherwise would be because of the unequalizing nature of revenue sharing, as noted above. These inequities could, to a large extent, be overcome if a system of negative grants could be implemented. Alas, such a fraternal system of transfers is probably not viable in Indonesia at present, at least as judged by reactions to initial proposals for such.

In any case, while Indonesia has made some progress in addressing equalization objectives, as demonstrated above, more could still be done, even given the constraints noted. More work needs to be done at the technical level to improve the DAU allocation formula. In the medium term, factors that better proxy expenditure requirements and fiscal capacity need to be found and employed. In the long run, expenditure requirements should be more precisely estimated for individual governments as a function of the real costs of achieving some specified standard of service delivery. In addition, fiscal capacities need to be more exactly derived as a function of size of tax bases over which local governments actually have some control. A general issue for consideration is whether urbanized and rural areas should be treated separately in estimation procedures, given their very real differences in service responsibilities,

costs, and fiscal capacities. A transition plan for removing the balancing factor from the distribution formula gradually over time needs to be formally specified. The hold harmless condition, which was perhaps useful in the first year of DAU operations, should now be relaxed—its continued use directly constrains equalization goals.

In the end, of course, some horizontal imbalances are likely to remain, as they do everywhere in the world. This point notwithstanding, it would be useful for Indonesians to sort out, in more precise terms than they have so far done, the degree of fiscal inequality they are willing to tolerate. But they should not stop there. The entire process of fiscal decentralization in Indonesia would benefit greatly from increased clarity of its objectives and goals. Without a more explicit recognition of what decentralization is trying to achieve, how will Indonesians know the extent to which this important endeavor has been successful?

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Appendix: Dana Alokasi Umum, Fiscal Years 2001 and 2002

Feature	FY 2001	FY 2002
Total Pool of Funds	25 percent of total national revenues (net of shared amounts). Rp 60.517 trillion.	25 percent of total national revenues (net of shared amounts). Rp 69.114 trillion.
Local and Provincial Shares	90 percent for kabupaten/kota (Rp 54.279 trillion); 10 percent for provinces (Rp 6.238 trillion).	90 percent for kabupaten/kota (Rp 62.203 trillion); 10 percent for provinces (Rp 6.911 trillion).
General Allocation Mechanism	$DAU_i = LSA_i + BFA_i^* + FA_i$	$DAU_i = LSA_i + BFA_i + FA_i$
Lump Sum Amount	$$LSA_i = \frac{DAU_{T2} - \left(\sum_i BFA_i^* + \sum_i FA_i \right)}{n}$$	$$LSA_i = \frac{0.10 \bullet DAU_T}{n}$$
Balancing Factor Amount	$$BFA_i = 1.3 \bullet SDO_i + 1.1 \bullet INPRES_i$$	$$BFA_i = \frac{Wage_i}{\sum_i Wage_i} \bullet 0.50 \bullet DAU_T$$
Formula Amount	$$FA_i = \left(DAU_{T1} - \sum_i BFA_i \right) \bullet \frac{FG_i}{\sum_i FG_i}$$	$$FA_i = \left(DAU_T - \sum_i LSA_i - \sum_i BFA_i \right) \bullet \frac{FG_i}{\sum_i FG_i}$$
Fiscal Gap Component	$FG_i = EN_i - FC_i$; allocated 20 percent of total DAU.	$FG_i = EN_i - FC_i$; allocated 40 percent of total DAU.
Expenditure Needs	$$EN_i = \left(\frac{APBDEXP_T}{n} \right) \bullet \frac{1}{4} \left(\frac{Pop_i}{\frac{\sum_i Pop_i}{n}} + \frac{Area_i}{\frac{\sum_i Area_i}{n}} + \frac{Pov_i}{\frac{\sum_i Pov_i}{n}} + \frac{Cost_i}{100} \right)$$	$$EN_i = APBDEXP_T \bullet \left(0.4 \frac{Pop_i}{\sum_i Pop_i} + 0.1 \frac{Area_i}{\sum_i Area_i} + 0.1 \frac{PovGap_i}{\sum_i PovGap_i} + 0.4 \frac{Cost_i}{\sum_i Cost_i} \right)$$
Fiscal Capacity	$$FC_i = \left(\frac{OSR_T + SPT_T}{n} \right) \bullet \frac{1}{3} \left(\frac{\frac{NRO_i}{GRDP_i}}{\frac{\sum_i NRO_i}{\sum_i GRDP_i}} + \frac{\frac{NNRO_i}{GRDP_i}}{\frac{\sum_i NNRO_i}{\sum_i GRDP_i}} + \frac{\frac{LF_i}{Pop_i}}{\frac{\sum_i LF_i}{\sum_i Pop_i}} \right)$$	$FC_i = O\hat{S}R_i + SPT_i + SIT_i + 0.75 \bullet SNR_i$ where $O\hat{S}R$ is the predicted value derived from the regression: $OSR_i = \beta_0 + \beta_1 GRDPS_i + \varepsilon_i$
Provincial Allocations	$$DAU_i = 0.8 \bullet DAU_{T2} \bullet \left(\frac{SDO_i + INPRES_i}{\sum_i SDO_i + INPRES_i} \right) + 0.2 \bullet DAU_{T2} \bullet \left(\frac{FG_i}{\sum_i FG_i} \right)$$	Same as for local governments except that lump sum and balancing factor based on 20 and 30 percent of total provincial DAU, respectively.
Hold Harmless Condition	For local governments only. Built into balancing factor; local governments assured of at least 40 percent increase over previous year.	Insisted upon by Parliament. Led to "adjusted DAU" whereby both provincial and local governments assured of no less than previous year.
Use of Contingency Fund	A total of Rp 2.8 trillion allocated to regional governments to cover estimated shortfalls in finance. The total includes Rp 1.2 trillion for provinces and Rp 1.6 for kabupaten/kota. Allocations based on proposals from the regions and made at various times during the course of the fiscal year.	A total of Rp 2.1 trillion distributed to regional governments as part of DAU allocations. Distributions necessitated by Parliament's hold harmless stipulation. Total includes Rp 1.2 for provinces and Rp 0.81 trillion for kabupaten/kota governments.
Equalization Performance	Variation in distribution of per capita revenues smaller after DAU allocations than before. Per capita DAU allocations positively related to both expenditure needs and fiscal capacities.	Variation in distribution of per capita revenues smaller after DAU allocations than before. Per capita DAU allocations, before hold harmless adjustments, positively related to expenditure needs and negatively related to fiscal capacities. After adjustments, per capita DAU allocations positively related to expenditure needs but unrelated to fiscal capacities.

Variable Definitions

FY 2001

i	subscript denoting region
n	subscript denoting total number of regions
T	subscript denoting total of variable in question
T1	subscript denoting total value before changes to draft state budget
T2	subscript denoting total value after changes to draft state budget
DAU	DAU allocation
LSA	lump sum amount
BFA	balancing factor amount
BFA*	balancing factor amount after adjustments
FA	formula amount
SDO	routine grant, from previous fiscal year
INPRES	development grant, from previous fiscal year
FG	fiscal gap
EN	expenditure needs
FC	fiscal capacity
APBDEXP	local government expenditure
Pop	population
Area	area
Pov	incidence of poverty
Cost	cost index
OSR	own-source revenue
SPT	shared property taxes
NRO	product from natural resources sector
NNRO	product from non-natural resources sector
LF	labor force
GRDP	gross regional domestic product

See Lewis (2001) for further explanation

FY 2002

i	subscript denoting region
n	subscript denoting total number of regions
T	subscript denoting total of variable in question
DAU	DAU allocation
LSA	lump sum amount
BFA	balancing factor amount
Wage	civil service wage bill
FA	formula amount
FG	fiscal gap
EN	expenditure needs
FC	fiscal capacity
APBDEXP	local government expenditure
Pop	population
Area	area
PovGap	poverty gap
Cost	cost index
OSR	own-source revenue
SPT	shared property taxes
SIT	shared personal income tax
SNR	shared natural resource revenues
GRDPS	gross regional domestic product, services sector

See text for further explanation