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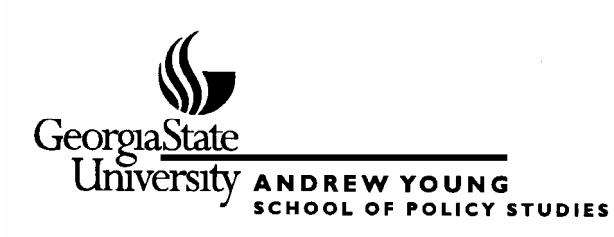

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Intergovernmental Transfers: The Funding Rule and Mechanisms

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1. Introduction

No federal or decentralized system of government can function without intergovernmental transfers. Once responsibilities are assigned to the different public agencies both vertically and horizontally, a typical outcome is vertical and horizontal fiscal imbalances. It means that the assignment of revenue does not fully match the expenditure functions for each public agency, which requires interagency transfers to allow a balanced carrying out of their respective public responsibilities.

Intergovernmental transfers are understood in a broad sense at this point. They include direct payments, the sharing of revenues, and non-monetary transactions such as complimentary service delivery among agencies (e.g. administration) or the waiver of intergovernmental commitments. Revenue sharing, in particular the sharing of taxes, is often indistinguishable from grants and therefore deserves special attention. Yet it must be clearly set apart from the sharing of tax bases. I treat the former as a mode of intergovernmental transfer, but not the latter. Base sharing resembles a revenue assignment rule that conveys rights, and hence legal entitlements, to exploit a tax base conjointly among governments. The advantage of base sharing over tax sharing lies in greater fiscal autonomy because different agencies can impose different tax rates on the shared base. Where legal entitlements from base sharing also exist for the sharing of the proceeds from taxation, this must be considered tax sharing *together* with base sharing. In this instance tax assignment and intergovernmental transfers are necessarily blurred.

Base sharing is not dealt with in this paper because the emphasis is on transfers, not tax assignment. Yet tax sharing in the sense of sharing the proceeds from taxation will be discussed as a special transfer regime. It is often used to allocate funds from the national level to subnational tiers of government although the converse can also be true. However tax sharing appears to require a nationally uniform tax rate to make sense, so tax sharing is conventional for taxes under the control of the national government.

In classifying and analyzing intergovernmental transfers one must ask the following questions:

- What is the purpose of such transfers?
- How should the transfers be funded?
- What mechanisms are commendable to achieve the objectives of a transfer?

I shall analyze these questions in the following chapters in an abstract way as if one could design a transfer system from scratch. This is of course unrealistic as all decentralized or federal governments will have to respect their historical and political conditions, so reforms will be highly path-dependent. Yet speaking in abstract terms can raise the awareness on possible deficiencies of existing arrangements, and it serves as a benchmark for potential reforms. Furthermore I try to include some international experience to illustrate the great variety and richness of the various institutional arrangements that have been adopted in rebalancing intergovernmental fiscal relations in different parts of the world. Finally, I shall sketch an incentive-neutral transfer scheme for a fictional country, Krakozhia, which aims at introducing a new scheme for its general purpose transfers using a methodology in the spirit of the one developed by the Commonwealth Grants Commission of Australia.

2. The Purpose of Intergovernmental Transfers

It is useful to distinguish the following types of transfers according to different purposes: (i) general transfers; (ii) specific transfers; (iii) special transfers. The nomenclature may vary, especially as the purpose of these transfers is often not clear or mixed, but essentially these categories are found in all decentralized governments in the world.

General transfers. They serve to provide general revenue to an agency's budget to fund its basic operations where own revenue would not be sufficient to fulfill this agency's responsibilities. General transfers or grants are thus used to redress existing vertical and horizontal fiscal imbalances that may exist between levels of government or among agencies at any one level of government. General grants are unconditional general purpose grants to balance the budgets of autonomous or quasi-autonomous public agencies. They fund current budgets and are taken from current budgets.

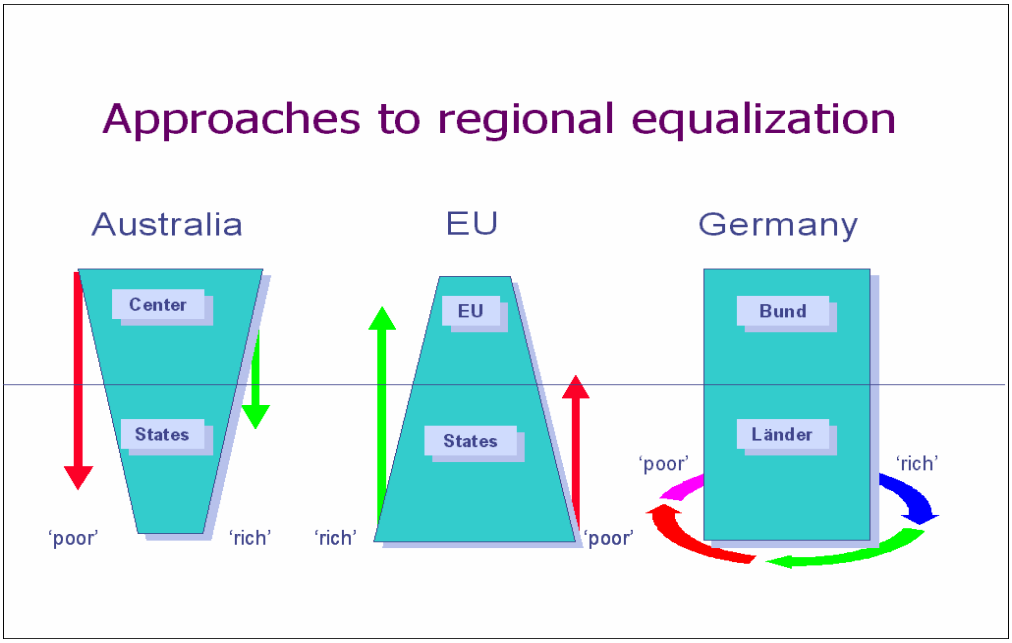
Providing general transfers does *not* mean open-end financing. There is an overall macro constraint on *all* public budgets that must be respected, so the resource pool is ideally well determined and fixed. Within this overall constraint those agencies with relatively better fiscal positions are requested to transfer to those whose fiscal position is comparably weak. Control on the spending of such transfers is carried out by the constituents of the recipient agency.

General grants are often used to redress vertical and horizontal fiscal imbalances *simultaneously*, which introduces asymmetries to the transfer system. However it is useful to distinguish these processes carefully to better understand the mechanics of the system. An ideal allocation formula for general transfers would always specify the vertical component first; it serves to rebalance the consolidated resources and spending needs for *all* agencies at each level of government. In a second step one would specify the rules governing the interagency reallocation of resources if there is want for some horizontal equity. So for general transfers I discern two separate goals: vertical fiscal rebalancing; and horizontal equalization.

As said, vertical rebalancing and horizontal equalization of budgets is often effected simultaneously through vertically asymmetric grants. An exception is Germany where vertical fiscal balance is taken up first, and horizontal equalization is addressed in a second step. A similar approach is found in Denmark for intermunicipal equalization. Instead of a single, vertically asymmetric system of transfers there are two separate processes in this case, which requires the second step horizontal redistribution among agencies at a particular level to be arranged in a “brotherly” fashion. Such horizontal general grants are pure equalization transfers.

Politically, it is often more convenient to start from a situation of vertical fiscal imbalance and engineer interagency equalization implicitly through a vertically asymmetric allocation of funds using a well defined formula. This is common practice in most parts of the world. It avoids direct rivalry of jurisdictions at a given level of government and it conveys some extra power to the senior government. Chart 1 illustrates different forms of allocating general grants, whereby Australia and the European Union represent single stage vertically asymmetric transfer systems while Germany’s equalization starts from a position of relative vertical fiscal balance. It is also obvious that senior government does not necessarily mean donor government as is clear from the case of the EU.

Chart 1: Examples of fiscal equalization among regional administrative bodies



Vertical fiscal rebalancing does not necessarily entail direct transfers between layers of government. On the contrary: In most instances it is effected through revenue or tax sharing. Indeed tax sharing is ideal for implicitly transferring resources between levels of government, yet it *does not equalize* among agencies at a given level.

The revenue returned to, or retained by, an agency is always proportional to the revenue collected in this agency's jurisdiction. The allocation of resources follows the principle of derivation or origin. This could be considered advantageous as it allows to clearly distinguish between vertical and horizontal redistribution via transfers. As said, Germany makes use of this: first, vertical fiscal balance between the federal and the states' budgets is attained through variations of the VAT share, and horizontal equalization is carried out by the interstate equalization scheme mentioned above.[1] Bosnia and Herzegovina is a federation that relies exclusively on tax assignment and tax sharing rules, and there is no formal interjurisdictional equalization.[2]

The redressing of vertical fiscal imbalances raises the question which resources or taxes should be used in these instances. This will be dealt with more generally below when discussing the funding rules. Problems of specifying equalization transfers,

[1] After unification Germany has increasingly used a third-round vertically asymmetric system of federal transfers.

[2] The Republic Srpska attempts some mild intermunicipal equalization by leveraging the sharing ratios for municipalities with poorer fiscal capacity. This approach to equalization is largely ineffective because it does not compensate for fiscal deficiencies: Even a full retention rate will produce nil if the tax potential is zero.

respectively the elements of an implicit allocation formula are addressed when sketching the mechanics of intergovernmental transfers.

Specific transfers. Specific transfers are paid for particular services rendered by one public agency to another on legal, bureaucratic, or contractual grounds. I have argued elsewhere that contractual arrangements offer particular benefits in that they are more flexible and adaptable than legal or bureaucratic rules.[3] The also allow to compensate for vertical and horizontal spillover effect between and among jurisdictions. Vertical spillovers or interagency externalities occur where *two or more layers of government* encounter costs, or draw benefits from, some policy or action. Horizontal spillovers or externalities occur where two or more jurisdictions *at the same level of government* encounter costs, or draw benefits from, some policy or action.

In both instances transfers between layers of government or among public agencies can enhance social welfare from an efficiency point of view. It results from the fact that each level of government or public agency, from its own perspective, would supply only insufficient amounts of the public service because it will disregard spillover effects that accrue to other levels of the public sector, or to other agencies. Contractual arrangements including cofinancing provisions are needed to achieve an optimal outcome for the federation as a whole.

The appropriate instrument for compensating spillovers in a *quid pro quo*-like fashion is matching grants. Ideally each agency would contribute a share of program financing that corresponds to its relative benefit from the public program to be financed. Matching transfers entail a change in relative prices and hence exhibit a substitution effect in addition to providing extra funds. This will interfere with, and alter priority setting by, the recipient government's policy. Where it exists it is often effected on the basis of fixed legal or bureaucratic rules, *not* on negotiated contractual arrangements, which could be a source of embedded inefficiencies. There are however examples of contract based transfers for specific programs among jurisdictions, for instance in Switzerland.

Spillovers must not necessarily be defined in terms of service delivery however. Very often they are expressed in terms of political costs and benefits. Specific transfers then turn into political signaling instruments. If, for instance, the federal government puts racial non-discrimination on its political platform, but states pursue such discrimination in the area of their competencies (say, education), a federal grant for schooling could be rendered conditional on the recipient state abandoning its discrimination policy.

Specific transfers are common in many countries, but the extreme example is perhaps found in the United States where the federal government uses a host of so-called categorical grants to compensate for vertical spillovers, to signal federal policy principles, and to impose its own priorities onto the states. A specialization of grants

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[3] See Paul Bernd Spahn, Contract federalism, in: *Handbook on Fiscal Federalism* edited by Ehtisham Ahmad und Giorgio Brosio (E. Elgar; forthcoming).

allows the "targeting" of programs by Congress. During the 1990s these transfer arrangements had become more and more specific, often imposing federal policy priorities onto state and local governments[4], which was criticized as violating the 10th Amendment. However the Supreme Court affirmed these grants as being in line with the Constitution because entering into such transfer arrangements is based on a contract and hence "voluntary".

The following provisions are typical for categorical or specific-purpose grants: observation of quality standards; permitted use of the funds; expenditure constraints; matching obligations; and transparency requirements (record-keeping and reporting).

The setting of *quality standards* through conditional grants is a powerful instrument to achieve some degree of homogeneity in the delivery of public services in a decentralized system of government. It is usually confined to minimum standards however. Standards exceeding the delivery capacity of subnational governments would violate their budget autonomy and can therefore be used only for centralized government.

Clauses on *specific uses* of the transferred funds are often inefficient. The so-called specific-purpose transfers or grants, prominent in almost all countries, are either binding for the recipient government in that they require spending these funds on policies to which the benefiting constituency attaches low priorities, in which case spending could represent a waste of public resources.[5] Or the clauses are non-binding in that the recipient government would have spend a similar or even greater amount from its own budget anyway. While the former case could entail inefficiencies where "forced spending" is not outweighed by vertical spillovers, the latter is tantamount to a general revenue grant because it frees unconditional budget resources; it therefore entails a pure revenue effect and does not interfere with local priorities.

Nonetheless, specific transfers are extremely popular and common in many countries although they risk to produce waste or, at best, constitute general revenue funds. This is because of their potential to convey policy priorities of the donor government to its own electorate. Politicians are keen on the "signaling" function of such transfers to demonstrate their commitment to "specific causes". They claim to have spent money on certain policies out of their control although the money would be spent by the recipient government anyway.

An interesting illustration of the purely political function of specific transfers provides Australia. This country uses both general and specific grants. General transfers are calculated, inter alia, on the basis of relative fiscal capacity of recipient states. Specific transfers of the Commonwealth to state governments are for specific purposes, but most of them are counted as increasing fiscal capacity. In that way the

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[4] For instance they imposed a 21-year-old drinking age for the states' citizens, or a 55-mph speed limit on interstate highways.

[5] This could however be outweighed by national benefits in the case of vertical externalities.

Commonwealth "claws back" the relative effects of specific transfers through the system of general grants.[6] Nevertheless Australian politicians attach value to retaining specific transfers most likely because of their high signaling potential.

Special transfers. Special transfers are neither pure general budget resources nor do they compensate for interjurisdictional externalities, including the spillover of political benefits and costs. They are used to compensate for extraordinary costs, such as from local catastrophes, for the targeting of *national* policies, and for regional development. The case of local catastrophes is self-evident: Emergency transfers do not represent regular budget resources by nature nor are they geared toward altering the behavior of recipient regional governments. It is also clear that national policies might want to focus on a particular region, for instance to develop its economic base, to ease poverty or to service minorities directly. Where the central government uses regional authorities as its agents, there will be special transfers that correspond *de facto* to the financing of national policy objectives. So wherever the national government pursues regional development objectives, it may use the instrument of special transfers to subnational governments or agencies. Such transfers can be unconditional or conditional, but in all cases are they exclusively determined by national priorities. Nevertheless the national government may employ preference revealing mechanisms, such as matching requirements, even for such types of transfers in order to respond to local priorities.

Often such transfers are limited in time. This is helpful in avoiding grants dependency and moral hazard. A sunset date for a regional development initiative emphasizes the need for a region to become self-sufficient after a phase of support. The Marshall Plan initiative after World War II was indeed limited in time; the Structural Funds of the European Union are not time limited, but based on fixed criteria that allow a region to eventually "mature" from support.

Other special grants are typically given for "bulky" expenditures such as for larger public investment projects. Special transfers linked to the investment budget of the recipient government are often labeled "capital grants".[7] They are of course limited by the gestation period of the local investment project, and they are sporadic by nature.

Where capital grants are purely motivated by national regional development policies, they should indeed be subsumed in the special transfers category. However

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[6] Since the pool for general grants is closed however, the volume of specific purpose payments will have to be added to this pool to obtain the full budgetary impact. So the expression "claw back" is somewhat misleading.

[7] Capital grants should be distinguished from interagency lending/borrowing within the public sector. Intergovernmental transfers resulting from interagency lending/borrowing create commitments by the recipient government to service and redeem the debt in due course. Often however such interagency lending is significantly at variance from market conditions, so lending/borrowing is blurred by implicit transfers such as subsidized interests, grace periods, etc.

matching capital grants could also reflect spillovers, and to the extent that regional authorities possess investment responsibilities, capital transfers could also be included in an equalization formula. In these instances one would prefer to convert a "bulky" capital transfer into current annual transfers for supporting the operating budgets of recipient governments. This requires some rules for accrual accounting. Moreover it requires the regional authorities' ability to borrow from capital markets or to engage in corresponding leasing contracts with the private sector. The converted capital transfers could then be used to service the debt or to honor such leasing contracts.

In fact accrual accounting is still rare in the public sector, and often subnational governments have only limited access to capital markets either by statute or by reduced creditworthiness. Capital transfers for investment purposes are thus still prominent in most decentralized governments over the world, and it is therefore appropriate to include them in the special transfers category.

3. The Funding of transfers

As said, the funding of transfers has to respect the overall constraint on public resources. So a general principle should be the closed funding of transfers. This is either achieved through the assignment of a fixed amount or proportion of the donor government's budget or through tax sharing. There are certain exceptions however: For matching grants the program might be open ended, but in practice it is often limited by the recipient government's ability to commit corresponding own resources. Where this is not the case or where there are worries about possible abuses of the transfer system the funding of matching grants could still be limited in size.

Closed funding is achieved through restrictions on the total transfer pool. It raises the question of how to define the pool and what resources to allocate to it. This question can be addressed by first looking at *tax sharing* arrangements, which represent a special case of transferring resources between layers of government. Lessons can be drawn from this for other types of transfers that flow directly from *budgetary resources*.

Tax sharing. The most prominent case for funding transfers is indeed tax sharing. Here the resource pool is formed by a share of tax revenues collected in a jurisdiction for each level of government. The overall resource constraint is then automatically imposed on all participating governments conjointly. However it would be erroneous to expect that this also preserves macro stability at the same time. There are essentially three sources of potential macroeconomic risks associated with tax sharing:

- The sharing of taxes is too comprehensive including all or most of the important taxes. In this case the national government could lose its ability to use taxes as countercyclical policy instruments. If the economy is booming, hence tax revenues swell up, the national government may want to sterilize some tax revenue, but an important share is being retained and spent at lower tiers of

government in a procyclical manner. Brazil represents a situation where this was a problem in the past.

- Lower tiers of government participate in taxes with highly volatile returns. It either leads to variations in the provision of local public services, which could be politically stressful, or the national government is compelled to step in to smoothen the impact of such arrangements. The effect is exacerbated where subnational governments have only limited access to borrowing. Colombia and Nigeria represent cases where subnational entities benefits from the highly volatile returns on natural resources (petroleum). Apart from cyclical effects, the sharing of volatile resource taxes may also entail regional inequities and dynamic inefficiencies through unsustainable local investments (construction of future "ghost towns").
- Lower tiers of government are given a share of taxes that are less buoyant or are likely to dry out over time. It jeopardizes the sustainable provision of local public services and may either require a revision of the transfer arrangements or cause a vertical shift in power toward the central government.[8] Where local public service delivery is threatened, but lower tiers can mobilize political support, there is a moral hazard risk by which the national government is compelled to provide additional resources beyond existing transfer arrangements. This could entail a softening of local budget constraints and, again, jeopardize macro economic stability.[9]

Tax sharing also has a dynamic component: it could be instantaneous in that the proceeds are allocated to the budgets of benefiting governments "as you go"; or there could be some time lag and even hard constraints through formula apportionment and quantity ceilings.

Time lags are often used for administrative reasons (transfers are effected only after the completion of the fiscal year), but there may be other motives as well, such as the smoothening of cyclical effects. Moreover lagged transfers significantly reduce the budgetary risks of recipient governments through greater revenue predictability and transparency. It allows the better planning of subnational budgets and thus enhances the prospects for macro stability.

Where formulae are used to modify the revenue impact of tax sharing it is questionable whether we can still speak of tax sharing. For instance, Argentina operates a lagged tax sharing scheme for its provinces, but has occasionally put a lid on the annual increment; Germany operates a personal income tax sharing scheme for its

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[8] The latter could be desirable in some instances for instance in Bosnia and Herzegovina where the national government is extremely weak.

[9] A similar effect occurs where lower tiers of government are able to divert resources from specific transfer programs to which the national government attaches high priority. These programs are thus artificially "dried out", the national government is compelled to step in, and budget constraints are softened. There are indications that this strategy has played a role in South Africa for instance.

municipalities, but limits the sharing entitlement to the proportional part of the progressive tax. The objectives are obvious: In the first case the intention is to limit the buoyancy of subnational tax shares in order to avoid procyclical spending by lower tiers agencies and hence macroeconomic instability. In the second case there are also stability concerns, but in addition municipalities are thwarted to benefit from a fiscal drag that results from bracket creep of expanding personal incomes within a progressive tax system.

These examples illustrate that there are possibilities to limit the pool even within a tax sharing arrangement. However much depends on the legal framework for such arrangements. Where tax sharing is seen to represent legal entitlements, as in Germany, there is a case for a transfer-as-you-go system without restrictions. including on the use of these funds.[10] Where it is seen to represent an allowance by the senior government, as in Argentina, the "donor" may also control the conditions that reign the sharing arrangements.

Budgetary resources. In many instances intergovernmental transfers are funded directly from the general budget of the donor government. This is particularly true for general revenue transfers or equalization grants. Occasionally the resource pool is defined by historical developments, yet it often remains at the full discretion of the budget authorities controlling this pool. In Australia, for instance, the states had ceded their constitutional rights to levy the income taxes to the national government during World War II, receiving "tax reimbursement grants" from the Commonwealth instead. Over the years, such grants were transformed into ordinary general revenue grants representing a share of total budgetary resources of the national government. Today the Commonwealth has again formed a pool for general revenue grants from a single tax, the goods and services tax (GST).

The Australian example illustrates the great variety that exists in defining a funding pool for intergovernmental transfers for unconditional grants. If the pool is formed on a single or narrow resource base, the same problems will arise as with tax sharing discussed above: excessive volatility or structural shifts going one way or another. This could jeopardize macro stability or sustainable public service delivery by subnational agencies. A broader definition of budgetary resources would counteract such budgetary risks. But the very fact that budgetary authorities can control the size of the pool in a discretionary way is an advantage over blind tax sharing. Moreover, the use of budgetary funds allows to deviate from the principle of derivation and allocate the transfers to recipient governments in a disproportionate fashion. This way it is possible to combine elements of vertical fiscal rebalancing with horizontal equalization.

However transfers are often not directly funded from the general budget of the donor authority, but through the budgets of its line ministries. This is particularly true for specific and special transfers. For instance a specific purpose grant for education could come from the education ministry, a specific purpose grant for hospitals from the

[10] The sharing arrangements with local governments are exceptional in this instance.

ministry of health, etc. The idea is to entrust the line ministries with the setting of policy priorities in the realm of their competency and with the monitoring of spending activities by the recipient agencies according to the conditions specified.

The financing of transfers through special agencies and funds entails some inefficiency risks however:

- There might be a proliferation of specific purpose grants with substantial overlaps, counteracting effects, and a waste of resources because of a loss of effective control.
- There is a risk of fragmentation of national policies and a loss of parliamentary control, especially where resources are attributed to special funds whose functions are hardly ever reviewed. The danger is all the greater if such special funds are off-budget, create turf or are subject to political patronage.
- Line ministries and recipient agencies could take advantage of their information prerogatives jointly colluding to maximize the transfers to be reaped from the general budget.
- Because of the greater discretionary power of the donor ministry, transfers are more likely to flow to subnational jurisdictions according to party affiliation or nepotism.
- Finally, there might be a greater risk of moral hazard due to strategic hold-up positions of recipient authorities in the context of specific purpose programs to which the donor government and its ministries attach high priorities.[11]

Such inefficiency risks are significantly smaller for unconditional transfers funded from the general budget and allocated on the basis of objective criteria through formula apportionment.

However moral hazard might not totally be avoided even for unconditional funding from the general budget. Often donor government take recourse to gap filling transfers where they are compelled, by law or political pressure, to bail out subnational budgets under distress. This may occur despite firm rules reigning the overall transfer system.

Gap-filling transfers soften budget constraints of the public sector as a whole, they entail inefficiencies and jeopardize macroeconomic stability. Germany has a transfer system based on objective criteria, but the federal government is bound, by constitution, to assist states in financial troubles; Russia provides transfers to its republics and *oblasti* on reasonably well determined criteria, but there are opaque last-round transfers to fill remaining budgetary gaps the rules of which are hardly understood; Brazil operates a tax sharing system and state and municipal equalization funds based on clear criteria, but a host of transfers based on “contracts” (*convenios*) is often abused to honor partisanship. In all these instance hard budget constraints are weakened producing regional unfairness and economic inefficiencies.

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[11] See footnote 9 above.

Whether moral hazard in the transfer system can be avoided depends largely on a credible no-bailout commitment of the donor government. Given legal constraints and political commitments this is not always easy. But generally speaking it largely depends on the recipients taxing and budgeting autonomy. The stronger the financial basis provided by own resources of the recipient, the more credible a no bail-out commitment of donor governments will be. Or conversely: the smaller the recipient government's own tax base, the larger its transfer dependency, the greater the need for gap filling, and hence moral hazard.

4. Mechanics of Transfers Systems

There are no uniform rules for designing the machinery of a transfer system. This very much depends on traditions and political conditions with different objectives. It is also constrained by the informational base and administrative procedures.

One should distinguish transfer mechanisms that are wholly determined by ad hoc political decisions and transfer mechanisms that are based on well established rules.

- The former are often found in the realm of specific purpose transfers and special grants, and they are difficult to analyze without reference to given political objectives. I shall therefore refrain from discussing such "mechanisms" in this paper.
- The latter consist of formal procedural constraints that can be analyzed independently from underlying political value judgments.

Rules are often used to design general revenue grants for equalization purposes where the rules serve to foster transparency and to reach a degree of interjurisdictional fairness among recipient governments. Such transfers should display a pure income effect. There are also rules-based transfer system containing specific incentives so as to influence the behavior of recipient governments. Such transfers exhibit an income *and* a substitution effect. In this paper I shall dwell on general grants with a view to a more general applicability. The design of transfers embedding substitution effects hinges on specific policy objectives that cannot be dealt with here. A few principles for rules-based general transfers will be sketched in the following however.

Standard setting. Typically, rules-based transfer mechanisms will first define a reference point. It serves as a standard or benchmark against which to measure the relative positions of all or a part of the jurisdictions participating in the scheme. The standards and the relative positions are almost everywhere defined in per-capita terms, where some countries, for instance Germany, might attach "weights" to the population figures to account for regional agglomeration or low-density effects. The benchmark could be a comprehensive national average or a subset of jurisdictions with standard characteristics.

It is important that the standards be measurable, i.e. the relevant information must be available and comparable in quality across participating jurisdictions. It is crucial that this information be as objective as possible and that recipients cannot influence them through unilateral action.

General transfers are designed with a view to the relative fiscal position of recipient governments. There may distinguish three different philosophies in this regard:

- Where there are no significant differences between the level and the costing of service delivery across subnational governments, as assumed for Canada and Germany, it is sufficient to set *revenue capacity* as a single standard and to equalize revenue capacity across jurisdictions. Some countries such as Switzerland or South Africa use, inter alia, regional GDP instead, which could be interpreted as a proxy for revenue capacity.
- For specific purpose or bloc transfers it is common to focus on *expenditure needs*, i.e. on indicators translated into budget equivalents through the costing of a standard level of services. This philosophy also creeps in some equalization schemes for general transfers as in South Africa or Russia, for instance. Mongolia, where heating and transportation plays an important role, emphasizes energy costs in its transfer mechanisms.
- Obviously, it is also possible to include both revenue capacity *and* expenditure needs in a comprehensive approach to *budget equalization*. Australia represents a most prominent example for this approach. It has led to a highly complex system that is being criticized as overly complicated. In particular differences between the level and the costing of service delivery across subnational governments are said to be only small (except for the Northern Territory), which would warrant a much simpler model such as in Canada, for instance.

Despite possible shortcomings, the Australian system has become *the* reference model for designing an ideal transfer system. The basic approach is sound, complete, feasible, and reasonably transparent. The proliferation of criteria that render the Australian system so cumbersome result exclusively from political haggling, *not* from an ill-designed scheme. On the contrary: the scheme was able to absorb the varying political demands without sacrificing its basic philosophy as is often the case elsewhere. True, the Australian scheme for general transfers is heavy in terms of information requirements and technical expertise that render it difficult, if not impossible, to export it to other countries where data might often be poor and administrative capacity weak.

It is my contention however that the basic approach of the Australian system should be, and could be, followed by other countries including developing countries, albeit in a simpler typified form. In the following chapter I shall illustrate this by sketching the adoption of the scheme for a developing country in Eurasiafrica, the federation of Krakozhia.

Degree of equalization. Once the benchmark is set, the degree to which the gap between the effective standardized tax capacity, needs indicator or budget deficit of any recipient government should be closed is still to be decided. This is basically a matter of value judgment. Germany for instance insists on equalizing all states at least up to 99.5 percent of the national per capita average. It leads to an open pool for the federal budget because its size will be determined by remaining fiscal gaps before federal grants. In other countries such as Australia the pool size limits the degree of equalization. The transfers are proportional to the size of the pool and allocated onto the states according to relativities. Both systems are symmetrical in the sense however that the rules apply to all receiving entities in the same way.

Canada and Spain, both in their own way, operate asymmetrical transfer systems with varying degrees of equalization. In Canada the better-off provinces such as Alberta do not participate in the equalization arrangements at all while in Germany they are asked to make a contribution to an interstate equalization pool. In the latter case the fiscal capacity of 'richer' states is leveled down, while it remains untouched in the former. In Spain transfers from the national government obey different sets of rules for different categories of regions. The better-off regions of Navarra and the Basque region are fiscally self-sufficient contributing themselves to the national budget through upward-oriented transfers. It is obvious that value judgments differ greatly among countries and even within countries, which renders it impossible to establish firm rules on the degree to which equalization should be carried on.

5. A Budget Equalization Scheme for Krakozhia

In this concluding chapter an attempt is made to design a transfer scheme for a developing country, Krakozhia, which has all the desired characteristics of a good transfer scheme for budget equalization through general grants: closed pool; standardized budgets; and regional fairness (symmetry). The model is borrowed from the Australian philosophy for designing general revenue grants, but the scheme had to be stylized and simplified considerably to conform with the conditions prevailing in countries with weak administrative capacity and a shortage of statistical data.

Krakozhia is a country situated in the heart of Eurasiafrica that has peacefully lived with its neighbors for centuries (which renders the case even more ficticious). The federation consists of 10 rather inhomogeneous provinces: Adania, Birino, Chuchko, Dobrodzia, Eshowia, Filiasi, Gubkin, Humppila, Ilgin and Jabel. The population and population density characteristics of the federation are represented in Table 1.

Table 1: Population Characteristics of Krakozhian Provinces

	Population (Mill. persons)	Area (Sq.km.)	Population density (1.000 per sq.km.)	*Population (Percent of total)*	*Area (in percent of total)*
Adania	2.0	53.6	36	*6.0%*	*9.4%*
Birino	0.6	48.6	13	*2.0%*	*8.5%*
Chuchko	8.6	80.9	106	*26.6%*	*14.1%*
Dobrodzia	11.9	179.8	66	*36.7%*	*31.4%*
Eshowia	1.9	136.0	14	*6.0%*	*23.8%*
Filiasi	0.3	25.2	11	*0.9%*	*4.4%*
Gubkin	6.6	56.9	117	*20.6%*	*9.9%*
Humppila	0.1	17.0	7	*0.3%*	*3.0%*
Ilgin	0.1	0.2	501	*0.3%*	*0.0%*
Jabel	0.2	1.0	173	*0.5%*	*0.2%*
Total provinces	**32.3**	**572.4**	**56**	***100.0%***	***100.0%***

The Krakozhian federal authorities, after evaluating and comparing various international grant models, have concluded that "the formula which incorporates both revenue raising capacity and expenditure needs has been found appealing in its generic form for adoption in Krakozhia." They are eager to implement the methodology developed by the Commonwealth Grants Commission (CGC) of Australia for transferring general revenue to the states and have asked for consultancies to design the scheme.

In the following an attempt is made to develop a simplified formula inspired by this methodology. The purpose is to illustrate how a formula incorporating both revenue raising capacity and expenditure needs could look like in Krakozhia, a country where, contrary to Australia, there are huge differences in the level of economic development, of revenue potentials, and of public service needs that might require special attention beyond a policy emphasizing standard tax capacity and standard expenditure needs.

<u>Moving toward a transfer formula: Some basic issues</u>

The objectives of any grants system are concisely spelt out in a paper prepared by the Krakozhian Ministry of Finance:

> "*Objective:* The prime objective of the formula is to cover the portion of each province's expenditure requirements that cannot be covered with its own revenue sources. In doing so, the formula distributes the pool of regional grant resources among the regional governments in a way that narrows the disparities between them."

Hence the transfer formula will have to address both *vertical fiscal imbalance* (mismatch between revenues and expenditures at levels of government) and *horizontal fiscal*

imbalances (equalization among regions) at the same time.

Horizontal equalization: conceptual issues

Before embarking on simulations of a methodology to cope with horizontal fiscal balancing in Krakozhia, it might be useful to sketch the CGC approach.
The Australian equalization mechanism functions as follows:

1) The total pool of unconditional transfers is well defined and closed.
   - It was set by the Commonwealth government prior to the 2000 tax reform (Financial Assistance Grants); and
   - is based on the proceeds from the goods and services tax since the year 2000.
2) Distribution of the funds among the states is made according to the per capita rule proposed by the Commonwealth Grants Commission (CGC):
   - This distribution rule, designated by the term "relativity," is established each year by complex calculations;
   - the CGC's recommendations (and the federal government's proposals on total transfer payments, before 2000) are/were discussed at annual state and territorial premiers' conferences.
3) The establishment of per capita relativities consists of the:
   - calculation of the standardized per capita expenditures of each state, i.e. the spending that the state must cover to provide the average level of public services of the states overall, bearing in mind the cost of delivering such services;
   - calculation of the standardized per capita revenues of each state, i.e. the revenues that each state could obtain were it to apply the average taxation structure of the states overall to its own tax bases;
   - calculation, using these standardized amounts, of the funding that each state requires to provide a level of public services equivalent to the average for the states overall;
   - calculation of the difference between this amount and the amount of specific federal transfers paid to the state (the result is the shortfall or the state's net financial requirement, covered by a transfer payment).

Per capita assistance in the form of equalization thus comprises an equal per capita portion of unconditional federal transfers plus an adjustment in respect of the cost of delivery plus another adjustment that reflects fiscal capacity. It should be noted that equalization in Australia must satisfy the principle whereby each state must have the capacity – not the obligation, which would render the transfers conditional – to offer services at a level similar to that prevailing in the other states were the state in question to apply the average taxation rates of the states overall and conduct its affairs with a similar degree of efficiency.

Issue 1: Administrative capacity

As noted above "each state must have the capacity … to offer services at a level similar to that prevailing in the other states". This condition is largely met in Australia; it is highly doubtful for Krakozhia. The differences in administrative capacity are extremely large *among* Krakozhian provinces, and often even larger *within* a province. This might jeopardize the mandate of any one province, or parts of it within the province, to "provide the average level of public services … overall". After all, the objective is *not* to equalize *government spending as such*; it is to equalize *government output*—the level and quality of public service delivery. It requires appropriate administrative capacity.

The lack of administrative capacity can not be coped with by including a corresponding "disability factor" in the formula. It would mean to simply transfer additional funds to a region that exhibits administrative "disability" without addressing the fundamental problem itself: Transfers cannot be converted into effective output due to a lack of administrative capacity. They cannot be effectively "absorbed", but will be spent anyhow. This represents a waste of public resources and results in inefficiencies.

Issue 2: Size of jurisdiction

The size of the Australian states is more or less comparable in terms of population and area—except the Northern Territory and, perhaps, Tasmania. In Krakozhia the regions exhibit much larger discrepancies in these terms (see Table 1). Dobrodzia controls roughly one third of the country's resources in terms of population and area; tiny Ilgin covers only 0.03 percent of the total area, but has the highest density of population in the country. Humppila, Filiasi and Eshowia are the regions with the lowest population density reflecting the high geographical diversity of a country with large inhospitable areas.

It is obvious that this regional variation represents a major challenge for designing a grants formula that will basically count on expenditure needs and tax capacity for the *average of the country as a whole*.

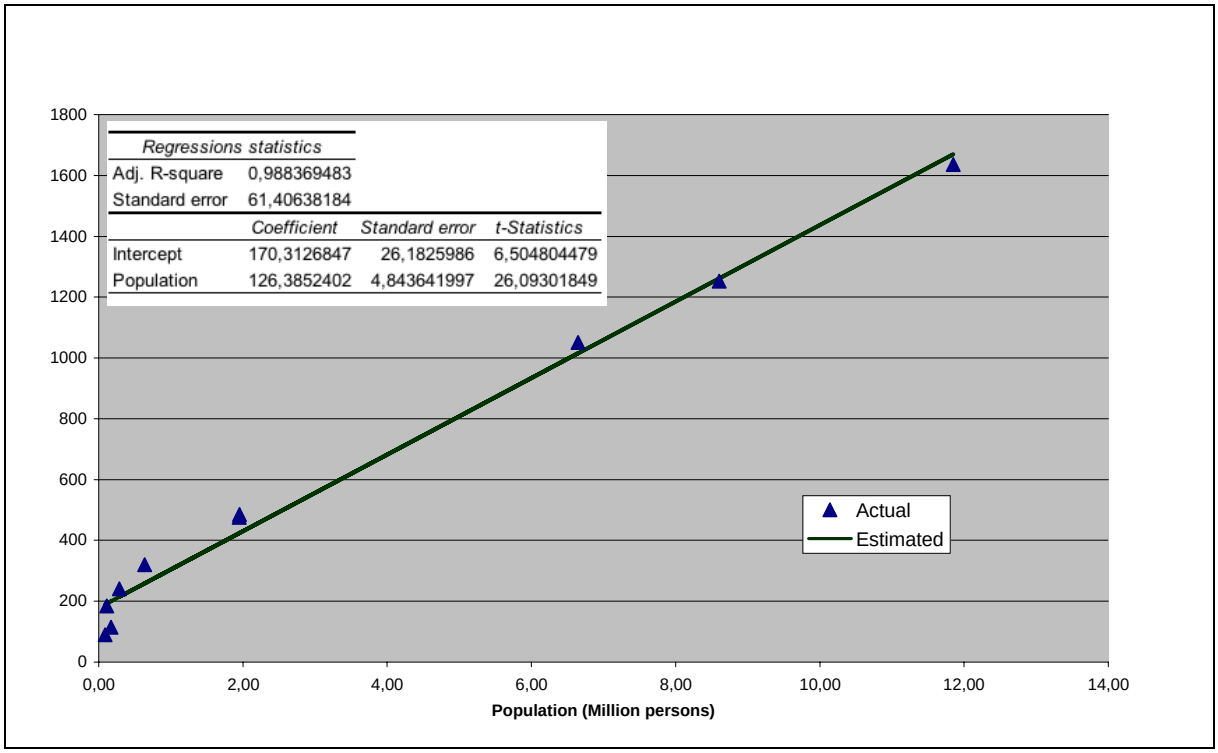
Issue 3: Per capita relativities

The large differences in area size will definitely affect the calculations of transfers, but they can eventually be addressed through cost adjustment factors. The differences in the size of the population represent a thornier problem for a formula that works with per capita relativities as in the CGC methodology. This is because of the existence of fixed costs elements (overhead costs) of public administration. These costs represent a much higher burden for the smaller jurisdictions than for the larger ones.

Assuming regions of more or less equal size in terms of population, and assuming all other factors equal for the time being, the CGC methodology would calculate equal per capita amounts that can be multiplied by the population of each state to obtain the

total grant entitlement. So the per capita distribution by size of jurisdiction would largely form a parallel to the x-axis. The grant as a function of population would be proportional, i.e. linear without an intercept. In many countries with regions of uneven size, including the federation of Krakozhia, the intercept is highly significant however. A simple regression with actual data for the existing transfer scheme of Krakozhia reveals the following picture:

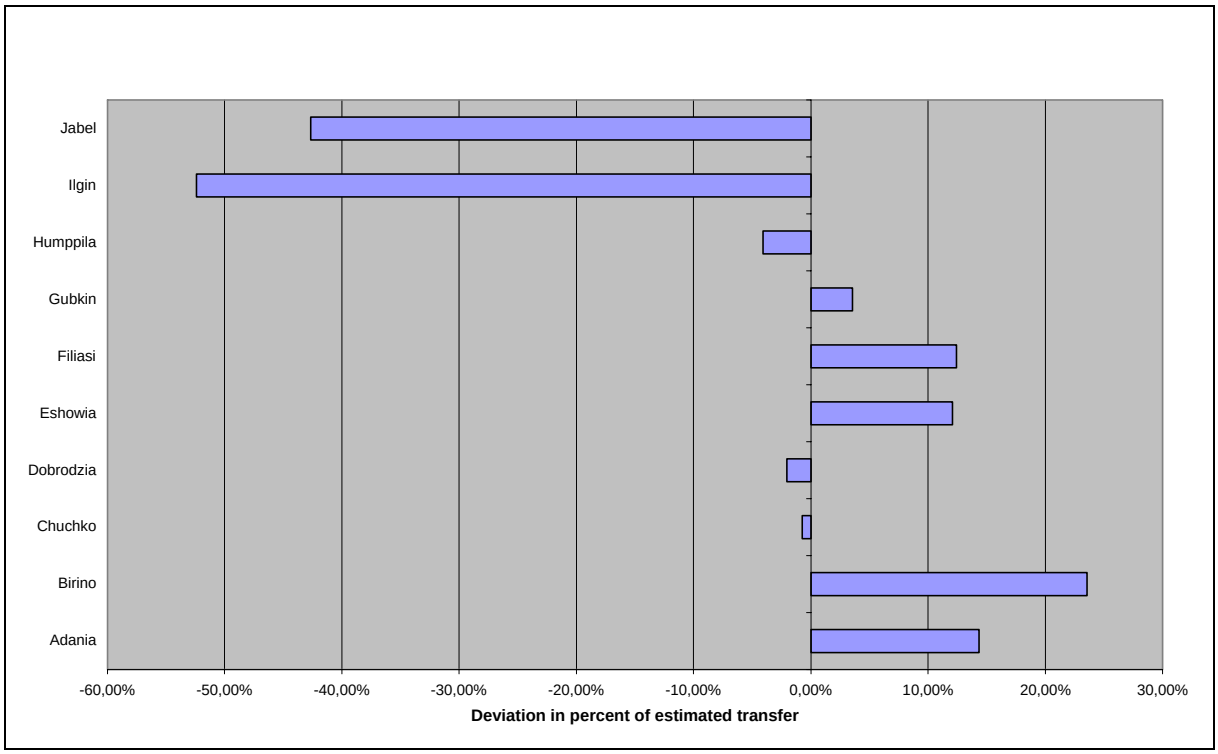
Chart 2: Existing transfers to the Krakozhian provinces in proportion to population



On the basis of this regression analysis, the smaller provinces appear to be underfunded, while the middle-sized provinces are relatively better off compared to a purely population based grant with a fixed cost element. The larger and more populous regional governments of Dobrodzia and Chuchko are funded more or less in line with population as one would expect.

Measured against this standardized benchmark, the regional pattern of grants allocations would hence be significantly different from the present one. This can best be illustrated by the following Chart 3.

Chart 3: Deviation of actual transfers from transfers estimated on a population basis, and intercept (fixed amount)



Standardizing recurrent expenditure needs

In order to obtain a standard regional budget one must first determine the amount of money needed to finance the standardized per capita expenditures of each province, i.e. the outlays the province must cover to provide the average level of public services of the provinces overall, bearing in mind the cost of delivering such services. The CGC calculates such standard needs in an extremely detailed fashion for quite a number of expenditure items. In Krakozhia the methodology must be considerably simpler because of data limitations.

The calculations of standardized per capita expenditures can be based on a consolidated set of budget data. The Krakozhian provinces have only three types of expenditures: administration, education and health. They are represented in Table 2.

For each of the expenditure items, an appropriate method for standardizing expenditure needs has to be developed. This is done on a per capita basis. The sum of the standardized per capita expenditure items times the population would then form the total of the standardized expenditures for each province.

The CGC methodology does not only look at the spending that the state must cover to provide the average level of public services of the states overall, but also on the standard cost of delivering such services. This is done for each expenditure item

separately. Because of an obvious lack of corresponding information in Krakozhia, it is proposed using a generalized cost-adjustment factor on the aggregate of per capital expenditure needs rather than making individual adjustments for each expenditure item individually.

Table 2: Consolidated Expenditures of Krakozhian provinces

	Administration	**Education**	**Health**	**TOTAL**
		In mill. danir		
Adania	65	85	45	195
Birino	75	15	10	100
Chuchko	200	250	70	520
Dobrodzia	320	480	115	915
Eshowia	90	10	10	110
Filiasi	40	20	15	75
Gubkin	150	240	60	450
Humppila	30	20	10	60
Ilgin	15	15	8	38
Jabel	15	15	7	37
Total provinces	1000	1150	350	2500
In percent of total	40.0%	46.0%	14.0%	100.0%
		In danir per capita		
Adania	33	44	23	100
Birino	118	24	16	157
Chuchko	23	29	8	60
Dobrodzia	27	40	10	77
Eshowia	46	5	5	57
Filiasi	142	71	53	265
Gubkin	23	36	9	68
Humppila	270	180	90	541
Ilgin	174	174	93	442
Jabel	87	88	41	216
Total provinces	31	36	11	77
Std.dev.	*82*	*62*	*34*	*171*
Std.dev./mean	*266%*	*173%*	*311%*	*221%*

Administration

Administrative expenditures constitute a major spending item of provincial budgets in Krakozhia: forty percent of total regional spending goes to general services. Moreover these outlays vary significantly among provinces. The larger provinces, Dobrodzia and Chuchko, spend as little as 23-27 danir per capita and year on administration; the smaller provinces might need 5 to 8 times as much. This is clearly related to the importance of overhead costs for administration and general services.

It is obvious that the larger provinces will greatly affect the average per capita spending. If per capita expenditure needs for administration of all provinces were to be expressed in terms of the comparably low average figure for the provinces as a whole, it would not be sufficient to cover the overhead costs of smaller provinces. Thus some model calculations have to be made in order to arrive at standardized needs that take overhead cost more explicitly into account.

For the following regression analysis it is assumed that outlays for administration contain a fixed cost element, and they are related to population and area size.
The regression results are shown in the following table:

Regression statistics			
Multiple correlation coefficient	0.990668534		
R-square	0.981424145		
Adjusted R-square	0.976116758		
Standard error	15.08909472		
	Coefficients	*Standard error*	*t-statistics*
Intercept	16.67035687	7.018771693	2.37511029
Population (mill. persons)	18.23257937	1.789895876	10.18639107
Area (sq.km.)	0.408391237	0.129889631	3.144140398

The results are highly significant and appear to produce a reasonably good fit. The estimated coefficients were then used to calculate the standard expenditures for administration and general services.

This produces the following expenditure pattern:

Table 3: Estimating Provincial Outlays for Administration in Krakozhia

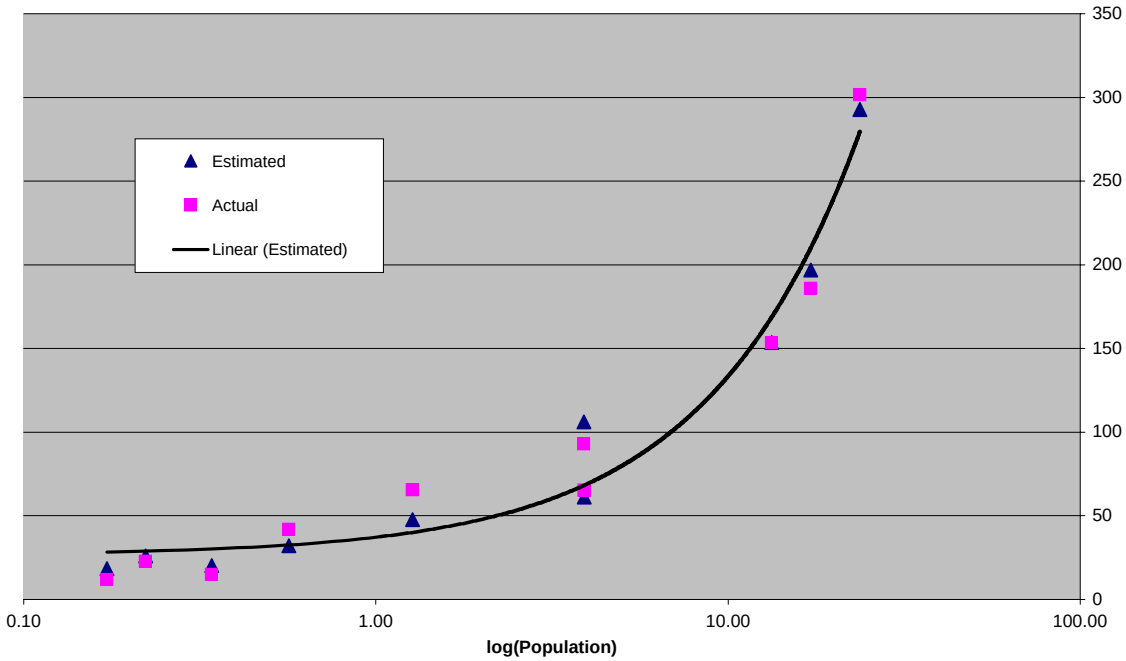
	Estimated	Actual	Difference in
	mill. danir		% of actual
Adania	74	65	13.8%
Birino	48	75	-35.8%
Chuchko	207	200	3.3%
Dobrodzia	306	320	-4.3%
Eshowia	108	90	19.7%
Filiasi	32	40	-19.7%
Gubkin	161	150	7.4%
Humppila	26	30	-14.5%
Ilgin	18	15	22.1%
Jabel	20	15	35.1%
Total provinces	1000	1000	0.0%
		Std.dev.	*21.6%*

The model reproduces the actual pattern of spending reasonably well, except for the smallest provinces Ilgin and Jabel. In fact these entities spend now considerably less than they would according to the standardized model. If this standardization procedure were to be adopted, Ilgin and Jabel could expect higher grant entitlements based on this single expenditure item.

The relationship between actual and estimated standard expenditures can also be shown graphically as in Chart 4[12]: The line drawn represents a purely population based estimate for provincial administrative expenditures. The inclusion of the area size improves the estimates remarkable which indicates higher general services outlays for less densely populated areas.

[12] The x-axis (population) is shown in logarithms to spread the axis at the lower end in order to bring out the smaller regions. This transformation makes the linear trend appear in the form of an exponential function.

Chart 4: Administration expenditures of Krakozhian provinces *Actual and estimated*



Since neither population nor area are under the direct control of the respective provincial spending authorities, it makes sense to standardize administrative outlays on the basis of these two variables, i.e. the regression estimates are used to standardize general grants for education notwithstanding a cost adjustment factor that will apply to total spending later on.

Education

Expenditures on education represent by far the most import item of regional government budgets. 46 percent of total regional spending is on education. This puts the first priority on refining the methodology for standardizing expenditure need in that sector.

For education, some independent information was made available for Krakozhia that is used for the present grants formula. These indicators include for all provinces:

- Average primary & secondary participation rate
- Total primary school teachers
- Number of classrooms in primary school
- Number of students in primary school
- Students-teacher ratio
- Students-classroom ratio

This are valuable statistics that could also be used for standardizing education expenditures according to the CGC methodology. However one must guard against using the information *as such* for each province. Some indicators—for instance, the number of

school teachers or the number of class rooms—represent "capacity indicators" as discussed above. If used directly, the transfers would induce perverse incentives such as increasing the number of class rooms or teachers without relating it to standard needs. Therefore the information must always be used in a *standardized fashion* when calculating grants relativities, relating it to a standard curriculum adjusted for eventual cost differentials as may be applicable. But the information contained in the above set of data is in fact useful for deriving standard figures on average.

There is a number of options to relate per student education expenditures to some of the variables listed above. This is not the place to go into a deeper analysis. The model used here is testing simply whether there is a relationship between education expenditures on the one hand and the number of students enrolled on the other.

The regression results for this type of model are as follows:

Regression statistics			
Multiple correlation coefficient	0.990263267		
R-square	0.980621338		
Adjusted R-square	0.978199005		
	Coefficients	*Standard error*	*t-statistics*
Intercept	2.508932093	9.287561259	0.270138955
Number of students	0.146559482	0.007284171	20.12026829

The regression results appear to yield a reasonable fit. It might therefore be reasonable to standardize the transfers for education by using the number of students enrolled. If the actual outlays for education are confronted with the estimated figures based on the number of students, the following set of data is obtained as represented in Table 4:

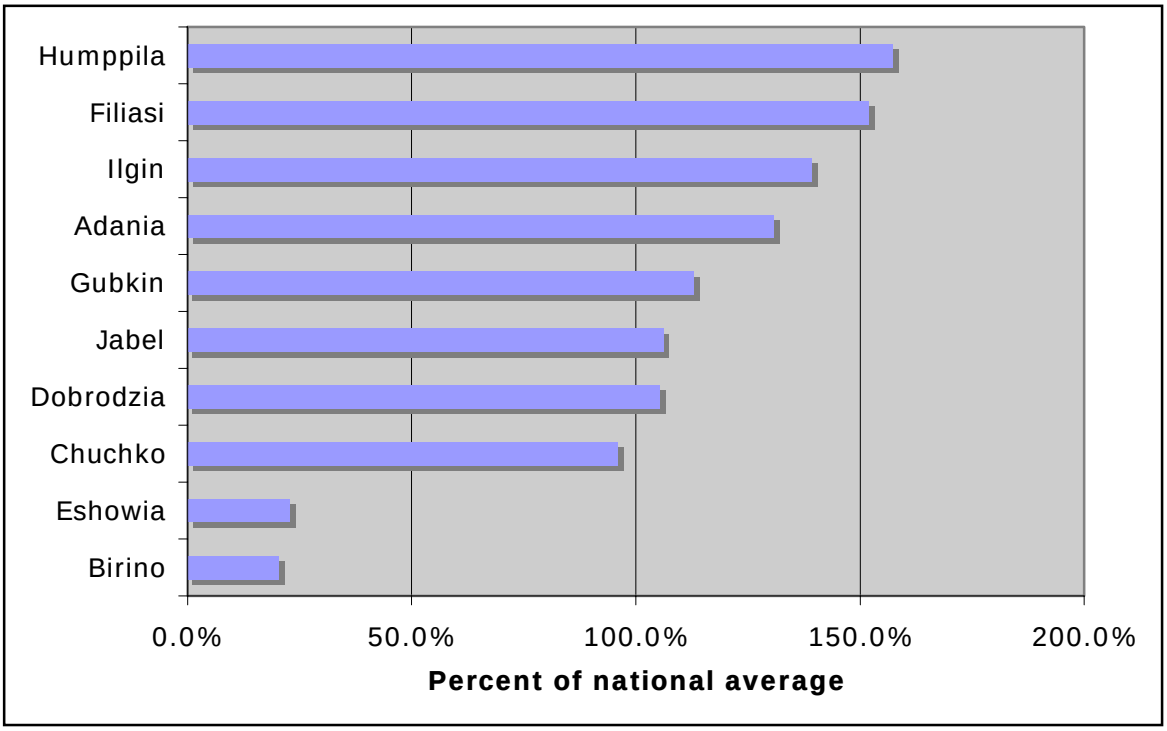
The differences between the estimated and the actual expenditure figures are dramatic in some instances. In Eshowia the estimated amount is roughly twice the actual; in Birino, Humppila and Ilgin it is less than half. This may have several reasons: First there could be significant differences in the costs of producing education services due to differences in population density, for instance. In particular overhead costs could be higher than represented by the intercept in the equation for smaller jurisdictions. Second there could be differences in the quality of education services. Third there could be distortions induced by institutional factors, including corruption. This would need further inquiries which cannot be carried further in this paper.

Table 4: Estimating Provincial Outlays for Education in Krakozhia

	Estimated	Actual	Difference in
	Mill. danir		% of actual
Adania	91	85	7.5%
Birino	7	15	-53.2%
Chuchko	290	250	16.1%
Dobrodzia	438	480	-8.8%
Eshowia	18	10	76.8%
Filiasi	17	20	-12.7%
Gubkin	264	240	10.0%
Humppila	9	20	-57.0%
Ilgin	7	15	-55.5%
Jabel	9	15	-41.1%
Total provinces	1150	1150	0.0%
			42.2%

One particular aspect has to be taken care however. As can be seen from Chart 5, the take-up rate of education is highly uneven in Krokazhia.

Chart 5: Schooling take-up rates per population



These differences will put significant stress on the equalization formula. They do *not* represent disability factors in the sense of cost differentials, but are explained by different access conditions to schooling throughout the country. If the equalization formula were based on the actual number of students, it could perpetuate regional unfairness; if it were based on the standardized number of students, it could over-equalize and lead to a spending spree in some provinces without generating corresponding output. In this case the transfers are better geared toward specific purpose payments conditional on some appropriate performance criteria, such as take-up rates with some standards for the quality of service delivery. One has to caution however that this will require additional monitoring because simply enrolling students is easy. What counts is whether the students are in fact consuming public services, or not, and at what level of quality.

For the present study, estimations on the basis of actual students are used for starting the new transfer system in Krakozhia understanding that incentives will have to be built in to increase the schooling take-up rate and to harmonize quality standards through appropriate incentives and effective monitoring.

Health

Health expenditures represent an average of 14 percent of total spending by provincial governments. The distribution of the average health costs per capita is highly uneven among the regions in Krakozhia. They are as little as 5 danir in Eshowia, and about 90 danir in Ilgin or Humppila, two regions with very different characteristics. The average costs per capita for all regions is 11 danir, with a standard deviation of 34 danir. The variation coefficient[13] is correspondingly high: over 300 percent. This indicates extremely varying conditions for the provision of health services in Krakozhia, which – again – cannot be addressed simply by dealing out grant money. As in the case of education requires a thorough analysis and, perhaps, overhaul of the whole health sector and the delivery of health services.

Again, some independent information was made available for the health sector. These indicators include for all provinces:

- Number of health centers
- Number of hospital beds
- Number of doctors
- Number of nurses
- Number of health assistance
- Health center coverage
- Unit cost of constructing a health center
- Under five years age mortality rate per 1,000 of population

[13] The variation coefficient is the standard deviation divided by the mean.

The same precautionary note made for education on "capacity indicators" also applies for health expenditures. The information should never be used as such for individual provinces, but only for the total of the country and in a standardized fashion.

In order to detect a common pattern for health expenditures that could be used to standardize across regions, health expenditures were regressed on a number of variables: population, the number of health centers, the number of hospital beds, the number of doctors, the number of nurses, and the infant mortality rate. None of the health-related indicators is significant. So again the regression was simplified by using population figures as the only explanatory variable.

The regression results for this type of model are shown as follows:

Regression statistics			
Multiple correlation coefficient	0.964047418		
R-square	0.929387424		
Adjusted R-square	0.920560852		
Standard error	10.33793001		
	Coefficients	*Standard error*	*t-statistics*
Intercept	8.09275238	4.188232878	1.932259407
Population	8.320586041	0.810870602	10.26129942

For the illustrative model exercise presented in this paper it was decided to health expenditures on the basis of population only (Table 5). It is obvious that, given the large discrepancies in per capita health expenditures among regions, the standard assessment for health expenditures based on average national costs will vary significantly from the actual distribution of health expenditures for most regions. These variation could be as large as 100 percent measured against actual budget appropriations. It is questionable whether such large differences, if converted into transfer funding, would be bearable for regional government budgets. It will hinge on the importance of the cost correction factor discussed below.

Table 5: Estimating Provincial Outlays for Health in Krakozhia

	Estimated	Actual	Difference in
	Mill. danir		% of actual
Adania	24	45	-46.0%
Birino	13	10	33.8%
Chuchko	80	70	14.5%
Dobrodzia	107	115	-7.2%
Eshowia	24	10	143.1%
Filiasi	10	15	-30.4%
Gubkin	63	60	5.7%
Humppila	9	10	-9.8%
Ilgin	9	8	10.1%
Jabel	10	7	35.9%
Total provinces	350	350	0.0%
Std.deviation			*51.9%*

Costing

As mentioned before, it was deemed to be appropriate to treat cost differentials on the basis of total expenditures rather than for each individual budget item.

The approach to evaluating costing differentials is based on a heroic assumption:

> *It is assumed that the difference between the total standard expenditures and total actual recurrent expenditures is an appropriate indicator for existing cost differentials among provinces.*

This methodology would also close some of the gaps that will exist between the standard and the actual budgets of individual provinces.

The exercise is thus based on a comparison between standard and actual expenditures as presented in the following Table 6:

Table 6: Comparing standard and actual expenditures of provincial governments in Krakozhia

	Standardized Expenditures				**Actual**	**Differences**	
	Mill. danir						*% of actual*
	Admin. service	**Edu-cation**	**Health**	**Total**	**Total**		
Adania	74	71	24	169	195	26	13.4%
Birino	48	17	13	79	100	21	21.3%
Chuchko	207	285	80	571	520	-52	-10.0%
Dobrodzia	306	447	107	860	915	55	6.0%
Eshowia	108	18	24	150	110	-40	-35.9%
Filiasi	32	9	10	52	75	23	30.8%
Gubkin	161	261	63	485	450	-35	-7.8%
Humppila	26	12	9	47	60	13	21.5%
Ilgin	18	24	9	51	38	-13	-35.0%
Jabel	20	5	10	35	37	2	5.0%
Total regions	1000	1150	350	2500	2500	0	0.0%
Std.deviation				*287*	*290*		
Variation coefficient				11.5%	11.6%		

It is interesting to note that, despite the simplifications made when standardizing each individual budget item, the total of standardized expenditures reflects a rather similar pattern than the total of actual expenditures, at least in the aggregate. The standard deviations for both relevant columns of Table 6 are almost identical. This conceals the fact that individual variations can be a high as 35 percent for some provinces (Eshowia, Ilgin). Even so, the variations are much less pronounced than those of the individual budget items, which discloses some compensatory effects through aggregation.

As said before, the differences between standard and actual expenditures were taken to indicate systematic cost differentials among provinces. These had to be rationalized by using some external information explaining such differentials.

The proposed procedure is as follows:

1) A cost differential indicator is calculated representing actual divided by standard total recurrent expenditures.
2) The logarithm of this indicator is regressed on the following independent variables reflecting proxies for cost differentials (no intercept):
   - The logarithm of unit costs of constructing a school (in mill. danir);
   - the logarithm of unit costs of constructing a health center (in mill danir); and
   - the logarithm of population density (1,000 per sq.km.).

3) The estimated "cost correction factors" are then used to bring standard expenditures closer to the actual ones. This requires two steps:

- First the harmonic mean of these estimated cost correction factors is calculated;
- second, the estimated correction factors are adjusted by dividing them by their harmonic mean to standardize them to a factor of 1. It shows which regions are above and below average.

The following table exhibits the regression results for the "cost correction factors":

Regression statistics			
Multiple correlation coefficient	0.697698935		
R-square	0.486783804		
Adjusted R-square	0.197293462		
Standard error	0.081227937		
	Coefficients	*Standard error*	*t-statistics*
Intercept	0	#NV	#NV
Log unit costs of schools	0.075376029	0.276714959	0.272395932
Log unit costs of health center	0.407518771	0.184230933	2.211999715
Log population density	-0.059398231	0.045075743	-1.317742695

The regression is however somewhat disappointing. Although the explanatory variables exhibit the correct sign, they are not highly significant. The intercept was constraint to zero after a preliminary estimate had revealed it to be close to zero anyway.

Just to illustrate how standard expenditures can be corrected once appropriate regional cost adjustment factors are available, the procedure can be demonstrated as in Table 7.

Table 7: Adjusting total provincial expenditures for cost differentials

	Total outlays standardized	Estimated cost correction factor	Corrected cost adjustment factor*)	Adjusted standard outlays	Total actual	Diff.	in % of actual
Adania	169	1.029	1.017	172	195	-24	-12.1%
Birino	79	1.110	1.097	86	100	-14	-13.8%
Chuchko	571	0.981	0.969	553	520	33	6.4%
Dobrodzia	860	1.034	1.022	877	915	-38	-4.1%
Eshowia	150	0.999	0.987	148	110	37	34.0%
Filiasi	52	1.038	1.026	53	75	-22	-29.1%
Gubkin	485	1.004	0.992	480	450	30	6.8%
Humppila	47	1.129	1.115	52	60	-8	-12.6%
Ilgin	51	0.909	0.899	46	38	8	21.1%
Jabel	35	0.929	0.918	32	37	-5	-12.9%
Total regions	2500	1.012	1.000	2500	2500	0	0.0%
Std.deviation				*287*	*290*		
Std. deviation in % of mean				*11.5%*	*11.6%*		

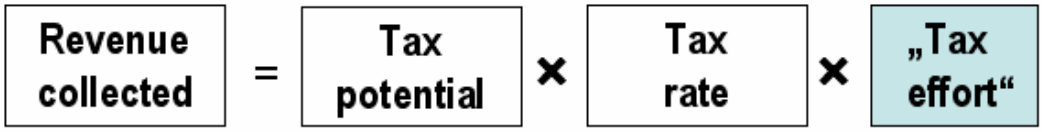
*) Estimated corrections factor divided by its harmonic mean.

Standardizing Fiscal Capacity

In order to depict regional budgets in a policy-neutral fashion, the revenue side of regional governments has to be standardized also. In Australia the states are autonomous as to their own tax policy, so they can vary the rates of state taxes. Moreover they administer and collect their own taxes, so there could be regional variations in "tax effort". Such effects would have to be neutralized in an appropriate fashion to avoid that states with a high tax rate, or a strong "tax effort", are penalized through the grants system. If *actual* tax collections were used, this would implicitly reduce the grants entitlements for high-tax states; and it would increase the grants for the low-tax states. This entails an undesirable reward for under-exploiting the own tax base; and a penalty for states that want to use their fiscal potential more intensely. Obviously, these perverse incentives have to be neutralized by standardizing fiscal (or tax) capacity.

The so-called "fiscal capacity" (or "tax capacity"), which is used for standardizing the revenue side of provincial budgets in Krakozhia, eliminates these undesirable distortionary effects. This has to be done at various stages of assessing and collecting taxes.

These stages can be broken down as follows:



The components are the following:

- "Tax potential" is understood to include the legal definition of the base, but also the social and economic relevance of the legal provision. If, for instance, a tax is placed on the wealthy according to some definition, but the province has no wealthy people thus defined, the tax potential of the tax would be zero. Similarly, if a tax law defines a tax base in a certain way, but taxpayers manage to evade the tax to some degree, this would reduce the tax potential conformingly.
- The tax rate is usually a proportional statutory rate, but it could also be a set of rates, for instance for different types of property, or for income brackets.
- "Tax effort" is finally a measure of the effectiveness of fiscal administration and tax collection, which will include an element of taxpayers' compliance. Tax effort is particularly difficult to measure as regional governments often engage in mutual "tax competition" in order to attract business activities to their region. Where the tax legislation does not allow to compete through the tax rate, this is often effected through leniency in administering and collecting the tax.

Ideally, standardization of tax capacity has to be effected at all three levels—the tax potential, the tax rate, and the tax effort. Moreover, tax potential would have to include harmonizing eventually different legal provisions regarding the definition of the base and their social and economic relevance in any one region.

Fortunately, standardization is often unnecessary because there might be some degree of uniformity across regions.

- Where the legal provisions defining the tax base are uniform throughout the country, the exercise amounts to defining the economic relevance (potential) only. No standardization on the basis of a "harmonized" tax base is required.
- The same is true where regional governments have no discretion to vary tax rates as they are set by national legislation.
- Where the central government administers and collects regional taxes, one will have to assume that the same "tax effort" is made in every region. Where this is not the case, the regional authorities cannot be held accountable for a lack of effort.

Standardization of fiscal capacity has to be effected for each single revenue item, including non-tax revenue. However it is sufficient to focus on the "big" revenue items, and include smaller revenue sources as a simple markup.

For Krakozhia, we shall simplify matters by assuming a single provincial tax only. This tax is based on the same legal provisions throughout Krakozhia. Moreover it is administered and collected by the national government. This makes a good case for using *actual* rather than standardized tax income, which appears to be an excellent proxy for economic potentials, and hence tax capacity, in the regions.

Total provincial taxes collected in Krakozhia are 1,000 mill. danir, which is 40 percent of total expenditures. The remainder has to be covered, on average and on a

standardized basis, by transfers of the national government. The ratio own taxes relative to total spending is reasonably high to avoid transfer dependency at the aggregate level for all provinces. Although they cannot use tax instruments, which are fixed at the national level, they could be expected to adjust expenditures and employ their non-tax revenue so as to be financially autonomous under the transfer regime.

Non-tax revenue

Non-tax revenue includes a number of charges, fees, and fines, revenue from the sale of goods and services, income from public investments, and other capital income. By nature this revenue category is extremely diverse and some crude method has to be used to take them into account in a simplified manner, because these revenue items are under the full control of regional jurisdictions. It is reasonable to treat non-tax revenue as a simple markup on tax revenue. This standardizing will preserve the revenue raising autonomy of provinces in the realm of their budget authority. If there were a penalty on raising revenue through charges and fees, there would be a severe incentive to bring these charges to zero to the benefit of local taxpayers. This is avoided through standardization. The markup is 25 percent of tax revenue bringing own resources up to 50 percent of total provincial expenditures at the aggregate level.

Integrating Budgets, and Calculating Transfers

In the following, the expenditure and revenue sides of provincial budgets are integrated in a standard fashion and to compare it with the actual data. This exercise is, again, for illustration purposes only. Table 8 exemplified the procedure for integrating the budget for calculating regional grants in Krakozhia

Table 8: The composition of provincial budgets (In mill. danir)

	Own revenue	**Actual outlays**	**Standard outlays**	**Budget deficit**	**Standard budget deficit =Transfer**	**Uncovered budget deficit**	**Uncov. deficit in % of outlays**
Adania	120	195	169	75	49	-26	-13.4%
Birino	15	100	79	85	64	-21	-21.3%
Chuchko	262	520	571	257	309	52	10.0%
Dobrodzia	556	915	860	359	304	-55	-6.0%
Eshowia	29	110	150	81	121	40	35.9%
Filiasi	18	75	52	57	34	-23	-30.8%
Gubkin	203	450	485	247	282	35	7.8%
Humppila	11	60	47	49	36	-13	-21.5%
Ilgin	12	38	51	26	40	13	35.0%
Jabel	24	37	35	13	11	-2	-5.0%
Total provinces	**1250**	**2500**	**2500**	**1250**	**1250**	**0**	**0.0%**

Table 8 compares actual and standard total outlays assuming that actual taxes (including non-tax revenues) represent effective taxable capacity, which produces actual and standard deficits for each province. If the national government decides to establish vertical fiscal balance by closing the budget gap on average for all provinces (1,250 mill. danir), it is advised to use standard fiscal gaps rather than actual gaps, since gap filling entails perverse incentives leading to higher outlays and lower taxes at subnational levels.

Standard fiscal gaps require budget adjustments for some provinces however since their transferred resources flows correspond to standard outlays, not actual outlays. For instance Jabel will have to reduce expenditures (or increase non-tax revenues) corresponding to 5 percent of actual outlays. In Dobrodzia it is 6 percent, and in Adania 13 percent. This appears to be manageable for these provinces. Larger adjustments would be required for Birino, Humppila, and Filiasi with about 20 respectively 30 percent of actual outlays. This would require further examinations leading, perhaps, to additional specific purpose or special transfers for these provinces.

Four provinces would receive more than covers their actual deficit. While two of them are tiny provinces where relativities tend to be overblown, Chuchko (+10 percent) and Gubkin (+8 percent) require special attention however. These are two larger provinces where taxes per capita relationship fall short of the national average, so possibly the simplifications made by equating actual with potential tax revenue need further investigation and a refinement of the transfer mechanism. It is essential that provinces whose existing level of taxation is low will not benefit from “grandfathering” through an inappropriate design of the transfer system.

6. Conclusion

It is useful to distinguish the following types of transfers according to different purposes: (i) general transfers; (ii) specific transfers; (iii) special transfers. *General grants* are unconditional general purpose grants to balance the budgets of autonomous or quasi-autonomous public agencies. They fund current budgets and are taken from current budgets. *Specific transfers* are paid for particular services rendered by one public agency to another on legal, bureaucratic, or contractual grounds. They are also used as political “signaling instruments” by the donor government where policies reach beyond the realm of its own competencies. Special transfers are neither pure general budget resources nor do they compensate for interjurisdictional externalities, including the spillover of political benefits and costs. They are used to compensate for extraordinary costs, such as from local catastrophes, for the targeting of *national* policies, and for regional development.

The funding of transfers has to respect the overall constraint on public resources. So a general principle should be the closed funding of transfers. This is either achieved through the assignment of a fixed amount or proportion of the donor government’s budget or through tax sharing. There are many possibilities to limit the pool, even within a tax sharing arrangement. and there is a great variety in defining a funding pool for intergovernmental transfers for transfers. If the pool is formed on a single or narrow

resource base, there will be excessive volatility or structural shifts that impact on subnational budgets. This could jeopardize macro stability or sustainable public service delivery by subnational agencies. A broader definition of budgetary resources would counteract such budgetary risks, but perhaps limit the national government's ability to use taxes as a countercyclical policy instrument.

Often transfers are not directly funded from the general budget of the donor authority, but through the budgets of its line ministries. This is particularly true for specific and special transfers. The financing of transfers through special agencies and funds entails some inefficiency risks however. Such inefficiency risks are significantly smaller for unconditional transfers funded from the general budget and allocated on the basis of objective criteria through formula apportionment. However moral hazard might not totally be avoided even for unconditional funding from the general budget. Often donor government take recourse to gap filling transfers where they are compelled, by law or political pressure, to bail out subnational budgets under distress. This may occur despite firm rules reigning the overall transfer system.

There are no uniform rules for designing the machinery of a transfer system. This very much depends on traditions and political conditions with different objectives. It is also constrained by the informational base and administrative procedures.

Rules are often used to design general revenue grants for equalization purposes where the rules serve to foster transparency and to reach a degree of interjurisdictional fairness among recipient governments. Such transfers should display a pure income effect. There are also rules-based transfer system containing specific incentives so as to influence the behavior of recipient governments. Such transfers exhibit an income *and* a substitution effect. A few principles for rules-based general transfers are sketched in this paper and illustrated by applying them to a fictional case: the redesign of a general transfer system for the federation of Krakozhia.