

A Preliminary Simulation of Education and Health Block Grants in Tanzania

August 2003

1. Overview

As part of the ongoing preparations for the implementation of formula-based block grants in Tanzania, a simulation model was produced to simulate the incidence of local government block grant allocations for the education and health sectors for budget year 2004/05. The current simulation model is an updated and more targeted version of the simulation model produced as part of the “Final Report: Developing a System of Intergovernmental Grants in Tanzania” (Boex et al 2003).⁹

The current version of the simulation model was developed to provide insight into the incidence of local government resources under a formula-based approach, allowing the Government of Tanzania to consider different formulas, as well as phasing-in and holding-harmless options, by estimating the cost of the different policy scenarios. This technical note provides an overview of the simulation model, presents preliminary simulation results, and discusses the key policy implications of the preliminary results.

The current version of the simulation model computes the simulated allocation of sectoral block grants in Tanzania in four basic steps:

1. As a first step, the simulation model allows the user to define the available budget envelopes for the sectoral block grants for education and health care, respectively. The block grant amounts specified by the user define the block grant pools before taking into account either the potential savings from phasing-in or the potential additional costs that could arise from holding harmless. The sectoral grant pools are entered in the bright green cells of the Policy worksheet (Figure 1). The default budget envelopes included in the simulation model for 2004/05 are set equal to amounts budgeted for 2002/03, notably Tsh 170,242 million for local education and Tsh 43,643 million for local health.¹⁰

⁹ The Final Report and supporting materials, including the original simulation model, are temporarily available online at <http://isp-aysps.gsu.edu/projects/tanzania/index2.html>.

¹⁰ At the time of writing, local government allocations for 2003/04 were unavailable to the author.

2. As a second step, the simulation model allows the user to define the allocation formulas for the two sectoral block grants in the light blue cells in the Policy worksheet. The allocation formulas included in the simulation model are discussed further in Section 2 of this technical note. Please note that the data upon which the preliminary simulations rely (contained in the Data worksheet) are not accurate nor complete, as some outdated variables were used and some values had to be imputed. As such, the preliminary simulations only provide indicative estimates of the actual allocations of block grants for BY 2004/05.
3. As a third step, the simulation model allows the user to define the phasing in and holding harmless options in the bright yellow cells in the Policy worksheet. Descriptions of the phasing-in and holding harmless options follow in section 3 and 4 of this short technical note, respectively.
4. Fourth, based on the policy parameters specified by the user, as well as the data included in the model, the spreadsheet computes the simulated allocation of block grants. The computations for the education block grant take place in the “education” worksheet; the simulations for the health block grant are computed in the “health” worksheet.

Figure 1
Developing a System of Formula-Based Allocations for local government authorities in Tanzania: Policy Decisions Worksheet

The screenshot shows a Microsoft Excel spreadsheet with the following visible content:

- Title Bar:** Microsoft Excel - spreadsheet model (02/14/05)
- Worksheet Title:** Developing a System of Formula-Based Allocations for LGAs in Tanzania
- Section 1: Vertical Allocation of Resources**
 - 2004/05
 - 2002/2003
 - Local Education Allocations: 25,242
 - Local Health Allocations: 43,424
 - Local Education Allocations: PE Dist: 32,288; DC District: 32,892
 - Local Health Allocations: 34,872; 34,892
- Section 2: Local Education Allocations**
 - Factor weight 1: [input field]
 - Factor weight 2: [input field]
 - Factor weight 3: [input field]
 - Factor weight 4: EQUALITY: 0.000
 - Phasing in (percentage): 25
 - Holding Harmless percentage (PE): 100
 - Holding Harmless DC based on PE: 100
 - Holding Harmless percentage (DC): 100
- Section 3: Local Health Allocations**
 - Factor weight 1: [input field]
 - Factor weight 2: [input field]
 - Factor weight 3: [input field]
 - Factor weight 4: EQUALITY: 0.000
 - Phasing in (percentage): 25
 - Holding Harmless percentage (PE): 100
 - Holding Harmless DC based on PE: 100
 - Holding Harmless percentage (DC): 100

2. Sectoral allocation formulas

The sectoral allocation formulas for local education and local health care are to be determined during the implementation phase of formula-based block grant system in Tanzania during the latter half of 2003. The final form of the sectoral formulas will be decided by the respective sectoral block grants implementation teams with concurrence from the overarching MOF-RALG block grants implementation team. However, the simulation model requires allocation formulas to be selected in order for the model to compute simulated allocations.

Two formulas have been raised for consideration by the Education Block Grant Implementation Team, notably (1) allocating local education resources in proportion to enrollment levels, and (2) allocating local education resources based on the number of school-aged children in each local government. (More complex formulas including other allocation factors such as land area and poverty are also still under consideration by the Ministry of Education). The pros and cons of these two approaches are discussed in greater detail in the “Final Report: Developing a System of Intergovernmental Grants in Tanzania” (Boex et al 2003). For the purpose of the preliminary simulation, education funds are allocated 100 percent in proportion to the number of school-aged children in each local government authority.

Consensus seems to have been reached within the Ministry of Health regarding the sectoral allocation formula for local health care. In addition to the overall population, MoH has decided to give extra resources to three “special needs populations,” namely the rural, poor, and children and mothers. Consistent with this formula, the simulation model allocates health care grants in proportion to four factors:

- Population, as a measure of the general health care needs of the local government area: 70 percent
- Additional needs of rural areas, as measured by district medical vehicle mileage: 10 percent
- Additional needs of poor residents, as measured by the estimated number of poor residents: 10 percent
- Additional needs of children and mothers, as measured by under-five mortality levels: 10 percent

3. Phasing-in

As the Government of Tanzania moves to introduce a system of formula-based block grants, two important implementation questions should be answered: First, should the new formula-based allocations be phasing in? The aim of phasing-in would be to cap

sudden large increases in the level of resources received by local governments as a result of the introduction of a formula. Second, should local governments be held harmless for potential declines in resources allocations?

Phasing-in of a new formula could be done in several ways. One practical way of phasing in a new formula could be achieved by setting a maximum cap on the year-to-year increase in block grant allocations.¹¹

For instance, a phasing-in approach could limit the year-to-year increase in local government allocations to each individual local government for each sector to, say, 25 percent. Without phasing-in a new formula-based approach, there would be 20 local government districts that would receive an increase of more than 25 percent in formula-based grant resources when compared to the current allocation scheme. In fact, six local governments would receive more than 50 percent more resources than under the current scheme.

The main disadvantage of phasing-in a new formula-based approach is that it complicates the introduction of the new formula-based system. On the other hand, advantages of the phasing-in option are:

- Phasing-in might be politically expedient because phasing-in results in a more gradual transition from the status quo to the formula-based approach
- Phasing-in might prevent inefficiencies caused by the inability of local governments to absorb large increases in resources during the transition years
- Phasing-in reduces the cost of transition to a formula-based approach during the transition years (by reducing the size of transfers to the largest “winners” during the first few years).

As a default, the simulation model will follow a phasing-in of the formula, which limits the year-to-year increase in resources to 25 percent. Phasing-in in such a manner might provide a prudent and gradual transition to the formula-based approach, and would result in cost savings of approximately TSh. 7 billion for local education and TSh. 3 billion for local health during the first year of the formula-based grants scheme. These amounts represent cost savings prior to taking into account the cost of holding harmless and, obviously, other assumptions made in the model would cause these amounts to vary.

¹¹ Note that the phasing-in methodology included in the current version of the simulation model differs somewhat from the approach contained in the original simulation model as discussed in the Final Report (Boex et al 2003).

4. Holding harmless

The current discussion whether local governments should be held harmless for potential decreases in resources is broken up into two components: holding harmless for PE and holding harmless for OC.

In a well-functioning system in which local governments have full control over the distribution of resources between PE and OC, this separation would not be relevant. However, in Tanzania this separation is relevant because under the current Civil Service Act local government councils do not have control over PE, and are thus unable to distribute their grant resources between PE and OC as they wish. The local civil service issue is subject to a separate Technical Note, and the Government is encouraged to bring the Civil Service Act in line with the Government's decentralization policy.¹²

4A. Holding harmless for PE

Local government staffing levels in the priority sectors –including local education and health- are currently determined by the Local Government Board of the Civil Service Department. Since local governments cannot hire or fire personnel without CSD approval, local government councils in Tanzania ultimately are not able to control the level of personal emoluments (PE) for which they are responsible. In absence of such control over local government staff, what should happen if a local government's personnel obligations exceed the total formula-based grant allocated to this local government? Since the central government cannot (and should not) force local governments to pay for personnel expenditures in excess of the level of grant resources provided to the local government, in the short run local governments will have to be "held harmless" so that the block grants provided to each local government are adequate to fund each local government's commitment to personal emoluments.

As a result, until local governments are provided with control over local hiring and firing, every local government should be fully held harmless for PE. In other words, if the formula-based grant is insufficient to cover a local government's current PE commitments, 100 percent of the historical PE level should be guaranteed; any gap between the PE requirements of a local government authority and the formula-based block grant should be covered by a supplemental hold-harmless amount.¹³

Whether holding harmless for PE should be continued at the 100 percent rate once local governments are given control over PE is subject to debate. Continuing to hold local

¹² See the related technical note "The design of formula-based recurrent block grant system and the role of personal emoluments."

¹³ Note that the approach to holding harmless included in the current version of the simulation model differs slightly from the approach contained in the original simulation model as discussed in the Final Report (Boex et al 2003).

governments fully harmless for PE would make sure that no local government would ever have to fire a local official (such as a teacher or health care worker) in any of the priority sectors. Although this might be politically popular, such a move would be fiscally expensive in the longer run. Alternatively, in the long run, it might be possible to hold local government's harmless for PE at a rate of less than 100 percents (for instance, 90 percent). In the structure of the current simulation model, holding local governments harmless for 90 percent of their PE would mean that 90 percent of the historical (e.g., last year's) PE level would be guaranteed by the hold-harmless approach.

If the user of the simulation model wishes to simulate a situation in which local governments are not held harmless at all, the model's user can enter the value "0" in the appropriate cell of the model's Policy worksheet.

4B. Holding harmless for OC

In addition to making sure that all local governments have a sufficient amount of grant resources to cover PE obligations (which currently fall beyond the control of local governments), the central government might also want to make sure that each local government has a certain minimum amount of resources available for Other Charges (OC). This is especially the case since certain OC obligations are directly tied to PE levels, such as local government staff pensions.¹⁴

If the Government of Tanzania is inclined to hold local government harmless for OC, this can take place in two ways. The simulation model accommodates both options; the user should either select HIST (holding harmless based on historical OC levels) or THRES (holding harmless based on a threshold OC level).

- First, local governments could be held harmless against last year's OC amount. The user of the preliminary simulation model can choose to hold harmless based on the historical amount by selecting the "HIST" option in the Policy worksheet. In this scenario, if the hold-harmless percentage is set at 100 percent, the hold-harmless approach would make sure that each local government would receive at least the same amount of resources available for OC as it was given in last year's budget (after taking into account each local government's PE obligations). If the hold-harmless percentage is set at less than 100 percent, each local government would be assured at least a certain share (for instance, 90 percent) of last year's OC resources.

¹⁴ For practical reasons, the administration of local government grants may funnel wage-related local personnel expenses –such as pension contributions and other such personnel costs- through the PE account of local governments.

- Second, local governments could be held harmless against a normative threshold-level of resources for OC. Although this approach would not favor local governments that currently have higher levels of OC, this approach would assure that all local governments at least receive a minimum amount of resources available for OC. For instance, a threshold level of OC might assure that each local government would receive X Shilling per school-aged child (or per pupil) for education OC.

This option prevents the situation in which a local government with very high pre-existing PE commitments (again, over which it currently has no control) would have no money left for OC after paying its personnel expenditures. If this approach is followed, the Government would have to establish an objective method for determining the normative threshold. If the user of the preliminary simulation model selects the “THRES” option for holding local governments harmless for OC, then the simulation model will determine the OC threshold for each local government as $(p \cdot \Sigma OC_{t-1} \cdot f_i)$, where p equal the hold-harmless percentage for OC selected by the model’s user; ΣOC_{t-1} is the aggregate amount of OC allocated during the previous budget year; and f_i is formula-based share of resources that is allocated to local government i (for instance, the allocation formula might distribute 0.03 or 3 percent of the sectoral grant pool to local government i).

Depending on the complexity of the sectoral formulas that are selected by the sectoral ministries, the holding-harmless approach may be simplified correspondingly. For instance, if education is distributed exclusively in proportion to the number of school-aged children, then the hold-harmless clause might simply specify that no local government will receive less OC than X Shilling per school-aged child. Also, if the Government chooses to hold local governments fully harmless (i.e., at 100 percent) both for PE and OC, then a single, simple hold-harmless clause can be included in the final computations. This approach would assure that no single local government will receive less resources for either PE or OC than they are receiving in the current budget year.

5. Next steps

Based on the preliminary simulation results, there are basically three next steps that should be taken into account in the process towards implementing formula-based block grants for local education and local health care for the 2004-05 budget year:

5 A. *Completing the simulations: updating the allocation formulas and the data*

The allocation formulas and data used as part of the preliminary simulations should be thoroughly checked and updated as necessary and feasible. The allocation formulas

should be updated to conform to the formulas agreed upon by the sector ministries and approved by MOF and RALG.

The data review and data updates that will take place during the second half of 2003 should consider the following variables:

- Population. The 2002 population count data included in the model should be reviewed for accuracy. If possible, Census should generate local population counts excluding refugees and possibly certain transitory populations. (Source: Census 2002)
- Population in Poverty. No local-level data on poverty is available in Tanzania. The number of people that live below the basic needs poverty line in each local government can be estimated for each local government authority based on urban and rural poverty rates for each region reported by the Household Budget Survey. At this point, it does not appear that more accurate and statistically sound poverty estimates can be made based on Census data. (Source: Household Budget Survey 2002, page 188)
- Under-Five Mortality. No local-level data on infant mortality or under-five mortality is available in Tanzania. Estimates based on regional mortality rates are to be produced by the MOH. (Source: Ministry of Health)
- Medical Vehicle Mileage. The data for this variable should be carefully reviewed. A process for future updates for this variable should be established by MOH in order to prevent manipulation of the variable in future years. (Source: Ministry of Health)
- Population Under Age Five. Local-level data should be available for this demographic statistic from the Census, although the data may not be available in time for the finalization of the formula for BY 2004/05. This variable could serve as a basis for the computation of under-five mortality counts. (Source: Census 2002)
- School-Aged Population. Local-level data for this demographic statistics should also be available from the Census, although again the data may not be available in time for the formula for BY 2004/05. This variable could serve as the primary allocation factor for the education formula, or alternatively, as a reference point to check the validity of reported enrollment rates. (Source: Census 2002)
- School Enrollment. MOEC is in the process of finalizing enrollment figures for each local government district for the previous school year. The self-reported nature of these data is a major concern for use of this variable as a potential allocation factor. However, enrollment is ostensibly used for PEDP allocations. Enrollment counts might thus potentially serve as the primary allocation factor for the education formula, or alternatively, as a reference point to confirm the validity of number of school-aged children in each local government as reported by the Census. (Source: Ministry of Education)

- Local government allocations for 2003-04. Although the preliminary simulations rely on local government budget data for BY 2002/04, in reality phasing-in and holding harmless of local governments will actually have to occur vis-à-vis the local government allocations for BY 2003/04. (Source: Ministry of Finance)

5 B. Identifying resources for holding harmless

Under the policy assumptions used for the preliminary simulations, the combination of phasing-in the new formulas while holding local governments fully harmless (both for PE and OC) during the first year of implementation will require approximately TSh 12 billion (US\$ 12 million) for local education and TSh 3.2 billion (US\$ 3.2 million) for local health care. These estimates may be subject to change as allocation formulas are finalized and the data is updated. These amounts would be needed in addition to the level of resources already allocated to these sectors during the current budget year.

Where are these additional resources going to come from? Possible modalities for securing this additional funding might include:

- Additional funding from the Government's regular budget resources.
- HIPC savings.
- Earmarking resources for the purpose of holding harmless from existing sectoral basket funds (eg, Health Basket or PEDP).
- Additional donor resources provided in the form of budget support.

The MOF and the overarching MOF/RALG block grant implementation team should start raising this issue at the highest policy level, and should start discussions with donors and international financial institutions in order to identify the revenue sources needed to cover the additional expenditure requirement for introducing the formula-based block grant approach.

5 C. Implications of holding harmless for CSD policy

The preliminary simulations highlight the possibility of two types of negative incentives involving local government staff that might occur as a result of the introduction of formula-based block grants.

First, if local governments know that they may be held harmless against the current year's personnel expenditures under the formula-based approach, local governments will have a significant incentive to secure higher levels of PE before the formula-based system is introduced. In order to prevent this, local governments should be notified as soon as possible that local governments will not be held harmless for additional PE that arises from staffing requests approved by CSD after September 1, 2003 (or perhaps even

retroactively to July 1, 2003). This means that for any local request for additional staffing expenditures approved after this deadline, for every additional Shilling of PE that is allotted to a local government, a direct and proportional offset will occur from OC. Effective immediately, the Local Government Board of CSD should disallow any requests for additional local staff from local governments who are projected to receive supplemental hold-harmless funding (e.g., as identified by the preliminary simulations).

The second incentive problem that might occur is that, under a formula-based grant system, the central government would be able to increase the wage scales for local government staff without necessarily feeling the fiscal burden of this in its own budget. In order to prevent such an “unfunded mandate”, it should be clearly stated as a matter of policy that if the central government changes the salary rate scales applicable to local government officials, then the central government should proportionally increase the aggregate grant pool provided to the local government level to fund the increased expenditure needs of the local government level.