

NBER WORKING PAPER SERIES

DECENTRALIZATION IN DEVELOPING ECONOMIES

Lucie Gadenne
Monica Singhal

Working Paper 19402
<http://www.nber.org/papers/w19402>

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
September 2013

Forthcoming in the Annual Review of Economics. DOI:10.1146/annurev-economics-080213-040833.
The views expressed herein are those of the authors and do not necessarily reflect the views of the National Bureau of Economic Research.

NBER working papers are circulated for discussion and comment purposes. They have not been peer-reviewed or been subject to the review by the NBER Board of Directors that accompanies official NBER publications.

© 2013 by Lucie Gadenne and Monica Singhal. All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including © notice, is given to the source.

Decentralization in Developing Economies
Lucie Gadenne and Monica Singhal
NBER Working Paper No. 19402
September 2013
JEL No. H2,H4,H7,I3,J01,L3,O1

ABSTRACT

We develop a 2-sided principal-agent framework to think about optimal decentralization in developing economies. We can think of a benevolent government as the principal, trying to maximize social welfare, or citizens as principals, trying to get a non-benevolent government to act in their interests. In both cases, principals face information and enforcement constraints, which differ at different levels of government. After discussing the empirical evidence on patterns and causal effects of decentralization, we review the literature on these information and enforcement constraints, highlighting the most important areas in which developing countries differ from developed countries and discussing the implications for decentralization. We then consider provision of public goods by non-governmental organizations and discuss an emerging literature that examines policies which leverage potential advantages of developing economies (local information and social networks) to improve policy outcomes. We conclude by outlining promising areas for future research.

Lucie Gadenne
University College London
Department of Economics
30 Gordon Street
WC1H0AX London
l.gadenne@ucl.ac.uk

Monica Singhal
Harvard Kennedy School
Harvard University
79 JFK Street
Cambridge, MA 02138
and NBER
monica_singhal@harvard.edu

I Introduction

Developing countries face severe limits on state capacity, both in raising revenue and in delivering public services effectively. The structure of fiscal federalism is often discussed as being integral to improving the functioning of the public sector and economic performance as a whole. The 1999/2000 World Development Report notes that “[t]he experience of the last 15 years shows that the devolution of powers affects political stability, public service performance, equity, and macroeconomic stability” (World Bank 1999). This paper considers the theory and evidence on decentralization in developing economies. We focus in particular on linking the public finance, political economy, and development literatures, highlighting areas where standard public finance models need to be modified to take into account relevant features of the developing country context.¹

One way to think about the problem of optimal decentralization is in the broader context of a two-sided principal-agent problem (Table 1). We can think of the (benevolent) government as the principal, trying to maximize social welfare in the presence of information and enforcement constraints. We can also think of the citizens as principals, trying to force a (non-benevolent) government to act in their interests, again in the presence of information and enforcement constraints.

Standard public finance models fall into the first column. Specifically, most of these models focus on the challenges of maximizing social welfare under asymmetric information (Cell A). For example, governments may have imperfect information about earnings ability (optimal tax and transfer models) and about preferences (optimal public goods models).

¹ Throughout the paper, we will use the terms “developed” and “developing” countries somewhat loosely. There is no clear dividing line between these groups, and there is obviously tremendous heterogeneity within each of these categories, however defined. Our goal is to highlight features that are often not emphasized when thinking about public finance and decentralization in rich countries (U.S., Europe), but that are common characteristics of many low income countries.

Governments may also face enforcement constraints (Cell B), which we define here as limits the principal may face in coercing agents to behave as desired, *conditional on having perfect information*. For example, suppose the government is able to determine with certainty that a rural farmer has not paid his property tax, but the farmer simply refuses to pay. The government may face significant costs in *collecting* this tax, even if it knows exactly how much is owed. While there are many tax enforcement models of auditing and more recent work on third party reporting, we would argue that these models still fundamentally address an information problem (the government does not know true earnings) rather than an enforcement problem as defined above. If we think of the state as holding a “monopoly on violence,” it can in theory use unlimited force in the legitimate enforcement of its laws (Weber 1919). However, there are often significant constraints or costs in the exercise of this coercive power in practice. Becker (1968), for example, discusses costs associated with imposing various forms of punishment in the context of crime. We consider the application of this idea to the public finance context in Section III.²

Most political economy models fall into the second column: government as agent.³ Citizens may be imperfectly informed about important public policy parameters, such as the true cost of public goods provision, the magnitude of intergovernmental grants, or even their own eligibility for programs (Cell C). And even if they are perfectly aware that the government is not

² Slemrod (1990) discusses the importance of thinking about the “technology” of tax collection when thinking about optimal taxation but focuses on feasibility of various tax instruments given the limited information of the tax authority as well as administrative costs (e.g., of levying differentiated commodity taxes) rather than the possibility of a fundamental limit to the coercive power of the state.

³ We think of political economy models in which a benevolent government is the principal and a self-interested bureaucrat is the agent as falling in this category as well (see, for example, Becker & Stigler (1974) and Banerjee (1997)).

acting in their interest, they may have limited recourse to change government behavior due to failures in political and legal systems (Cell D).

This two-sided problem provides a framework for thinking about public finance issues generally and can also be applied to the problem of optimal decentralization. As we discuss in more detail below, there are different information and enforcement constraints (on both sides) at different levels of government. In addition, these constraints are relevant when structuring the relationships across levels of government. Intergovernmental grants, for example, create easy opportunities for rent seeking.

Finally, when thinking about decentralization in developing economies, the main focus of the present paper, we need to consider the fact that these information and enforcement constraints are generally much more severe than in most developed countries. To illustrate our point, consider two of the main models that motivate decentralization of public services: Tiebout-style models of local public goods provision (Tiebout 1956) and political economy models of fiscal competition (e.g., Besley & Case 1995).⁴ We can think of these models in the context of the first row of Table 1: in the Tiebout model, a benevolent government has imperfect information about individuals' preferences for public services; in the Besley-Case model, individuals have imperfect information about the cost of providing public services, leading to rent-seeking by a non-benevolent government. Both frameworks model localizing the provision of public goods as a possible solution. The Tiebout model achieves preference revelation through jurisdictional sorting, and the Besley-Case model achieves accountability through yardstick competition across jurisdictions. Note that these frameworks do not explicitly consider multiple levels of government. We can implicitly think of the benefits of decentralization arising in these

⁴ There are of course other motivations for decentralization that are outside the scope of this paper. See, for example, World Bank (2004) and Bardhan (2002).

models as being weighed against benefits of centralization, such as economies of scale, correction of inter-jurisdictional externalities (Oates 1972; Besley & Coate 2003), and redistribution.

It is not clear how well these frameworks translate to a developing country context. In the Tiebout model, the mechanism through which governments get information about tastes for public goods (i.e., preference revelation) is through mobility and interjurisdictional sorting. In many developing countries, mobility is limited.⁵ In addition, many local governments cannot easily collect taxes to finance public services: limited information results in widespread evasion and local governments can also face significant constraints in their ability to coerce citizens to pay taxes and fees.

We next consider the case of non-benevolent governments. By comparing the performance of politicians in different jurisdictions, voters can infer information on their incumbent's performance: competition across local governments increases voters' capacity to hold their elected representatives accountable. Besley & Case (1995) find evidence that yardstick competition affects politicians' behavior in the U.S.. For yardstick competition to improve accountability, one must assume that citizens can acquire information on outcomes in other jurisdictions. To the extent that citizens in developing countries are (typically) less educated than in developed countries and have less access to independent media, we do not expect yardstick competition to play as strong a role in the developing world. Another requirement for yardstick competition to be effective is functioning local democracies: politicians that do not perform well enough will be voted out by citizens. However, limited political contestability of local elections

⁵ This may be because households are reluctant to leave local risk-sharing networks (Munshi & Rosenzweig, 2009) or because of policy limits on migration (Au & Henderson, 2006).

in many developing countries often leads to extensive elite capture, incompetent leaders, and limited effort (Bardhan & Mookherjee 2005; 2006).

The potential limits of the Tiebout and Besley-Case models for developing countries do not mean that decentralization is undesirable. These examples simply illustrate that some of our standard models and results need to be modified when applying them to developing countries, and that the policy instruments generally used in developed countries are not necessarily the most relevant or appropriate for developing countries. These are themes we return to throughout the paper.

The remainder of the paper proceeds as follows. In Section II, we present empirical evidence on patterns of decentralization around the world. We also discuss the limited available evidence on the causal effects of decentralization. Section III reviews specific information and enforcement constraints faced by developing country governments and citizens as well as their implications for public finance and fiscal federalism. Section IV discusses provision of goods and services by non-state actors such as NGOs, an important component of public service delivery in many developing economies. Section V considers what types of policy instruments may be appropriate for developing countries. In particular, we focus on an emerging literature examining innovative policies that often seek to leverage some of the *advantages* of developing countries (e.g., in local information and the importance of social networks) to improve social welfare. Section VI concludes by highlighting promising directions for future research.

II Facts and Evidence on Decentralization in Developing Countries

IIA Evidence on Fiscal Federalism

This section considers the scope of subnational governments as well as recent decentralization trends in developed and developing countries. There is little existing evidence to

inform these questions because it is difficult to construct complete and consistent data series of subnational government budgets in developing countries.

We compile data on fiscal decentralization from the IMF's *Government Finance Statistics* (GFS), the only database that documents revenues of central and subnational governments separately. World Bank publications occasionally report data on subnational revenues for some developing countries, but this information is not publicly available and covers few countries (see World Bank 2002; 2004). Our sample includes 86 countries over the period 1996-2010: 35 developed and 51 developing countries.⁶ There are two reasons to be cautious in interpreting patterns that emerge from this data. First, the data are incomplete. Many developing countries do not report any government revenues in GFS. For example, we only have data on 8 out of 48 sub-Saharan African countries. In addition, many countries report some central government revenues but no subnational revenues even when we know that local and regional governments exist. We code missing subnational government information as zeros and exclude countries which do not provide information on their central government. Second, information from GFS does not always perfectly coincide with official government finance statistics released by the countries themselves, possibly because of different definitions of subnational revenues in national and international (IMF) accounting frameworks.

We consider two indicators of fiscal decentralization: the share of revenues allocated to subnational levels of government (local and regional/state) in total public revenues and the share

⁶ We follow the World Bank's classification of countries based on their income per capita. We label high-income countries as "developed" and all other country groups (upper-middle, lower-middle and low income) as "developing." Countries are classified as high-income when their gross national income reaches 12,616 dollars per capita in 2011 (PPP measured using the Atlas method). Dziobek et al. (2011) construct different measures of fiscal decentralization since 1990 by comparing reported "general" government revenues to "central" government revenues in the GFS. Few developing countries report "general" government revenues, and there is some ambiguity regarding the treatment of social security funds in this approach. We think our method is more appropriate to compare developed and developing countries. They, like us, find that developing countries are less decentralized than developed countries.

of tax revenues collected by subnational levels of government in total tax revenues. The potential mismatch between subnational revenues and taxes is also of interest as the assumption that local governments finance a large share of their expenditures through locally levied taxes is central to several theories of fiscal federalism. We measure this mismatch through the “fiscal gap,” the share of subnational revenues that is not covered by subnational tax revenues.

The first two graphs in Figure 1 plot two measures of decentralization as a function of GDP per capita averaged over the period 2006-2010. We see that even in developed countries subnational revenues only represent slightly less than a third of public revenues on average. This average hides substantial heterogeneity across countries: the United States, the most commonly studied fiscal federation, is substantially more decentralized than the average.⁷

Developing countries are less decentralized than developed countries along both dimensions: the shares of both subnational revenues and taxes are twice as high on average in developed than in developing countries (27% versus 14% for revenues and 21% versus 10% for taxes). Missing observations likely bias this difference downward: the developing countries for which data is missing (mostly in sub-Saharan Africa) are probably less decentralized than those for which information is available (World Bank 2002).

The third graph in Figure 1 plots the fiscal gap for countries which declare positive levels of subnational revenues. The fiscal gap is large in both developed and developing countries. On average only 38% of subnational government revenues are raised through subnational taxes. It is slightly wider in developing than in developed countries, indicating that developing country subnational governments have a greater dependence on central government transfers. Missing data is also a concern here as there are cases of developing countries not declaring any local

⁷ For a detailed discussion of U.S. decentralization in the post-WWII period, see Baicker et al. (2012).

government revenues when these governments exist and levy hardly any local taxes. Therefore, the data probably underestimate the fiscal gap in developing countries.

Table 2 presents the evolution of the two measures of decentralization and the fiscal gap between 1996-2000 and 2006-2010. Developed countries have devolved slightly more revenues and taxes to subnational levels of government over the period. In contrast, in developing countries the shares of subnational taxes and revenues have decreased over time. This is perhaps surprising given the discussion of a decentralizing “trend” in developing countries in some of the literature (World Bank 2004; Bardhan 2002; Shah 2006). However, the data also show that the number of countries that declare no subnational revenues to GFS has decreased in both country groups, particularly so in developing countries. This suggests that some countries did decentralize over the period. Developing countries that start reporting subnational revenues after 2000 do so a couple of years after legally increasing the responsibilities of local governments, indicating “real” decentralization rather than a data collection or reporting effect. Moreover, it may be that countries devolved new responsibilities to local governments that we do not observe in the data. India, for example, assigned expenditures to local governments in the 1990s but never reports any information on its local governments in GFS; Ethiopia decentralized in the same period but is not in our dataset. What the data does indicate is that there was no increase in decentralization among countries that reported data on revenues of all subnational levels of government at the beginning of the period.

The final trend presented in Table 2 is the evolution of the fiscal gap. It is roughly stable in developed countries but increases in developing countries where the share of non-tax revenues in subnational revenues increases from 49% to 62%. Subnational governments in developing

countries seem to rely increasingly on transfers from the central government to finance their expenditures.

Overall, three stylized facts emerge from the data. First, developing countries are less decentralized than developed countries. Second, there are more decentralized developing countries today than 15 years ago, but the subnational governments that we observe throughout the period have less revenue and taxes on average today. Third, subnational governments in both country groups collect on average less than 40% of their revenues through taxes they levy themselves, and this share seems to have been falling in developing countries over time.

IIB Evidence on the Impact of Fiscal Decentralization

How does the structure of fiscal federalism affect outcomes? Quantitative evidence on the causal impact of decentralization is limited. One exception is Faguet (2004; 2008) who considers the 1994 decentralization reform in Bolivia. This reform doubled the share of public revenues allocated to municipalities and expanded their expenditure responsibilities. He finds that it was associated with a large increase in local public investment in education and health and that these investments became more responsive to measures of local need. These results are in line with the frameworks in Oates (1972) and Besley & Coate (2003), which suggest there are gains from decentralization when local preferences are heterogeneous.

The fiscal gap has also attracted some attention in the literature. Weingast (2009) points out that local governments have stronger incentives to invest in local growth when they anticipate that they will keep a higher share of the tax revenues generated by this growth. He argues that Chinese local governments have strong fiscal incentives, and that this explains why they implement regulations that promote local growth more than their counterparts in neighboring India or Russia. Some support for this idea is found in Zhuravskaya (2000) who

shows that there is more provision of public goods and more private firm creation in Russian cities that keep more of the tax revenues collected in their jurisdiction.

Gadenne (2013) provides a test of the impact of the fiscal gap by comparing how local governments in Brazil spend increases in local tax revenues and increases in federal transfers. She finds that increases in local taxes lead to an increase in both the quantity and quality of locally funded education infrastructure; increases in transfer revenues have no such effect. Some evidence on what transfer revenues are used for in this context is found in Brollo et al. (2013), which shows that transfer revenues lead to more corruption. This suggests that increasing the extent to which subnational governments finance themselves through locally levied taxes may improve public outcomes of countries that choose to decentralize.

III Specific Constraints that Shape Fiscal Federalism in Developing Economies

We now return to the information and enforcement constraints presented in Table 1 and their implications for public finance and decentralization in developing countries. Our goal is to highlight a few of the most important areas in which developing countries differ most systematically and substantially from developed countries.

III A Government as Principal

In this section, we consider a benevolent, social welfare maximizing government. We do not claim that this is a realistic depiction of developing country governments (or indeed of any government). However, it is easy to assume that all developing country public sector failures arise from political economy problems, such as corrupt officials. It is therefore important to emphasize that even a benevolent government may face significant constraints in designing and

implementing optimal policies in developing economies. We return explicitly to the case of non-benevolent governments in Section IIIB below.

IIIA.1 Information Constraints

In standard tax and transfer models, benevolent governments attempt to maximize social welfare under asymmetric information about earnings ability. Governments can incentivize individuals to self-select through the structure of the tax and transfer system (e.g., Mirrlees 1971). One of the most important shortcomings of this class of models in their applicability to developing economies is that many developing country governments are not easily able to observe *earnings*, let alone earnings ability. In some cases, they may not even be able to identify the existence of individuals or firms. In the context of transfer programs, this means that targeting the poor is very difficult. In the context of taxation, this means that tax evasion is a first order issue.

Targeting Transfers

How can governments target transfers if they cannot observe earnings? A commonly utilized method is proxy means testing which uses assets and categorical factors (e.g., age, location, gender) to predict individual income.

An alternative mechanism is the use of community based targeting: allowing local governments to determine the allocation of transfers. The motivation for community-based targeting is the idea that localities have better information than the central government about who is poor. In a study of a transfer program in Albania, Alderman (2002) does find that local elected officials appear to be doing a better job of targeting than would be predicted by observable proxies for poverty, suggesting that they have an informational advantage. In some community-

based targeting programs, the line between “local government” and “local community” becomes blurred. Galasso & Ravallion (2005) find improved targeting by local community groups in the Bangladesh “Food For Education” program, where the allocating committee usually consisted of “teachers, local representatives, parents, education specialists and donors to the school.” Alatas et al. (2012) examine a randomized trial in which community-based targeting was done by consensus in village meetings consisting of community members. They find that the community-based method performs slightly worse than proxy means tests on consumption targeting but achieves higher satisfaction.⁸ We return to a more detailed discussion of this study in Section V. Another mechanism to target the poor is to use ordeal mechanisms or transfers in-kind to encourage self-selection. Such mechanisms have long been recognized as having the potential to improve targeting when earnings ability is unobserved (Nichols & Zeckhauser 1982). However, they will of course have the potential to improve targeting when earnings are unobserved as well, since governments can achieve self-selection just by knowing the relative utility costs of ordeals or the relative utility benefits of in-kind goods between rich and poor households. In practice, governments often use a combination of the above mechanisms when targeting transfers.⁹

Governments may also face an even more basic targeting problem: verifying the existence and identity of individuals, given a lack of birth records or identifying information. When one of the authors was working with a pre-school program in poor areas of Delhi, parents were regularly unable to provide the birth day or even month of their child, and in some cases even the reported name of the child changed from year to year. Even the most well-intentioned

⁸ A concern with community-based targeting is the possibility of elite capture. Alatas et al. (2012) and Alatas et al. (2013a) find limited evidence of elite capture in their studies of transfer programs in Indonesia; however, Galasso & Ravallion (2005) find suggestive evidence of capture by the non-poor in the Bangladesh program.

⁹ See Coady et al. (2004) for a meta review of the design and effectiveness of targeting programs around the world; Besley & Coate (1995) for more discussion on the design of transfer programs; and Alatas et al. (2013b) for empirical evidence on ordeal mechanisms from a recent randomized trial in Indonesia.

government would face challenges in distributing resources under these types of information constraints. Programs such as the assignment of unique identification cards, while seemingly basic, may actually be a critical prerequisite for targeting services appropriately.¹⁰

Raising Revenue

A major challenge for developing countries is the widespread prevalence of tax evasion. One manifestation of this is the large size of the informal sector: using data from Schneider (2002), Gordon & Li (2009) estimate that the informal economy is 30% of GDP on average in developing countries, twice as large as in developed countries. We should note that “informality” is not a clearly defined concept and often means different things in different contexts. One way to think about it is as an extensive margin of evasion. However, taxpayers may be registered with the tax authority, and in that sense be formal, but fail to pay any of their owed taxes. Informality also need not be a binary choice: partial evaders can be considered to have some of their economic activity “formal” and some “informal.”¹¹

The next question becomes how governments can gather information on true economic activity. In auditing models (such as Allingham & Sandmo (1972)), the taxpayer chooses how much income to declare and the tax authority can determine the truth with some probability. However, audits are often costly in practice, and it is difficult to reconcile low audit rates and low penalty rates in developed countries with observed levels of tax evasion. A more recent literature has focused on the role of third party information and cross checks. Kleven et al. (2009) present a model in which firms report employee salaries to the government. As firms get

¹⁰ Designing and implementing such programs is non-trivial; see Mukhopadhyay et al. (2013) for details about the introduction of biometric “smart cards” in Andhra Pradesh, India.

¹¹ Addressing the various determinants of firms’ registration choices is beyond the scope of this paper. However, recent work by de Mel et al. (2012) suggests that incentivizing firms to formalize may be challenging. In a randomized evaluation in Sri Lanka, they find that information and reimbursement of direct costs has no effect on registration, and cash payments need to be quite substantial to induce firms to register.

large, collusion breaks down and firms truthfully report. In a randomized audit study in Denmark, Kleven et al. (2011) show that individual tax evasion is concentrated in line items that are not third party reported. Conversely, employees may have incentives to get firms to report truthfully if their benefits depend on firm tax payments on their behalf (Kumler et al. (2012)). The tax authority may also use information from transaction partners. For example, the structure of the VAT allows the tax authority to cross check firm reports against the reports of other firms, thus reducing evasion (Pomeranz 2013). However, there may be limits to the effectiveness of third party reporting and cross checks if information is incomplete: Carrillo et al. (2013) show that when firms in Ecuador are notified about revenue discrepancies, they adjust reported revenues but often fully offset by adjusting reported costs.

Evasion has important implications for the design of tax systems and the choice of tax instruments. As Slemrod (1990) points out, optimal tax theory must also take into account the feasibility of levying various types of taxes given informational and administrative requirements. In a study of developing country tax structures, Gordon & Li (2009) show that low income countries tend to rely much more on revenue sources that are generally considered inefficient: tariffs, corporate income taxes, and seignorage.¹² They propose a model in which taxpayers trade off the benefits from entering the formal financial sector against the costs of having transactions that are observable by the tax authority and argue that this model can explain many of the “puzzling” features of developing country tax structures. Best et al. (2013) show that in the presence of evasion, governments may wish to trade off production efficiency for revenue efficiency and provide empirical support in the context of profit versus turnover taxes in Pakistan.

¹² See also Burgess and Stern (1993), Cage & Gadenne (2013) and Baunsgaard & Keen (2010) for further discussion of tax structures in developing countries.

Social Insurance

The provision of social insurance is a major role of government in developed countries. Social insurance expenditures in developing countries are smaller, both as a share of GDP and as a share of government expenditure (Chetty & Looney 2006). However, individuals in developing countries often reduce risk through self-insurance as well as community informal insurance systems (Coate & Ravallion, 1993; Townsend 1995). The welfare effects of expanding formal insurance systems will therefore depend on the extent of crowd out and also on the relative costliness of the formal and informal consumption smoothing mechanisms (Chetty & Looney 2005).

Another factor that will affect the relative desirability of formal and informal insurance systems is information. In designing optimal social insurance programs, governments face a tradeoff between risk reduction and moral hazard. If informal insurance systems can make use of greater local information and peer monitoring, they may be able to reduce moral hazard relative to formal social insurance systems (Arnott & Stiglitz, 1991). However, informal insurance systems cannot insure against shocks to the community as a whole. We return to the implications for decentralization below.

IIIA.2 Enforcement Constraints

Implicit in tax models is the idea that governments can collect taxes once they determine how much is owed. However, knowing is not enough: governments must also be able to compel individuals to pay. In the standard Allingham-Sandmo framework, if the audit probability (or more specifically, the detection probability) is equal to 1, there is no incentive to evade even if there is no penalty above and beyond paying the owed tax if caught. But how can the

government actually make you pay the owed tax (or an additional fine) in practice? Ultimately, there must be some mechanism for collection or other type of punishment the government can impose. In the terminology of Slemrod (1990), ability to collect is an important component of the technology of the tax system and may restrict the feasibility of certain tax instruments.

A useful starting point is to consider how the U.S. Internal Revenue Service (IRS) collects taxes. Its website notes the following: “It is important to contact us and make arrangements to pay the tax due voluntarily. If you do not contact us, we may take action to collect the liability. Some of the actions we may take to collect taxes include:

1. Filing a Notice of Federal Tax Lien
2. Serving a Notice of Levy, or
3. Offsetting a refund to which you are entitled.”¹³

It is immediately clear that these policy instruments are not relevant or available in many developing countries. A notice of federal tax lien is punitive only if the taxpayer is seeking credit in the future and the creditor is aware of and affected by the tax lien. Likewise, the IRS notes that it may “levy assets such as wages, bank accounts, Social Security benefits, and retirement income.” Many individuals and firms in developing countries operate in the informal sector, and the tax authority therefore does not have the ability to garnish wages or seize bank funds, much less Social Security or retirement income. The tax authority could in theory seize physical assets, but this is likely to be costly and may be politically infeasible if the assets fall into the category of necessities. Tax refunds are also unlikely to be relevant in contexts where transfers tend to happen outside the tax system and withholding is limited.

The Allingham-Sandmo model includes monetary fines, but the government can also attempt to prevent evasion by imposing non-monetary punishments, as in the more general

¹³ <http://www.irs.gov/taxtopics/tc201.html>; accessed on August 10, 2013.

Becker model of crime (Becker 1968). We generally think of punishments as being needed to address a detection probability less than one but they are also relevant even if detection is certain; there is no benefit from knowing an individual has committed a crime if there is no ability to punish. Governments can always compel “good” behavior by making punishments severe enough, but there are moral and political limits to such coercion: societies are unlikely to be willing to accept execution for tax evaders. Even sending someone to jail for tax evasion is often very difficult in developing economies due to slow, poorly functioning, and corrupt court systems. Abiding by democratic rules may actually make tax collection more difficult: autocracies do not need to worry as much about verifiability, due process, or the political costs of coercion.¹⁴

Disentangling evasion that is a response to these types of enforcement constraints from evasion that is a response to other limitations of the tax system is challenging. However, our own experiences with government authorities suggest that having information is not a sufficient condition for tax collection: there is widespread non-payment of property taxes even when the owed amount is clear (India), non-payment of tax arrears that are fully documented in public budgets (Brazil), and known non-payment of metered water fees (South Africa).

To the best of our knowledge, there is almost no research on enforcement as we define it here. An exception is Aparicio et al. (2011) who study a 2007 enforcement reform in Ecuador which increased the possibility of jail time for corporate tax evasion and made company CFOs and others liable for criminal offenses for involvement in tax evasion schemes, while previously only the firm’s accountants or legal representatives were prosecutable for tax evasion. The major challenge is separating the causal effects of the reform from other changes in the economic and

¹⁴ Of course, in this case, tax collection can become extortionary (Bernstein and Lu (2008); Banerjee and Iyer (2005)).

enforcement environments; the authors therefore construct counterfactual revenue trends by using data from pre-reform years. They find that the reform resulted in increased tax payments, but only in the top 25% of the tax distribution.

Interestingly, it may be that some of the issues discussed in the previous subsection may arise from constraints to enforcement, in addition to or rather than, constraints to information. For example, firms may be informal or evade taxes because they believe the tax authority does not know they exist or does not know their true earnings. But they may also be informal because they do not believe the tax authority can realistically take any action against them. The Gordon-Li model focuses on governments choosing tax instruments for which they have better information. However, these are also often the tax instruments that are enforceable. For example, governments can prevent goods from being exported and imported if tariffs have not been paid, and they may have access to more of the “IRS” instruments for large corporations. To the extent that enforcement constraints are important, improving information may not be enough to address the problem of evasion. An interesting direction for future research would be to separate behavioral responses of taxpayers to information constraints of the tax authority from responses to enforcement constraints.¹⁵

IIIA.3 Implications for Decentralization

What do these information and enforcement constraints mean for decentralization in developing countries? The evidence suggests that local governments may have informational advantages in allocating resources. Faguet’s work on the Bolivian decentralization (described above) indicates that channeling resources through local governments allows them to better

¹⁵ Aparicio (2012) combines the Ecuadorian tax enforcement change described above with discontinuities in becoming a large taxpaying unit (LTU), which arguably results in greater monitoring. She finds some suggestive evidence of complementarities between monitoring and enforcement.

match service provision to local need. The mechanism is not clear: it may be that decentralization makes governments more accountable to their citizens (a point to which we return in the next section). It is also possible that local governments have better information about local needs than the central government. The overall empirical evidence on targeting transfers shows mixed results about the performance of community-based targeting versus proxy means tests (Coady et al. 2004). The evidence above suggests that, at least in some contexts, local governments do have relevant information above and beyond what can be easily measured by the central government.

Next, consider the revenue sources that developing countries rely heavily on as compared to developed countries: tariffs, corporate income taxes, and seignorage. None of these revenue instruments are likely to be available to local governments, tariffs and seignorage for structural reasons and corporate income taxes due to concerns about capital mobility. In many rural areas, much of the economy is informal. This makes the levying of other types of taxes difficult as well. While local governments may have informational advantages, there are likely to be economies of scale in enforcement.

Taken together, these results suggest that allowing local governments to allocate resources can be beneficial since doing so allows them to take advantage of better local information. However, local governments may be very constrained in their ability to raise own source revenue. It is therefore perhaps not surprising that there is relatively less tax revenue decentralization and larger fiscal gaps in developing countries, as discussed in Section II. As a result of revenue limitations, local governments may also rely more on extra-governmental community provision enforced informally (“informal taxation”), which we discuss in Section V.

Finally, consider the case of social insurance. As noted above, localities may have informational advantages in the provision of insurance (whether formal or informal), so the provision of insurance locally may help to reduce moral hazard problems and improve welfare. On the other hand, local communities cannot insure against shocks to the community. Insuring against this type of aggregate shock requires some degree of centralization. Central governments could redistribute across communities to insure against these aggregate shocks and then leave insurance against idiosyncratic risk to the local level. However, determining the appropriate level of cross-community transfers may be quite challenging in practice. An alternative is then the direct provision of social insurance to individuals by the central government, which insures them against idiosyncratic risk (although perhaps less perfectly) as well as aggregate risk. In theory, communities could then insure against residual idiosyncratic risk. Yet the presence of formal social insurance could undermine the systems of local insurance if they are informal in practice. We still know very little about how formal and informal insurance systems interact in practice.

IIIB Government as Agent

This section considers the relationship between citizens and the public officials (politicians and civil servants) to whom they are delegating tasks. Agency problems arise because citizens and officials have conflicting objectives, and tasks cannot be perfectly contracted. Citizens have very little information on the production function for public services; this creates rent opportunities for public officials who can inflate the costs of production or hide part of the inputs available to them, as well as low incentives to provide optimal levels of efforts (see Besley (2006) for a review of principal-agent models of politics). They may also have little ability to punish officials that they know are not performing well. Our purpose here is not to review the entire literature on political economy in developing countries, well reviewed

elsewhere.¹⁶ Instead, we discuss the ways in which information and enforcement constraints may be more severe in developing countries, how this leads to suboptimal behavior of both politicians and civil servants, and what this implies for fiscal federalism.

IIIB.1 Information Constraints

The Brazilian context is particularly well-suited to examine the relationship between information constraints and rent-taking by politicians because some information on sub-optimal behavior of local officials is available thanks to an anti-corruption program that regularly conducts random audits of local governments since 2003. Reports of the audits are made public: we can think of the release of a report as relaxing the information constraint faced by citizens. Ferraz & Finan (2008) find that citizens vote corrupt mayors out of office more when reports are made public before the elections, indicating that citizens indeed have imperfect information about corruption. Litschig & Zamboni (2013) show that providing information consequently improves outcomes. They find that when local officials are faced with a higher probability of audit, they take fewer rents.¹⁷

Low effort by non-political civil servants is also a pervasive problem in developing countries. While we do worry about incentives for effort in the developed world, particularly in the education and health sectors, the problems in developing countries are often much more basic and severe. For example, the extreme behavior of no effort at all (not showing up to work) is far from anecdotal: Chaudhury et al. (2006) report results from surveys in which enumerators made unannounced visits to primary schools and health clinics in six developing countries. They find

¹⁶ See Banerjee et al. (2013), Olken & Pande (2012) and Besley & Persson (2013). In particular, we abstract from discussing issues that arise in measuring corruption, costs of corruption, and corruption markets.

¹⁷ Note that providing citizens with information on politicians' behavior need not unambiguously improve outcomes. Besley & Smart (2007) show that it may discourage "bad" politicians from pretending they are of the "good" type because they are more likely to be found out.

that on average 19 percent of teachers and 35 percent of health workers were absent. Part of this reflects difficulties in collecting information on attendance. Duflo et al. (2012) study an experiment in which information on teacher presence is made automatic by asking teachers to take a picture of themselves with their students every day and find that the experiment cuts teacher absence rates by half.

More generally, there is a growing body of evidence showing that alleviating citizens' information constraints improves public service delivery in developing countries (see Besley & Burgess (2002) for early work on the subject). This is well illustrated in Reinikka & Svensson (2011) who study a campaign in Uganda that published education grant amounts in newspapers. Prior to the campaign, schools received 13% of the grants on average (Reinikka & Svensson 2004). They find that exposure to information (proxied by distance to newspaper outlets) substantially increased the share of the grants received by the school and had a positive effect on educational outcomes.

Information constraints are likely more severe in developing countries. Inequalities of education and wealth, which we return to below, affect citizens' capacity to gather and use political information. Perhaps more importantly, there is evidence that both the availability and quality of the media – the main producer of information on public officials – are weaker in developing countries.¹⁸

IIIB.2 Enforcement Constraints

As in Section IIIA, improving information may not be enough: even if a policy provides citizens with full information, it will only affect officials' behavior if citizens can punish them

¹⁸ See Freedom House' *Freedom of the Press* index for example (<http://www.freedomhouse.org/report/freedom-press/freedom-press-2013>).

for revealed rent-seeking and low effort. In the political context, we generally think of enforcement as coming through voting bad politicians out of office; in the civil service context, we think about removing bad officials, punishing them through penalties and rewarding good behavior. The evidence above shows that officials do respond to the provision of information, indicating that there is at least some degree of enforceability. In the Brazilian context Ferraz & Finan (2011a) find that elections in particular are an important source of enforcement: mayors facing re-election are less corrupt.

However, there are also limits to enforcement, as evidenced by the fact that some information interventions are unable to improve outcomes. For example, Banerjee & Duflo (2006) report that paying a community member to monitor nurse presence does not reduce absence rates, even though the community member accurately collects this information. The authors argue that the communities were unable to act on the information, possibly because of collective action problems.

Again, we do not claim that enforcement constraints are unique to developing countries, but they are likely to be more prevalent and more binding. First, and most obviously, restrictions to voting rights limit citizens' capacity to punish public officials in the many developing countries that are autocracies or imperfect democracies.¹⁹ Second, even in democracies, vote buying and clientelistic policies break the relationship between a citizen's assessment of a politician's actions and her vote. This is more of a concern in developing countries where income and status differences between voters and politicians are typically larger. For example, there is evidence that clientelist politics along ethnic lines limit the extent to which elections constrain politicians' behavior by encouraging voters to reward a candidate's group identity over his

¹⁹ Political punishments for misbehavior in non-democracies have been shown to be efficient in some cases (Jia et al. 2013). It is unclear whether these results would generalize outside the specific Chinese context.

performance (Banerjee & Pande 2007). Third, low education levels suggest that even if information is available, a large share of the population may not be able to act on it.

Finally, establishing systems of monetary rewards and punishments for politicians and civil servants that enforce good behavior may also be more difficult in developing countries. There is, as discussed above, limited information on which to base these rewards and punishments; evidence on performance pay for civil servants is mixed.²⁰ Moreover, resource constraints may make it harder to pay both politicians' and civil servants' wages that are high enough to attract capable individuals and enforce good behavior. There is some evidence that increasing wages indeed attracts more educated and hardworking individuals to politics (Ferraz & Finan 2011b) and the civil service (Dal Bo et al. 2012), but to the best of our knowledge, there is no evidence on whether higher wages also lead to better public spending outcomes. Developing countries may experience high returns to providing non-monetary incentives to public health and education workers; we return to this in Section V.

IIIA.4 Implications for Public Finance

In this section, we consider some of the implications of political economy problems for public finance in developing economies.²¹ Most obviously, corruption introduces a wedge between the amounts allocated to a program and those effectively spent on delivering public services. This changes the optimal level of public spending on the program by lowering the

²⁰ For example, Muralidharan & Sundararaman (2011) find that introducing performance pay for teachers significantly improves students' test scores in India, but Rasul & Rogger (2013) find that performance incentives within a bureaucracy are negatively correlated with the quantity and quality of projects completed by the bureaucracy.

²¹ See Besley & Persson (2013) for a more formal exposition of how to incorporate corruption in public finance.

public value of funds spent.²² Olken (2006) finds that at least 18% of the rice distributed by a large anti-poverty program in Indonesia never reached its intended beneficiaries. Using this estimate to compute the overall welfare impact of the program, he concludes that the losses from corruption may have been large enough to offset its potential gains. Determining the optimal allocation of funds requires knowing the marginal wedge due to corruption and not the average wedge, which is typically the estimate obtained by the studies reviewed above. An exception is Niehaus & Sukhtankar (2013) who study the National Rural Employment Guarantee Act (NREGA) program in India which provides public employment at the minimal wage to rural households. They find that the marginal wedge for wage payments is strikingly higher (100%) than the average wedge (close to 0%).²³

Both these studies implicitly assume that funds that are diverted because of corruption are “wasted.” This is true if meeting the program’s objectives is the only element that enters the social welfare function. Under more general forms of the government’s objective function, the social weight on the utility of the officials that pocket the rents (while lower than that of the intended beneficiaries of the programs), is probably not zero. Gaining a better understanding of the welfare costs of corruption is a promising direction for future theoretical and empirical research; see Olken & Pande (2012) for further discussion.

Political economy considerations also imply that we must take into account the potential suboptimal behavior of public agents when thinking about program design. Niehaus et al. (2013) take a step in this direction by studying the optimal design of proxy means testing when the implementing agent is corruptible. They show that conditioning the test on more observable

²² Leverages also affect how redistributive a policy is if there is more corruption among poorer communities. This is what Reinikka & Svensson (2004) find in their study of education transfers in Uganda: actual education spending, unlike budget allocation, is regressive.

²³ See also Niehaus & Sukhtanker (2012) for evidence of corruption on the quantity margin in the NREGA program (“ghost workers”) and the response of corruption to dynamic incentives.

correlates of poverty may actually worsen targeting. This is because there is a trade-off between statistical accuracy, which improves with the number of proxies included, and enforceability, which worsens with the number of proxies that must be considered when monitoring the behavior of the agent.

Finally, the behavior of tax inspectors is typically not considered in public finance models and yet is probably a key constraint on governments' capacity to raise revenues. Inspectors' willingness to exert effort determines the probability of detection of tax evasion; their willingness to take bribes instead of tax payments affects overall tax revenues conditional on evasion. The possibility of collusion between (potential) taxpayers and tax collectors makes the analysis of the welfare impact of corruption particularly complicated in this setting (citizens pay bribes instead of taxes, some of these taxes would have been used to pay tax collectors). It also lowers the citizens' incentives to monitor collectors themselves and the possibility that information on misbehavior will be revealed to the government. In such a setting the design of the agent's contract is therefore the main instrument available to limit moral hazard. The optimality of efficiency wages is studied theoretically by Besley & McLaren (1993), but there is remarkably little research on how incentives affect the behavior of tax inspectors. An exception is on-going work by Khan et al. (2013), who implement a randomized evaluation to test the impact of providing different forms of performance-based incentives to tax collectors in Pakistan on how much inspectors exert effort and take bribes.

IIIB.4 Implications for Decentralization

An often heard argument in favor of decentralization in developing countries is that it will increase the accountability of government by "bringing it closer to the people" (World Bank 2004). Decentralization could indeed alleviate both information and enforcement constraints by

changing the nature of the local agency problem from one between local bureaucrats/service providers and the central governments to one between citizens and elected local politicians. This improves information if citizens observe the local public services production function better than the central government (Bardhan & Mookherjee 2005; 2006), or are able to infer performance of their elected representative from comparing across local governments (yardstick competition). By increasing the probability that local outcomes determine the re-election of incumbent politicians, decentralization also potentially improves political enforcement (Seabright 1996).

But decentralization could also worsen these constraints. Bardhan & Mookherjee (2005; 2006) point out that introducing electoral incentives to local officials in charge of providing public services may backfire in “imperfect democracies”. The merit of decentralization depends on whether local politicians are more or less subject to elite capture and prone to clientelistic and vote-buying practices than central politicians. If there are economies of scale in the political organization of non-elite groups of the society it will be easier for elites to capture local governments than the central government. Even in the absence of elite capture, monitoring provision of services and enforcing punishments is costly and requires that citizens solve a collective action problem. It is not clear that decentralization makes it easier for citizens to solve this problem: small and interconnected local groups are more likely to trust each other, but institutionalized forms of coordination (e.g., political parties, trade unions) are more likely to emerge on a national scale.

A growing literature on community-based monitoring considers the impact of empowering local communities on the behavior of politicians and service providers. Overall, the evidence is mixed. Olken (2007) finds that increasing monitoring by citizens has little impact on corruption within local government projects in Indonesia, unlike increasing the probability of

audits of the projects (a tool typically used by central governments to control local bureaucrats). Banerjee et al. (2010) similarly report that interventions designed to encourage communities' monitoring of local schools had no effect on community involvement, teacher effort, or learning outcomes in the schools. On the other hand, Bjorkman & Svensson (2009) present positive results from Uganda where an intervention that organized meetings between providers and beneficiaries of public services improved efforts of the providers and health outcomes.

Finally, a potential drawback of decentralization lies with the different layers of government it creates and the need to transfer public funds across these layers. Many programs in decentralized developing countries are funded by transfers from the central government but administered by local governments. The central government has an interest in keeping costs low but leaves most monitoring of elected local politicians to citizens. These citizens have on the contrary little interest in keeping costs low and probably even less understanding of how much revenues are used as inputs in local production of public services once funds have gone through several layers of government. Moreover, the literature on the market structure of corruption has shown that an increase in the number of administrations that (potentially) ask for bribes will increase the total amount of bribes paid if each agent does not fully internalize the effect of their bribes on other agents' bribe revenues (Shleifer & Vishny 1993; Olken & Barron 2009).

It is perhaps no coincidence that every measure of corruption described in this section comes from examining how inter-governmental transfers are used: there is plenty evidence that such transfers create ample opportunities for rent-taking. The results in Gadenne (2013) discussed above suggest this may be because citizens cannot or do not have incentives to monitor the use of funds by politicians when these funds are not locally levied.²⁴

²⁴ See Bird & Smart (2002) for more on the issues raised by inter-governmental transfers in developing countries.

IV Provision of Public Services by Non-Governmental Organizations

We have so far focused our discussion on the government sector. However, in most developing countries a substantial share of public goods provision occurs outside the formal public sector through non-governmental organizations (NGOs). There are over 20,000 international NGOs in operation today, and billions of dollars in aid from rich countries are channeled through NGOs annually (Werker & Ahmed 2008). In many places, NGOs are a primary provider of public goods. In fact, the majority of randomized evaluations in developing countries (e.g., on health and education interventions) have been conducted in collaboration with NGO providers rather than government agencies.²⁵ However, despite the tremendous amount of academic research conducted with NGOs, there is surprisingly little research, either theoretical or empirical, on NGOs themselves. We focus here on a few key areas in which NGOs are most important for thinking about the public sector and decentralization.²⁶

First, formal budget figures may miss a lot of what is actually happening on the ground. This is true both in terms of overall amounts spent on public goods and services and also in terms of resource allocation, since NGOs tend to concentrate in certain sectors. From the point of view of decentralization, we often think of NGOs as “local” because they are often integrated closely into local communities. But it is important to keep in mind that the majority of NGO dollars come from rich country governments and private contributions from individuals in rich countries (Werker & Ahmed 2008). NGO projects, particularly for large NGOs, are therefore funded not only outside the local community but also outside the country budget.

²⁵ This also raises the important question of whether results from these interventions will “scale up” to settings where the government is the provider, given differences in employee selection and incentives between the NGO and government sectors.

²⁶ See Werker & Ahmed (2008) for a broader discussion of the NGO sector.

Second, we have very little understanding of how NGOs interact with the public sector. One way to think about NGOs is as governments contracting out to the private sector (see Besley & Ghatak 2001 for further discussion), but NGOs often appear to operate somewhat independently from governments as well. In terms of the framework above, information and enforcement constraints may lead to severe limits on state capacity, and NGO provision may thus arise as a response to the failures of the state. However, NGOs may also contribute dynamically to the failure of the state by crowding out public provision of services. To the best of our knowledge, existing empirical work has not examined government responses to NGO activity. There are also open questions when we move to thinking about the political economy of NGOs and the government sector. For example, do citizens distinguish between government and NGO provision when rewarding or punishing politicians or when comparing across jurisdictions? And do citizens even want their governments to focus on providing services if NGOs choose where to locate based on the lack of service provision? Perhaps a “good” local government is not one that builds schools but rather is successful at “competing” with other jurisdictions to attract an internationally funded NGO to build schools!

Finally, understanding how governments respond to NGO activities require us to better understand NGO incentives. NGOs are often described as “bridging the gap” between governments and citizens, presumably with the idea that the need for NGO involvement will decrease as state capacity increases. However, it is unlikely for any organization to see its desired future as non-existence; on the contrary, donors may evaluate NGOs on the scale of their activities. The accountability of NGOs vis-à-vis the state is also unclear; see Barr et al. (2005) for further discussion.

V Policy Instruments to Improve Welfare

In this final section, we consider what types of policy instruments can be used to improve social welfare in developing economies. Much attention has focused on the various types of instruments that are relevant in the developed country context. For example, we can improve information through digitization of records, improve administrative capacity through technology and training, and find ways to increase transparency. Broadly speaking, we can think of these types of policies as making developing countries “look more like” developed countries.

As discussed above, there is substantial evidence that these types of policies can in fact improve outcomes. However, an emerging literature suggests that we may also be able to design alternative policy instruments that exploit the fact that developing country environments have some advantages relative to developed countries in addition to constraints. Specifically, new research is focusing on how policymakers may be able to leverage information and social incentives to improve policy outcomes. This literature is of particular interest in the context of fiscal federalism, since many of the relevant forces operate best at local levels.

Considering the example of microfinance may help to provide intuition. Microfinance lenders have limited ability to observe individuals’ actions as well as limited ability to force individuals to repay loans. However, in the communities they serve, there is often very good local information and ability to punish through social channels. The lender can thus structure contracts (such as joint liability loans) that incentivize the use of these local information and enforcement mechanisms. How can this idea be applied in the public finance context?

Revenue

In Section IV, we discussed the provision of public goods and services by non-governmental providers. Another common feature of many developing countries is the provision

of local public goods by community members, what Olken & Singhal (2011) refer to as “informal taxation”. This type of community provision is often encouraged by central governments and international organizations such as the World Bank, both as a direct mechanism for local public goods provision and as a form of co-finance. Olken and Singhal document that a substantial share of households in developing countries around the world contribute in money, materials, and often in labor to the construction and maintenance of public goods such as roads, schools, and water systems. They find that informal taxation can be quite important. In their Indonesia sample, for example, informal taxes are the largest source of revenue under local control, increase the estimated amount of revenue under local control by 50%, and fund a non-trivial share of overall national expenditure on public goods.

Olken and Singhal consider several possible explanations for why informal tax systems arise. One possibility is that informal tax systems are an optimal response to the types of information and enforcement constraints discussed above. Specifically, they argue that local communities may have an informational advantage in determining true earnings ability / earnings relative to the tax authority. Informal tax systems can thus make use of information within the community that is observable but not legally verifiable. However, informal tax systems must rely on social sanctions for enforcement. If we take the “traditional” view of the state as having no limits on enforcement, then the choice between informal and formal taxation represents a tradeoff between information and enforcement. If the state faces severe limits to enforcement, then informal taxation may be preferable on both grounds.

An interesting feature of these systems in the context of decentralization is that central governments and international organizations often construct infrastructure projects but leave maintenance in the hands of local communities. When local informal systems fail, projects may

depreciate quickly, a common problem throughout the developing world. Khwaja (2009), for example, shows large within-community variance in maintenance of public projects in Pakistan arising from variation in project design.

The prevalence of informal taxation means that formal budget figures may underestimate the overall size of the public sector and the level of decentralization, particularly on the revenue side. There may also be tighter tax-benefit links at the local level than budget figures would suggest. In addition, it is not clear how informal taxation interacts with formal taxation and provision of public goods: local taxation and intergovernmental grants may crowd out informal taxation and vice versa. The widespread existence of informal tax mechanisms raises the question of whether such social pressures could be leveraged by policymakers to improve revenue collection in formal tax systems. A number of countries around the world recognize top taxpayers, presumably with the idea that such positive recognition will encourage individuals and firms to be more compliant. However, the impact of such programs has not been studied. In ongoing research, Ahmed et al. (2013) are collaborating with the tax authority in Bangladesh to implement a large-scale randomized evaluation to test the effect of peer recognition on VAT compliance.

Public Service Delivery

Local information and social enforcement mechanisms may also be leveraged to improve the quality of public service delivery. The success of the community monitoring programs described above probably depends partially on their capacity to introduce or strengthen community's uses of social non-monetary systems to incentivize front-line workers. To the best of our knowledge, none of the articles in this literature explicitly measure social incentives. Some interesting evidence comes from Nagavarapu & Sekhri (2013) who examine distribution of

goods through India's Targeted Public Distribution System (TPDS), a system known to suffer from substantial theft and diversion of goods to the black market. They find strikingly higher takeup of grains among scheduled caste individuals when the delivery agent is also scheduled caste. The authors present strong suggestive evidence that this effect is occurring through greater monitoring and enforcement of the delivery agent by the caste network and not through other channels, such as capture by the caste group. As the authors note, the evidence is ultimately an indirect test of the effect of social incentives on corruption, since their setting does not provide exogenous variation in social monitoring.

However, there is recent research that examines how the provision of non-monetary incentives in general affects the behavior of providers of public services. The theoretical literature suggests that providing non-monetary incentives to workers will be particularly effective in organizations that produce goods with large social externalities, such as the public sector and NGOs, for two reasons. First, these organizations gain from hiring workers with pro-social preferences who may value non-monetary gains more than financial gains (Besley & Ghatak 2008). Second, financial incentives could crowd out such pro-social motivations (Bénabou & Tirole 2003; Tirole & Benabou 2006). There is some evidence that non-monetary incentives indeed increase performance of workers in the non-for-profit sector. Ashraf et al. (2012) show that agents hired by a public health organization in Zambia perform better when offered non-monetary incentives ("stars" for each condom pack sold) than when offered financial rewards. They find no evidence of crowd-out.

This raises the possibility that developing countries may reap high returns from building-in non-monetary incentives in their management of bureaucrats and front-line workers. Given the importance of local social networks in developing countries, non-financial incentives could be

particularly effective when they include a social element. We do not know of work that has directly tested the effect of social rewards on public service delivery and see this as an interesting avenue for future research.²⁷

Introducing or strengthening non-monetary and social rewards may also affect which individuals select into public service by attracting individuals with other-regarding preferences. This is particularly important if existing social norms label politicians and civil servants as particularly self-regarding, and these norms are self-enforcing: if the community believes that "all politicians and civil servants are corrupt/criminals" for example, corrupt/criminal individuals are more likely to choose careers in the public sector. While there is no rigorous evidence on social norms, there is some evidence that suggests politicians have particularly self-regarding preferences in developing countries: Banerjee et al. (2011) report that roughly half of Delhi's incumbent state legislators faced criminal charges.

Targeting Transfers

As we discussed in Section III, decentralization and community based targeting methods can improve resource allocation as a result of local informational advantages. The commonly given rationale is that local communities may be able to observe information about true income or consumption that is not captured by the vector of assets or other information available for use in a proxy means test. Recent research also suggests that communities appear to have a different concept of poverty than one solely based on consumption. Alatas et al. (2012) examine a community-based targeting system in Indonesia in which communities explicitly ranked households from richest to poorest during a community meeting. They find that the community

²⁷ The Ashraf et al. study deliberately reduces community visibility of the stars treatment in order to avoid an "advertising effect."

based method performs worse than the proxy means test measure in terms of predicting consumption, but that community members are more satisfied with the resulting beneficiary list. They show that the community ranking does contain information about per capita consumption, above and beyond the proxy means test variables. They also show that the community rank appears to be making adjustments for other factors, such as household size, and perhaps most interestingly, for earnings ability: households headed by individuals with low education, widows, those with disabilities, and those with serious illnesses were categorized as poorer, conditional on actual consumption.

These results suggest that community based targeting may be advantageous relative to what the government could replicate in any program with specified eligibility criteria because local communities have an informational advantage in observing both earnings and earnings ability. We also note that even targeting based on earnings ability arises from a particular conception of the social welfare function. Communities may have different or additional welfare criteria which would be difficult for any “rules based” program to replicate. One of the most striking findings of the Alatas et al. paper is the remarkable degree of consensus around the community-based ranking, suggesting a broadly shared concept of welfare - however defined - within the community.

The examples in this section illustrate several ways in which non-traditional policy instruments may be used to raise revenue, improve public service delivery, and target resources toward desired beneficiaries. Much remains to be learned about the effectiveness and generalizability of such policies. Nevertheless, they raise the tantalizing possibility that policymakers may be able to make use of a wider range of tools, even conditional on a given information and enforcement environment, than previously thought. This suggests that

developing countries may not want to focus their policies exclusively on looking more like developed countries. These alternative policy instruments may help to improve welfare in the transition. Some of these policies may even be relevant in the developed country context. For example, a number of states in the U.S. publish lists of top tax debtors, indicating that (1) even U.S. governments face some limits or costs to tax collection; and (2) the state tax authorities believe that the social costs associated with “naming and shaming” encourage payment.²⁸

VI Conclusion

We conclude with a brief discussion of what we see as some the most important directions for future research on public finance in developing countries. First, we need more facts. As we discussed in Section II, we are far from having complete data on subnational governments that is comparable across countries. In addition, budget figures will generally fail to capture the substantial extra governmental provision of public goods and services common in many developing countries, resulting in a distorted view of decentralization and the level and allocation of public goods provision as a whole. Understanding the incentives and responses of governments and NGOs in relation to each other is also important and an area about which we know very little.

Second, public finance models should take seriously the possibility of constraints on enforcement. Certain policy instruments (e.g., seizing bank accounts) may not be available for all sectors of the economy. In addition, collection (even from banks) must ultimately be enforced by some type of non-monetary punishment, since if the tax authority cannot collect the tax, it cannot collect a fine. As pointed out by Becker (1968), imposing punishment is costly. Tax collection will therefore be limited by whether the threat to impose a particular punishment is credible.

²⁸ <http://online.wsj.com/article/SB118290240318249269.html?mod=World-News>; accessed August 13, 2013.

Observed evasion behavior and choice of tax instruments may therefore be driven by limits to enforcement in addition to limits to information.

Third, a fruitful avenue for future research on developing countries lies in the intersection of the public finance and political economy literatures. In particular, public finance models that incorporate potential suboptimal behavior or public service providers would have greater relevance for developing countries. In addition, such models could direct empirical work toward identifying the key characteristics (or “sufficient statistics,” in the spirit of Chetty (2009)) needed to quantify welfare effects. Estimation of the marginal rather than average wedges created by corruption, as in Niehaus & Sukhtanker (2013), is one example of the type of parameter we have in mind.

Finally, we would like to see more studies on the type of non-traditional policy instruments discussed in Section V. From a policy perspective, it is important to understand how governments may be able to leverage these instruments to improve welfare. From a research perspective, these studies raise important questions regarding how to think about the welfare consequences of socially motivated tax payment, non-financial public sector incentives, and even individuals’ conception of the social welfare function.

Literature Cited

- Ahmed N, Chetty R, Mobarak M, Rahman A, Singhal M. 2013. *Social incentives and tax compliance: Evidence from a field experiment*. Work. Pap., Harvard Univ.
- Alatas V, Banerjee A, Chandrasekhar AG, Hanna R, Olken BA. 2012. *Network structure and the aggregation of information: Theory and evidence from Indonesia*. NBER Work. Pap. 18351
- Alatas V, Banerjee A, Chandrasekhar AG, Hanna R, Olken BA et al. 2013a. *Does elite capture matter? Local elites and targeted welfare programs in Indonesia*. NBER Work.Pap. 18798
- Alatas V, Banerjee A, Chandrasekhar AG, Hanna R, Olken BA et al. 2013b *Ordeal mechanisms in targeting: Theory and evidence from a field experiment in Indonesia*. NBER Work. Pap. 19127
- Alderman H. 2002. Do local officials know something we don't? Decentralization of targeted transfers in Albania. *J. of Public Econ.* 83 (3): 375-404
- Allingham MG, Sandmo A. 1972. Income tax evasion: a theoretical analysis. *J. of Public Econ.* 1 (3-4): 323-38
- Aparicio G. 2012. *Monitoring and its interaction with punishment in tax enforcement*. Work. Pap., George Wash. Univ.
- Aparicio G, Carrillo PE, Emran MS. 2011. *Taxes, prisons, and CFOs: The effects of increased punishment on corporate tax compliance in Ecuador*. Work. Pap. 2011-02, The George Wash. Univ., Inst. for Int. Econ. Policy
- Arnott R, Stiglitz JE. 1991. Moral hazard and nonmarket institutions: Dysfunctional crowding out of peer monitoring? *Am. Econ. Rev.* 81 (1): 179-190
- Ashraf N, Bandiera O, Jack K. 2012. No margin, no mission? A field experiment on incentives for pro-social tasks. *STICERD Discuss. Pap. Ser.* 035
- Au CC, Henderson JV, 2006. How migration restrictions limit agglomeration and productivity in China. *J. of Dev. Econ.* 80 (2): 350 - 88
- Baicker K, Clemens J, Singhal M. 2012. The rise of the states: U.S. fiscal decentralization in the postwar period. *J. of Public Econ.* 96 (11): 1079-91
- Banerjee A, Duflo E. 2006. Addressing absence. *J. of Econ. Perspect.* 20 (1): 117-32
- Banerjee A, Hanna R, Mullainathan S. 2013. Corruption. In *The Handbook of Organizational Economics*. (Forthcom.)

- Banerjee A, Iyer L. 2005. History, institutions and economic performance: The legacy of colonial land tenure systems in India. *Am. Econ. Rev.* 95: 1190-213
- Banerjee A, Pande R. 2007. *Parochial politics: Ethnic preferences and politician corruption*. Discuss. Pap. 6381, C.E.P.R. Discuss. Pap.
- Banerjee A. 1997. A theory of misgovernance. *Q. J. of Econ.* 112 (4): 1289-332
- Banerjee A, Banerji R, Duflo E, Glennerster R, Khemani S. 2010. Pitfalls of participatory programs: Evidence from a randomized evaluation in education in India. *Am. Econ. J.: Econ. Policy.* 2 (1): 1-30
- Banerjee A, Kumar S, Pande R, Su F. 2011. *Do informed voters make better choices? Experimental evidence from urban India*. Work. Pap.
- Bardhan P. 2002. Decentralization of governance and development. *J. of Econ. Perspect.* 16 (4): 185-205
- Bardhan P, Mookherjee D. 2005. Decentralizing antipoverty program delivery in developing countries. *J. of Public Econ.* 89 (4): 675 -704
- Bardhan P, Mookherjee D. 2006. Decentralization and accountability in infrastructure delivery in developing countries. *Econ. J.* 116 (508): 101-27
- Barr A, Fafchamps M, Owens T. 2005. The governance of non-governmental organizations in Uganda. *World Dev.* 33 (4): 657-79
- Barro RJ. 1973. The control of politicians: An economic model. *Public Choice.* 14: 19-42
- Baunsgaard T, Keen M. 2010. Tax revenue and (or?) trade liberalization. *J. of Public Econ.* 94 (9-10): 563 - 77
- Becker GS. 1968. Crime and punishment: An economic approach. *J. of Polit. Econ.* 76: 169
- Becker GS, Stigler GJ. 1974. Law enforcement, malfeasance, and compensation of enforcers. *J. of Leg. Stud.* 3 (1): 1-18
- Benabou R, Tirole J. 2003. Intrinsic and extrinsic motivation. *Rev. of Econ. Stud.* 70 (3): 489-520
- Brennan G, Buchanan JM. 1980. *The Power to Tax: Analytical Foundations of a Fiscal Constitution*. Camb.: Camb. University Press
- Bernstein TP, Lu X. 2008. Taxation and coercion in rural China In *Taxation and State-Building in Developing Countries*, New York: Camb. Univ. Press

- Besley T. 2006. *Principled agents? The political economy of good government*. New York: Oxf. Univ. Press
- Besley T, Burgess R. 2002. The political economy of government responsiveness: Theory and evidence from India. *Q. J. of Econ.* 117 (4): 1415-51
- Besley T, Case A. 1995. Incumbent behavior: Vote-seeking, tax-setting, and yardstick competition. *Am. Econ. Rev.* 85 (1): 25-45
- Besley T, Coate S. 1995. The design of income maintenance programmes. *Rev. of Econ. Stud.* 62 (2): 187-221
- Besley T, Coate S. 2003. Centralized versus decentralized provision of local public goods: A political economy approach. *J. of Public Econ.* 87 (12): 2611 - 37.
- Besley T, Ghatak M. 2001. Government versus private ownership of public goods. *Q. J. of Econ.* 116 (4): 1343-72
- Besley T, Ghatak M. 2008. Status incentives. *Am. Econ. Rev.* 98 (2): 206-11
- Besley T, McLaren J. 1993. Taxes and bribery: The role of wage incentives. *The Econ. J.* 103 (416): 119-41
- Besley T, Persson T. 2013. Public finance and development. In *Handbook of Public Economics*
- Besley T, Smart M. 2007. Fiscal restraints and voter welfare. *J. of Public Econ.* 91 (3-4): 755-73
- Best M, Brockmeyer A, Kleven HJ, Spinnewijn J, Waseem, M. 2013. *Production vs revenue efficiency with limited tax capacity: Theory and evidence from Pakistan*. Work. Pap., Lond. Sch. of Econ.
- Bird RM, Smart M. 2002. Intergovernmental fiscal transfers: International lessons for developing countries. *World Dev.* 30 (6): 899-912
- Bjorkman M, Svensson J. 2009. Power to the people: Evidence from a randomized field experiment of a community-based monitoring project in Uganda. *Q. J. of Econ.* 124 (2): 735-69
- Brollo F, Nannicini T, Perotti R, Tabellini G. 2013. *The political resource curse*. NBER Work. Pap. 15705
- Burgess R, Stern N. 1993. Taxation and development. *J. of Econ. Lit.* 31 (2): 762-830
- Cage J, Gadenne L. 2013. *Tax revenues and the fiscal cost of trade liberalization, 1792-2006*. Work. Pap., Univ. Coll. Lon.

- Carrillo P, Pomeranz D, Singhal M. 2013. *Tax me if you can: Third party cross-checks and evasion substitution*. Work. Pap., Harvard Univ.
- Chaudhury N, Hammer JS, Kremer M, Muralidharan K, Rogers FH. 2006. Missing in action: Teacher and health worker absence in developing countries. *J. of Econ. Perspect.* 20 (1): 91-116
- Chetty R. 2009. Sufficient statistics for welfare analysis: A bridge between structural and reduced-form methods. *Annu. Rev. of Econ.* 1 (1): 451-88
- Chetty R, Looney A. 2005. Income risk and the benefits of social insurance: Evidence from Indonesia and the United States. In *Fiscal Policy and Management in East Asia*, Vol. 16, NBER-EASE, pp. 99-121.
- Chetty R, Looney A. 2006. Consumption smoothing and the welfare consequences of social insurance in developing economies. *J. of Public Econ.* 90 (12): 2351-6
- Coady D, Grosh M, Hoddinott J. 2004. *Targeting of Transfers in Developing Countries: Review of Lessons and Experience*. Washington, D.C.: The World Bank.
- Coate S, Ravallion M. 1993. Reciprocity without commitment: Characterization and performance of informal insurance arrangements. *J. of Dev. Econ.* 40 (1): 1-24
- Dal Bo E, Finan F, Rossi M. 2012. *Strengthening state capabilities: The role of financial incentives in the call to public service*. NBER Work. Pap. 18156
- De Mel S, McKenzie D, Woodruff C. 2012. *Do informal firms want to formalize and does it help them if they do?*. World Bank Other Oper. Stud. 10053, The World Bank
- Duflo E, Hanna R, Ryan SP. 2012. Incentives work: Getting teachers to come to school. *Am. Econ. Rev.* 102 (4): 1241-78
- Dziobek C, Mangas CG, Kufa P. 2011. *Measuring Fiscal Decentralization - Exploring the IMF's Databases*. Tech. rep., Work. Pap. 11/126, Int. Monet. Fund
- Faguet JP. 2004. Does decentralization increase government responsiveness to local needs?: Evidence from Bolivia. *J. of Public Econ.* 88 (3-4): 867-93
- Faguet JP. 2008. Decentralisation's effects on public investment: Evidence and policy lessons from Bolivia and Colombia. *J. of Dev. Stud.* 44 (8): 1100-21
- Ferraz C, Finan F. 2008. Exposing corrupt politicians: The effects of Brazil's publicly released audits on electoral outcomes. *Q. J. of Econ.*, 123 (2): 703-45

- Ferraz C, Finan F. 2011a. Electoral accountability and corruption: Evidence from the audits of local governments. *Am. Econ. Rev.* 101 (4): 1274-311
- Ferraz C, Finan F. 2011b. *Motivating politicians: The impacts of monetary incentives on quality and performance*. IZA Discuss. Pap. 3411, Inst. for the Stud. of Labor
- Gadenne L. 2013. *Tax me, but spend wisely: Sources of public finance and government accountability*. Work. Pap., Univ. Coll. Lon.
- Galasso E, Ravallion M. 2005. Decentralized targeting of an antipoverty program. *J. of Public Econ.* 89 (4): 705-27
- Gordon R, Li W. 2009. Tax structures in developing countries: Many puzzles and a possible explanation. *J. of Public Econ.* 93 (7-8): 855-66
- Jia R, Kudamatsu M, Seim D. 2013. *Complementary roles of connections and performance in political selection in China*. CEPR Discuss. Pap., DP9523
- Khan A, Khwaja A, Olken B. 2013. *Tax farming redux: Experimental evidence on incentive pay for tax collectors*. Sem., Harvard Univ.
- Khwaja AI. 2009. Can good projects succeed in bad communities? *J. of Public Econ.* 93 (7-8): 899-916
- Kleven HJ, Knudsen MB, Kreiner CT, Pedersen S, Saez E. 2011. Unwilling or unable to cheat? Evidence from a tax audit experiment in Denmark. *Econometrica.* 79 (3): 651-92
- Kleven HJ, Kreiner CT, Saez E. 2009. *Why can modern governments tax so much? An agency model of firms as fiscal Intermediaries*. NBER Work. Pap. 15218
- Kumler T, Verhoogen E, Frias J. 2012. *Enlisting workers in monitoring firms: Payroll tax compliance in Mexico*. Work. Pap., Dep. of Econ. Columbia Univ.
- Litschig S, Zamboni Y. 2013. *Audit risk and rent extraction: evidence from a randomized evaluation in Brazil*. Econ. Work. Pap. 1270, Dep. of Econ. and Bus., Univ. Pompeu Fabra.
- Maddison A. 2008. *Statistics on world population, GDP and per capita GDP*. 1-2008 ad, <http://www.ggdc.net/MADDISON/oriindex.htm>
- Mirrlees JA. 1971. An exploration in the theory of optimum income taxation. *Rev. of Econ. Stud.* 38 (114): 175-208
- Mukhopadhyay P, Muralidharan K, Niehaus P, Sukhtankar S. 2013. *Implementing a biometric payment system: The Andhra Pradesh experience*. Tech. rep., AP Smartcard Impact Eval. Proj. Policy Rep.

- Munshi K, Rosenzweig M. 2009. *Why is mobility in India so low? Social insurance, inequality, and growth*. NBER Work. Pap. 14850
- Muralidharan K, Sundararaman V. 2011. Teacher performance pay: Experimental evidence from India. *J. of Pol. Econ.* 119 (1): 39 - 77
- Nagavarapu S, Sekhri S. 2013. *Informal Monitoring Mechanisms in Public Service Delivery: Evidence from the Public Distribution System in India*. Work. Pap., University of Virginia.
- Nichols AL, Zeckhauser RJ. 1982. Targeting transfers through restrictions on recipients. *Am. Econ. Rev.* 72 (2): 372-7
- Niehaus P, Atanassova A, Bertrand M, Mullainathan S. 2013. Targeting with agents. *Am. Econ. J.: Econ. Pol.* 5 (1): 206-38
- Niehaus P, Sukhtankar S. 2012. *Corruption dynamics: The golden goose effect*. Work. Pap., Harvard Univ.
- Niehaus P, Sukhtankar S. 2013. The marginal rate of corruption in public programs. *J. of Public Econ.* 104: 52-64
- Oates W. 1972. *Fiscal Federalism*. New York: Harcourt Brace
- Olken B, Pande R. 2012. Corruption in developing countries. *Annu. Rev. of Econ.* (Forthcom.)
- Olken BA. 2006. Corruption and the costs of redistribution: Micro evidence from Indonesia. *J. of Public Econ.* 90 (4-5): 853-70
- Olken BA. 2007. Monitoring corruption: Evidence from a field experiment in Indonesia. *J. of Political Econ.* 115: 200-49
- Olken BA, Barron P. 2009. The simple economics of extortion: Evidence from trucking in Aceh. *J. of Political Econ.* 117 (3): 417-52
- Olken BA, Singhal M. 2011. Informal taxation. *Am. Econ. J.: Appl. Econ.* 3 (4) (15221): 1-28
- Pomeranz D. 2013. *No taxation without information*. Work. Pap. No. 13-057, Harvard Bus. Sch.
- Rasul I, Rogger D. 2013. *Management of bureaucrats and public service delivery: Evidence from the Nigerian civil service*. Work. Pap., Univ. Coll. Lon.
- Reinikka R, Svensson J. 2004. Local capture: Evidence from a central government transfer program in Uganda. *Q. J. of Econ.* 119 (2): 678-704

- Reinikka R, Svensson J. 2011. The power of information in public services: Evidence from education in Uganda. *J. of Public Econ.* 95 (7-8): 956-66
- Samuelson PA. 1954. The pure theory of public expenditure. *The Rev. of Econ. and Stat.* 36 (4): 387-9
- Schneider F. 2002. *Size and measurement of the informal economy in 110 countries around the world.* Work. Pap., Univ. of Linz
- Seabright P. 1996. Accountability and decentralization in government: An incomplete contracts model. *Eur. Econ. Rev.* 40
- Shah A, ed. 2006. *Local Governance in Developing Countries.* Libr. of Congr.
- Shleifer A, Vishny RW. 1993. Corruption. *Q. J. of Econ.* 108 (3): 599-617
- Slemrod J. 1990. Optimal taxation and optimal tax systems. *J. of Econ. Perspect.* 4 (1): 157-78
- Tiebout CM. 1956. A pure theory of local expenditures. *J. of Political Econ.* 64: 416
- Tirole J, Benabou R. 2006. Incentives and prosocial behavior. *Am. Econ. Rev.* 96 (5): 1652-78
- Townsend RM. 1995. Consumption insurance: An evaluation of risk-bearing systems in low-income economies. *J. of Econ. Perspect.* 9 (3): 83-102
- Weber M. 1919. The profession and vocation of politics. In *Political Writings, Cambridge Texts in the History of Political Thought.* 1994. ed. Lassman P, Speirs R, pp. 309-69, Camb.: Camb. Univ. Press
- Weingast BR. 2009. Second generation fiscal federalism: The implications of fiscal incentives. *J. of Urban Econ.* 65: 279-93
- Werker E, Ahmed FZ. 2008. What do nongovernmental organizations do? *J. of Econ. Perspect.* 22 (2): 73-92
- World Bank. 1999. *World Development Report 1999: Entering the 21st Century: The Changing Development Landscape.* World Bank and Oxf. Univ. Press
- World Bank. 2002. *Decentralization in Africa: A stocktaking survey.* Afr. Reg. Work. Pap. No. 40
- World Bank. 2004. *World Development Report 2004: Making Services Work for Poor People.* New York: Oxf. Univ. Press
- Zhuravskaya EV. 2000. Incentives to provide local public goods: Fiscal federalism, Russian style. *J. of Public Econ.* 76 (3): 337-68

Tables and Figures

Table 1: Conceptual Framework

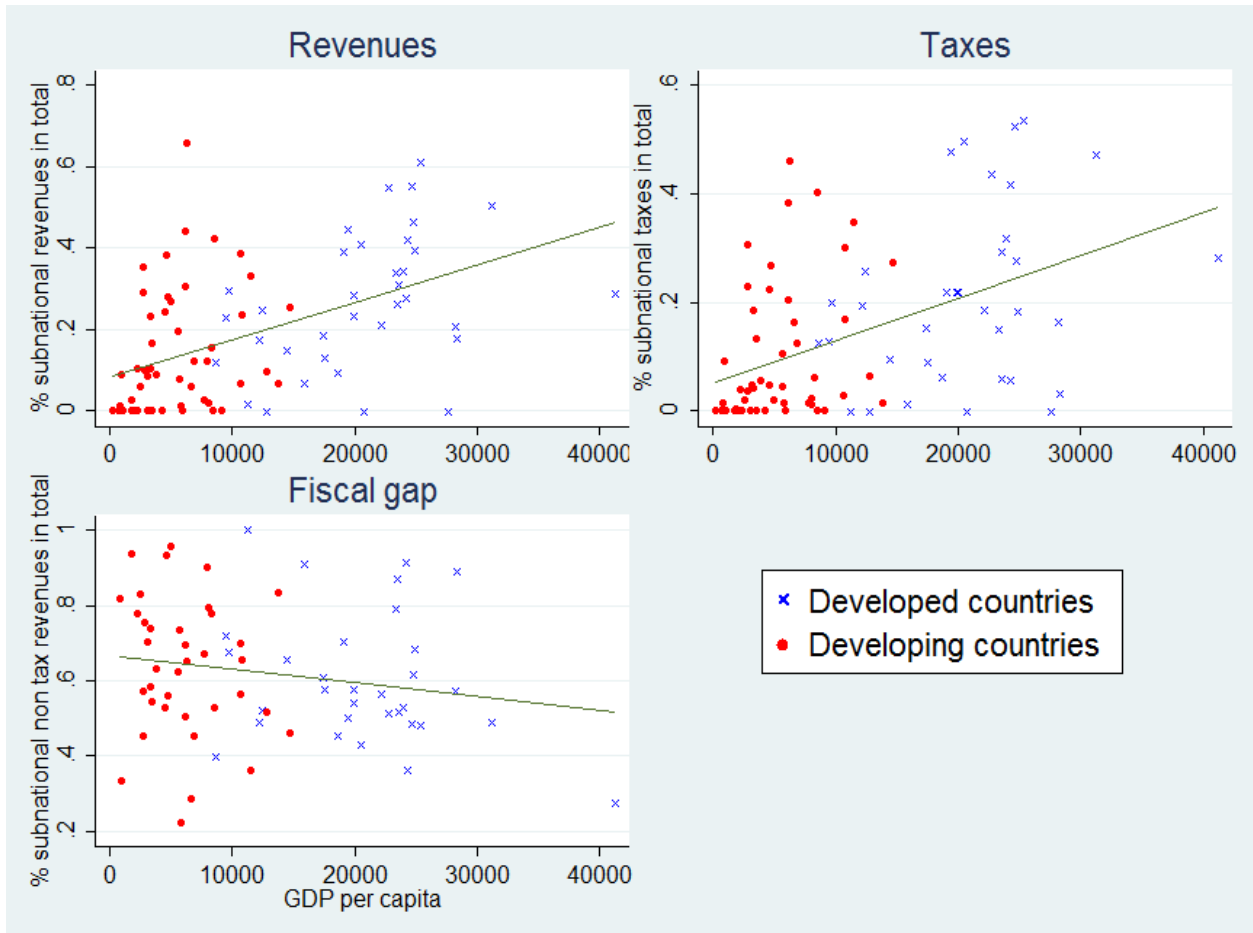
	Government is the Principal	Government is the Agent
Information Costs and Constraints	A Samuelson (1954) Mirrlees (1971)	C Brennan & Buchanan (1980) Besley & Smart (2007)
Enforcement Costs and Constraints	B Becker (1968)	D Barro (1973) Becker & Stigler (1974) Brennan & Buchanan (1980)

Table 2: Recent Trends in Decentralization

	1996-2000			2006-2010		
	Mean	Nb. 0	Obs	Mean	Nb. 0	Obs
<i>Developed countries</i>						
Subnational revenue share	25 (16)	4	32	27 (16)	2	32
Subnational tax share	19 (16)	4	32	21 (16)	3	32
Fiscal gap	60 (17)	0	28	61 (18)	0	30
<i>Developing countries</i>						
Subnational revenue share	16 (17)	15	38	14 (15)	11	38
Subnational tax share	14 (16)	16	38	10 (13)	11	38
Fiscal gap	49 (23)		23	62 (20)		27

Means over the periods 1996-2000 and 2006-2010 (standard errors in parentheses). The second and fifth columns report the number of countries for which the variable is always zero over the period, the third and sixth columns report the total number of countries which report some central government information over the period. The sample includes the 33 developed countries and 32 developing countries for which we have data for 1991-1995 and 2006-2010.

Figure 1: Cross country evidence on decentralization, 2006-2010



Each graph represents the average y-axis variable over the period 2006-2010 as a function of GDP per capita in 2006-2010. We use GDP data from Maddison (2008) which is in 1990 international Geary-Khamis dollars. Each point represents a country. These graphs are reproduced with country labels in the paper's online Appendix.