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International Studies Program
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The Determinants of the Incidence of Intergovernmental Grants: A Survey of the International Experience

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Abstract

Although the presence of objective formula-based grants is an important component of a stable, equitable and efficient system of intergovernmental fiscal relations, the final incidence of grants is not always according to what is stated in the formula because there are other intervening institutional factors. Furthermore, the intergovernmental grant mechanism itself is often a function of the same interests or forces that ultimately drive the incidence of grant resources. This paper relates the horizontal allocation of intergovernmental grants directly to their potential underlying determinants, including normative policy issues, voter choice arguments and political considerations. An international comparison of empirical incidence studies reveals that besides local expenditure needs and local fiscal capacity, other factors including political influence and a jurisdiction's size play important and consistent roles in determining the horizontal allocation of per capita intergovernmental grants

Introduction

One of the cornerstones of sound intergovernmental fiscal systems in countries around the world is the manner in which grants resources are allocated among regional or local government units. There is wide consensus in the literature that the bulk of expected benefits from fiscal decentralization will fail to materialize in fiscally decentralized systems of government unless the system of intergovernmental fiscal transfers relies on a stable, equitable and efficient horizontal allocation mechanism.

The most straightforward horizontal allocation mechanism possible would be to distribute the total pool of intergovernmental grants available in a country proportionally among all local governments based on the number of people that reside in each local government area. In this case, each local government in the country would receive the same amount of per capita transfer funding. Although attractive and simple, per capita allocations are not always equitable or efficient. In reality intergovernmental grants are rarely allocated strictly on a per capita basis. Although many countries use horizontal allocation formulas to distribute grant resources among eligible local government jurisdictions (and population is often a key factor in the allocation formulas), other countries rely on more discretionary approaches to allocate intergovernmental grants across local governments. Regardless of the approach used, the distribution of grant resources between local governments units typically results in some local government jurisdictions receiving more resources on a per capita basis than other local governments.

It is widely recognized among fiscal policy experts and practitioners that *ad hoc* grant disbursements which are determined annually or local government allocations that are negotiated as part of the central government budget formulation process are inherently more centralizing than formula-based grants (Bahl 1999). Determining the horizontal allocation of grants on an *ad hoc* basis also provides politicians with an opportunity to wield their influence to the benefit of their constituents, and gives cabinet officials or members of parliament an opportunity to “sell” favors to local officials. An *ad hoc* approach to the horizontal allocation of resources hardly ever results in a fair, efficient, and stable allocation of intergovernmental grants. It is much less objective.

Yet, the presence of a formula-based allocation mechanism in itself does not assure that the allocation of resources is either objective, fair, efficient or stable. In many countries, the central government has the discretion to unilaterally change the factors included in the allocation formula and change their relative weights from year to year, giving the central government *de facto* control to alter the effective distribution of grant resources as it sees fit. In addition, even when a funding formula is fixed over a period of time, central government officials are able to influence the outcome of the formula by manipulating the data used to compute the allocation factors. In some cases, the formula is abandoned altogether. For instance, when the existing horizontal allocation formula did not produce politically desirable results for Russia’s equalization fund during the mid-1990s, the allocation formula was inconsistently applied and diluted by central government officials (Martinez-Vazquez and Boex 2001). Similarly, the new equalization formula introduced in Indonesia in 2001 was “neutralized” by a parliamentary coalition so that only a small fraction of the pool of equalization funds were actually allocated through the formula (Brodjonegoro and Martinez-Vazquez, 2004).

In fact, it is important to recognize that the allocation formula –in fact the entire horizontal allocation methodology- is not an exogenous factor in determining the incidence of intergovernmental grants, but rather that the institutional mechanism itself is a function of the same interests that ultimately drive the allocation of resources.

Even in countries that rely on a sound formula-based transfer system, the form of the horizontal allocation mechanism is very often a function of the ultimate policy objectives pursued by the central government. An example may be helpful to illustrate this point. The fact that the U.S. federal government relies heavily on matching grant schemes (which tend to favor wealthier states) suggests that U.S. policy makers are politically comfortable with the consequence that federal-state grants may be allocated in a un-equalizing manner, whereby rich states receive greater transfers than poorer states. Had the policy objective of the U.S. government been to achieve a more fiscally equalizing outcome, it would have been unlikely that policy makers would have chosen to rely practically exclusively on matching grant schemes. In general, it would thus be incorrect to attribute any specific incidence pattern exogenously to the nature of the transfer system itself.

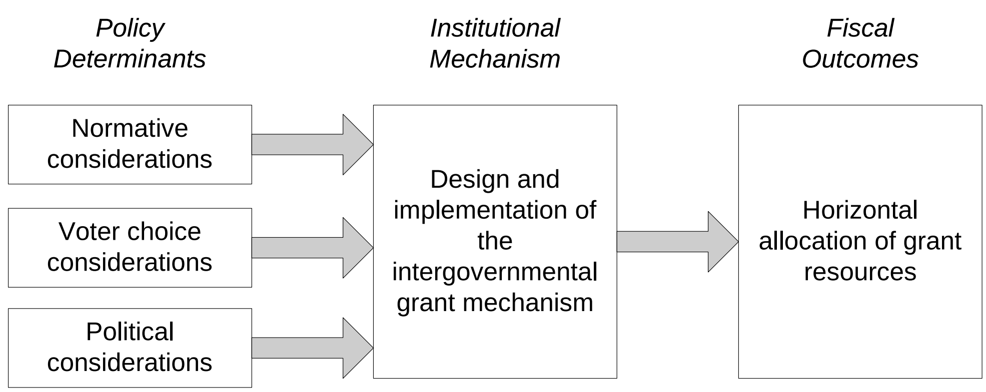
It is not even necessary for policy makers to intentionally select the horizontal allocation mechanism that *a priori* yields the desired horizontal incidence. For instance, in Nepal, Village Development Committees (VDCs) receive a simple lump sum transfer from the central government in the amount of 500,000 Rupees (approximately US$ 7,500) per VDC (Shrestha 2002). Although fiscal policy experts may argue that the approach is unsuitable because it produces a highly unequal per capita allocation of local resources, central government officials have been disinclined to replace the existing "formula." This is because, given the structure of local governments in Nepal, the formula tends to provide substantially more per capita resources to sparsely populated VDCs (especially in mountainous districts) that are perceived to have high fiscal needs, while more populous and more densely populated VDCs (particularly in the hill and terrai regions of the country) receive substantially less on a per person basis. Although it is unlikely that this was an intentional design element of the lump-sum "formula" as the VDC grant evolved into its current form, the current VDC grant formula remains unchanged based on the general perception by policy makers that the resulting incidence pattern is generally fair.

The realization that the incidence of intergovernmental grants is driven by something more fundamental than the horizontal allocation formula or the design of the transfer mechanism itself may not come as a surprise to politicians in many countries who are trying to maneuver and work around whatever "institutional constraints" there are in order to achieve their personal objectives. However, this fact has not been sufficiently studied or is fully understood in the fiscal decentralization literature. Our focus in this paper is on the following question: irrespective of the grant mechanism used, what factors determine the incidence or the horizontal allocation of intergovernmental grant resources?

What determines the horizontal allocation of intergovernmental grants?

Three strands of the economics literature consider factors that may affect the distribution of central government resources across local governments (Figure 1). First, the public finance literature provides broad, normative guidance on how intergovernmental grants should be distributed in order to improve the efficient and equitable allocation of resources in a country (e.g., Oates 1972). Second, a variety of voter-choice models in the public choice literature provide an understanding of how electoral mechanisms could influence the fiscal choices of central government politicians in distributing resources across local governments in response to voters' demands for public services. Third, political economy arguments –based on non-electoral concerns- could also contribute to explaining the incidence of intergovernmental grants.

Figure 1
Determinants of the horizontal allocation of intergovernmental grants



After considering the arguments made by normative public finance, electoral choice models and the political economy literature in some greater detail, this article reviews the available comparative empirical evidence to determine to what extent each of these three arguments in fact contribute to determining the horizontal allocation of grant resources in fiscally decentralized system around the world.

The relevance of such empirical incidence analyses goes well beyond academic interest. Given that even formula-based mechanisms often contain major discretionary elements in both formulation and implementation, it is important to verify that intergovernmental grants are allocated in a manner that is consistent with the government's policy objectives, or whether in fact central government officials inadvertently (or perhaps knowingly) allocate resources in a different manner, for example, benefiting politically more powerful local governments.

Normative considerations in the distribution of intergovernmental grants

There is wide consensus in the local public finance literature with Oates' (1972) proposition that, a country's system of fiscal federalism should be designed in such a way that it pursues Musgrave's (1976) three economic roles of the public sector, including (a) achieving a stable economic environment; (b) assuring an equitable distribution of resources, and (c) achieving efficiency in the allocation of resources. Since the policy objective of macroeconomic stability is typically pursued at the national level, normative considerations in the distribution of intergovernmental fiscal transfers usually focus on enhancing efficiency through the distribution of grant resources as well as assuring a more equitable allocation of resources by redistributing public resources through the system of intergovernmental grants.

The first normative objective potentially pursued by the horizontal allocation of grant resources is to assure an efficient allocation of resources among local governments. In pursuit of this objective, the intergovernmental grant system might seek to correct for inter-jurisdictional externalities in the provision of certain local public services. For instance, since not all the benefits from the provision of primary and secondary education accrue to the local government level (better education results in greater national tax revenues, lower national unemployment expenditures, lower crime rates, and a better educated national electorate), local governments would tend to under-provide local public education if left to their own devices. This is not an unrealistic scenario, since most government services typically provided at the local level (including public education, basic health care, as well as other local services provided such as local roads) are argued to have significant positive externalities. In order to correct for these externalities and to assure public education is produced at a more efficient level (ideally at the quantity of public education where social marginal benefits equal social marginal costs), greater intergovernmental grants would have to be provided to local jurisdictions that produce a sub-optimal level of public education. In particular, greater per capita intergovernmental grants would have to be focused on local jurisdictions with a greater number of school-aged children, or to those local governments that have a low own revenue base. As a result, in the presence of positive externalities in the delivery of local services, the normative pursuit of economic efficiency would result in the central government providing greater intergovernmental grants in response to higher local expenditure needs, as reflected by the number of school-aged children, and so on.

The second normative economic objective that can be pursued with the horizontal allocation of grants is to achieve a more equitable distribution of resources across the population. Although there are several ways in which governments can achieve income redistribution (including tax policies, expenditure programs, and direct income transfers to households), income redistribution policies and policies that assure equitable access to public services is often pursued through equalizing intergovernmental grant schemes. As such, the pursuit of a more equitable allocation of national resources would lead us to expect a pro-poor allocation of grant resources across local government jurisdictions. For instance, if the central government implements its social policies through local governments on the basis of cost reimbursement, then we would expect to see greater intergovernmental grants flow to local jurisdictions with more dependent residents, such as senior citizens, unemployed, or poor. As such, the government's equity objective would again suggest that local governments with greater (social) expenditure needs and lower own local revenue bases receive higher levels of intergovernmental grants.

We should recognize that tensions may in fact arise between these two normative objectives. For instance, excessive equalization in pursuit of equity could reduce economic efficiency by reducing economic growth in wealthier, more productive regions. Such trade-offs made by policy makers in pursuit of these normative policy objectives will impact the ultimate allocation of public resources across the national territory. [1]

Voter choice models and the distribution of intergovernmental grants

The local public finance literature is not the only segment of the economics literature that clarifies how public resources might be distributed across local government jurisdictions. The public choice literature attempts to clarify public resource allocations by considering how public decision-making mechanisms (such as electoral mechanisms) can influence the allocation decisions made by policy makers. Although the median voter hypothesis is often criticized for being too simplistic, this approach is perhaps the public choice tool most widely used by public economists (Turnbull and Djoundourian 1994).

Electoral choice models such as the median voter hypothesis suggests that under certain basic assumptions about the electoral system, democratically elected politicians tend to maximize their probability of being (re-)elected to office, generally by adopting the fiscal preferences of the median voter. Thus if the median voter hypothesis is applied to the allocation of intergovernmental grants in a country, we would expect the system of intergovernmental grants to distribute local government finances in accordance with the fiscal preferences of the nation's median voter. For instance, if a majority of voters in a country reside in rural areas (as is the case in most developing economies), we would generally expect central government politicians to support an allocation of intergovernmental grants that favors rural areas or less density populated local governments over more densely populated urban areas.

Likewise, since the median voter often lives in a local government with below-average own local revenue base (as a result of the fact that local tax bases are typically are concentrated in a relatively small number of high-income jurisdictions), the voter choice argument suggests that we should observe an overall tendency towards fiscal equalization in intergovernmental grant systems. Specifically, local jurisdictions with greater expenditure needs should be expected to receive more intergovernmental grants in order to assure more equal access to local public services, while local governments with greater own fiscal resources (greater fiscal capacity) would be expected to receive a relatively lower level of intergovernmental grants.[2]

[1] For a discussion of this possible tradeoff see Baretti, Huber and Lichtblau (2002) for the case of Germany and Quiao, Martinez-Vazquez and Xu (2003) for the case of China.

[2] Since both normative and voter choice considerations support equalization, we are not able to separate whether a country pursuing greater fiscal equalization has a higher preference for equity, or whether the median voter is in a different position relative to the mean income. It could even be the case that voters, including the medina voter, may

The voter choice literature also offers more complex models that provide alternatives to the basic median voter hypothesis. For example, Epple and Romano (1996) sketch a scenario in which a coalition of rich and poor households defeats the preferences of the middle-income median voter. Despite the availability of more complex models, the median voter hypothesis and other electoral choice models oversimplify the allocation process if they do not take into account the political mechanism which converts the public demand for government services into policy decisions.

Other political economy considerations in the distribution of intergovernmental grants

The public choice models that incorporate political economy considerations into local government finance (beyond electoral considerations) argue that political decision-making processes can be "captured" by powerful interest groups, so that the distribution of public resources across local government units would be at least partially determined by political and institutional factors (Raimondo 1983; Grossman 1994; Atlas et al. 1995). An implication of this literature is that subnational governments with powerful political interests can be expected to receive larger intergovernmental grants.

Obviously, the measures used to capture interjurisdictional variations of political power vary from country to country since different countries have different political systems. For example, in countries with electoral systems based on single-member district-based constituencies such as the United States or the United Kingdom (as opposed to countries that use party list-based proportional representation electoral systems), jurisdictions that have disproportionately greater representation on a per capita basis (e.g., regions that have more legislators per capita) might be expected to attract more intergovernmental grants on a per capita basis. Theoretically, elected officials with smaller constituencies have a greater incentive (and opportunity) to lobby for greater intergovernmental resources, as the pay-off per vote is greater (Atlas et al. 1995; Porto and Sanguinetti 2001; Weingast 1979).

Other political factors could influence local and regional allocation patterns in similar ways, irrespective of the political system. Jurisdictions which are represented at the national level by senior lawmakers or government officials might wield their influence to bias the transfer mechanism in favor of their home districts. For instance, in many countries the home town of the President receives an "unexplained" higher level of intergovernmental grants. The same privilege is often bestowed on national capitals, going beyond quantifiably greater local expenditure needs. Based on political economy considerations, we might further expect regional or local governments that are governed by the same political party as the central government to potentially receive a disproportionate share of intergovernmental grants.

Likewise, in accordance with political economy principles, local governments that are able to exert greater political pressure on the center may receive greater political benefits in the form of greater transfers. For instance, despite the implications of the median voter model,

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demonstrate a taste for redistribution. This alternative is undistinguishable from the normative model. See Martinez-Vazquez (1981).

wealthier, well-connected subnational governments that have greater resources to exert political pressure on the central government (for instance, by financially supporting political candidates) may be able to convince the central government to engage in counter-equalizing intergovernmental grants. Alternatively, grant resources may be directed to stem negative political pressures, such as jurisdictions that did not support the executive in the previous elections, or "trouble-makers" such as secessionist jurisdictions (for instance, the ethnic republics in the Russian Federation).

But are larger grants due to political overrepresentation or scale economies? As discussed below, much of the existing empirical literature finds that political (particularly senatorial) overrepresentation results in the assignment of greater per capita grants. However, this existing literature appears not to have carefully considered the close correspondence between jurisdiction size and the intensity of political representation, particularly in countries with bi-cameral political systems where the upper house or senate provides each state or region with equal political representation.

Although in political systems with single-member districts the size of lower-house constituencies may vary between electoral districts (which would give rise to variations in relative political representation), these variations typically occur across different states or regions. However, in the case that each state or region is represented by an equal number of senators, the number of senators per thousand constituents is inversely related to the population size of that subnational jurisdiction. This makes it essentially impossible to determine whether the allocation of greater intergovernmental grants is in fact caused by the disproportionate political power of senators from small states, or whether other characteristics of less populated states (such as the presence of scale economies) justify greater intergovernmental grants.

A final political economy argument centers on the size of jurisdictions. Pereira (1996) argues that smaller local governments might receive greater intergovernmental grants on a per capita basis as a result of the mechanism used for local government lobbying activities. Independent of the impact of potential scale economies, and independent of the national electoral system, smaller jurisdictions might be able to increase their relative share of intergovernmental grants if local government lobbying organizations are based on the "one mayor, one vote" principle. For instance, if each mayor has one vote in the policy recommendations of the national association of local governments, then the association's common position will tend to be biased in favor of smaller jurisdictions.

Pereira (1996) argues that locally provided services are largely not truly public (i.e., non-rival and non-excludable) goods and that scale economies are generally absent in the production of local public services once a certain population threshold (sometimes set at 10,000 residents) is reached. Rather than attributing the presence of scale economies to population size, Pereira suggests that for other kinds of local public goods (such as public infrastructure and perhaps public administration) it is expected that per capita production costs will be higher where the population density is lower. Thus, if there is a positive relationship between the population density and population size of a jurisdiction, the effect of population density might be mistaken for scale economies in the provision of local public goods. After controlling for the effect of population density, Pereira's (1996) empirical analysis of lump-sum grants in Portugal supports the political economy hypothesis as the main explanatory cause for the observed population-regressivity of per capita grants.

A simple empirical model

While normative policy considerations, voter choice and other political concerns are plausible explanations behind the actual allocation of intergovernmental grants, it is unclear which of these explanations carries the most weight in the international experience. Therefore, a comparative perspective can be quite useful in answering this question.

Fortunately, the incidence of central-subnational government grants has been the subject of numerous country-specific empirical studies. The countries subjected to these studies vary significantly as to their intergovernmental fiscal systems, their degree of decentralization, their level of economic development, and their geographical location.

However, the general empirical approach followed by the incidence studies in the literature is basically identical. The empirical studies that analyze the distribution of intergovernmental grants across subnational jurisdictions generally consider that the per capita amount of grants received by some local government *i* (PC GRANT_i) is determined by four factors, including local expenditure needs (NEEDS), some measure of revenue capacity or revenue effort (REVENUE), a variety of political factors (POLITICS), and/or the relative population size of the jurisdiction (POP). This relationship may be represented in linear form as:

$$\begin{aligned}\text{PC GRANT}_i = {} & \beta_0 + \beta_1 \text{ NEEDS}_i + \beta_2 \text{ REVENUE}_i + \beta_3 \text{ POLITICS}_i + \\ & \beta_4 \text{ POP}_i + \varepsilon\end{aligned}$$

Both the normative line of reasoning as well as the voter choice argument support a positive relationship between grant amounts and local expenditure needs. If for example the median voter seeks to assure more equal access to local government services, we should expect the sign on NEEDS to be positive. Likewise, if the distribution of local government grants is based (in part at least) on normative factors, then we should expect to undercover a positive relationship between local government expenditure and local government transfers. Under the weaker assumption that the median voter at least seeks not to exacerbate variations in local expenditure needs, we would expect the impact of NEEDS to be at least non-negative.

However, the impact of a local government's own revenue base (or local revenue capacity) on the size of its intergovernmental grants is conceptually indeterminate. If equity concerns are dominant in the allocation of intergovernmental grants as suggested by the normative approach (for instance, Grossman 1994), then we should find REVENUE to be negative. Yet, if subnational wealth is predominantly a reflection of political power, then the sign on REVENUE might be expected to be positive.

Further according to the political economy literature, a positive relationship should be expected between political factors (POLITICAL) such as political representation and support and the size of intergovernmental grants. The expected sign on POP is negative (smaller jurisdictions receive greater per capita grants), which may be caused either by scale economies or due to the potentially disproportionate lobbying power of smaller subnational jurisdictions.

International experiences in the horizontal allocation of resources: a comparative perspective

While a completely exhaustive comparison of country experiences is beyond the scope of the current study, our goal is to provide a comparative perspective based on selected country cases that yield a geographically, economically, politically and institutionally diverse set of international experiences. A pretty intense, although by no means completely exhaustive, review of the empirical literature on the allocation of intergovernmental grants –including published journal articles as well as technical reports for individual countries- yielded a dozen suitable and comparable studies on the horizontal incidence of intergovernmental grants.[3] Countries included in the international comparison are Argentina, Australia, Brazil, Indonesia, Israel, Japan, Mexico, Nigeria, Russian Federation, Tanzania, Uganda and the United States. A brief description of each country case study captured in the current review is contained in the appendix.

Table 1 summarizes the findings of the relevant country studies. For each country case study included in the comparison, the dependent variable in the original study was per capita grant allocations. Whereas most empirical studies used some of the same independent variables, most studies also relied on country-specific measures of local expenditure need, fiscal capacity or political influence. Instead of presenting the original regression estimates, Table 1 compares the different incidence studies by noting which variables were included in the original studies to quantify each of the four policy dimensions (NEEDS, REVENUE, POLITICS and POP). The included independent variables are discussed in greater detail below. Blank cells in the table indicate that no relevant variable were included for that category in a particular study: while some studies focused more on the fiscal aspects of intergovernmental grants, others focused *a priori* more on political determinants. Each cell in table further indicates whether a positive (+) or negative (-) relationship was uncovered, while statistically insignificant results are indicated in the table by "NS." The final column of Table 1 notes the explanatory power of each respective country case study by indicating the coefficient of determination or the adjusted R^2.

We should note that the goal of Table 1 is to present a comparative overview of country experiences, and that neither the table nor the appendix is able to reflect the level of detail and subtleties contained in the original studies. Indeed, the comparability of empirical studies presented in Table 1 may be somewhat limited by the fact that most but not all empirical studies considered the totality of intergovernmental grants in each country. For instance, Worthington and Dollery (1998) exclude financial assistance (equalization) grants

[3] When multiple empirical studies were identified for a country, the comparison relies on the analysis that is most comprehensive and suitable in line with the structure of the table.

from their analysis in Australia and focus on special purpose grants for education, health and welfare. As such, this study only reveals a partial picture of the incidence of the system of intergovernmental grants in Australia. Likewise, the current country case studies fail to relate the incidence of intergovernmental grants to the distribution of local own source revenues across local governments or to the collection of national revenues by local government residents to the national treasury. Nonetheless, the consistency of the incidence patterns uncovered in Table 1 suggests a high degree of comparability between the different studies.

Table 1
A review of empirical incidence studies:
Determinants of the horizontal allocation of per capita local government grants

	Expenditure needs	**Fiscal capacity**	**Political power**	**Population Size**	R^2
Argentina	Pop. Density: -	Income: -	Political rep.: +	Population: -	0.88
Australia	Exp needs ratios: +		Political rep.: + Political support: +		0.67 - 0.77
Brazil		Income: +	Political rep.: +		0.90
Indonesia	Poverty: + Reg. prices: +	GRP: +			0.23
Israel	Dependent population: +	Local deficit: +	Political support: +	Population: -	0.64
Japan	Urban: NS	Income: +	Political rep.: +		0.97
Mexico	HDI: +	HDI: +	Political rep.: + Political support: +		0.79
Nigeria	Poverty: NS Pop Density: NS School-aged: NS	Fiscal capacity: +		Population: -	0.63
Russian Federation	Social service delivery index: +	Profits: -	Spec. status: + Political support: -	Population: -	0.62
Tanzania	Poverty: + School-aged: +	HH Expend: +	Urban: +	Population: -	0.52
Uganda	Pop density: + Poverty: -	Poverty: -		Population: -	0.62
United States	Urbanization: -	Income: +	Political support: +		0.73

Sources: Argentina (Porto and Sanguinetti 2001); Australia (Worthington and Dollery 1998); Brazil and Mexico (Kraemer 1997); Indonesia (Brodjonegoro and Martinez-Vazquez 2004); Israel (Alperovish 1984); Japan (Meyer and Naka 1999), Nigeria (Alm and Boex 2001), Russian Federation (Treisman 1996), Tanzania (Boex 2003), Uganda (LGFC 2003) and the United States (Wallis 1996).

Although the international comparison of incidence studies shows that there are variations between findings in individual countries, the consistent patterns that emerge from the table are striking. The international comparison of empirical incidence studies reveals that local expenditure needs, local fiscal capacity, political influence, and a jurisdiction's population size all play an important role in determining the horizontal allocation of per capita intergovernmental grants.

The remainder of this section synthesizes the main finding in the empirical literature. The discussion of results will follow the order of the four potential determining forces behind the horizontal allocation of local government grants incorporated in Table 1.

Local expenditure needs

The variables that were used to measure local expenditure need in the different studies varied from country case to country case, but all studies include commonly used local expenditure need measures such as demographic variables (for instance, the size of the school-aged population and the economically dependent population), population density or urbanization (with more rural areas typically presumed to have a higher level of local expenditure needs), poverty measures, as well as regional price variations. Some of the studies rely on composite measures of local expenditure needs, such as a human development index (HDI).

Despite the different types of proxies used for local expenditure needs across studies (partially reflecting variations across countries in the factors driving local expenditure needs), the empirical literature broadly supports the normative notion that local governments with higher expenditure needs should receive larger transfers, an outcome which may also be consistent with voter choice explanations, such as the one provided by the median-voter model. The international review finds that local expenditure needs generally have a positive impact on the level of intergovernmental grants received by local governments. Exceptions include Nigeria -where no relation was found between key expenditure needs measures and intergovernmental grants- and Mexico, where higher levels of human development were associated with higher transfer levels.

Revenue capacity

While both normative and voter choice considerations would lead us to believe that intergovernmental grants are generally allocated in an equalizing manner, the political economy approach argues that grant resources might be distributed in a pro-wealthy (thus counter-equalizing) manner as a result of political factors. The reviewed studies again rely on a variety of different measures to quantify variations in subnational revenue capacity, including the average level of household income or household expenditures in a local (or regional) government, business profits, and gross regional product (GRP). Other studies rely on indirect measures of local fiscal capacity; for instance the poverty rate, HDI, or local fiscal deficits.

Perhaps one of the more surprising facts uncovered by the current comparison of international practices is the finding that the impact of local revenue capacity on intergovernmental grants is generally positive. In almost all countries reviewed, wealthier local governments receive greater intergovernmental transfers while poorer local governments receive smaller transfers. In fact, a negative (i.e., equalizing) relationship between subnational fiscal capacity and intergovernmental grant levels is uncovered only in three cases (Argentina, Israel, and the Russian Federation). In contrast, positive relationships between subnational revenue capacity and intergovernmental grants are found in 8 of the 9 remaining country case studies (including Brazil, Indonesia, Japan, Mexico, Nigeria, Tanzania, Uganda, and the United States). This suggests that in a majority of countries reviewed, either political considerations outweigh the impact of normative considerations and the voter choice model, or the allocation mechanism is failing to perform as intended.[4]

Although local revenue capacity generally has a positive impact on the horizontal allocation of intergovernmental grants, it is impossible to identify an underlying correspondence between the three countries where a negative relationship is observed. For instance, the comparative review provides examples of both federal and unitary countries that are revenue equalizing (for instance, Argentina and Israel, respectively), and likewise provides examples of both federal and unitary countries that allocate resources in a pro-wealthy manner (for instance, the United States and Japan, respectively). Similarly, it is noteworthy that neither the level of economic development nor the size of the country appears to have a systematic impact on whether a country's system of intergovernmental grant is equalization or counter-equalizing.

Although the empirical literature suggests that wealthier local governments often receive greater intergovernmental grants than their less well-to-do peers, this does not necessarily mean that wealthier local governments disproportionately benefit from the intergovernmental fiscal system when considering the overall "net fiscal incidence." The concept of net fiscal incidence takes into account not only the distribution of grants (or national outlays) across subnational jurisdictions, but also considers the revenues contributed by each jurisdiction to the national budget (Martinez-Vazquez 2001; Atlas et al. 1995). Thus, even in countries where we find a positive relationship between subnational revenue capacity and intergovernmental grants, on balance the system of intergovernmental fiscal relations might in fact still be redistributive when considering both the incidence of revenue collections together with the incidence of transfer flows. This would be the case when wealthy subnational governments contribute proportionally more resources to the system of intergovernmental finance in the way of taxes than they receive back from the system through the transfer mechanism.[5]

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[4] The institutional failure argument suggests that although the median voter and national policy makers wish to pursue an equalizing allocation of local government resources, shortcoming of the institutional mechanism inadvertently cause wealthier local governments to receive a disproportionate share of local government resources (Boex 2003). Such institutional failure of the intergovernmental transfer mechanism could be driven by a number of factors. These factors include an urban bias by teachers and other professionals who might prefer to locate in wealthier urban areas (particularly in developing economies), the inherent higher utilization of local public services in a more developed, urban setting, and the fact that wealthier, better managed subnational governments are better positioned to efficiently spend allocations from the central government.

[5] We should note that in many developing and transitional countries a large proportion of public sector revenues is typically raised in only a handful of the wealthiest subnational jurisdictions. If policy makers indeed consider net fiscal incidence in their efforts to achieve an equitable allocation of resources, then we would expect to find a substantially larger pro-wealthy incidence in the distribution of grant resources in those countries than in countries that have less pronounced inter-regional economic disparities. We thank an anonymous reviewer for this point..

Political representation

In addition to the earlier finding that in most countries wealthier subnational governments may have sufficient political power to attract larger intergovernmental grants, the international comparison shows with impressive consistency that political economy arguments are an important factor in the distribution of intergovernmental transfers. In virtually all countries reviewed with district-based political systems, disproportionate political representation (greater representation per voter) consistently results in greater per capita intergovernmental transfers. Furthermore, greater political support in a region for the national government is almost always rewarded by greater grants as well. However, in one of the countries reviewed (Russia), the opposite conclusion may be drawn: recalcitrant regions that have "special" political status and subnational governments that support the political opposition tend to receive greater transfers, ostensibly as a "bribe" to placate the political opposition (Treisman 1996; Stewart 1997). The finding that political factors are consistently an important determining factor in the allocation of intergovernmental grants should serve as a wake-up call of sorts to policy economists, public finance experts and policy makers alike.

Population

A final factor that influenced the allocation of intergovernmental resources with impressive consistency is the size of the subnational jurisdiction's population. In every empirical country study in which population was included as an independent variable, local governments with larger population received significantly fewer per capita transfers.

In fact, many formula-based grant schemes are explicitly constructed to favor smaller local government by including an "equal shares" component or a fixed lump sum, so that local governments by construction receive the same amount regardless of their population size. Of course, in per capita terms this means that more populous local governments receive smaller per capita grant allocations. In the case of Nigeria, where "equal shares" accounts for 40 percent of the allocation formula, population is the single-most dominant factor in determining variations in per capita intergovernmental grants; introduction of the population variable into the incidence model increased the explanatory power of the model from 0.04 to 0.63 (Alm and Boex 2001).

While population has a systematic and negative impact on per capita intergovernmental grants, the source of this relationship is less clear. The observed relationship might be driven in response to the perceived presence of scale economies in the delivery of subnational public services, which could prompt policy makers to include an equal shares component into the allocation formula. Alternatively, the fiscal bias in favor of smaller (less populous) subnational governments may be driven by political motivations, either to secure broad political support from the subnational government tier (including less populous rural areas) in the vertical power structure, or to secure the political support of subnational representatives (for instance, senators) at the national level. Yet, whether this relationship is driven by scale economies, by political considerations, or simply by construction of the formula is a research question which merits further study.

Summary and conclusions

In this study, we sought to ascertain whether the underlying determinants of the horizontal allocation of intergovernmental grants include normative policy considerations, voter choice and political economy arguments. We identified twelve comparable empirical countries studies. The comparative analysis of the available empirical studies suggests that normative considerations and voter choice mechanisms are significant forces in assuring that intergovernmental grants are generally allocated in a needs-equalizing manner. In addition, the international comparisons provided by this study further suggests that political factors are consistently a major driving force in determining the incidence of intergovernmental fiscal transfers in fiscally decentralized systems around the world.

A number of conclusions and lessons can be drawn from this comparative perspective. First, the comparative perspective uncovers an extremely high level of consistency in the forces that determine the incidence of intergovernmental transfers across a subset of widely different countries. In a sense, this consistency validates the findings and conclusions of the original studies by placing the empirical results within -rather than outside- the international norm.

Second, the overview of the empirical literature exposes the fact that although (when all else is held equal) intergovernmental transfers systems tend to be needs-equalizing, these systems are generally counter-equalizing when it comes to fiscal capacity, so that local governments with a smaller own tax base (i.e., poorer local governments) tend to receive fewer intergovernmental transfers. The latter finding is inconsistent with the notion that many countries –particularly developing countries- are ostensibly pursuing policies of fiscal equalization and poverty alleviation. As such, greater emphasis is warranted in policy circles on the direct and indirect relationships between local revenue capacity (or local economic development) and the design and functioning of intergovernmental grant mechanisms. In particular, further consideration of the role of net fiscal incidence in the design of intergovernmental grant mechanisms should be part of this research agenda.

And third, the current international comparison highlights our limited understanding about the link between local government finances, local government structure, local government service delivery and political institutions and processes. For instance, although much of the empirical public finance and public administration literature suggests that the size of local governments generally exceeds the minimum efficient scale for the delivery of local public services, our findings nonetheless consistently indicate that smaller subnational jurisdictions receive larger per capita grants. Are central governments mistakenly providing smaller local governments with additional resources for nonexistent scale economies, do less populous local governments receive larger per capita grants for political purposes, or is the empirical economics literature failing to accurately capture the impact of scale economies on the delivery of local government services? In order to answer such questions, the inverse relationship between jurisdiction size and per capita intergovernmental grants is a topic that should be subjected to further research.

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Appendix

Argentina. Porto and Sanguinetti (2001) explore the determinants of federal grant allocations across 22 provincial states in Argentina using panel data for four decades (1960s-1990s). Explanatory variables used include senators per capita; representatives per capita; income, and population density, where density is used as a proxy for the cost of delivering public services. The analysis by Porto and Sanguinetti (2001) –which is included in Table 1- was considered more comprehensive and suitable than the analysis of intergovernmental grants in Argentina included in Kraemer (1997).

Australia. Worthington and Dollery (1998) focus on identifying the incidence of special purpose grants for education, health and welfare in Australia over the period from 1981/82 to 1991/92. Their analysis relies on government-defined sectoral "disability ratios" for each of the sectors as measures of subnational expenditure needs; no measure of subnational fiscal capacity or population is included in the empirical model. Numerous political variables are included as explanatory variables, including the number and proportion of seats held in the state held by the federal government.

Brazil. Kraemer (1997) considers regional variations of per capita federal-state transfers for 1991. The analysis considers the total transfer amount per voter, as well as separately considering constitutionally-mandated revenue sharing transfers and other transfers. Per capita income is included as a measure of revenue capacity, while population density is specifically excluded due to collinearity. The number of senators per million voters is included as a political variable, while the regional level of tax effort is included as an additional explanatory variable in the model.

Indonesia. Brodjonegoro and Martinez-Vazquez (2004) analyze the incidence of Indonesia's unconditional transfer to the local government level (DAU). Explanatory variables included in the model comprise a variety of proxies for local expenditure needs (demographic composition, poverty rates, population density, and regional construction price levels) and revenue capacity (based on gross regional product). The empirical model does not include population or political variables.

Israel. Alperovish (1984) studies the incidence of per capita general participation grants to local authorities in Israel for 1976 and 1978. Dependent variables include population; dependent population; support for the political party in power; and the local budget deficit as an indicator for (the lack of) local revenue capacity.

Japan. Meyer and Naka (1999) examine whether politically over-represented Japanese prefectures receive larger real per capita transfers from the central government than under-represented prefectures, based on a pooled sample of prefectures from 1957 to 1990. The urbanization rate is included in the model as an indictor of local expenditure needs (although ultimately not found to be significant), while the log of per capita income is included as a measure of local revenue capacity. Numerous political variables, including the majority of the ruling Liberal Democratic Party and the seniority of local politicians are also included in the empirical analysis.

Mexico. Kraemer (1997) analyzes the determinants of federal-provincial transfers per person in Mexico for 1986 and 1992. A Human Development Index (HDI) is included as a proxy for subnational fiscal conditions. Several political variables are included in the analysis, including the number of senators per capita, support for the ruling *Partido Revolucionario Institucional*, and proximity to the next subnational elections. The regional level of tax effort is also included as an explanatory variable in the model.

Nigeria. Alm and Boex (2001) consider the per capita incidence of distributions from Nigeria's Federal Allocations across states for 1999 as part of their study of intergovernmental fiscal relations in Nigeria. In their analysis, state fiscal capacity is proxied by federally-collected VAT revenues, while poverty rates, secondary school enrollment rates and population density are included as measured of state expenditure need. No political variables are included in the analysis. The authors note that when they exclude population as a dependent variable, the explanatory power of their model drops from 0.63 percent to 0.04.

Russian Federation. Treisman (1996) is one of several studies that considers the incidence of intergovernmental grants in the Russian Federation in 1992. However, whereas Stewart (1997) and Martinez-Vazquez and Boex (2001) predominantly focus on economic determinants, Treisman (1996) takes into account both economic and political factors. Explanatory variables incorporated in the model include subnational revenue capacity (per capita profits) and expenditure needs (urbanization and infrastructure development), as well as political support (share of the regional vote for Yeltsin in 1991), population, and the bargaining power of the region (whether the region declared sovereignty in 1991 and man-days lost to strikes).

Tanzania. Boex (2003) analyzes the incidence of local government allocations to local councils in Tanzania for 2002/03. Explanatory variables in the analysis include poverty, school-aged population, and population density as measures of local expenditure need, while regional household expenditure levels are used as a proxy for local revenue capacity. The primary school attendance rate is further included as a measure of utilization of local public services. All else equal, urban authorities (included in the model using a dummy variable) are expected to be politically well-connected and thus receive more resources.

Uganda. Uganda's Fiscal Decentralization Strategy includes incidence analyses for a number of sectoral grant programs (LGFC 2003). Due to the lack of adequate data, the study is unable to consider total per capita grant disbursements to each district. As such, the analysis referenced in the current review is based on the incidence of per capita education grants, which accounts for slightly over 50 percent of all intergovernmental grants in Uganda. Explanatory variables in the model include population density and poverty (proxies for local expenditure needs), population and enrollment rates (utilization). Household consumption expenditure (a measure of local revenue capacity) was excluded as a result of its collinearity with poverty.

<u>United States</u>. Wallis (1996) studies the motivating factors behind the allocation of federal grants to the states in the U.S. from 1932-1982. A variety of political variables are included as potential explanatory variables, including the percent of vote in support of the president. Other dependent variables included in the analysis are real per capita income (a measure of state wealth), the racial composition of states, and the urbanization rate (considered as a measure of expenditure need).