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Reducing Reliance on Natural Resource Revenue and Increasing Subnational Tax Autonomy in Bolivia

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Abstract[*]

This paper address options for restructuring the revenue system of Bolivia's subnational governments, particularly prefectures, emphasizing reduction of dependence on natural resources and strengthening of subnational tax autonomy. The paper additionally identifies tax instruments or tax bases that could be assigned exclusively to regional governments or shared with the central government, assessing their main advantages and disadvantages through a simulation of revenue generation. The results show that several options exist for increasing the tax autonomy of local governments. The tax instruments proposed in this paper carry relatively low administrative costs. In fact, the taxes proposed would not require the establishment of new agencies but could be collected by existing agencies and, in the case of energy and fuel taxes, by producing and distributing firms.

JEL Classification: H21, H23, H24, H25, H26, H71
Keywords: Tax reform, Tax autonomy, Subnational governments, Prefectures, municipalities

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Introduction

This paper provides a set of options aimed at restructuring the revenue system of subnational governments in Bolivia, with a special focus on the reduction of their dependence on natural resources and the strengthening of subnational tax autonomy. This applies particularly to prefectures, which are entirely dependent on natural resource rents and have no tax autonomy.

Recent Bolivian legislation has confirmed the present tax allocation for municipalities, while strengthening their tax regulatory powers. The changes for prefectures were minimal, although the central government is empowered to devolve, partially or fully, tax bases to subnational governments. It is within the context of possible devolution that the options here presented for prefectures should be viewed. For municipalities, the paper stresses the importance of expanding the collection of existing taxes. This will require not only better tax administration, but also greater efficiency in the provision of basic infrastructure.

Based on a set of widely used criteria, the paper singles out a number of tax instruments or tax bases that could be assigned exclusively to regional governments or shared with the central government. The paper assesses the main advantages and disadvantages of these instruments and their impact through a simulation of the revenue that they could generate. It shows that there would be a number of feasible choices, if the tax autonomy of local governments were increased.

The paper is structured in two main parts. Part I describes the current system of intergovernmental relations in Bolivia, with a particular emphasis on financing. Part II contains an evaluation of the scope for expanding tax collection at the municipal level, with a special emphasis on the property tax, and presents options for new tax instruments for prefectures and their evaluation.

Part I

The State of Decentralization in Bolivia and Implications of Recent Reforms for Sub-national Expenditure and Revenues

1. Public Sector Size and Constitutional Arrangements

Pending the full implementation of the provisions of the new Constitution of 2009,[1] Bolivia will be a unitary state with two levels of sub-national government: municipalities and prefectures.

Despite its per capita GDP, which is the lowest in South America, Bolivia has a relatively large public sector. The share of total public sector expenditure in GDP is above 30 percent. Tax revenue is also relatively high, considering the country's GDP. As a matter of fact, Bolivia exerts a tax effort that is above the Latin American average. The tax-to-GDP ratio has been stable in recent years at above 27 percent. In Latin America, only Argentina and Brazil have higher ratios, but their economies are much more developed.

An important feature of Bolivian taxation is the large share of taxes collected on oil and gas. Oil and gas tax revenues represent a third of total tax revenue. While this does not imply an overarching dependence on natural resource revenues, it indicates that Bolivia's revenue capacity is subject, to a substantial extent, to price fluctuations of these resources and to their continued production.

Table 1. Bolivia: Public Sector Expenditure and Revenue as Percent of GDP, 2007-2011

	2007	2008	2009 Preliminary	2010 Estimated	2011 Projected
Total expenditure	31.8	34.6	35.5	31.9	34.1
Of which: Current expenditures	20.0	22.7	22.9	21.6	22.3
Total revenue	34.4	38.9	36.1	33.9	34.8
of which: Tax revenues	27.8	28.5	26.9	26.4	27.1
IDH and Royalties	9.0	8.5	8.3	7.9	8.5
Non-oil and gas-related taxes	18.8	20.0	18.6	18.5	18.6

Source: IMF 2011 Staff Report on the Article IV Consultation with Bolivia.

[1] The constitution mentions the possibility of creating Regions through the full or partial merging of existing prefectures, which would also devolve part of their responsibilities to the newly created entities.

With respect to expenditures, Bolivia is relatively decentralized, although measuring the degree of decentralization is difficult and controversial. The various sources of available data are neither consistent nor complete, particularly with reference to consolidation of operations between the various levels of government. According to the IMF's *Government Finance Statistics*, in 2007 (which for Bolivia is the latest available year) the central government was responsible for 55.1 percent of general government expenditures, the prefectures for 25.8 percent, and the municipalities for the remaining 19.1 percent. These figures are reported in Table 2 and refer to direct expenditures of each level of government, net of intergovernmental transfers. (The four upper rows are not consolidated and appear in italics.)

However, these data overestimate the importance of subnational governments, because the salaries of teachers and health personnel are included in the expenditure of prefectures, while in reality these public employees are fully managed by the central government. When the correction is made, the share of the expenditure of prefectures decreases by about two-thirds, and the resulting figures are consistent with comparative data. Table 1 in the Statistical Annex reports a 26.5 percent share of subnational government expenditures. This share has grown substantially in recent years, and situates Bolivia slightly below federal systems, but on a par with countries, such as Colombia, that have embarked on a process of substantial expenditure decentralization.

Table 2. Bolivia: General Government Expenditure and Revenue by Level, 2007

		Millions of Bolivianos		
	Central	Departments	*Local*	*General*
Gross Current Expenditure	*22,467*	*7,088*	*2,836*	*25,544*
Capital expenditure	*3,050*	*3,170*	*4,000*	*10,220*
Total non financial expenditure	*25,517*	*10,258*	*6,836*	*35,764*
Grants	*5,728*	*1,052*	*13*	*36*
Direct expenditure	19,789	9,206	*6,823*	*35,728*
percentage share by government	55.4	25.8	*19.1*	*100.0*
of which: salaries	4,991	5,069	*830*	*10,890*
other current	11,748	967	*1,993*	*14,618*
Revenues	26,797	10,479	*7,477*	*37,906*
of which: transfers from central government		9,541	*4,594*	
Net lending/borrowing	1,280	221	*641*	*2,142*

Source: Authors' compilation based on IMF *Government Finance Statistics*.

In fiscal terms, municipalities are much more important than prefectures, with nearly double the total expenditures of prefectures. In addition to the provision of typical urban services, such as garbage collection, sewerage, street cleaning, and lighting, municipalities are also assigned—although the actual transfer has not yet taken place—the responsibility of providing a few wide-area services, such as education and health care. According to the prescriptions of the normative literature, these responsibilities should be assigned to an intermediate level of government, i.e., in the case of Bolivia, to prefectures. Having these broader responsibilities creates problems, particularly for smaller municipalities. Prefectures have traditionally been a deconcentrated level of government, and their present structure still embodies many features of deconcentration.

The system of intergovernmental relations in Bolivia is also characterized by a deep vertical imbalance. Transfers represent almost the totality (91 percent) of revenues for prefectures and more than two-thirds for municipalities (Table 2).

The Constitution of 2009 introduced a number of changes in the structure of subnational government. They are: i) a n ew self-employed status for all subnational governments, ii) the creation of self-employed subnational governments for the indigenous communities and, iii) the creation of Regions, at the initiative of prefectures. However, the implications of the constitutional changes—and of the new decentralization framework law—for subnational finances cannot yet be fully assessed.

The policy responsibilities assigned to prefectures have increased. However, the expenditure implications of the most important changes are not yet clear. The policy areas assigned to prefectures will be still centered on the promotion of economic and social development and the provision of infrastructure. There is no specific level of expenditures clearly associated with these functions. Running and recurrent costs are small compared to capital costs. In other words, it is difficult to find a benchmark that could help evaluate the financial implications of the changes. The additional responsibilities assigned to municipalities are fewer, and they are also related to the promotion of economic and social development and the provision of infrastructure.

The new local governments that will be created by the Indigenous Communities will, in principle, have to provide the full range of local services, plus some additional ones, such as the provision of justice in accordance with local laws. Their impact on total subnational expenditure

presumably will not be substantial. This is because in some cases the transformation will be mostly nominal: existing local government units (municipalities) will take on a new denomination. In other cases, there will be a splitting and/or reshaping of existing local units. This could impact expenditure mostly through missed economies of scale, which, in any case, are likely to be modest. Moreover, the size of the population involved in the transformation is likely to be limited (although there are divergent views on this issue). There is no apparent reason why the newly created Indigenous Communities should have a tax and revenue regime different from that of other subnational governments. Clearly, their poverty and isolation should be taken into consideration in the grants system.

The largest impact of the process of decentralization on expenditure and revenue is related to the transfer of education and healthcare personnel to the local level. This is a highly politically sensitive issue that has not yet been defined in the legal texts, although, as mentioned above, salaries for personnel in these areas are in the budget of prefectures. The effective transfer of responsibilities in these areas would have huge financial implications, given the weight of these two areas in general government expenditures (approximately a fifth and a seventh of total public expenditure, respectively). There are, however, no indications that the transfer of these two functions will take place any time soon. Teachers are resisting the change for fear of losing their pension rights and of being moved to more remote areas. These reasons also delay the transfer of healthcare personnel.

2. Revenue System

2.1 Municipalities

Bolivian municipalities rely increasingly on transfers from the central government for the financing of their expenditures (Table 2 in the Statistical Annex). Own revenues—taxes and fees—were equivalent to 76 percent of transfers in 1994; by 2008, this ratio had decreased to around 30 percent.

Transfers—consisting mainly of shared revenues (*coparticipaciones*)—have grown much faster than own revenues, due to the increasing share of the Direct Tax on Hydrocarbons (*Impuesto Directo sobre Hidrocarburos*—IDH), a royalty on gas levied by the central government, transferred to municipalities in 2005. The main criterion for the distribution is population size. The allocation of transfers on the basis of population size should put

municipalities with the largest flows of immigrants at a disadvantage, because population data are calculated by census year, while the demand for services is related to the current size of the population.

The IDH, which represented 37 percent of total transfers in 2008, is highly cyclical, as it is levied on the price of gas. The rising international price of gas has yielded a huge increase in the IDH and, consequently, transfers. This has weakened incentives for municipalities to expand their own revenue collection.

The importance of taxes and fees is closely related to the size, in terms of population, of municipalities. Metropolitan municipalities collected on average US$25.1 in taxes per capita in 2008. The smallest municipalities (<15.000 inhabitants) collected on average US$5.7. The corresponding figures for fees and various contributions were US$7.9 and US$3.7, respectively.

Municipal taxes include the property tax, the tax on vehicles, and the tax on transfers of property and vehicles. These are typical local taxes, although the tax on vehicles is frequently assigned to the intermediate level of government, such as regions or departments. These taxes satisfy most of the requirements prescribed for subnational taxation, such as low mobility, little distortion, low level of exportability, even distribution of the tax base across the territory, etc.

These taxes also have substantial revenue potential. Comparative data on reliance on the property tax in Latin America (Table 3 in the Statistical Annex) put Bolivia at the top of the list. Collections of the property tax are 0.62 percent of GDP; this is slightly higher than the level reached in Chile and Colombia, substantially higher than in Argentina, Brazil and Mexico, and about four times higher than in Ecuador, Peru, and Guatemala. The relative performance of Bolivia is especially impressive when the size of the potential tax base is considered. The estimated per capita base of the property tax in Bolivia is one-fourth of that of Argentina, one-third of that of Brazil, and about half of that of Ecuador and Peru (Table 4 in the Statistical Annex). In terms of urban property, which represents by far the largest component of the tax base, the differences are much larger.

At the same time, Latin American countries hardly exploit the potential of the property tax (Table 5 in the Statistical Annex). The share of collections in GDP in Latin America is smaller than the average of developing countries, and one-eighth of the average of OECD countries. Bolivia fares slightly better than the group of developing countries.

A widely cited problem with Bolivian municipal taxation is the lack of discretionary power. There is absolutely no discretionary power for vehicle taxation, because the value of vehicles, the identification of vehicles, and the tax rates on vehicles are determined by the central government.

For the property tax, a progressive schedule of rates is set by the central government. Each year, a presidential decree determines the values associated with the parameters that municipalities must apply to determine the value of each individual property, such as the zone, age, quality, slope of land, etc. Municipalities are responsible for subdividing their territory into a predetermined number of zones. They are also responsible for the annual reassessment, based on inflation, of the basic element for the determination of the tax base, which is the value of the square meter of both land and buildings (to which the various parameters apply). However, few municipalities have updated these values in recent years; thus, the tax base is lagging behind the evolution of market prices. They also have some discretionary power in the selection of the parameters used to determine the value of each individual property. In fact, in current practice, these parameters vary to some extent between municipalities. More importantly, municipalities are also responsible for keeping the register of properties, and thus for determining the coverage of the tax, by updating the register of taxpayers, adding new properties to it, and recording the changes in the characteristics and thus in the valuation of the existing properties.

In summary, despite their lack of discretionary power, Bolivian municipalities potentially have the capacity to determine the volume of collections deriving from their taxation powers. The most important component of this capacity, which is frequently neglected in the literature, is urbanization policies. Specifically, municipalities can react to the lack of discretionary powers by reducing red tape—e.g., by expediting building and renovation permits—and by rapid urbanization of new areas to satisfy the demand for housing coming from the (migrating) population. This happens particularly in the large cities, to which rural inhabitants migrate and create a corresponding demand for more housing. New construction should take place in planned and serviced areas and should be authorized by local officials.

When building proceeds without authorization, there is a corresponding increase in illegality/informality. Since they were built without legal authorization, the new buildings cannot be registered and subjected to taxation. Estimates provided by local officials in La Paz and Cochabamba suggest that the ratio of illegal/non-registered buildings to registered ones is

not less than 20 percent. *Ceteris paribus,* this leads to a loss of the same amount of revenue in terms of value, since new buildings have on average the same value as old ones. In other words, it is the capacity to provide infrastructure and services that determines the use of taxing powers.

Obviously, delays in infrastructure are caused by lack of funds. Thus, municipalities find themselves in a vicious circle: they are slow to provide infrastructure and services, in part because they do not have adequate funds, but, since they are slow, they do not collect enough taxes. These considerations highlight the need to improve the functioning of all areas of local administration.

Clearly, administration of the property tax is itself deficient. In addition to the considerable lag time between the construction of new properties and their inclusion in the registry of the municipalities just noted, there are considerable arrears in payments that for the large cities are estimated to represent about 10-15 percent of tax collections. Although a growing number of municipalities use the services provided by RUAT (*Registro Único para la Administración Tributaria Municipal*),[2] this is not enough to improve administrative substantially, since all of the essential components of the process of assessing and collecting the property tax remain with the municipalities.

For vehicles, most of the administration is the task of RUAT, which maintains the register and determines the tax base (value of vehicles) according to tables provided by the central government. In essence, municipalities are only responsible for the collection of the tax (and the arrears).

The revenue from the transfer tax on property and vehicles is clearly determined by the circumstances discussed above. In principle, the tax on transfer of property should apply to the effective (market) value of the transaction. In practice, however, municipalities accept assessed values that are considerably lower than the market ones, hence the paucity of collections.

[2] The tasks of RUAT with respect to property taxes are the following: It receives lists of properties from municipalities; it updates the tax base, cross-referencing the information from municipalities with the tables on parameters issued yearly by the central government; and it returns the list to the municipalities, which proceed to collect the taxes.

2.2 Prefectures

Revenues generated by the prefectures themselves are almost irrelevant: they represent only 2 percent of total revenues, while 90 percent come from transfers, which, according to the official classification, also include royalties.

Oil and gas are the predominant base on which the revenues—excluding the minimal own revenue and loans—assigned to prefectures are levied. The Hydrocarbons Law mandates an 18 percent royalty for oil and gas. Twelve of these percentage points go directly to the producing prefectures, 1 percentage point goes to the prefectures of Beni and Pando, and the remaining 6 percentages points go to the National Treasury.

According to the Hydrocarbons Law and other legislation, the taxes collected as IDH, which is in fact a royalty being levied with a tax rate of 32 percent on the gross value of production, are allocated among the different levels of government according a four-layered process, illustrated in Table 3 below. The first allocation determines the shares going to the producing and the non-producing prefectures and the central government. The second allocation guarantees that the producing prefectures will receive at least as much as the non-producing ones. It also makes a special allocation from the National Treasury to the three most populous cities. The third allocation defines how the funds received by each prefecture have to be allocated between its budget, its municipalities, and its public university. Finally, since 2008, a 30 percent share of IDH received by prefectures and municipalities has to be paid back to the central government, to finance the Pension Fund (*Renta Dignidad*).

From 2007 to 2008, the fourth allocation of the IDH produced a large shift in the sharing rates between the central government and the local governments, as reported in Figures 1 and 2. The share of rent from hydrocarbons going to prefectures has decreased by almost 50 percent, specifically from 46 percent to 30 percent. The decrease in the share going to municipalities has also been substantial, although somewhat less, declining from 22 percent to 17 percent of the total.

Table 3. Allocation of Royalties and IDH Collections among Levels of Government in Bolivia

Instrument	First allocation	Second allocation	Third allocation	Fourth allocation
Royalties Tax rate 18 percent	Amount corresponding to tax rate of: 11 percent to Producing Prefectures; 1 percent to Beni (2/3) and Pando Prefectures (1/3); 6 percent to CG			
IDH Tax rate 32percent	Total collections divided to: Producing Prefectures 12.5 percent; Non- producing Prefectures 31.25 percent; (6.25percent of IDH each) Central Gov-ernment 56.25 percent	Compensation from CG to producing Prefectures that receive less than 6.25 percent of IDH. - 8 percent of IDH to Municipalities of the three most pop-ulous prefectures (Cochabamba, Santa Cruz, La Paz) according to population	IDH distributed to Prefectures goes: 24.39 percent to Prefectures; 66.99 percent to their Municipalities Public University of the Prefecture 8.62 percent	30 percent IDH received by each Prefecture and Municipality goes to *Renta Dignidad* (pensions)

With respect to minerals, royalties are the only instrument used to share the rent among the different levels of government. The rates are determined by the central government, and the sharing mechanism is much simpler than for hydrocarbons. Pursuant to a law and regulation passed in 2007, all mineral royalties are devolved locally: 85 percent goes to the government of the prefecture where the mine is located, and 15 percent to the municipality. (There is no allocation to other municipalities in the prefecture). As for revenues from hydrocarbons, there are strict rules for the use of these royalties: for prefectures, 85 percent of the transfer must be spent on publ ic investment and 10 pe rcent on mineral exploration and development, and on environmental projects. For municipalities, 85 percent must be spent on public investment, half of which on projects in the area affected by mining operations and half on public investment in the municipality. Minerals play a minor role compared to gas revenues: in 2009, royalties on minerals represented less than one-fourth of royalties on gas.

The 85 percent investment earmark for prefectures makes sense from the point of view of the volatility of these revenues, reducing the problem of financing recurrent expenditure. At the

same time, it neglects the need to consider running costs when planning new investment projects. All of this underscores the need to finance prefectures with revenues that are less dependent on natural resources.

Figure 1.

Bolivia: Allocation of Hydrocarbon Rents by Level of Government, 2008

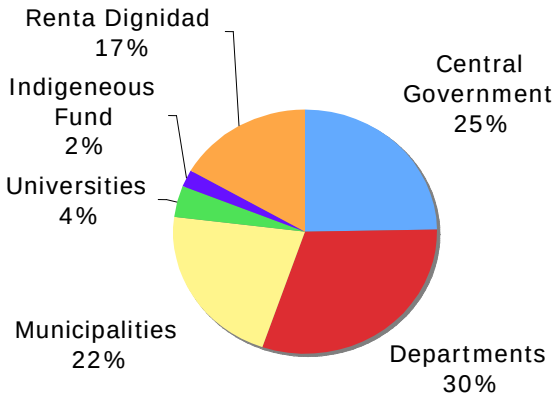
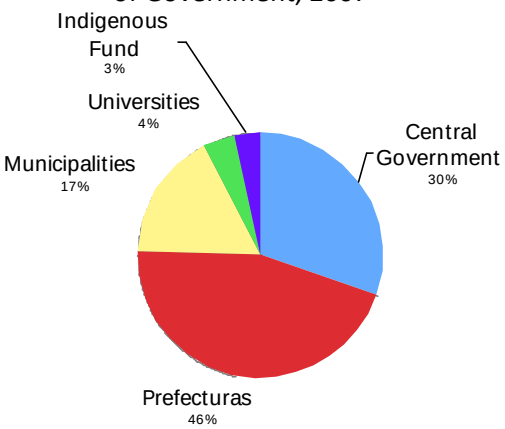


Figure 2.

Bolivia: Allocation of Hydrocarbon Rents by Level of Government, 2007



The remaining transfers paid to prefectures, namely the Special Tax on Hydrocarbons and Derivatives (*Impuesto Especial sobre Hidrocarburos y Derivados—IEHD*), an excise tax levied on gas and oil products such as gasoline and diesel, are also related to hydrocarbons—making total transfers completely dependent on price and output fluctuations of natural resources (see Figure 1).

The only discretionary instrument available to prefectures for increasing their level of revenues is borrowing. This is a risky instrument for them because prefectures have no tax handles to service their debt and cannot even predict future trends in transfers because of their dependence on gas price and output fluctuations.

The distribution of transfers benefits mostly the gas-producing prefectures and the smallest ones (due to some lumpiness in their allocation). Per capita allocations of transfers (Table 6 in the Statistical Annex) range from a minimum of about US$19 for La Paz, to a maximum of US$378 for Tarija, which is the richest prefecture. Own revenues do not modify the distribution of total revenue that is highly debatable on equity and efficiency grounds. The smallest prefectures have huge per capita revenues, while the largest prefectures have the smallest, despite the concentration of poverty in the urban areas.

3. Assignment of Tax Bases

In June 2011, the Bolivian parliament passed a law called *Ley de Clasificación y Definición de Impuestos de Dominio de los Gobiernos Autónomos,* which assigns the existing tax bases to the different levels of government. The law, which is mandated by the Constitution, introduces (or reinforces) a system based on the intergovernmental separation of the tax bases. It does not substantially change the present assignments, continuing the dependence of prefectures on natural resources and confirming the clear preference for having municipalities fiscally stronger than prefectures. Most tax bases will continue to remain under the central government, which maintains the right, also conferred by the Constitution, to devolve some of its tax bases to subnational governments.

The municipalities will keep their existing tax bases, namely urban and rural property, property of vehicles, and transfer of property and vehicles. They will also receive a consumption tax on *chicha* (a fermented drink derived from maize and brewed mostly by farmers, the

consumption of which is concentrated in a few departments of the country) and the possibility of levying taxes on damages to the environment caused by exhaust fumes.

Municipalities will have, in principle, full regulatory and administrative powers with respect to their tax bases. As a consequence, the present frequently lamented situation of missing discretionary powers should disappear, although the central government will still retain its final say through the submission of municipal decisions to a newly created agency in charge of coordinating subnational fiscal decision making.

At the same time, the law crystallizes the assignment of the administration of municipal taxes to municipalities, making more conjectural the possibility of shifting it to prefectures, unless done on a purely voluntary basis. There are, however, additional reasons that render such a shift less appealing in practice, as will be discussed later in this paper.

Tax assignments to prefectures remain very limited. Specifically, prefectures will be assigned: i) the inheritance tax, currently assigned to the central government; ii) the taxation of property of motor aircraft and boats (it is not specified whether commercial airliners can also be taxed, but previous versions of the law suggest that they will be exempt); and iii) the possibility of levying taxes on damages to the environment not attributable to vehicles, minerals, hydrocarbons, or electric energy.

The inheritance and gift tax (*Impuesto a la transmisión gratuita de bienes*) plays a minuscule role in Bolivia, as it does elsewhere. In 2009 it amounted to 0.12 percent of national tax collections (Table 4). Revenues from this source—amounting to less than 2 Bolivianos per capita—would contribute minimally to departmental revenues. Low collections are due, among other factors, to the very restricted tax base (only real property and vehicles are included) and to low tax rates (1 percent for transfers between parents and children and between spouses; 10 and 20 per cent for other cases). This tax suffers basically from the same problems as the municipal tax on transfers of property and vehicles. Clearly, the prefectures could strive to expand collections, but they would have to rely exclusively on the tax rates and, with greater difficulty, on the assessed value that is currently determined by the municipalities (for properties) and by the central government/RUAT for vehicles. Prefectures cannot expand the tax base, since the law states clearly that only property subject to registration can be included in the tax base.

The other two tax handles reserved for prefectures also have a very modest revenue potential. If we exclude commercial airliners, the tax base on planes and boats is also small,

given the ease of evading taxation (by using foreign registries) and the fact that Bolivia, having no outlet to the sea, has only a small fleet of boats.

Table 4. Collections of the Inheritance and Gift Tax – 2009

	Collections (Bolivianos)	percent
Chuquisaca	795,652	4.3
La Paz	5,514,522	29.8
Cochabamba	4,387,986	23.7
Oruro	733,551	4.0
Potosí	491,502	2.7
Tarija	640.975	3.5
Santa Cruz	5,662,817	30.6
Beni	230,946	1.2
Pando	61,940	0.3
Total	18,519,891	100.0

Source: Servicio Nacional de Impuestos.

Environmental taxation, a potentially powerful tax instrument, is currently untapped in Bolivia. There are, however, a number of questions about its real potential. First, the most important economic activities currently carried out in Bolivia and heavily impacting on the environment are excluded from the assignment to prefectures. Second, the tax base assigned (environmental impact) is only vaguely defined and would require specification before prefectures could actually use it. For example, would water usage, or water pollution, be the tax base assigned to prefectures? Would prefectures be allowed to impose a carbon tax? In any case, only pollution from households and from economic activities not related to minerals, hydrocarbons, and electricity could be taxed by prefectures. This would considerably reduce the base for environmental taxation. Finally, the actual use of taxes on environmental pollution around the world is quite small, mostly due to concerns about their impact on production costs and consequently on the level of output. This concern may well also affect prefectures' preparedness to use environmental taxes.

Part II
Options for Mobilizing Subnational Revenues

1. Introduction

Suggesting the introduction of new sources of tax revenue for Bolivian subnational governments could be interpreted as implying that the country's overall tax burden is low and should be increased. This is not the view espoused in this paper. The Bolivian tax burden is relatively high, and the public sector has a growing surplus, which amounted to 2 percent of GDP in 2010, up from 0.3 percent the previous year. The central government is estimated to have registered a deficit of 2 percent of GDP, and the rest of the public sector, including subnational governments, a surplus of 4 percent of GDP. Consequently, there is no need to increase overall tax pressure, nor is there a need to increase the revenue of subnational governments before new expenditure responsibilities are transferred to them. There is, however, a need to develop tax instruments that can replace or reduce the dependence on revenues from hydrocarbons.

Thus, the increase in revenue that would be collected using all of the tax instruments considered here should be offset by corresponding reductions of national taxes and inter-governmental transfers. It is also suggested that subnational governments be given some discretionary power in the determination of the tax rates applied under the new tax instruments. In this way, they would be able to adjust the level of their expenditure to the preferences of their citizens by equating marginal benefits from expenditure to marginal costs from taxes.

2. Municipalities

No attempt is made here to identify new tax instruments for municipalities. The three main instruments that are currently available and that have been confirmed by the above-mentioned law on the classification of tax bases have a revenue potential large enough to fund their expenditure responsibilities, at least until the responsibility for administering education and healthcare is transferred to them. International experience shows that the property tax can provide adequate revenue for local governments to finance the provision of basic urban services for which they are responsible. This applies, obviously, to the large and wealthy municipalities, while the smaller, poorer ones must rely on transfers. In addition, Bolivian municipalities have been assigned the tax on vehicles, which is usually assigned to the intermediate level of government, and the tax on transfer of property and vehicles, for which no clear pattern of

assignment prevails but whose revenue is potentially substantial. Clearly, the main reform to be undertaken in Bolivia is increasing incentives for municipalities to strengthen their tax collection.

This paper provides an estimate of the potential of the property tax to finance municipal expenditure. It reinforces the argument that current municipal tax handles are on average large enough to meet the financing requirements of current municipal expenditure assignments. There is a huge variation across Bolivian municipalities in the degree to which they benefit from the property tax. Per capita collections are, as expected, positively associated with the size of municipalities, but also with the effort exerted in the municipal administration of the tax. Table 5, referring to the largest Bolivian municipalities, offers some indication of the variation in effort. The share of taxpayers/properties in the population (third column from the left, illustrating the effort made to reach taxpayers) varies substantially among municipalities and seems to be an important determinant of collections. In fact, the variation is much higher in the per capita collections (last column on the right) than in collections per property (the next to last column on the right), meaning that the municipalities listed in the table do not differ much in their treatment of taxpayers, i.e., of those who are caught in their net. However, nets have different densities.

Frequent changes of mayors and of the governing coalitions may explain a part of the huge variance in municipal tax collection. Because Bolivia does not have a local civil service, the changes in political orientation bring with them a reshuffling of the managerial staff. Consequently, municipalities frequently restart their actions almost from scratch.

Moreover, there is no link between the transfers from the central government and municipal tax collection. This means, obviously, that there is no direct incentive to expand collections in order to receive more grants. The lack of direct incentives has been compounded by the growing weight in revenue transfers derived from gas and oil. In principle, this affects all municipalities equally and cannot be used to explain the variance of behavior. On the other hand, the lack of incentives, deriving from the method of allocating the grants and from their rapid recent growth, favors the emergence of idiosyncratic factors, such as the emergence of mayors and political coalitions with different interests and degrees of capacity to carry out reform.

Table 5. Basic Property Tax Indicators in a Sample of Large Bolivian Municipalities

Prefecture	Number of properties registered, 2011	Population 2010	Percentage ratio of properties to population	Total collections 2009, in Bolivianos	Collections per property, Bolivianos	Collections per capita, in Bolivianos
Cochabamba	118,587	618,384	19.2	89,481,050	755	145
El Alto	190,338	960,767	19.8	44,681,614	235	47
La Paz	157,365	840,209	18.7	175,437,044	1,115	209
Montero	16,313	98,539	16.6	4,143,497	254	42
Oruro	73,055	232,265	31.5	21,071,103	288	91
Potosi	32,871	167,439	19.6	7,438,040	226	44
Sacaba	50,778	179,847	28.2	7,579,430	149	42
Santa Cruz de La Sierra	209,247	1,651,436	12.7	152,544,497	729	92
Sucre	52,154	306,54	17	25,668,508	492	84
Tarija	36,206	211,018	17.2	18.783.512	519	89
Trinidad	14,598	97,625	15	4,672,616	320	48
Villa Montes	4,374	27,550	15.9	1,021,599	234	37
Yacuiba	11,411	138,414	8.2	4,382,606	384	32

Source: Number of properties: RUAT; population: INE; collections: Ministry of Finance.

The gap between actual and potential tax collections and the factors that determine it may be explained with the use of the approach developed by Bahl and Martínez-Vázquez[3] summarized by the following identity:

$$TC = \frac{TC}{TL} \cdot \frac{TL}{TAV} \cdot \frac{TAV}{TMV} \cdot \frac{TMV}{MV} \cdot MV \qquad (1)$$

TC = total collections

TL = tax liability: tax due by taxpayers as determined by municipalities

TAV = taxable assessed value as determined by municipalities

TMV = taxable market value

MV = market value

[3] See Bahl and Martínez-Vázquez, 2008.

The first term on the right-hand side, property tax collections over tax liability, may also be called the collection ratio. If all taxpayers were punctually and fully paying their liabilities, the ratio would be equal to one and no leakage would exist.

The second term on the right-hand side is the share of tax liabilities over taxable assessed value. This corresponds to the average statutory tax rate. Clearly, this a cr ucial element to transform the potential tax base into actual collections. In this case, leakages derive only from mistakes in calculations.

The third term represents the assessment ratio, the share of taxable assessed value in taxable market value, by which the law establishes the share of the taxable market value on which the tax liability is actually going to be computed. There is no l ogical need to have an assessment ratio lower than one. However, in many cases, a ratio less than one is used to promote the public's acceptance of the tax and to reduce complaints about the assessment criteria. One way to reduce the assessment rate in practice is by not updating the assessed value for inflation. This can also be referred to as missed revaluation.

The fourth term is the ratio of taxable market value over (full) market value. It summarizes all the effects of preferential treatments, exemptions on the tax base, and errors in assessing the true market value of the property. Errors also include also the failure of the tax administration to identify properties and thus to include potential taxpayers into the net. The product of the fourth and fifth terms in equation (1) represents the tax base that is actually available for taxation.

An attempt can be made to estimate the loss of potential collections for Bolivian municipalities, using the limited available information. Starting from the first term, an evaluation made by the municipalities of La Paz and Cochabamba (representing about 20 pe rcent of the total population, but a much larger share in terms of property tax collection) situates at the collection ratio around 85 percent. There is no reason to assume that the second term has to be different from the statutory rate, the more so considering that the calculation is done by RUAT.

The third term plays a crucial role in Bolivia, as in most countries, as a result of the infrequent adjustment of assessed values to inflation. In recent years practically all Bolivian municipalities have not made such an adjustment. Considering that the average annual inflation

rate over the last five years has been nearly 7.5 percent, and assuming that missed adjustment refers to only the last five years on average,[4] the third term would have a value of 0.5 percent.[5]

The fourth term represents the inability, or unwillingness, of municipalities to assess property values and to identify new properties and taxpayers. Interviews with municipal representatives revealed that the ratio in question is around 85 pe rcent, meaning that non-registered properties and/or non updated values account for 15 per cent of the total.

In summary, the ratio of the assessed tax base to the market value should be equal to 0.85 x 0.65 x 0.85 = 0.47 percent. This means that tax collections lost due to policy decisions and administrative weaknesses amount on a verage to more than 50 p ercent of potential collections. This is clearly a huge gap, the elimination of which would require a wide range of actions by municipalities that should be taken steadily but with determination. These actions include both changes in legal discipline and administration aimed at: i) giving discretionary power to municipalities to adjust collections to their perceived expenditure needs, ii) stimulating individual municipalities to better exploit their revenue potential, and iii) extending coverage, so that the burden on current taxpayers could be lowered without changing collections.

There are at least four main ways to improve local tax collection and to reduce the huge disparity of outcomes. The first is the creation of a local civil service. Presently, efforts to improve local tax administration are quite sporadic because the frequent electoral changes of the mayor and the council are accompanied by a replacement of the highest-ranking civil servants, forcing the administration to start from scratch every time. The second instrument is improving urbanization policies to speed up t he development of new areas and the construction of new housing. This is both a national and local task, involving changes in legislation to reduce red tape and improve administration through faster delivery of building and renovation permits and rapid provision of infrastructure to the new areas.

The third instrument is a redesign of transfers from the central government. Linking transfers to tax capacity, or to the effective use of the tax potential, is not an easy task. It requires information about the potential rather than the assessed tax base which, in the case of property, is

[4] In large cities such as La Paz that obviously set the trend, the revaluation was stopped at the beginning of the last decade. This makes our evaluation quite cautious.

[5] There is no official information on the evolution of housing prices. Some evidence suggests that in large cities, prices grow faster than the overall price index, due mostly to high migration. Thus using the overall price index to update to inflation leads quite likely to an underestimate of the adjustment.

hard to estimate. Clearly, this task would be facilitated by the construction of regional, if not national, cadastres to ensure uniformity of evaluation criteria and practices.

The use of statistical indicators is made difficult because: i) there are no good proxies of value of real property, and ii) if there were, and if they were accepted by all stakeholders, they would likely be unavailable at the municipal level. This is the case of GDP, for example, which is frequently, but not unanimously, considered a proxy of real property value. A simpler, second-best alternative is to stimulate tax collection effort by linking transfers—or a portion of them—to the growth of collections or to other indicators of tax effort. To be more specific, a share of the total amount of grants could be allocated according to the difference, for each municipality, between the rate of growth of its collections and the national average growth rate. Growth rates should be calculated as moving averages over a three or four-year period to avoid sudden changes and strategic behaviors. Alternative and/or complementary indicators could be increases in the number of tax payers, and decreases in tax arrears. The fourth mean could be assigning property tax administration to the prefectures.

3. Prefectures

Structural reform of prefectures is a high priority. Prefectures have a system of financing that is incompatible with the smooth functioning of a decentralized government. This is the case because: a) they have no discretionary power to determine their revenue; b) their present revenue sources are completely dependent on natural resources and their cyclicality; and c) allocations to individual prefectures are highly unequal and incompatible with the objective of providing a homogeneous set of services, as mandated by the Constitution.

Hence, options for reform should focus on identifying revenue instruments capable of providing prefectures a degree of autonomy in the determination of the tax burden they impose on their citizens. This suggests that the new revenue instruments should be either own taxes or shared tax bases, since both instruments allow discretion in the determination of their burden via the tax rates and/or the definition of the tax base.[6]

[6] *Terminology of subnational revenues*

Own taxes : tax base and/or tax rates under local control

Shared taxes bases (overlapping taxes): tax base under national control, tax rates under national and local control (piggy-back taxes). Alternatively, local tax rates can be applied to national collections (instead of the tax base).

With these instruments, the level of revenue (and expenditure) is determined according to local preferences and with reference to the present level of expenditure responsibilities. Future devolution of responsibilities can be accommodated with an increase in the allowed tax rates on the same tax instruments, depending on the size of their tax base. In the case of large new expenditure responsibilities, however, the increased expenditure needs should be accommodated through the devolution of other tax instruments.

Dependence on natural resources could be eliminated in a simpler way by partially or completely replacing royalties and/or IDH with a share of national tax collections allocated according to population size or other criteria. The origin principle—implying that shared tax collections are allocated according to the area where they are generated—is not applicable in Bolivia due to the abovementioned tax administration practice that privileges headquarters. However, shared revenues do not have the same benefit as own ones in terms of subnational accountability.

The paper presents a preliminary exploration of possible own revenue sources. The selection of revenue instruments is made on the basis of suggestions deriving from international good practice, suggestions advanced in Bolivia by different stakeholders, including international organizations, and the author's views. They are evaluated on the basis of a number of widely accepted criteria that qualify them as proper subnational revenue source in the specific circumstances of Bolivia. These criteria are the following:

Fees and charges: generally the central government specifies where such charges can be levied and provision that govern their calculation

Shared tax revenues: nationwide tax base and tax rates, but a given share of national collections is allocated to local governments on the basis of: a) the revenue accruing to each jurisdiction (derivation principle), or b) of other criteria such as population area etc. This is the case of *coparticipaciones* (revenue sharing) in Latin America. In the latter case, shared tax revenue amounts to a transfer (see below).

General purpose (non-conditional) transfers: allocations to individual local government are determined centrally, but local governments are free to determine how to spend the transfer

Specific-purpose transfers: the amount may be determined by the central government or may also depend on the spending decisions of local governments. In either case, the central government determines the sector where the transfer has to be spent.

- *Stability of revenue over time*: important for effective financial planning by prefectures, especially in view of the fact that they do not have the same access to short-term financing as the central government.
- *Size of potential tax base*: when substantial, it allows the use of a small set of tax instruments and avoids the use of nuisance taxes.
- *Present exploitation of the tax base*: a country-specific factor that allows rebalancing of tax policy when substantial tax bases are not exploited.
- *Link with policy responsibilities of prefectures*: allows implementation of benefit taxation.
- *Intergovernmental equity*: requires that new revenues do not amplify disparities between *prefectures*, hence reducing the need for equalization transfers.
- *Interpersonal equity*: although this is a typical central government concern, the use of tax instruments that are highly discriminatory among individuals can create resistance at the local level and add to the central government's problems.
- *Intergovernmental efficiency*: lack of tax exportation is a requirement of subnational taxes designed to foster accountability. It can be mitigated in the case of benefit taxation.
- *Administrative feasibility*: this refers to administrative costs of the new instruments. It is a crucial criterion in view on the multiple number of tax instruments considered that could raise administrative costs substantially without necessarily producing more revenue. Keeping costs manageable depends on information about local tax bases and on the possibility of using the present administration and the best opportunities available (for example, payment of taxes by units situated at the lower stage of the production/distribution process) to collect the new taxes.
- *Political acceptability*: this is generally a huge problem in Bolivia, due to the traditionally low standing of the political class in the eyes of the most numerous and poorest segments of the population. Changes in taxes, charges,

or administrative costs frequently provoke violent reactions. The introduction of any of them has to be very carefully weighed and prepared.

This paper simulates the revenue potential of tax instruments in a pragmatic way. Ideally, the starting point should be a determination of the amount of additional revenue needed to fund new expenditure responsibilities or to replace existing revenue. The next step is calculating the tax rates that should be applied to the base of the different tax instruments to provide the additional revenue, and to evaluate their feasibility and likely impact. However, the determination of the amount of additional revenue needed is a policy judgment, and no devolution of additional expenditure responsibilities has yet taken place in Bolivia. There are currently no grounds for determining that the present level of expenditure and the overall revenues of prefectures are too low and have to be increased. Rather, there is a widely shared view that the complete reliance of prefectures on revenues derived from natural resources is a problem that has to be solved.

A more pragmatic approach entails estimating the revenue potential of each instrument (and hence the rates that can be applied to the estimated tax bases) based on the experiences of other countries that use, or have used, similar instruments. Obviously, adaptation to the specific circumstances of the country of reference is needed.

In this approach, the revenue potential of each of the revenue instruments considered can be compared for each prefecture, with the actual revenues deriving from the existing revenue sources that the new ones are meant to replace, allowing consideration of the differential impact among prefectures and suggesting eventual need for reform of the transfer system. Different combinations of instruments are also considered. Some indication of the possible range of variation in the tax rates is also given.

The comparison is made in this paper with revenues deriving from IDH allocations. These allocations are paid to all prefectures, albeit in a way that produces significant disparities. Obviously, the prefectures that are going to lose with the change—the natural resource-rich prefectures, such as Tarija—can be compensated by increasing transfers. Prefectures that are going to gain can receive less in the form of transfers.[7] In both cases, however, this should take place after careful consideration of their overall fiscal capacity.

[7] In the immediate future, the transfers could be IDH, but in the medium term, equalization transfers need to be introduced.

Transfers should derive from the entire pool of national taxes and not only from IDH in order to reduce their volatility. Their allocation should be structured in such a way as to include incentives to stimulate tax effort.

Clearly, from standpoint of the central government, the introduction of these new tax instruments does not necessarily mean an increase in the overall tax pressure, which is already quite high. In other words, the central government can decide to keep the total amount of revenue accruing to subnational governments stable by correspondingly reducing its total allocations of resources—of IDH in the present case—and to use the savings to reduce its present taxes and/or to increase its expenditure. There will still be substantial advantages for prefectures consisting in a degree of tax autonomy and higher revenue stability. These are clearly long-lasting advantages, but prefectures may in the immediate future have a preference for total reliance on central government financing. Hence, incentives have to be provided, and the timing of the change has to be carefully selected.

4. Sharing Real Property and Vehicle Tax Bases between Municipalities and Prefectures

Real property and vehicle taxes are presently assigned exclusively to the municipalities. Sharing would not represent an oddity. France provides an example of sharing taxes on property among different levels of government, specifically between municipalities, departments and regions. This system has been in place for the two first levels since the French Revolution and was extended to the regions after their creation in the 1970s. In the case of France, its functioning is facilitated by efficient central government administration of taxes, while each local government determines its tax rates within nationally determined brackets.

Implementing sharing in Bolivia would be technically easy: what is needed is the introduction, over and above the existing municipal rate, of a tax rate (or preferably tax brackets) for prefectures. Politically, it would surely be more difficult, since it would likely be strongly resisted by municipalities and would require a modification of the recent tax base classification law. Municipalities could be induced to cede part of their rights on this tax base only in exchange for more dynamic tax bases, such as the personal income tax, through a municipal surcharge on it.

Centralizing property tax administration at the prefecture level could be beneficial for both levels of government. The advantage could be substantial for small and medium-sized municipalities because of possible economies of scale. At the same time, centralization of tax administration is only part of the problem, because urbanization and infrastructure policies are at least equally crucial, and they are responsibility of municipalities. Simulations of collections are presented in Table 6, and they are based on the following criteria:

- *Reactions of taxpayers*: All simulations conducted in this paper assume, in general that taxpayers do no react to tax increases by reducing compliance. This may not be too far from the truth in view of the small size of the proposed changes. Possibility of leakages in tax administration cannot be excluded, although there are two opposite forces at work. If administration is done by the municipalities, they could see in the surcharge for prefectures a reduction in their incentives to work, because part of the revenue would go to another level of government. On the other hand, prefectures would have incentives to exert pressure, or to offer help to municipalities. The reverse would happen if the administration were shifted to prefectures.
- *Tax rates*: their size would amount to approximately one-sixth of the national rates, providing, *ceteris paribus* in terms of administration of the tax (no more evasion, same efficiency, etc.), additional revenue for prefectures amounting to 15 pe rcent of the existing rate. There is no specific rationale for the suggested tax rates; their size is simply dictated by the objective of promoting the political feasibility of the new tax through a light additional weight on the tax bases. Obviously, tax rates should be locally determined within national brackets. A simulation with higher tax rates is illustrated later, when commenting overall results.
- *Allocation among prefectures*: Is done by summing collections of municipalities by prefecture.

Table 6. Estimates of Potential Collections of a Departmental Surcharge on Real Property and Vehicles 2009

	Existing property tax (Impuesto a la Propiedad de Bienes Inmuebles), 2009 Bolivianos	Existing vehicle tax (Impuesto a la Propiedad de Vehículos Automotores), 2009 Bolivianos	Number of municipal-ities	Of which not available	Departmental tax on real property, Bolivianos	Depart-mental tax on vehicles, Bolivianos	Depart-mental tax on real property in percent of GDP	Departmental tax on vehicles in percent of GDP
Chuquisaca	26,943,857	8,961,005	28	2	4,041,579	1,344,151	0.074	0.025
La Paz	227,835,144	71,698,142	80	30	34,175,272	10,754,721	0.112	0.035
Cochabamba	11,994,829	51,152,669	45	7	17,99,574	7,672,900	0.097	0.041
Oruro	22,515,203	12,333,592	35	16	3,377,280	1,850,039	0.049	0.027
Potosí	11,536,374	7,976,909	38	14	1,730,456	1,196,536	0.021	0.014
Tarija	26,883,183	14,538,389	11	0	4,032,477	2,180,758	0.029	0.015
Santa Cruz	199,945,677	88,265,447	56	2	29,991,852	13,239,817	0.091	0.040
Beni	8,948,180	1,675,383	19	0	1,342,227	251,307	0.037	0.007
Pando	1,833,660	1,798,748	15	12	275,049	269,812	0.025	0.025
Total	646,385,107	258,400,285	327	83	96,957,766	38,760,043	0.080	0.032

Source: Author's calculations based on data provided by the authorities.

5. Tourism Tax

The tourism tax is a very old tax instrument. It has only marginal revenue potential outside the main tourist areas. In these areas, it can help to overcome a typical problem, namely, the fact that the size of public services has to be determined with reference to the entire population and not only to the resident population. Tourism taxes are clearly inspired by the benefit principle: the tax burden is a compensation for the use of public services by tourists. They are not exported, and the services provided correspond to the tax burden. Tourist taxes are also increasingly used for ecological purposes: tourists use the natural environment and, in accordance with economic efficiency considerations, they should pay for its use. Taxes on tourism have recently been revamped in a number of countries, particularly main tourist destinations. While there is a good economic rationale for tourism taxation, there is at also considerable political opposition to it from the tourism industry. Since tourism taxes are typically levied on hotels and other tourism-related accommodations, they are highly visible and are typically resisted by the concerned sectors.

A frequently quoted example of the resurgence of tourist taxes is the Eco-tax (*Ecotasa)* introduced by the government of Spain's Baleares region in the early 2000s. This tax produced substantial revenue from the tourism industry on the Balearic Islands, but it was repealed after four years of implementation due to strong opposition from the tourism sector. In Italy, however, the tax has been reintroduced for municipalities in the context of intergovernmental relations reform and under pressure from municipalities benefiting from tourism.

The economic importance of tourism in Bolivia is not negligible: it represents almost 10 percent of exports and 2 percent of GDP. These figures are slightly higher than those for all South American countries, with the exception of Uruguay. The number of recorded foreign visitors is around half a million annually. This number grew rapidly in the 1990s, but in recent years it has stalled. Nights spent in hotels and other tourist accommodation total around 2 million units. (Only the provincial capital cities and El Alto are recorded.)

Estimates of collections are presented in Table 7 and are based on the following criteria. They somewhat underestimate the potential revenues, since only the 10 biggest cities are considered. On the other hand, the calculations assume full compliance, which probably results in a non-negligible upward bias.

Table 7. Estimates of Collections from a Tourism Tax, 2009

	Collections in Bolivianos, 2009	Percent by Depart	Nights spent by tourist	Percent	Percent of GDP
Chuquisaca	289,288	4.6	106,269	4.0	0.0053
La Paz	2,014,079	32.3	880,926	33.3	0.0066
Cochabamba	794,778	12.8	308,350	11.7	0.0043
Oruro	363,467	5.8	163,760	6.2	0.0053
Potosí	167,105	2.7	72,067	2.7	0.0020
Tarija	334,974	5.4	125,408	.7	0.0024
Santa Cruz	2,002,327	32.1	878,518	33.2	0.0060
Beni	137,974	2.2	54,847	2.1	0.0038
Pando	126,546	2	54,234	2.1	0.0116
Total	6 ,230,539	100	2,644.380	100	0.0051

Source: Author's calculations based on data from INE (*Estadísticas Departamentales*) and UDAPE.

These simulations are based on the following assumptions and criteria:

- *Tax rates*: These are specific and scaled down according the category of accommodation. They range from the equivalent of US$0.5 per night for five-star hotels to US$0.25 for the cheapest accommodations. Local governments could be permitted to vary the rates (for example, +/- 25 percent).
- *Allocation between prefectures*: This could be done according to the number of nights spent in hotels and other accommodations, weighted by the number of establishments in each category.
- *Tax administration and collection:* This could be assigned to the prefecture's agency in charge of tourism, or delegated by the prefectures to the corresponding agencies operating in the big cities (where they exist). This is a solution frequently used around the world. A fee covering the administration cost could be permitted. Evasion is partly taken into account in the estimates, which are based on the number of registered nights. Obviously, the tax may lead to a further small decrease in registrations.

6. A Departmental Consumption Tax on Gasoline and Diesel

This is a widely considered option in Bolivia. Fuels for vehicles are already subject centrally to the Special Direct Tax on Hydrocarbons (IEDH), with part of its collections allocated to prefectures as a transfer based on population size. An option in this area would be to allow prefectures to levy their own tax rates on diesel and gasoline within brackets established by the central government, thus creating a new subnational tax that will overlap with the national one.

There are sound economic grounds for such a tax. Consumption of vehicle fuel provides a broad tax base that grows as income rises, although it can be subject to the vagaries of oil price fluctuations, which affect the quantity consumed. In general, fuel consumption is correlated with general consumption, making the allocation of the tax among regional governments more equal (or equitable) than the allocation of taxes on income.[8] Although the tax base is mobile, small differences in tax rates among prefectures should not generate much mobility.

There are also some grounds for opposing a gasoline consumption tax. The introduction of the tax as a truly local tax, i.e., taxing local consumption, may be administratively complex. This is because, as a consumption tax, it must be collected not where the fuel is produced but where it is purchased, at gas stations. Alternatively and more efficiently, the tax can be collected from wholesale traders, who will be asked to declare the location of their customers (the gas stations). Once the change has been made (as in Italy, with its regional surcharge on gasoline and diesel), administrative costs would be low.

Secondly, gasoline and diesel prices are highly regulated in Bolivia. Due to the politically sensitive nature of this issue, prices have not been increased for a long time. The tax rate has a floor of 3.5 Bolivianos per liter but changes according to economic conditions. The IEDH works as a cushion between fluctuating oil prices and the final regulated price. A sudden decision in December 2010 by the government to raise the price of gasoline by 73 percent was met with riots that forced the government to recall it. All this would not augur well for the introduction of a local tax. However, one has to consider that the government has to continue its efforts to abandon its policy of fixed price for vehicle fuels and that small, gradual changes are more politically viable than large, abrupt changes. Secondly, making prefectures the

[8] According to the analysis of the incidence of the IEDH on households made by Cossio Muñoz,the tax has an almost perfect proportional impact on consumption. This should translate into a proportional regional impact.

beneficiaries of the tax could make it more politically feasible by widening the number of people who favor it.

The current system used for IEDH should be used to collect the tax, with the additional burden of asking the sellers of fuel to detail the volumes sold by the prefecture. Leakages of collections could be kept to a minimum, because total assessed volumes of sales should be the same for the IEDH and the local fuel tax. Simulations of revenue, provided in Table 8, are based on the following assumptions and criteria:

- *Tax rates*: The rate would amount to 1/20 of the national rate, roughly corresponding to an average of 0.2 Bolivianos per liter, with the possibility that individual departments could increase it to 0.22 of the national rate. Simulations with a larger tax rate (0.4 Bolivianos per liter) are provided below in the summary table.
- *Projected revenue*: In "normal" years the IEDH provides around 2 percent of GDP. Collections have fallen in the two last years because of the gap between the international oil price and the fixed retail price. Thus, in a normal year the local tax on fuels should provide collections on the order of 0.04 percent of GDP.
- *Allocation among prefectures*: Allocation to prefectures should be calculated according to effective consumption. This data is not currently available. A simulation has been conducted using the number of private vehicles as a proxy.

Table 8. Estimates of Collections of a Departmental Vehicle Fuel Tax

	GDP 2009, in thousands of Bolivianos	In percent	Private vehicles	In percent	Departmental vehicle fuel tax, Bolivianos	In percent of GDP
Chuquisaca	5,466,642	4.5	31,880	3.9	1,832,785	0.034
La Paz	30,626,803	25.2	211,589	26.2	12,164,276	0.040
Cochabamba	18,545,544	15.2	177,413	21.9	10,199,494	0.055
Oruro	6,830,816	5.6	53,929	6.0	3,100,384	0.045
Potosí	8,332,607	6.8	26,520	3.3	1,524,638	0.018
Tarija	14,127,458	11.6	45.,54	5.7	2,636,152	0.019
Santa Cruz	33,114,415	27.2	251,495	31.1	14,458,476	0.044
Beni	3,595,380	3	10,216	1.3	587,319	0.016
Pando	1,087,079	0.9	9*	0.0*	517	0.000
Total	121 ,726,744	100	808,905	100	44,671,256	0.037
* No effective data are available for Pando because of an existing Zona Franca exemption.						

Source: Estimates of author on data on GDP and private vehicles provided by INE.

7. A Departmental Electricity Tax

Electricity is usually taxed around the world by imposing national excise taxes and value-added taxes (VAT) in addition to direct taxes on producing firms. The tax base is large and stable and its growth is correlated with GDP growth. It has two distinct components. The first one is domestic consumption. It represents a tax base that is particularly suited for local governments, since it is not exportable. This tax is roughly proportional to total household consumption, and allocation of the tax base to local governments should thus largely correspond to the weight of electricity in general consumption. The second component is the electricity used by business and local governments for street lighting. This component is usually larger than the first one, but it is more unequally distributed among local governments. A local tax on it is clearly exportable in the case of firms that export part of their production beyond local borders.

From an administrative point of view, these two taxes are the most suitable for subnational governments, since collections can be made by energy firms when they bill customers. There are no problems in the assignment of taxpayers to the relevant local government; that is, they are taxed where consumption takes place. Local governments everywhere make use of this tax where they are permitted to do so. In Italy, for example, there

are both municipal and provincial excise taxes on electricity consumption that piggyback on the national excise tax.

Italian municipalities tax household consumption at a rate of 0.023290 Euros per Kwh. Provinces tax non-household consumption at a rate of 0.012400 Euros per Kwh. Although these rates are rather low, the collections are not minimal. For provinces, the collections amount to around 750 million Euros, representing around one-third of total tax revenue and around one-sixth of their total recurrent revenues. For municipalities, the collections are only slightly lower: 700 million Euros, corresponding to 1.3 percent of their total revenue. They correspond broadly to one seventh of property tax collections and less than one third of collections from the local surtax on the personal income tax. Italian municipalities have much larger responsibilities and revenues than provinces, as is the case in Bolivia. Moreover, in Italy there are also regional governments, with broad responsibilities.

In Bolivia, the price of energy is closely regulated and partly subsidized through the sale of natural gas to producers on concessional terms. The cost of electricity, like the cost of gas and diesel, is a politically sensitive issue because of its impact on incomes of poor households, although this impact can be lessened through appropriate tariffs that favor small consumers.

Table 9 presents revenue simulations based on the following assumptions and criteria:

- *Tax rates*: are specific and amount to 50 Bolivianos per Mwh on household consumption and 25 Bolivianos per Mwh on non-household consumption. They amount to slightly less than one-fourth of the corresponding tax rates levied in Italy by municipal and provincial governments, respectively. A minimal level of consumption could be exempted, reducing collections correspondingly.
- *Collection*: Energy providers would use the existing billing system. This system, along with modest tax rates, practically excludes new evasion.
- *Allocation*: Taxes would be allocated to prefectures according to effective consumption.

Table 9. Estimates of Collections of Departmental Electricity Tax

	Consumption of electricity Mwh		Collections in Bolivianos				
	Households	Total	Households	Non-household	Total	In percent	In percent of GDP
Chuquisaca	63,869	170,353	3.193,450	2,662,100	5,855,550	3.7	0.107114
La Paz	52.,11	1,101,132	26,375,550	14,340,525	40,716,075	25.6	0.132943
Cochabamba	333,000	841,207	16,650,000	12,705,175	29,355,175	18.5	0.158287
Oruro	61,765	303,037	3,088,255	6,031,800	9,120,055	5.7	0.133513
Potosí	27,679	248,487	1,383,950	5,520,200	6,904,150	4.3	0.082857
Tarija	51,491	87,372	2,574,550	897,025	3,471,575	2.2	0.024573
Santa Cruz	731,482	1,736,418	36,574,100	25,123,400	61,697,500	38.8	0.186316
Beni	27,455	47,806	1,372,750	508,775	1,881,525	1.2	0.052332
Pando			0	0	0	0	0
Total	1,824,252	4,535,812	91,212,605	67,789,000	67,789,000	100	0.1306

Source: Calculations by the author based on data from INE (*Estadísticas Departamentales*) and UDAPE.

8. A Personal Income Tax Replacing RC-IVA

A personal income tax replacing the *Régimen Complementario al IVA* (RC-IVA) would clearly be the main change envisioned for the whole Bolivian tax system. It is a politically sensitive topic, meaning that the risks of the proposal have to be analyzed and that, if it is to be introduced, it must be carefully prepared and presented. This reform was originally proposed in 2003 and, following a public debate, was rejected by the population and labeled an *impuestazo* (a huge tax).

Bolivia does not levy personal income taxes. Income accruing to individuals is taxed under three different tax regimes. The first is the RC-IVA. This is a tax on income from work, plus interest from saving accounts, rents of property, and royalties from intellectual property. From wages and salaries, the equivalent of two minimum monthly wages is deducted as an initial allowance. The tax base so calculated is subject to a 13 percent flat rate. However, taxpayers can deduct the VAT paid on t heir purchases. When not able to produce VAT invoices, they are allowed an additional deduction of two minumum monthly wages. The tax, which ultimately is equivalent to a tax on savings, was introduced mainly as an instrument to improve the collection

of the VAT by inducing buyers to request invoices from vendors.[9] However, the system has not proved to be very effective: a secondary market for VAT invoices has flourished, and the tax authorities have not been able to take advantage of the increased use of invoices. Moreover, tax compliance costs are estimated (Berhan and Jenkins, 2005) to be very large, and equivalent pratically to the total amount of taxes collected.[10] Collections from RC-IVA for 2009 represented only 2.4 percent of total national tax collections.

The second instrument used for taxing incomes accruing to inividuals is the tax on business income *(Impuesto a las utilidades de las empresas*). It also taxes the liberal professions at a rate of 25 percent, applied not to their net income but to 50 percent of their gross income. The collections from the business tax are substantial, but it is difficult to estimate the share attributable to self-employment.

The third instrument are the so-called temporary and simplified regimes (*Régimen tributario simplificado* and *Régimen tributario integrado*) under which income earned from the handicraft, transport, and retail sectors is taxed. Collections from the special regimes amount to less than 1 percent of total national collections despite the large number of taxpayers (almost 150,000), due to the extremely low tax rates that apply to capital and not to income.

This system of income taxation has very little economic or equity rationale. Reform should consist of merging the different categories of income presently taxed through the three tax regimes into a single regime, starting gradually with either a proportional or a mildly progressive rate, to ease the administrative burden and the likely negative reaction from taxpayers. The new tax should be national, with the possibility that prefectures could piggyback on it, that is, levy their own tax within nationally determined parameters on a nationally determined tax base.

Simulation of the collections of this tax, which used 2007 household survey data, was extremely complex. The simulation process is described in Annex II.

[9] For an illustration of the tax and of its problems, see Bird R., 2006; Byrne and Jenkins,1993; Berhan and Jenkins, 2005; and Cossio Muñoz-Reyes, 2005.

[10] For example, wage earners send the list of their invoices to their employer monthly, who deduct the VAT paid by the employee.

Table 10. Estimates of a Departmental Piggyback Tax on the National Personal Income Tax

	Collections with 4 minimum wages initial allowance	Percent share by prefecture	in percent of GDP	Collections with 2 minimum wages initial allowance	Percent share by prefecture	In percent of GDP
Chuquisaca	5,231,504	5.3	0.0957	8,893,668	5.4	0.1627
La Paz	25,663,982	26	0.0838	38,868,622	23.6	0.1269
Cochabamba	18,655,740	18.9	0.1006	30,139,652	18.3	0.1625
Oruro	6,021,165	6.1	0.0881	11,693,526	7.1	0.1712
Potosì	5,428,919	5.5	0.0652	8,893,668	5.4	0.1067
Tarija	8,291,440	8.4	0.0587	16,469,755	10	0.1166
Santa Cruz	21,616,969	21.9	0.0653	34,915,881	21.2	0.1054
Beni	4,145.720	4.2	0.1153	8,399,575	5.1	0.2336
Pando	3,553,474	3.6	0.3269	6,258,507	3.8	0.5757
Total	98,707,622	100	0.0811	164,697,552	100	0.1353

Sources: See Table 1 of Annex II.

Table 10 r eports the estimates of collections deriving from the application of a departmental piggyback with a flat tax rate of 1 percent on the nationally determined tax base. There are two options, which differ according to the initial allowance from taxable income. As detailed in Annex II, the estimates are very cautious. They take into consideration the existence of a vast informal sector and the difficulties of introducing a full-fledged personal income tax with an inclusive tax base: only taxpayers with a tax identification number and/or who do business with other taxpayers that also have tax identification numbers are considered. This should be considered as the minimum floor of the new tax.

9. A Sales Tax at the Retail Level that Could Complement the VAT

The revenue potential of a sales tax could be considerable, depending on the rate chosen, and it is reasonably dynamic and stable. The reform would be administratively quite complex, if this tax has to become a truly local own tax, because it would need to cover all retailers. In addition, its relation to the VAT would have to be defined. A much simpler version of this proposal, consisting of sharing a part of VAT revenue on a derivation basis, has been circulated in Bolivia.

This would not increase fiscal accountability, because only collections of the VAT would be shared. At the same time, implementation would not be easy. It would require information which is not currently available since the VAT is paid by headquarters of firms that, in turn, are concentrated almost exclusively in two prefectures. The other problems with the sales tax are more general and well-known. With only one point of collection, evasion of the sales tax may be easier than for the VAT. Moreover, it is difficult to avoid imposing the sales tax on business sales, thus leading to cascading and distortion of business inputs.

10. An Income-type VAT

Technically, this would be an origin-based VAT, calculated with the subtraction method rather than the more usual invoice-credit method. That is, the tax is levied directly on an accounts-based measure of value-added, calculated for each taxable entity by subtracting allowable purchases from revenues. Here, the allowable purchases are all inputs, current and depreciation. Exports as well as domestic sales would be subject to the tax, and imports would be correspondingly exempt. This is why it is an origin-based tax. It is a tax payable by business and it is aimed at having a different impact on prices than the VAT, since imposing a tax on prices would be discouraged, at least for tradable goods, by the exemption of imports and taxation of exports.

A tax of this nature is used in relatively few countries around the world. Its closest model is the Italian IRAP, which has been assigned to the regions, with constraints on the range of tax rates set. This kind of tax would provide substantial revenue in Bolivia, even with a modest rate, because of its vast base, which is substantially the same as that of the VAT. It would be simple to administer, because its taxpayers would already be subject to the VAT. Thus, additional record-keeping requirements would be minimal. However, its apportionment among prefectures would be problematic because of the headquarters issue mentioned above.

The Italian IRAP (*Imposta Regionale sulle Attività Produttive*)

The IRAP, introduced in 1998, is a tax payable by businesses on the difference between their sales and the sum of their material purchases and depreciation, i.e., an origin-based income-type VAT, whose payment is determined by the subtraction method. Basically, its tax base is the sum of wages, profits, and interest.

The statutory central rate is 4.25 percent, but regions can vary this, in either direction, by 1 percentage point, and they may differentiate the rate by sectors. Regions make some use of their autonomy mostly by lowering tax rates applied to agriculture, cooperatives, and by increasing rates applied to financial services, insurance, and the energy sector. General government is also subject to IRAP, with a tax base that is limited to wages and salaries paid and with a tax rate of 8.5. Even with its present relatively low tax rates, revenue from the IRAP is substantial, on the order of almost 2.5 percent of GDP. It represents broadly more than one third of VAT collections, one fourth of PIT collections, and more than two-thirds of corporate income tax (CIT) collections. These collections are more equally distributed across regions than VAT or CIT, because government (which is relatively more important in Southern Italy) also pays. IRAP has some attractive features on the administration side.

IRAP-type taxes have a few disadvantages. First, unlike the corporate income tax, it is likely that only part of them may be creditable against foreign (specifically U.S.) corporate taxes.[11] This may deter inward investment, other things equal. Second, it is an additional tax on labor and thus may reduce wages and/or increase unemployment. Third, it can act against exports because of their non-deductibility from the tax base.

11. A Tax on Gambling and Lotteries

This reform would consist of shifting the recently created tax on gambling and lotteries from the central to the departmental level, taking into account that the regulation of gambling and lotteries has been assigned by the Constitution of 2009 to prefectures as a concurrent responsibility.

Taxes on gambling are increasingly used throughout the world to provide funds to intermediate levels of government, and they have the potential to produce considerable if somewhat fluctuating revenue. In Italy, for example, collections from the tax on gambling and lotteries are quite substantial, amounting to almost 2 percent of total national and subnational

[11] The U.S.-Italy bilateral tax treaty may be a guide here, given the similarity of the tax to the IRAP. In that treaty, only the part of the IRAP that taxes pure profit (i.e., not wages, interest, or rents) is creditable against U.S. CIT.

taxes and social security collections, corresponding to 0.9 pe rcent of GDP.[12] In Australia, gambling taxation represents more than 10 percent of state governments' own revenue, corresponding to 0.5 percent of GDP.[13] Such a shift is, however, likely to be opposed by the central government, given the recent creation of the tax.

12. Summary of Estimates

Tables 11 and 12 present a summary of the estimates, which are split into two different options. The first refers to the tax rates illustrated in the text, and the second one utilizes higher tax rates or, in the case of the personal income tax, a larger tax base. Specifically, i) property and vehicle taxes are adjusted to increase by 15 to 25 percent over their present levels; ii) fuel and electricity tax rates are doubled, and iii) the initial allowance of the personal income tax is reduced to two minimum wages. Under the second option, collections would increase substantially.

Table 11. Summary of Results of Estimates

Prefecture	Property tax	Vehicles tax	Tourist tax	Fuel tax	Electricity tax	Piggyback on the personal income tax	Total of new taxes
FIRST OPTION							
	As percent of provincial GDP						
Chuquisaca	0.0739	0.0246	0.0053	0.0335	0.1071	0.0957	0.3402
La Paz	0.1116	0.0351	0.0066	0.0397	0.1329	0.0838	0.4097
Cochabamba	0.0970	0.0414	0.0043	0.0550	0.1583	0.1006	0.4565
Oruro	0.0494	0.0271	0.0053	0.0454	0.1335	0.0881	0.3489
Potosí	0.0208	0.0144	0.0020	0.0183	0.0829	0.0652	0.2034
Tarija	0.0285	0.0154	0.0024	0.0187	0.0246	0.0587	0.1483
Santa Cruz	0.0906	0.0400	0.0060	0.0437	0.1863	0.0653	0.-4319
Beni	0.0373	0.0070	0.0038	0.0163	0.0523	0.1153	0.2321
Pando	0.0253	0.0248	0.0116	0.0000	0.0000	0.3269	0.3887
Total	0.0797	0.0318	0.0051	0.0367	0.1258	0.0811	0.3602

[12] See Corte dei Conti, 2011.
[13]See Australian Productivity Commission.

Table 11. Summary of Results of Estimates, continued

SECOND OPTION							
Prefecture	Property tax	Vehicle tax	Tourist tax	Fuel tax	Electricity tax	Piggyback on the personal income tax	Total of new taxes
As percent of provincial GDP							
Chuquisaca	0.1232	0.0410	0.0053	0.0670	0.2142	0.1627	0.6135
La Paz	0.1860	0.0585	0.0066	0.0794	0.2659	0.1269	0.7233
Cochabamba	0.1617	0.0690	0.0043	0.1099	0.3166	0.1625	0.8240
Oruro	0.0824	0.0451	0.0053	0.0907	0.2670	0.1712	0.6618
Potosí	0,0346	0.0239	0.0020	0.0365	0.1657	0.1067	0.3696
Tarija	0.0476	0.0257	0.0024	0.0373	0.0491	0.1166	0.2787
Santa Cruz	0.1509	0.0666	0.0060	0.0873	0.3726	0.1054	0.7890
Beni	0.0622	0.0116	0.0038	0.0326	0.1047	0.2336	0.4487
Pando	0.0422	0,0414	0.0116	0,09521	0.0000	0.5757	0.6710
Total	0.1327	0.0531	0.0051	0.0733	0.2516	0.1353	0.6513

Source: See previous tables.

Although the panoply of new instruments proposed would utilize low tax rates, particularly under the first option, the reallocation impact would not be modest, as shown in Table 12, which reports: i) the per capita values of the new revenue instruments according to the two distinct options, ii) the per capita allocations of the IDH, and iii) the percent distribution of the new taxes and of GDP by prefecture.

Large prefectures would gain, since they are all either non-producers or only modest producers of gas and oil. Small prefectures and gas-producing prefectures would lose, as expected. This would require compensating transfers to poor prefectures and temporary grants to producing prefectures to facilitate the transition to the new system and to minimize opposition to it.

All prefectures will be able to partially adjust collections to their needs by varying their tax rates. The range of variation suggested here is quite modest by international standards: +/-10 percent. It could be increased over time after monitoring of the impact of the changes.

Table 12. Per capita Allocations of New Taxes and IDH, Distribution of New Taxes and GDP by Prefecture

Prefecture	Per capita First Option, Bolivianos	Per capita Second Option, Bolivianos	Per capita IDH allocations 2008, Bolivianos	Collections from First Option in percent	Collections from Second Option in percent	GDP 2009 in percent
Chuquisaca	29	52	190	4.2	4.2	4.5
La Paz	45	79	32	28.6	27.9	25.2
Cochabamba	46	83	57	19.3	19.3	15.2
Oruro	53	101	265	5.4	5.7	5.6
Potosí	22	40	120	3.9	3.9	6.8
Tarija	41	77	304	4.8	33.0	11.6
Santa Cruz	53	97	37	32.6	2.0	27.2
Beni	19	37	248	1.9	0.9	3.0
Pando	54	93	1,438	1.0	4.2	0.9

Source: Previous tables and, for IDH collections, Ministry of Finance.

13. Evaluation

The abovementioned evaluation criteria were applied to each of the revenue instruments considered in Table 10. Four marks were given. Criteria were formulated to allow non-contradictory interpretation of marks. For example, the criterion for introducing new tax instruments in Bolivia was formulated in terms of present non-exploitation of the tax base; the highest mark is given to the tourist tax, since this tax base is not currently taken advantage of in Bolivia.

Obviously, these marks reflect the author's evaluation, but it is largely based on received wisdom in the literature. They confirm the superiority of the property tax as a local tax. The distance between the property tax and other taxes, however, is not huge. The table again highlights the administrative burden associated with the introduction of a retail sales tax and the paucity of collections from the tourist tax.

Table 13. Matrix of Criteria for Evaluating Proposed Instruments

	Property tax	Vehicle tax	Tourist Tax	Fuel tax	Electricity tax	Personal income tax	IVA at retail stage	Income type VAT
Size of potential tax base	*High*	*High*	*Very Low*	*High*	*High*	*High*	*High*	*High*
Present non exploitation of the tax base	*Medium*	*Medium*	*High*	*Medium*	*High*	*High*	*Medium*	*Low*
Link with responsibilities of Prefecturas	*High*	*High*	*High*	*High*	*High*	*Medium*	*Medium*	*High*
Intergovernmental equity: limited disparities between Prefecturas	*High*	*Medium*	*Low*	*Medium*	*Medium*	*Medium*	*Medium*	*Medium*
Intergovernmental efficiency: lack of tax exportation	*High*	*High*	*Low*	*Medium*	*Medium*	*High*	*High*	*Low*
Interpersonal equity: discrimination between individuals	*Medium*	*High*		*Medium*	*Medium*	*High*	*Medium*	*Medium*
Administrative feasibility: proper attributing of collections to Prefecturas	*High*	*High*	*High*	*Low*	*High*	*High*	*Very low*	*High*
Political acceptability	*Medium*	*Medium*	*Medium*	*Low*	*Low*	*Medium*	*Medium*	*Medium*

The introduction of new own taxes for subnational governments is not frequently welcomed by the presumed beneficiaries, who usually prefer to rely on transfers or shared revenues. The idea of asking citizens directly for money appeals more to researchers than to politicians. Usually, only when cuts in transfers become unavoidable—or when commitment from the central government weakens—are subnational governments ready to accept the idea and to ask for own revenues. Raising own revenues is also more appealing to wealthy than to poor local governments.

This would suggest that the introduction of one or more taxes to raise own revenues in Bolivia would be facilitated if the idea were introduced at a time of declining gas revenues, which would negatively impact prefectures' revenue. Secondly, the introduction of taxes should be accompanied by the introduction of a system of equalization transfers based on fiscal

capacity. These transfers have considerable information requirements having to do with the size of the potential tax base. However, in the case of most of the tax options proposed here, most of these requirements are satisfied by the fact that the assessment of the tax base would be done by the central government in the case of the personal income tax and to the vehicle tax, or by some agency that is not controlled by prefectures in the case of the energy tax and the fuel tax. The only important tax that would be difficult to insert into the determination of tax capacity is the property tax.

Structure of Equalization Transfers based on Fiscal Capacity[14]

Formulas based only on Fiscal Capacity

The equalization transfer takes into account only differences in fiscal capacity. An example is the Canadian system of general-purpose transfers to provinces that consider only differences in tax capacity and assume, correspondingly, that each province has the same per capita expenditure needs. The formula would be as follows:

$TR_i = t \times (B/P - B_i/P_i) \times P_i$

where:

Tr_i is the transfer to local unit i,

P is population

B is the effective tax base (not the assessed tax base, but the base that potentially can be assessed; and

t is the average effective tax rate on the concerned tax base.

Variables without i refer to the country total.

Since $B/P - B_i/P_i$ measures the difference between the per capita national average tax base and that of region i, the formula brings the fiscal capacity of those subnational governments that are below the national average up to the national average, i.e., it provides 100 percent equalization with reference to the national average. Equalization can obviously be less intense.

Formulas that Consider both Expenditure Needs and Fiscal Capacity

Expenditure needs are estimated for each local expenditure responsibility and aggregated. The transfer will result from the difference between total expenditure needs and fiscal capacity, as in the following formula:

$TR_i = \Sigma N_{ij} - FC_i$

where, in addition to previous symbols, N is expenditure need; FC is fiscal capacity; and j stands for expenditure responsibility.

[14] This section is based on Ahmad and Brosio (forthcoming).

14. Conclusions

This paper has analyzed the system for financing subnational governments in Bolivia with a view to strengthening their reliance on own source of revenue. This should make them more accountable and prepare a sound financial foundation for further devolution of functions. Different consideration was given to municipalities and prefectures.

For the former, the paper focused on the improvement of the present set of instruments, whose structure is in principle suited to the municipal level of government. A basket of new tax instruments for Bolivian prefectures was also considered and evaluated, which includes a relatively large number of instruments. This can be considered a weakness. At the same time, it sends a message: the introduction of tax autonomy is not hindered by a lack of available instruments.

Compared to those levied by the central government in Bolivia or in other countries that make use of the tax instruments considered here, the tax rates used in the simulation are relatively low, with a view to moderating the increase in the price of highly sensitive tax bases, thus avoiding excessive economic distortions and political opposition to their introduction.

Obviously, it would not be necessary to introduce all of them simultaneously. When introducing tax reforms, governments are always faced with the choice of selecting one or a few instruments, thus concentrating collections and the burden for taxpayers on them, or splitting the burden among a number of instruments that make administration more cumbersome. A positive feature of the proposed instruments is their relatively low administrative cost. In fact, the taxes proposed would not require the establishment of new agencies, but could be collected by the existing ones and, in the case of energy and fuel taxes, by the firms that produce and distribute them.

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ANNEX I

Tables and Figures

Table 1. Latin America: Size of Sub-national Public Expenditure (Percentages of GDP and total expenditure of the general government)

	1985-1990	1991-1995	1996-2000	2001-2005	2006-2008		1991-1995	1996-2000	2001-2005	2006-2008
	In percent of GDP						*In percent of total expenditure of NFPS or GG*			
Argentina	8.7	11.0	11.9	12.0	14.0		44.7	44.8	45.1	46.7
Bolivia	2.8	5.6	6.9	7.8	10.7		15.4	19.9	22.1	26.5
Brazil	…	…	12.2	12.3	12.6		…	33.0	31.4	31.5
Chile	2.3	2.3	3.0	3.0	2.4		7.3	9.5	9.0	7.0
Colombia*	5.2	5.0	7.1	7.5	7.7		23.3	22.6	22.8	26.0
Costa Rica	0.8	0.6	0.7	0.8	0.9		2.6	2.9	2.9	3.6
Ecuador	…	1.8	2.2	3.7	4.3		7.5	9.0	15.6	14.4
Mexico	3.8	4.6	6.2	7.9	8.4		21.9	30.0	37.1	37.3
Paraguay	0.4	0.3	0.3	0.4	0.4		1.0	0.9	1.1	1.3
Peru	…	1.9	2.0	2.1	3.0		9.3	10.0	11.1	16.4
Average AL	…	…	5.3	5.8	6.4		…	18.3	19.8	21.1

Source: Ter-Minassian and Juan Pablo Jiménez Macroeconomic Challenges of Fiscal Decentralization in Latin America in the Aftermath of the Global Financial Crisis (CEPAL, 2011).
Note: Subnational databases include provinces, prefectures and municipalities in Argentina; prefectures and municipalities in Bolivia; states in Brazil; municipalities in Chile; departments and municipalities in Colombia; local governments in Costa Rica; provincial councils and municipalities in Ecuador; state governments and the DF in Mexico; departmental governments in Paraguay; and local governments in Peru.
NFPS: Non-Financial Public Sector; GG: General Government
*Average 1985-1990 correspond to 1986-1990.

Table 2. Municipal Revenues by Source: 1994-2008

	1994	2000	2001	2002	2003	2004	2005	2006	2007	2008
Own revenues	9.2	16.4	15.9	13.2	14.3	18.1	16.7	17.8	20.6	25.7
Transfers	12.1	22.6	23.2	28.1	24.3	28.8	32.2	51.7	60.6	85.2
Other revenues	0.0	10.6	23.5	15.5	16.2	20.5	16.5	19.5	24.2	27.7
Total	21.3	49.6	62.6	56.8	54.8	67.3	65.5	89.0	105.4	138.7

Source: FAM (2009). Bolivia. *Caracteristicas fiscales y financiera del proceso de descentralización en Bolivia, 1994-2008.*

Table 3. Reliance on the Property Tax as a Share of GDP in Latin American Countries

	1990-94	1995-99	2000-04	2005-07
Argentina	0.65	0.62	0.59	0.44
Bolivia	…	…	0.69	0.62
Brazil	0.37	0.41	0.42	0.44
Chile	0.55	0.65	0.7	0.59
Colombia	0.25	0.46	0.48	0.54
Ecuador	0.1	0.13	0.13	0.14
Guatemala	0.09	0.07	0.14	0.16
Mexico	0.18	0.18	0.18	0.18
Paraguay	…	0.36	0.39	…
Peru	…	…	0.17	0.16
Uruguay	0.52	0.7	0.71	…
Latin American countries	0.33	0.4	0.38	0.36

Source: Sepulveda and Martinez-Vazquez**.**

Table 4. **Estimates of Potential Property Tax Base by Country and Region, 2000 (in US$ per capita)**

	Potential rural tax base			**Potential urban tax base**	**Potential property tax base**
Country	**Cropland**	**Pastureland**	**Cropland + Pastureland**	**Urban land + Structures ***	
Argentina	3,632	2,754	6,386	18,301	24,687
Belize	5,201	133	5,334	9,298	14,632
Bolivia	1,550	541	2,091	2,021	4,112
Brazil	1,998	1,311	3,309	9,234	12,543
Chile	2,443	1,001	3,444	10,235	13,679
Colombia	1,911	978	2,889	4,665	7,554
Costa Rica	5,811	1,310	7,121	7,989	15,110
Ecuador	5,263	1,065	6,328	2,721	9,049
El Salvador	404	395	799	3,935	4,734
Guatemala	1,697	218	1,915	2,967	4,882
Guyana	5,324	252	5,576	3,192	8,768
Honduras	1,189	595	1,784	2,934	4,718
Mexico	1,195	721	1,916	18,155	20,071
Nicaragua	867	410	1,277	1,646	2,923
Panama	3,256	664	3,920	10,551	14,471
Paraguay	2,193	1,215	3,408	4,290	7,698
Peru	1,480	341	1,821	5,326	7,147
Suriname	2,113	210	2,323	5,571	7,894
Uruguay	3,621	5,549	9,170	10,330	19,500
Venezuela, R.B. de	1,086	581	1,667	13,049	14,716

Source: Bahl and Martínez Vasquez (2008).

Table 5. The Property Tax as a Share of GDP in Representative Groups of Countries (percent)*

	1970s	1980s	1990s	2000s*
All countries	0.77	0.73	0.75	1.04
(number of countries)	(37)	(49)	(59)	(65)
OECD countries	1.24	1.31	1.44	2.12
(number of countries)	(16)	(18)	(16)	(18)
Transition countries	0.34	0.59	0.54	0.68
(number of countries)	(1)	(4)	(20)	(18)
Developing countries	0.42	0.36	0.42	0.60
(number of countries)	(20)	(27)	(23)	(29)
Latin American countries	…	…	0.36	0.37
(number of countries)	…	…	(8)	(10)

* The data for 2000s are for five years from 2000 to 2004.
Note: Figures in parenthesis represent the number of countries considered in each computation.
Source: Bahl and Martinez-Vazquez (2008) and CEPAL.

Table 6. Per Capita Revenues of Prefectures, 2008

Prefectures	Population (2001)	Own revenues per capita (dollars)	Transfers per capita (dollars)	Other revenue per capita (dollars)	Total revenue per capita (dollars)	Per capita GDP 2006 (Bolivianos)	Share of gas production (2006)
Chuquisaca	531,522	3.8	74.7	9.9	88.4	7,505	5,8
La Paz	2,349,885	1.2	18.8	4.1	24.1	9,139	0
Cochabamba	1,455,711	1.2	36.8	4.1	42.1	9,878	11,8
Oruro	392,451	1.9	83.5	3.6	89.0	10,898	0
Potosì	709,013	0.6	97.6	1.0	99.2	6.245	0
Tarija	391,226	4.1	457.2	1.4	462.7	29.468	60,1
Santacruz	2,029,471	0.9	33.9	6.5	41.3	12.744	22,3
Benì	362,521	0.3	92.8	9.8	102.9	7.509	0
Pando	52,525	0	378.4	4.3	382.7	14.576	0
Bolivia	8,274,325	1.5	141.5	6.3	149.3		100

Source: FAM (2009).

ANNEX II

Simulation of the New Personal Income Tax Base

Statistical Information

Estimates of the tax base were conducted on t he basis of the information provided by the household survey (MECOVI) for 2007. A total of 16,784 individuals were surveyed. The sample is statistically representative of the population of Bolivia. The two columns at the right of Table 1 report the distribution of the population in the sample according to occupational status. The distribution is then compared—in the two left columns—with the whole population of Bolivia. There is an almost perfect matching between the two distributions, mostly because the survey is the basis on which national data are built.

Table 1. Bolivia: Population by Occupational Status, 2007

	Bolivia	percent	Mecovi Survey 2007	percent
Total population (number of respondents)	9,902,633	100.0	16,784	100.0
Population outside working age	2,296,496	23.2	3,965	23.6
Population within working age	7,606,137	76.8	12,819	76.4
Active population	4,927,369	49.8	8,269	49.3
of which: Employed	4.672,361	47.2	7,871	46.9
Unemployed	255,008	2.6	398	2.4
Previously employed	159,994	1.6	250	1.5
Yet to be employed	95,014	1.0	148	0.9
Non-active population	2,678,768	27.1	4,550	27.1
Temporarily	850,061			
Permanently	1,828,707			

Sources: two columns on the right: author's calculations on M ECOVI 2007; two left columns: INE, *Estadísticas de Mercado del Trabajo.*
Note: individuals under 10 years of age were excluded from the sample to make the data comparable with that from INE referring to the universe.

First step: Determination of total personal income by category of income with number of income earners and their average income

Table 2 reports by income category: i) the number of income earners; ii) average income by category and iii) total income by category (i x ii). The two columns to the right report the transformation to the universe of the sample.

Table 2. Number of Income Earners, Average Income and Total Income by Category, 2007

MECOVI 2007				Bolivia	
Type of income	N. of obs.	Mean value	Total (bolivianos)	Number	Total (bolivianos)
Salaries+ benefits	3,020	17325.8	52,323,916	1,781,813	30,871,338,017
Self-assessed self-employment income	2,902	11202.36	32,509,249	1,712,193	19,80,598,140
Second salary including benefits	157	9605.52	1,508,067	92,631	889,765,877
Self-assessed second self-employment Income	389	7620.4	2,964,336	229,512	1,748,970,897
Income from retirement	231	1724.4	398,336	136,291	235,020,209
Veterans allowances	9	1111.7	10,005	5,310	5,903,171
Disability allowances	5	1116	5,580	2,950	3.992,224
Allowances to widows	46	999.1	45,959	27,140	27,115,774
Interest income	84	422	35,448	49,560	20,914,474
Rents from real property	262	880.9	230,796	154,581	136,170,526
Other rents	29	2013.2	58,383	17,110	34,446,106
Rents from agricultural property	36	1755.8	63,209	21,240	37,293,467
Dividends and shares	17	6241.3	106,102	10,030	62,600,700
Rents from machinery	17	1759.8	29,917	10,030	17,650,924
Divorce alimony	119	5873,.	698,958	70,211	412,388,496
Domestic remittances	802	6548	5,251,496	473,183	3,098,405,481
Foreign remittances	485	8691.5	4,215,378	286,152	2,487,091,059
Severance pay	36	9463.75	340,695	21,240	201,011,532
Social Security allowances	2	11100	22,200	1,180	13,098,097
Bonosol	845	1797.9	1,519,226	498,554	896,349,653
Other incomes	107	1374.1	147,029	63,130	86,747,572
Total					

Sources: See Table 1.

Second step: Determination of the tax base

The gross tax base is determined as the sum of: i) wages and salaries (first and second occupation); ii) self-employment income (from first and second activity); iii) income from interest, dividends and shares, rents from real and agricultural property plus machinery. The main difference with respect to the present RC-IVA is the inclusion in the tax base of income from autonomous work, such as the liberal professions, small businesses, and traders. This tax base is presently included in the business tax (*Impuesto a las utilidades)* and in the special regimes.

According to this definition, all transfers to individuals from the public sector are excluded, as are domestic and foreign remittances. There is clearly no justification, from a tax policy point of view, for the exclusion of transfers from the public sector. It derives simply from the factual observation that transfers are individually modest and would thus be excluded from the tax base if a basic personal allowance were included. For pensions, we adhere to the present system under which individual pension contributions are taxed via their non-deductibility from the various income taxes.

This definition is in line with a traditional definition of income for tax purposes and diverges considerably from a comprehensive approach to personal income taxation of the Haig-Simons type that would include all transfers and remittances. With the exception of remittances, the loss in the tax base is, however, almost negligible.

Table 3. Types of Income Included in the Tax Base

		MECOVI		Bolivia
Type of income	N. of Obs.	Mean value	Total	Total
Salaries+ benefits	3,020	17325.8	52,323,916	30,871,338,017
Self assessed self-employment income	2,902	11202.36	32,509,249	19,180,598,140
Second salary including benefits	157	9605.52	1,508,067	889,765,877
Self assessed second self-employment income	389	7620.4	2,966, 336	1,748,970,897
Interest income	84	422	35,448	20,914,474
Rents from real property	262	880.9	230,796	136,170,526
Other rents	29	2013.2	58,383	34,446,106
Rents from agricultural property	36	1755.8	63,209	37,293,467
Dividends and shares	17	6241.3	106,102	62,600,700
Rents from machinery	17	1759.8	29,917	17,650,924
Other income	107	1374.1	147,029	86,747,572
Total			*89,976,452*	*53,086,496,700*

Sources: See Table 1.

Third step: Correcting the tax base for informality

Bolivia has a huge informal sector. According to various estimates,[15] the size of the informal sector corresponds to roughly a quarter of the formal economy recorded in the official statistics. The actual share of informality in the labor market is much higher, ranging between 50 percent and 60 percent of total employment, according to different estimates.

[15] For a review of various studies and findings, see Evia and Pacheco, 2010.

Table 4. Personal Income Tax Base, Corrected for Informality

	N. of obs.	Average income	Total income Bolivianos	Bolivia Bolivianos
Salaries+ benefits	1,842	22,093	40,695,306	24,010,407,539
Self assessed self-employment income	256	30,463	7,798,528	4,601,165,439
Second salary including benefits	40	13,025	521,000	307,392,266
Self assessed second self-employment Income	117	12,775	1,494,675	88,864,751
Income from interest	84	422	35,448	20,914,474
Rents from real property	262	880.9	230,796	136,170,526
Other rents	29	2013.2	58,383	34,446,106
Rents from agricultural property	36	1755.8	63,209	37,293,467
Dividends and shares	17	6241.3	106,102	62,600,700
Rents from machinery	17	1759.8	29,917	17,650,924
Other incomes	107	1374.1	147,029	86,747,572
Total			51,180,392	30,196,653,765

Sources: See Table 1.

By definition, the informal sector does not pay taxes on income at the moment. This does not however, amount to evasion in all cases. Many individuals operating in the informal sector, such as those helping their family, do not receive remuneration and are thus not subject to tax. For evaders, their missing tax base is clearly related to the capacity of the tax administration to reduce evasion. Current estimates of actual collections must be based on the actual available tax base and consequently require deducting from total income, both from dependent labor and self-employed work, the share received by individuals operating in the informal sector. We perform this operation by excluding from the tax base all salaries received from firms that have no tax identification number and all income from self-employed work performed by individuals who do not have or use a tax identification number.

The correction is large: the incomes attributable to the formal sector and thus taxable are only 56 pe r cent of total declared incomes, corresponding to an evaluation of the informal sector—with reference obviously to the activities included in the tax base—amounting to 45 percent of the total. As a result, our estimates of the revenue of the new personal income tax are rather conservative.

Fourth Step: Simulation of personal tax structure: inserting initial individual allowances

Simulations refer to two different structures of the income tax. The first one is a classical linear income tax with an initial allowance. The second one has a progressive tax rate schedule. Both structures are intended to exempt income earners lying at the poorer side of the income distribution. Several options involving the sizes of the initial allowances are reported in Table 5.

The first option corresponds basically to the existing exemption levels for the RC-IVA: four minimum monthly salaries are deducted from taxable income for dependent workers. The same initial allowance is given to self-employed workers, whose inclusion in the base of the new tax is the main change considered here. The impact of an initial deduction of this size is clearly huge: for dependent workers, it amounts to exempting almost two-thirds of those who have remained in the net after excluding the informal sector.

In the second option, the initial allowance is reduced to two minimum salaries again for both dependent workers and self-employed income earners. This produces a large, but reverse impact on both the number of tax payers and the size of the tax base. The number of taxpayers doubles, while the size of the tax base increases by almost 70 percent. The reason for the discrepancy between the two percentage increases is that some taxpayers earn different categories of income but the initial allowance is personal and hence is given only once.

Two additional options are also presented in which the initial allowance for self-employed work is made smaller: from 2 minimum wages to 1.5 and 1 minimum wage, respectively. The positive impact on the tax base is relatively modest. This fact, along with the consideration that the economic and equity grounds for differentiation of treatment between dependent and self-employed work is rather limited, suggests abandoning the two last options.

Table 5. Size of the Tax Base and Number of Taxpayers by Option

	First Option	Second option	Third Option	Fourth Option
	minus 4 minimum salaries for dependent workers	minus 2 minimum salaries for dependent workers	minus 2 minimum salaries for dependent workers	minus 2 minimum salaries for dependent workers
	minus 4 minimum salaries for self-employed work	minus 2 minimum salaries for self-employed work	minus 1,5 minimum salaries for self-employed work	minus 1 minimum salaries for self-employed work
Salaries+ benefits	6,352,159,083	12,036,915,571	12,036,915,571	12,036,915,571
Self assessed self-employment income	2,020,269,859	2,934,506,403	3,284,173,188	3,687,753,084
Second salary including benefits	307,392,266	307,392,266	307,392,266	307,392,266
Self ass. second income	881,864,751	881,864,751	881,864,751	881,864,751
Income from interest	20,914,474	20,914,474	20,914,474	20,914,474
Rents from real property	136,170,526	136,170,526	136,170,526	136,170,526
Other rents	34,446,106	34,446,106	34,446,106	34,446,106
Rents from agricultural property	37,293,467	37,293,467	37,293,467	37,293,467
Dividends and shares	62,600,700	62,600,700	62,600,700	62,600,700
Rents from machinery	17,650,924	17,650,924	17,650,924	17,650,924
Total	9,870,762,157	16,469,755,188	16,819,421,974	17,223,001,870
N. of taxable dependent workers	266,682	676,145	676,145	676,145
N. of taxable self-employed workers	51,920	102,661	122,131	134,521

Sources: See Table 1.

In the second option with the low level of exemption, the number of taxpayers is substantial, reaching almost 800,000, amounting to about 9 percent of the population. This would situate the personal income tax in Bolivia in middle of the road situation between the "mass" model of this tax used in industrialized countries and characterized by a low initial exemption and quasi universal subjection of the income earners to the tax, and the selective model used in most developing countries with high levels of initial exemption, restricted number of taxpayers and low collections.

Fifth Step: Simulation of Revenue with Different Options

In this last step we consider four options that are the combination of the two options referring to the initial allowance with a proportional and a progressive tax schedule. The simulations rest on equality of collections. In other words, the tax rates are calculated with the aim of ensuring with the new tax the same amount of revenue that is produced by the RC-IVA plus a share—estimated at 10 percent—of the revenue of the *Impuesto a las utilidades de las empresas* (tax on business income) attributable to income from self-employed income and the revenue deriving from the so-called temporary and simplified regimes (*Régimen tributario simplificado* and *Régimen tributario integrado*) under which the income earned from the handicraft, transport and retail sector is taxed. While the revenue from the *Impuesto a las utilidades de las empresas* is substantial, although it is attributable only in small part to the liberal professions and other self-employed workers, the revenue from the special regimes is tiny.

Table 6. Simulation of the Tax Rates and the Revenue deriving from the Four Options of a Personal Income Tax

	Rc-iva/impuesto utilidades	*1) Proportional tax With low exemption and low tax rates*	*2) Proportional tax With higher exemption and higher tax rates*
Deduction from income	4 minimum salaries	2 minimum salaries to dependent and self-employed	4 minimum salaries to dependent and self-employed
Tax rate	13 percent/25 percent (applying to 50 percent of gross income)	2.88 percent	4.81
Amount of collections (bolivianos)	474,908,000	474,908,000	474,908,000
		3) Progressive tax with low exemption	*4) Progressive tax with high exemption*
Deductions from income		2 minimum salaries to dependent and self-employed	4 minimum salaries to dependent and self-employed
Tax rates		2 per cent for income from 2 to 4 minimum salary	4 per cent for income from 4 to 8 minimum salary
		4 for percent for income above 8 minimum salary	8 for percent for income above 4 minimum salary
Amount of collections	474,908,000	512,649,581	555,046,156

The first column to the left shows the basic numbers for the duo RC-IVA/*Impuesto a las utilidades.* Dependent work and other items, such as interest and rents are taxed under the RC-IVA with a tax rate of 13 percent. Initial exemption is set quite high to allow the deduction, for those who cannot show IVA invoices, of consumption. The tax rate on self-employed work is much higher and no allowance for consumption is given. With a flat rate income tax, equality of revenue would be assured with a 2.88 percent tax rate with a low initial allowance amounting to 2 minimum salaries, and with a 4.81 percent tax rate in the case of a higher initial allowance. The gap with the present tax rates is huge and could raise doubts about the feasibility of the proposal, more precisely about the possibility of raising the targeted amount of revenue with such small tax rates. Basically, equality of revenue rests on the elimination of the deduction of the IVA paid on purchases and on improved tax administration that is able to reach small taxpayers and evaders.

The progressive options would also imply modest tax rates. With two income brackets, the tax rates would be 2 and 4 percent with a low level of exemption, and 4 and 8 percent with the higher one. The level of revenue associated with these tax rates would be about 10 percent higher than the present one: the reason for this estimate is that we prefer to round tax rates rather than to ensure equality of revenue with unusually not rounded tax rates.

Simulation of Collections by Department

The MECOVI 2007 survey does not ensure that results are statistical significant at the departmental level. This applies to the small departments, while for the large departments the number of observations is high enough to provide reliable information. In any case, there is practically no alternative to the use of MECOVI 2007. The previous survey (2002-2003) is considerably outdated. Information on collections by departments of income related taxes is greatly biased in favor of the large departments, because in Bolivia headquarters of firms are responsible for filling declarations and paying where they are located the taxes for all their activities in the national territory. Thus, we prefer to use data from the MECOVI 2007 survey.

Estimates of collections by department are compared with those coming from other sources (Table 7). Since there is very little interpersonal redistribution in Bolivia data on the production side of income—that is, GDP—is expected to be strictly parallel to that on the receiving side of income, which reflects disposable income and thus the tax base. The main

difference between the two sides should be attributed to the initial allowance (deductions) from income and their distribution by department. Table 7 shows that our estimates are in line with the distribution of GDP by department, as expected. The only important gap is Potosí, where the share of the personal income tax is much smaller than the share of GDP. The gap can be easily explained by the high level of poverty prevailing in this department; Tarija, where the opposite takes place and is attributable to this department's high income level; and Pando, where our estimates of revenue are much smaller than this department's share of national GDP. One would have also expected for Santa Cruz a personal income tax share of revenue higher than that of GDP, but estimates show it to be smaller. However, Santa Cruz is fairly represented in MECOVI. The gap can thus be attributable to two different factors: i) the common feature of household surveys in which rich individuals tend to understate their expenditures and revenues and ii) this prefecture's small share of public sector workers, whose wage and salary cannot evade taxation. The estimates also show that the distribution of revenue by department does not vary substantially from one option to the other.

Table 7. Estimates by Department of the Collection of the Personal Income Tax

	Proportional income tax with 2 minimum income deductions	Progressive income tax with 2 minimum income deductions	Proportional income tax with 4 minimum income deductions	Progressive income tax with 2 minimum income deductions	RC-Iva collections 2009	GDP 2007
Chuquisaca	5.4	5.1	5.3	4.9	3.5	4.5
La Paz	23.6	24.4	26.0	26.5	48.9	25.2
Cochabamba	18.3	18.3	18.9	18.0	7.9	15.2
Oruro	7.1	6.5	6.1	5.4	1.9	5.6
Potosì	5.4	5.4	5.5	5.8	4.0	11.6
Tarija	10.0	9.9	8.4	8.2	2.5	6.8
Santa Cruz	21.2	20.7	21.9	21.5	29.9	27.2
Beni	5.1	6.1	4.2	6.6	1.3	3.0
Pando	3.8	3.6	3.6	3.2	0.2	0.9
Total	100.0	100.0	100.0	100.0	100.0	100.0