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Match the Theory?**

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Tax Assignment: Does the Practice Match the Theory?

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Abstract

The goal in this paper is to build on the existing literature to better explain the tax assignment choices made by countries in different economic circumstances. In particular, we explain why tax assignment to subnational governments is five times greater in industrial than developing countries, even when adjustment is made for differences in income level. Following on from the theory of tax assignment, we consider four arguments for this disparity. First, electoral regimes are not in place for the accountability gains to be captured. Second, tax decentralization may result in unacceptable fiscal disparities, and third, tax administration costs are higher for subnational governments and there is not enough incentive to take steps to lower them. Finally, we find empirical evidence to reject the hypothesis that giving more discretionary powers to subnational governments in developing countries will lead to a crowding out of central revenues, but find the opposite in the case of industrial countries.

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Introduction

Research on the theory and practice of fiscal decentralization is focused heavily on the expenditure side of the budget. Most students of the subject have been concerned with explaining why countries decentralize expenditure decisions (Oates, 1972) and with empirical analysis of the practice (Bahl and Wallace, 2005; Letelier, 2005). The tax assignment part of the story has been given less attention.

Some countries, for example the US and Canada, have carried tax decentralization quite far. In many other countries, particularly low income countries and those in transition, tax assignment has not been an important part of the decentralization strategy. This difference between industrialized and lower income countries is usually explained by tax administration capacity, historical traditions of centralization, and macroeconomic policy concerns. In fact, the story is more complicated and there is much still to be learned about why subnational governments make the revenue assignment decisions that they do.

The goal in this paper is to build on the existing literature to better explain the choices actually made by countries in different economic circumstances. In particular, we explain why tax assignment to subnational governments is five times greater in industrial than developing countries, even when adjustment is made for differences in income level. We begin with a summary of the theory of tax assignment, and the taxing rules that have been taken from this theory. We then turn to a review of how the practice follows the theory, and to four notes on the existing theory that can help explain the international practice. In particular we present an empirical analysis of crowding-out, i.e., the argument that subnational government taxes are restrained because of the fear that they may substitute for central government revenue mobilization. These amendments to the existing model can help us understand better why tax

assignment has gone no further than it has, particularly in low income and transition countries. We conclude by viewing these findings in a perspective of political economy and suggesting the policy implications.

The Theory

The traditional starting point for thinking about tax assignment is Musgrave's (1959, 1983) multi-level budget framework that would assign the stabilization and distribution functions to the central government and allocation responsibility to the local governments. This division of responsibility leads to general guidance about the placement of various instruments of taxation at the central, "middle" and local levels of government.² Progressive taxes with a distributional goal and taxes containing automatic stabilizers would be left with the central government. Subnational governments would rely mostly on those taxes levied against relatively immobile bases.

Most economists still hold to the Musgrave rules as the basic organizing principles for a fiscal federalism.³ But the theory and certainly the practice have moved on, and competing hypotheses have been offered about the motives that drive governments to make the tax decisions that they do. This work has focused on the importance of competition among subnational governments as a way of controlling the size of governments (Brennan and Buchanan, 1980), on taxing non-residents for benefits received (Oates, 1998) and on the political economy of tax assignment (Hettich and Winer, 1999). This thinking made the case for some claim on mobile tax bases by subnational governments. In terms of the contemporary practice,

² Paradoxically, most discussions are about intergovernmental fiscal systems in general rather than about intergovernmental fiscal systems in federal countries. Most studies that give theoretical guidance about tax assignment to lower levels of government, and are relatively vague about how taxes would be divided between the state and (provincial) local government levels.

³ For a good discussion of Musgrave's lasting contributions to the tax assignment question, see Bird (2008).

subnational governments now have taken on a substantial redistribution role, regularly use tax policy to stimulate their economies, and have been assigned major expenditure responsibilities. Further, “things have changed”. Economic integration in Europe and the reality of elected government in the developing countries have stimulated the demand for fiscal decentralization (Bahl, 2008; Stegarescu, 2009).

The evolving theory of tax assignment has led to a general set of taxing rules that many researchers and practitioners use as the takeoff point in designing subnational government tax policy (McLure, 1998).

1. The revenue potential should be enough to cover the local benefit portion of expenditures on services assigned to the local government.
2. The correct mix between own source revenues and grants will depend on the extent to which the subnational government is assigned responsibility for functions that have regional or national benefits, or have a low taxable capacity.
3. If service benefits can be priced, they should be financed by user charges. Otherwise, they should be financed by taxes whose burden is borne by those who benefit. There should be no exporting of tax burdens to non-beneficiaries.
4. The tax should be administrable at reasonable cost.
5. Exemptions and preferential treatments should be minimized.
6. No tax is politically acceptable in the absolute, and practically all tax rates are perceived by payers as being too high. The political goal is usually to find a path of least resistance. Political acceptability often is an enemy of good tax policy, but subnational governments generally avoid taxes and tax rates that might have a significant effect on tax compliance.

If all of these rules were followed to the letter, there surely would be no subnational government taxes. Even taxes on the supposedly immobile bases involve some exporting to non-beneficiaries (e.g., non residential property taxes), preferential treatments are unavoidable (e.g., small traders can evade the business license tax), and full cost recovery on essential services through user charges can bring social unrest. In some cases, even the letter is not clear, e.g.,

what is meant by “administration at reasonable cost”. So, there is an implicit qualifying statement for all of these rules, that a good local tax will “approximately” pass these tests. The policy question is how far to push the envelope.

The Practice

With these considerations and qualifications taken into account, can it be concluded that there are tax choices available to subnational governments that will generate adequate revenue? Are the choices more limited for developing and transition vs. industrial countries? Do the choices that have been made conform with the principles for good revenue assignment?

Individual Income Tax

A residence-based individual income tax can meet most of the tests for a good subnational government tax. It can generate significant revenue from an elastic tax base. It is roughly consistent with economic efficiency goals in that the burden falls mostly on those who benefit from the services provided. However, correspondence problems do arise with respect to those who cross provincial borders to reach their place of work, and some provision must be made for charging them for benefits received.⁴ If the tax is levied according to place of employment, some portion of the tax burden will be exported from the taxing jurisdiction. The employment-based model would also provide an incentive for jobs to migrate to lower taxing jurisdictions. Since the residence-based model is much preferred, subnational government income taxes work best if levied by jurisdictions that cover most of the commuting range.

⁴ Strictly speaking, the correspondence principle would call for a residence-based income tax, and for non-residents to file returns and pay an amount that would serve as a benefit charge for local services received (McLure, 1998).

In the industrial countries, subnational government income tax administration is feasible (Martinez and Timofeev, 2004; OECD, 2006). The PAYE portion can be assessed and collected at the place of work with relatively little difficulty. The “hard to tax” informal sector should be no more difficult a task for subnational governments than it is for the central government, and there is no reason to believe that the collection rate will be any lower under a decentralized than under a centralized tax system.⁵ Income taxes on capital sources (dividends, interest, rents) can be easily collected by states and provinces if there are information sharing agreements with the central government. Moreover, administrative difficulties can be circumvented by a piggyback arrangement where the central government defines the base and takes responsibility for collection while allowing local governments to set sur-rates.

Slack (2006, p.106-107) reports that income taxes represent the most important source of subnational government tax revenues in 13 of the 27 OECD countries. The approach to subnational government income taxation, however, varies among countries. The US model is for a state government tax, where there is discretion to define the tax rate and the tax base. Most US states begin with various lines on the federal income tax form, and build up their own base. In many states, the tax structure is simple but in some cases, it is complex and includes a progressive rate structure. In 11 states, local third tier governments are allowed to levy a further sur-charge on the state base (Schroeder, 2006). In a handful of states, there is no individual income tax. Provincial (State) and local governments account for about 20 percent of all individual income taxes raised in the US, and about 40 percent in Canada.

The Swiss model is similar to that of the United States. Cantons levy an individual income tax and also permit local governments (communes) to levy surcharges at locally-

⁵However, if there is a dual administration of the tax, compliance costs may rise and drive down collection rates.

established rates on the cantonal income taxes. Like some U.S. state government income taxes, the Swiss subnational government income taxes are not fully harmonized with the central income tax.

The case of Spain is different. The regions are divided into an autonomous group and a charter group. The former may levy a personal income tax and have some discretion over the tax rate. But, the tax base is common with the central government and collection is centralized. So, for these regions, there is an element of piggybacking. In the case of the charter regions, the subnational governments have autonomy over income tax policy and administration, much as is the case for US states (López- Laborda, Martínez-Vázquez, and Monasterio (2007).

Under the Nordic model (Lotz, 2006; OECD, 2006), the central government collects the tax, but local governments have discretion to set the tax rate. In Norway, however, local governments may not exceed a centrally-set maximum rate and most local governments are at the ceiling. These local income taxes are levied at a flat rate on the same tax base as the national income tax except in Sweden where it is an earned income tax. Provincial personal income taxes in Canada also are collected by the Federal government.

The German arrangement is unique. The Länder are responsible for collection, but have no authority to set the tax rate or determine the tax base. In effect, there are no subnational government income taxes in Germany. State governments in Australia levy a payroll tax because they are denied access to broad-based income taxes (Freebairn, 2002).

Administrative considerations rule out residence-based subnational government income taxes in most low income countries. Very few subnational governments have the ability to maintain a tax roll, or to do the necessary audit to police the compliance. Even under a piggyback arrangement – which gets around these administrative constraints – the tax base

would be concentrated in a very few local governments and most local governments would be shut out. Two other forces push towards centralization of the individual income tax. One is that central governments may rely heavily on this source of revenue, and even central governments often have trouble collecting much from the personal income tax (Bird and Zolt, 2005). The second reason is that income tax policy often involves income distribution goals and this is perceived to be the exclusive responsibility of the central government.

In a number of transition economies, subnational governments have been assigned significant shares of income tax revenue. At present in Russia, for example, 100 percent of individual income tax revenues are shared with subnational governments (Martinez-Vazquez, Timofeev, and Boex, 2006). A 60 percent share is allocated to provincial governments in China. Dillinger's (2007) review of the practice in eight eastern European countries indicates that the individual income tax sharing rate varies from a 94 percent allocation to local governments in Slovakia to 30 percent in the Czech Republic and Poland. In none of these countries, however, do local governments have any significant freedom in establishing the tax rate.

An alternative for low income countries with limited administrative capacity is a payroll tax. These are easily administrable, at least when imposed on large enterprises, and they are revenue productive at relatively low rates. The problems are that payroll taxes act as a tax barrier to employment in the modern sector and encourage firms to substitute capital for labor. Moreover, in many countries the payroll tax base is already heavily exploited to finance (central) social security and unemployment compensation systems.

Only rarely are subnational governments given direct access to the payroll tax base. When they are, it takes the form of a wage tax that is withheld by employers. Within the Mexico City metropolitan area, two state governments, and the federal district,, finance a portion of their

budgets from a payroll (wage) tax. States (and the Federal District) are free to choose their tax rate, define the tax base and administer the tax (Diaz-Cayeros and McLure, 2000). The Mexico City case illustrates the problems that can arise with a local payroll tax. The Federal District accounts for 49 percent of the payroll taxes collected in the metropolitan area, even though its population share is much lower, i.e., it likely exports part of its tax burden to non residents. This encourages overspending by the federal district and leads to political controversy.

Only a handful of developing countries allow subnational governments to impose a payroll tax. Municipal governments in South Africa tax on a base of payrolls and turnover.⁶ As in Mexico, the payroll tax is levied on an origin basis, and accounts for half as much revenue as the turnover component (Bahl and Solomon, 2003). In Pakistan, a professions tax is levied by the provinces on employees in a variety of businesses and professionals (Bahl, Wallace and Cyan, 2008), with specific rates applied to each category of business. The businesses act as collection agents.

Company Income Tax

Many who study revenue assignment argue that the company income tax is not a good choice for subnational governments (McLure, 1998; Martinez-Vazquez, 2008). To the extent that the incidence of the tax is shifted backwards to owners of the firms, or forward to consumers of the product, it is not likely borne by local residents. Hence it fails to match the beneficiaries of locally provided services with those who are burdened by the tax.

Countries usually try to trick the system out of this undesirable tax exporting effect by devising a formula to give every province where the company produces or sells its product a claim on some part of the tax base. But these allocation formulae give rough justice at best and

⁶ This tax will be abolished in 2011.

few would argue that they are a good way to convert the company income tax to a destination-based levy. The United States has learned well the great problems that come with trying to prorate the net income of national companies across state boundaries (McLure 1980).⁷

Other problems with a subnational government company income tax are no less worrisome: The tax base (profits) is cyclically unstable, and provincial and local government revenues can be affected by changes in central government tax or industrial policy. These problems notwithstanding, some industrial countries do assign the corporate income tax to subnational governments. It accounts for about 4 percent of state and local government tax revenues in the United States. In Switzerland, Spain, Japan, Italy and Canada, subnational governments tax business income.

The developing countries, make little if any use of company income taxes at the subnational government level. Subnational governments in transition countries, however, do depend on enterprise income taxes. In China, enterprise income taxes are a major source of provincial government revenues, but the central government determines the tax rate and the tax base. Such tax sharing arrangements are better thought of as intergovernmental fiscal transfers.

Consumption Taxes

General sales taxes are not often used by subnational governments, even in OECD countries, though the United States and Canada are notable exceptions. The practice suggests that the “decentralizing” European countries have settled on assigning general consumption taxes to the center and allowing the subnational governments to share the income tax base. In the

⁷ Similar allocation problems are observed in Switzerland (Spahn and Föttinger, 1997).

United States, there is a *de facto* separation of sales tax powers: most states rely heavily on a retail sales tax and there is no national sales tax.

General sales taxes of any type are a difficult proposition in developing countries, mostly for administrative reasons (Bahl and Bird, 2008). A gross receipts tax levied on an origin basis (mostly on importers and manufacturers) can be revenue productive, but creates distortions by shifting tax burdens from producing to consuming regions and by its pyramiding effect. Relatively few subnational governments in the developing world rely heavily on general sales taxes, though there are some important exceptions. Selective sales taxes and excises are more manageable for developing countries but still are little used by subnational governments.

Another version of the assignment of general consumption taxes is the revenue sharing practiced in transition countries, but as noted above, these are more appropriately thought of as intergovernmental transfers.

General Sales Tax (VAT) The only well-functioning, destination-based subnational VATs now in existence are those in Canada (Bird and Gendron, 2009). Canadian experience shows that with good tax administration it is perfectly feasible to operate a VAT at the subnational level on a destination basis.

In most developing countries, there is no realistic prospect that the tax administration will be able to support a subnational government VAT. In addition to the administration constraint, there are concerns about the tax treatment of international trade and problems arising from interstate trade. For most countries, the issue is that subnational VATs are distortionary if levied on an origin basis, and unworkable if levied on a destination basis (Bahl and Bird, 2008).

Still, there are exceptions. Brazil relies heavily on an origin-based subnational government VAT. State governments have autonomy in rate setting and compete for investment

by offering fiscal incentives. The resulting “fiscal war” has been an important factor behind the call for reform of the Brazilian VAT (Rezende and Afonso, 2006). India has implemented a state level value added tax, but is still working out the details of how it will operate, particularly with respect to interstate trade (Babita et al., 2008; Rao, 2008).

Retail Sales and Gross Receipts Taxes The retail sales tax is an important source of revenue in most US states. The tax rates and bases are determined by the individual states. The major problems with this tax in the US have to do with the difficulties with taxing services and with the failure to tax internet purchases. With the shift in spending patterns toward the consumption of services, and with internet ordering on the rise, there is considerable erosion of the state government revenue base. The taxation of electronic purchases is held back by legal rulings.⁸ The taxation of services is limited by administrative considerations and by a historical tradition of not taxing services, but this exclusion introduces significant horizontal inequities in the system.

Subnational governments in developing countries do make use of gross receipts taxes. The major own source revenue of Brazilian municipalities is a gross receipts tax on services (ISS), almost all of which is collected by the largest municipalities (Rezende and Garson 2006). The ISS and the urban property tax together account for about 60 percent of total municipal government tax revenue. National law fixes the minimum rate at 2 percent. Maximum rates differ by type of service, with the usual maximum being 5 percent of gross revenue. Within this range, local governments may choose the tax rate. Provincial governments in Pakistan are empowered to levy a sales tax on the consumption of services, but it yields little revenue.

Buenos Aires, both city and province, levy a gross receipts tax. The tax rate varies widely

⁸ The US Supreme Court ruled that state and local governments can only require sellers with a physical presence in the state to collect the sales tax. *Quill v. North Dakota*, 112 US 298 (1992).

by type of product and there are the expected cascading problems. In Nicaragua, the local gross receipts tax is levied at a rate of 1 percent. Colombian municipalities also derive much of their revenue from a gross receipts tax. The business tax in the Philippines is levied on gross receipts and accounts for about 30 percent of revenues (Taliercio, 2005). South African cities derive a significant amount of revenue from a combination payroll and turnover tax (Bahl and Solomon, 2003).

All of these taxes are levied on an origin basis, so all are guilty of tax exporting. Moreover, there is the “headquarters problem” which arises because national firms tend to pay tax for all branches at the headquarters location. The headquarters city therefore receives the revenues under an origin based system. In fact, for years there have been calls for replacing the gross receipts tax in Buenos Aires with a value added tax. But there has been little action, in part because of the important revenue role that this tax plays and the political strength of subnational governments. .

Excise Taxes Selective sales taxes are a potentially significant source of regional government revenue (McLure, 1998). Such taxes can be easily administered by regional governments and lend themselves to regionally-differentiated rate determination. Moreover, if applied on a destination basis, subnational government excise taxes should meet the correspondence test. There also may be a social cost argument for subnational government excises -- for example, on alcohol and tobacco -- to the extent that regional governments are responsible for traffic safety, hospitals and health expenditures -- and on vehicles and fuel where subnational governments are responsible for road maintenance. In practice, subnational government excise taxes work well in industrial countries because administration capabilities allow taxation on a destination basis.

The case for assignment of excise taxes to subnational governments in developing countries is not so strong, for two reasons. First, special excises on petroleum, liquor, beer and tobacco are of significant revenue importance to central governments, and not likely to be surrendered to decentralization. Second, administrative constraints limit the degree to which a destination-based excise could be implemented in most developing countries.⁹

The strongest economic and administrative case for regional (and perhaps even local) excises is with respect to vehicle-related taxes (Bahl and Linn, 1992; Bahl and Bird, 2008a). The most important tax on automobiles from a revenue perspective is the fuel tax, which, in fact is used by subnational governments in some OECD countries¹⁰.

The case for provincial level motor fuel taxes in developing countries is less easily made. States/Provinces in developing countries could impose fuel taxes, but rates could not differ much from those imposed by neighbors because of the mobility of the tax base and because of evasion. Collection at the pump is usually difficult. Differential provincial fuel taxes can as a rule be imposed at the refinery or wholesale level, with the refiner or wholesaler acting as a collection agent for the states, remitting taxes in accordance with fuel shipments. In practice, provincial taxation of motor fuels has been constrained because central governments are hesitant to allow encroachment on its petroleum excise base, because fuel prices are so sensitive a political issue that the center desires complete control, and because local governments themselves are not anxious to take on the political cost that might come with heavier taxation of motor vehicle use. A shared tax with the provincial government might be a more feasible way to tap the motor fuel base.

Motor vehicles may also be taxed with a number of other instruments. These include

⁹ For a good discussion of the excise tax practice in developing countries, see Cnossen (ed.) 2006.

¹⁰ For a review of the practice, see Newbery, 2005.

tolls and an appropriate set of annual automobile (and driver) license fees. The annual license for operating a motor vehicle is easily administered. An alternative administrative arrangement is revenue sharing of license taxes with a higher level of government. For example, in Brazil, the state government shares 50 percent of motor vehicle license revenues with municipalities according to the place of registration.

Property and Land Taxes

Virtually all countries assign the property tax to local governments, and in the industrialized countries these local governments are given rate setting powers. Administration of the tax is often divided between the central (or state) government and the local government, but there is no one dominant pattern on the division of administrative duties. In some cases higher level governments develop the cadastre and even do the valuation work, while local governments focus on collections. In other countries, valuation is a local function, especially in the larger cities. Most countries assign responsibility for collections to the local level.

The property tax passes many of the tests of a good subnational government tax. The base is broad and the tax can be revenue productive at reasonable levels of the statutory rate. Typically, revenues are stable over the business cycle. There is a rough jurisdictional correspondence between the benefits received from services financed by the tax and the burden distribution.¹¹ It fails the tests for a good subnational government tax in terms of its high administrative cost and its unpopularity with voters.

There is always controversy about the revenue yield of the property tax, i.e., about whether it's burden is too high or about whether it contributes enough revenue to the financing of

¹¹ The exception to this rule is the burden of taxes on some non-residential properties that are not owned by local residents, and/or that sell products outside the local area.

local public services. The revenue yield from the property tax in OECD countries is above 2 percent of GDP, more than three times higher than the yield in developing countries.

The discussion about property tax practices in low income countries is mostly pointed toward its almost uniformly weak revenue performance. On average, it accounts for well less than one percent of GDP in developing countries. Arguably the most important reason is that the property tax works best as a local government tax, and fiscal decentralization has not been as embraced in developing as in industrialized countries. Bahl and Martinez-Vazquez (2008) use data from a panel of 70 countries for 1990, 1995 and 2000 to show a significant positive effect of both expenditure decentralization and the level of per capita GDP on the level of the effective property tax rate.¹² Lower income countries are less decentralized and therefore use the property tax less.

The property tax offers several advantages as a good local tax in developing countries. Real property is visible and can be reached by local government administrations, and with effort, effective administration is possible (De Cesare, 2004). The local governments have a significant comparative advantage in administering the property tax because of their familiarity with the local economy and their related regulatory powers (e.g., issuing building permits and business licenses, making land use plans). The distribution of the tax burden is progressive because land ownership is concentrated in the upper income brackets. The revenue potential is well above amounts now collected in most developing countries. A major problem is that delays in general revaluation are commonplace, significantly lowering the revenue-income elasticity. Because the property tax is so unpopular in developing countries, it has few champions among elected officials.

¹² The effective rate of property tax is measured as the ratio of property tax collections to GDP.

Some Unanswered Questions

What we can learn from the above is that the practice of taxation more or less follows the theory in the industrialized countries, but does not match up as well in the developing countries. Moreover, while the subnational government expenditure share of GDP is about twice as high in industrial as in developing countries, the tax share is about five times higher (Table 1). Theory would predict a gap between industrialized and developing countries in the rate of subnational government revenue mobilization, but would it predict this large a gap?

The existing theory could do a better job of explaining the practice if it were amended to account for four factors: (a) subnational governments in developing countries may not capture the efficiency gains from having more taxing power, (b) higher levels of revenue mobilization by subnational governments may be opposed because of the fear that this would crowd out central government taxes, (c) tax decentralization would lead to fiscal disparities that would require central intervention, and (d) neither central nor local governments may be committed to lowering the high cost of subnational government tax administration.

Accountability

If consumer- voters at the subnational government level can choose the package of services they want, they will be willing to pay a (tax) price for this package. If they are constrained to a lower level of taxation by administration weaknesses or by limited taxing powers, they will suffer a welfare loss. If they are able to pay for the services with local taxes, but receive a lesser quality of services than they contracted for, they will suffer a welfare loss. Elected local politicians will be held accountable for delivering the quality of services for which the voter paid. The model works by exit (more so in industrialized than developing countries)

and it works by vote.

While the accountability model seems to hold, more or less, in the industrial countries, it may not be accurate in describing the situation in many developing countries. The electoral process might not be open and contested (China and Vietnam) or elections may have been suspended (Nepal). Information is imperfect, voters are less mobile and in some cases voters have not learned how to use the vote to hold their officials accountable.

What we can conclude from this are that the efficiency gains from assigning more taxing powers to subnational governments are more likely to be realized in industrial than in developing countries. All else being the same, this would dampen the relative demand for subnational government taxing powers in less developed countries and is another explanation for the large gap between revenue mobilization in developing and industrialized countries.

Another complication is that the central (or state) government may take policy actions that weaken accountability to voters. By providing financing to subnational governments through intergovernmental transfers, higher level governments can delink the tax and expenditure sides of the fiscal equation. Elected officials will no longer be as accountable to voters as would have been the case if the desired public service package had been financed by local taxes. In this case, taxpayers will tie service benefits more to the level of grants from higher level governments than to the level of local taxes. Even more likely, the benefits from increased subnational government taxes could be so negligible as to go unnoticed. The same will be true in industrialized countries with highly centralized fiscal systems. Spahn and Föttinger (p245) note that the highly centralized German system is so complicated that it is “.... impossible for voters and taxpayers to indentify which government spends or taxes, and for what purpose”.

Crowding Out

An important determinant of the level of revenue mobilization is intergovernmental tax competition. If subnational government taxation crowds out central government taxation (i.e., leads to central taxes being lower than they otherwise would have been), then the overall level of revenue mobilization is dampened. If subnational government taxes do not crowd out, national revenue mobilization is enhanced by higher levels of subnational government taxation. Crowding out can be an important determinant of revenue assignment to subnational governments.

How does crowding out happen? Subnational government taxing power may lead to an encroachment on the tax base of the central government. The result of higher local government taxes may be that voters will resist future increases in central government tax rates. In effect, the introduction of tax base sharing causes a reduction in the fiscal capacity of the central government. There may also be an output effect, depending on the price elasticity of demand for the goods that are taxed, and the elasticity of substitution between inputs. The underlying argument is that the voters are concerned with the total tax burden, rather than with the burden imposed by each level of government.

Crowding out might be argued for either industrial or developing countries, but the case is more plausible in higher income countries. One reason is that tax systems are more transparent, and taxpayers better understand how to use the vote. Moreover, in some OECD countries the income tax (Spain and the Nordic countries) and consumption tax (the United States and Canada) bases are formally shared. This makes matters even more transparent. A related issue is that higher joint tax rates and dual administration might lead to reduced compliance rates. For example, Plamondon and Zussman (1998) estimate that a single

administration of the Canadian federal and provincial business taxes would reduce compliance costs by 1.3 percent of collections.

Stimulative Effects. The contrary argument is that decentralization on the tax side of the budget would enhance overall revenue mobilization, in part because of more willingness to pay for services delivered under a decentralized fiscal system. This revenue enhancement effect could hold in either industrialized or low income countries.

A better reason to expect a stimulative effect is that subnational governments have some comparative, administrative advantages in reaching even the traditional income, consumption and wealth tax bases. Some of those who are hard to tax under central government regimes may be less hard to tax by provincial and local governments. The result of tax decentralization in such cases may be a net revenue gain. This argument better fits the case of developing and transition countries where the central government tax administration does not effectively reach the legal tax base (Bahl and Bird, 2008).

These “informational advantages” of subnational governments can take many forms. Often, for instance, state and local governments oversee a variety of licensing and regulatory activities, and they track property ownership and land-based transactions. They thus have ample opportunity to identify businesses in the community and to gain some knowledge about their assets and scale of operation. Because the potential revenue gain is much more important for them in relative terms, subnational governments have more incentive to carry out such activities than do national governments. This provincial and local government knowledge of the tax base may allow them to capture some of those who presently do not fully comply, or evade taxes altogether. This would include the self-employed --- including small businesses --- who often underdeclare taxable income and consumption.

There is another factor that suggests a revenue enhancement effect from decentralization. “New taxation” might lead to an overall revenue increase. In many countries, provincial and local governments have broadened their tax net with a variety of special tax instruments and administrative measures such as levies on the sales of assets of firms, licenses to operate, betterment charges and various forms of property and land taxation (Bird and Wallace, 2004; Bird, 2006).

What is the verdict? Does increased subnational government taxation crowd out central revenues and reduce overall revenue mobilization, or is it revenue-enhancing, and is there a difference in this regard between industrialized and low income countries? There is not much empirical evidence on the question of whether subnational government taxes crowd out central taxes, or whether they stimulate overall tax effort. Lotz (2006) has observed with impressionistic evidence from OECD countries that there is no clear conclusion as to whether decentralized taxation power leads to an increase in the overall level of taxation.

Empirical Model and Specification. We provide a systematic test of the crowding out hypothesis, using data from industrialized and low income countries. Consistent with the hypothesis here, the dependent variable is specified as central government tax revenues as a percent of GDP. Measuring the dependent variable in this way raises a comparability problem because the central government tax ratio will vary across countries depending on the tax assignment that they make. In this analysis, we control for this problem by including subnational government taxes as a percent of GDP as an independent variable.¹³

The other independent variables are meant to capture differences in taxable capacity, as has been the tradition in the earlier tax effort studies. All else being held equal, we expect that

¹³ An alternative is to measure the dependent variable as total central and subnational government taxes as a percent of GDP. We have also respecified the model in this way and find very similar empirical results.

industrial countries will mobilize a greater share of GDP in taxes, and so we introduce per capita GDP as an independent variable. The agricultural sector share of GDP is included to show the (presumed) lower taxable capacity in countries whose economy is more reliant on agriculture. The degree of openness in the economy (imports and exports as a percent of GDP) is used to capture the tax base enhancing effects of trade. In the case of developing countries, trade provides a “tax handle” that helps circumvent tax administration constraints (Lotz and Morss, 1967; Bahl, 1971). In the case of industrial countries it reflects a stronger economy and greater taxable capacity. On the other hand, trade liberalization and the zero rating of exports might cause us to expect that the marginal effect of openness on central tax effort would be negative.

The ratio of subnational government taxes to GDP is introduced as the (endogenous) tax decentralization measure¹⁴. If there is a crowding out effect, there should be a significant positive effect of the subnational government tax variable on the ratio of central government taxes to GDP. Further as argued above, the expectation is that crowding out will be more likely where there is a larger subnational government tax sector, because these countries will have assigned the broad-based taxes to the lower levels of government. Where subnational governments have been given less access to broad-based taxes, there may be no crowding out at all. Therefore we also include a squared term for the subnational government tax variable.

Estimation and Results. Consistent with the crowding out hypothesis, the share of subnational government taxes in total taxes is treated as endogenous¹⁵. The level of subnational government taxes is determined in part by the tax assignments they have been given.

¹⁴ The subnational government tax ratio is defined and computed as the sum of provincial (state) government tax revenue and local government tax revenue. Ideally, we would define and measure “tax decentralization” as the percent of total tax revenues in a country that is under the control of subnational governments. But data are usually reported in terms of the percent of tax revenues in a country that are reported in subnational government budgets. For discussion of this point, see Ebel and Yilmaz (2003).

¹⁵ In the Hausman test for endogeneity we obtain a chi-square value of -48.28 but the model fitted on these data fails to meet the asymptotic assumptions of the Hausman test.

Data are drawn from a panel of 70 industrialized and developing countries created for the 1990-2003 period. Fiscal data are from IMF (various years) and the independent variables are from the World Bank (World Bank, 2009). Some observations were missing for some years. This unbalanced sample was used in the estimation.¹⁶ Fixed effects were introduced to account for country specific factors.

The instruments used for the endogenous variable, the subnational government share of GDP, are population density, the labor force participation rate, industrial value added and electricity consumption per capita. To test the validity of our instruments, we calculate F-test values in the ranges of 18.2 and 19.8 and 14.96 and 7.91 for the first stage regressions for the subnational tax ratio and subnational tax ratio squared following Bound et al. (1995). The F-test values are greater than the critical values calculated by Stock and Yogo (2002; Table 2) for a desired maximal size of a 5 percent Wald test. We also obtained p-values of less than 0.005 for Anderson-Rubin statistic and concluded that the instruments were robust for inference (Baum et al., 2003). Statistics are robust to heteroskedasticity. For the exclusion restriction, we obtained a p-value of 0.9010 for the Hansen J test for overidentification and were not able to reject the null hypothesis that the instruments are orthogonal to the error term.

The results for the structural equation are presented in Table 2. The non-linear relationship between the level of subnational taxes and the level of central taxes is significant, with an inverted U-shape. At lower levels of subnational government taxes, there is a positive (additive) effect, and at higher levels there is evidence of a crowding out effect.

As expected, the level of central government revenue mobilization is positively and

¹⁶ Some data cleaning was necessary. In some cases the data appear to have been incorrectly reported or the reported taxes and calculated tax ratios did not logically belong in a series either due to a very high or a very low tax ratio that did not match with earlier or later years. The errors were either in subnational or central taxes and in some cases in both levels. All such observations were also dropped.

significantly related to the level of per capita GDP. The trade variable is negative and significant, indicating that for any given level of per capita income open economies do not give up significantly greater levels of central tax revenues. The agricultural share of GDP is significant but does not have the expected sign.¹⁷ The same analysis was repeated excluding the agriculture share as an independent variable, and there was little change in the results, as reported in Table 2. We also use a limited likelihood (LIML) estimation to control for weak instruments (in line with Fuller, 1977) but found little change in the results, also reported in Table 2. The LIML estimator is more robust to the presence of weak instruments as suggested by Hausman, Stock and Yogo (2005).

From these results, we can say that the estimated response of central government taxes revenues (CT) to a difference in subnational government tax revenues (SNT), both adjusted for the level of GDP and all else held constant, is

$$\frac{\partial CT}{\partial SNT} = 2.139 - 0.248 SNT$$

From this equation we estimate that crowding out occurs after the subnational tax ratio reaches 8.63 percent of GDP.¹⁸ When we drop the agricultural share of GDP from the equation, the crowding out threshold drops to 8.29 percent of GDP. Raising local taxes in countries with a low effective tax rate at the subnational government level is likely to add to overall revenue mobilization, perhaps because the increased burden will not be so noticeable. But in countries where the local burden is high and transparent (for example, the Nordic countries) increased subnational government taxes are more likely to crowd out central government tax revenues.

¹⁷ Bird, Martinez-Vazquez and Torgler (2006) obtained similar results for the agriculture and trade variables in their tax effort analysis.

¹⁸ If the equation is specified with total central plus subnational government taxes as the dependent variable, we estimate that total revenue mobilization does not decline until subnational government taxes reach 11.6 percent of GDP.

Equalization

A concern with tax assignment in many countries is equalization, i.e., the taxable capacity and the administrative capacity is significantly greater in the wealthy regions. More local taxing powers in this case would lead to greater fiscal disparities. This is another explanation for the gap in subnational government taxes between industrialized and lower income countries. Countries have dealt with this issue in four different ways. First in Denmark, an equalization formula is in place whereby any revenue collected that exceeds 45 percent of the difference between estimated revenue potential and estimated expenditure needs is paid to an equalization fund which is distributed to local governments whose needs exceed their revenue potential. In Sweden, the equalization rate used is over 80 percent. Spain and Japan use a similar system. In all of these countries, local income taxes are prominent (in the Nordic countries they are the dominant local government revenue source).

While fiscal disparities can be significantly reduced under such a system, it comes at a cost. The tax retained from an additional dollar of income taxes raised is lowered significantly. This has led to a dampening of local government tax effort (OECD, 2006).

Second, under a derivation based sharing system, such as in China, the subnational governments have no taxing powers. However, in the 1980s and 1990s when they perceived that their share of VAT and income tax reached too low a level, they reacted by providing special treatment to enterprises and by shifting revenues toward extrabudgetary accounts. This was halted by a recentralization reform of the intergovernmental fiscal system in 1994 (Bahl, 1999).

Third, some countries use the disparities concern to deny significant taxing powers to subnational governments. The Netherlands and Germany are examples for the OECD, and many developing countries would fall in this category.

Finally, some countries leave the tax-created disparities in place but attempt to resolve the disparities problem with a system of intergovernmental transfers from higher level governments, or by the direct assumption of expenditure responsibility by higher level governments. South Africa, for example, allows cities to levy a payroll and turnover tax, but equalize with an “equitable shares” grants that allocated about one-half as much to rich than to poorer local governments.

Tax Administration

In the industrial countries, tax administration is not usually a binding constraint in the tax assignment decision. Subnational governments assess and collect even broad-based taxes. This is primarily because the state/province level tax administration often is efficient, and where this is not the case, the central government serves as the collection agent. The industrialized countries are able to take advantage of the formality of their economies to mix and match tax administration styles to find an administrative regime that works.¹⁹ In the US, federal-state cooperation allows the state governments to effectively administer the personal income tax by tying into a particular line on the federal return. The Swiss cantons administer their income tax, and the German Länder collect the central income tax. In the Nordic countries, however, the subnational government income tax is administered by the central government.

By contrast, administration is usually the most binding constraint on the tax assignment decision in developing countries. Many policy analyses and country studies focus on the comparative advantage of the central government in tax collection as a reason why the level of subnational government taxation should be low. The tax administration costs can be factored

¹⁹ For a good discussion of the factors underlying the choice between centralized and decentralized administrative regimes, see Martinez-Vazquez and Timofeev (2004).

into the constrained maximization model as a higher price for tax-financed local public services. The level of subnational government taxation, then, would depend on the price elasticity of demand for these goods. The higher the cost of local vs. central tax administration, the less the demand, and the lower the level of tax assignment to subnational governments.

Other considerations work to dampen the level of subnational government taxation in developing countries. Perhaps the most important is political, i.e., the unwillingness of higher level governments to relinquish the power, and the macroeconomic control, that goes with taxing authority. If subnational government budgets are financed primarily by transfers, higher level governments can maintain more control, either by imposing grant conditions, or by making trade-offs between grants and vertical programs.

A second constraint to increased subnational government taxes is the perception that the learning curve for the development of administrative skills is not very steep. The resources necessary to finance these improvements are limited, there might be little new revenue mobilization from this investment for a number of years and in many cases the weak central government tax administration is thought to have first call on any such investment. During the waiting period for subnational government tax administration efficiency to take hold, voters may lose patience and confidence.

Finally, there is the question of how one might monitor the performance of subnational government tax administration, e.g., in order to assess the success of an investment in upgrading the local system. The question of a “reasonable” administrative cost for subnational governments is rarely pinned down in research on this subject. Even the concept of collection cost is not generally agreed. The common practice is to measure administrative cost against collections, e.g., “the cost should be less than 3 percent of collections”. The thinking here is

flawed. If the goal is to choose a tax based in part on its collection cost, the better measure would be the cost of collecting some normative, *target* amount.

What we conclude from this is that the higher cost of tax administration at the subnational government level in developing countries is an important reason for the low level of own source revenues assigned to state and local governments. But in some ways, poor tax administration is as much a whipping boy as a justification. Central governments (and international agencies) could long ago have begun a serious investment in upgrading administrative capacity at the subnational government level, or installing piggyback arrangements with local rate setting powers and no local administrative responsibilities. When one takes the long view, the administrative rationale for limited assignment of taxing powers to subnational governments may be less about administration than about a fear of the consequences of fiscal decentralization.

Summary and Conclusions

The economic theory of tax assignment leads to a conclusion that the level of subnational government taxes should more or less match the level of subnational government expenditures that are characterized by local benefits. Moreover, these expenditures should be financed by taxes whose burden falls on beneficiaries. This would point toward residence based individual income and payroll taxes, destination based sales taxes, property and land taxes and various forms of licenses and user charges, as the best choices for local government taxes. It is up to the central government (or the Constitution) to work out a tax assignment that gives this balance. Grants should be restricted to dealing with services where there are national priorities, and with equalization.

The real world of tax assignment has drifted from the model. The overall level of subnational government taxes is much higher in most industrialized countries than in developing countries, i.e., the vertical imbalance in the intergovernmental fiscal system is greater in the developing countries.²⁰ Moreover, while subnational governments in many OECD countries use individual income taxes, destination based sales taxes and property taxes, as the theory would prescribe, the developing countries do not. The question raised in the above discussion is why the practice follows the theory in some types of countries but not in others.

The discussion in this paper considers four reasons. First, the accountability feature that is the basis for arguing the importance of local government taxation, often does not lead to a capturing of the welfare gains from fiscal decentralization in developing countries. This is because a popular voting regime is not in place or because voters do not have the information necessary to effectively use the vote. Second, there is a fear at the central level that giving more discretionary taxing powers to local governments will lead to a crowding out of central revenues. Third, tax decentralization may lead to unacceptable fiscal disparities and in such cases equalization schemes become problematic. Fourth, tax administration costs are higher for subnational governments than for central governments, and narrowing this differential may not fit the interests of centralists.

The result of all of this is a kind of perfect storm where the elements have come together to dampen the relative level of subnational government taxation in developing countries. Central governments generally do not want to give up taxing powers for political or perhaps macroeconomic reasons. Elected officials in subnational governments are not enthusiastic about the accountability that comes with taxing power, and local voters have neither the information

²⁰ The exceptions among the OECD group are some of the unitary countries, notably the UK, Ireland, The Netherlands and New Zealand.

(nor perhaps even the vote) to push for such a change. The weak tax administration capabilities of subnational governments provide good cover for not moving toward the decentralization of taxation powers.

As a matter of public policy, however, tax centralization may exacerbate some fiscal problems in low income countries. Fiscal discipline rules in industrialized countries are usually based on discretionary local taxing powers and an intergovernmental transfer system that forces a hard budget constraint on the lower level governments. Without significant taxing powers, the avenues to budget balance that are open to subnational governments are to reduce spending, to borrow, or to lobby the higher level government for additional transfers.

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Table 1

	Subnational Government Tax Revenues As a Percent of GDP^a			
	1970s	1980s	1990s	2000s
OECD	8.59 (15)	9.49 (15)	8.61 (20)	7.8 (15)
Transition		7.55 (3)	4.62 (19)	4.55 (21)
Developing	1.42 (18)	1.36 (18)	1.98 (25)	1.57 (23)

^a The average value for the decade is reported in each cell. The number of countries reporting is shown in parenthesis.

Source: Computed from IMF (various years).

Table 2
Regression Estimates of the Determinants of Variations in Central Government Taxes as a Percent of GDP ^{a)}

VARIABLES	Instrumental Variables Estimates (Second Stage) 1990 to 2003		LIML Coefficients ^{b) e)}
	2SLS		
	Coefficients ^{b) e)}	Coefficients ^{b) e)}	
Subnational government taxes as a percent of GDP ^{c)}	2.139*** [0.00902]	2.653*** [0.00697]	2.157*** [0.00935]
Squared value of subnational government taxes as a percent of GDP	-0.124* [0.0728]	-0.160** [0.0357]	-0.125* [0.0743]
Agriculture sector share of GDP	0.280*** [2.04e-05]	0.271*** [0.000427]	0.280*** [2.22e-05]
Per capita GDP ^{d)}	0.277*** [0.00227]		0.276*** [0.00239]
Value of imports plus exports as a share of GDP	-0.0364*** [0.00333]	-0.0459*** [0.00164]	-0.0364*** [0.00359]
First Stage F-test	14.56 7.91	16.70 10.08	14.56 7.91
First Stage p-value	0.0000 0.0000	0.0000 0.0000	0.0000 0.0000
First Stage partial R2 of excluded instruments	0.0854 0.304	0.0736 0.0279	0.0854 0.0304

Notes:

- ^{a)} Estimated with an unbalanced panel for 55 countries for the period 1990 to 2003.
 Estimation with country fixed effects.
- ^{b)} Probabilities reported below regression coefficients. *** indicates significance at 0.001 level, ** at 0.05 level and * at 0.1 level.
- ^{c)} Instruments are rural population as a percentage of total population, population density as the population per square kilometer, electricity consumption measured as kWh per capita and labor force participation rate measured as the percentage of 15+ population in the labor force.
- ^{d)} In US dollars.
- ^{e)} N = 520