Options for retooling property taxation in Latin America

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I. Introduction

The very reason which makes direct taxation disagreeable
makes it preferable (John Stuart Mill, 1848).

Following a very rapid urbanization in the past decades 80 per cent of Latin America's population live in the cities. This is one of the highest rates of urbanization in the world and has been driven by migration from poorer towns and rural areas, often to informal settlements around mega-cities. Informality is very high in housing and there are wide spatial inequalities between and within countries in the provision of basic services and of development opportunities. There is growing recognition better anchor the provision of the sustainable development goals, from direct provision of funding and access to credit for infrastructure, and in generating more incentives for more accountable local governance. There is also wide recognition of the merits of relying on this instrument of taxation for efficiency and equity purposes, particularly when used as a local government own-source tax, i.e., where the local government has some control of the rates at the margin.

Most of the public services capitalized in values are provided locally, making the property tax the economist's favorite mechanism to finance local government. Alfred Marshall (first edition 1890; reprinted 1920) famously developed this argument labeling local property tax as a "beneficial" tax in antithesis to "onerous' national taxes (see also Ahmad, Brosio, Pöschl, 2015).

Also, one component of the property tax base, land, is totally immobile, while the other, buildings and improvements, are relatively immobile. These two characteristics make the local property tax, when combined with local zoning, an efficient decentralized benefit system of taxation with minimal economic distortions.

This instrument has a largely unexploited revenue potential in Latin America. On average, the region collects a fraction of its potential revenue—with the average of 0.3% of GDP, whereas a full application of the posted rates to a more updated system of valuation could generate revenues between 1.5 to 2% of GDP. Rural property is also inadequately taxed, which is relevant for Latin American countries with a large primary commodities and livestock sector. The region has a vast experience, both intellectual and political, with property taxation in its various variants, particularly with

betterment taxes. However, ambitions, need for revenues, and reform policies are confronted with political and administration obstacles.

Governments tend to worry about the political costs of taxing property. Unpopularity with voters is high, or is considered as such. Reassessment of property values is systematically delayed (clearly, this is not an exception, but rather a worldwide phenomenon) and the date for revaluations tends to be chosen as far as possible from the Election Day. Cyclical fluctuations originate around a long-term trend that is, at best, stable when not declining.

In Latin America, property taxation revenue and administration are assigned predominantly to subnational governments. There is also some evidence of a trend to further decentralize the administration, particularly in Argentina (from provinces to municipalities), but also in Colombia (from the national to the municipal administrations). This trend may be interpreted as recognition, at the same time, of unpopularity and potential. Upper governments prefer to deprive themselves of an instrument that generates problems and recognize that local governments are better equipped to manage unpopularity by using the link between revenue and expenditure, and would probably significantly increase the revenue collections.

According to the literature, unpopularity derives from the comparatively higher salience of the tax. The tax due is communicated clearly to taxpayers, but the assessment process done inside cadasters is obscure, and without participation of the taxpayers. Unpopularity and animosity against the tax originate also from the dissonance between the presumed capacity to pay, as indicated by the value of properties, and the effective capacity to pay the tax bill, which derives from money income flows rather than stock of wealth. Dissonance becomes acute with delayed updates of the tax base that lead to sudden peaks in payments. Also, lumpy modes of payment exacerbate problems for taxpayers.

In our view, unpopularity is more the result of transient government choices than a necessity deriving from the intrinsic nature of the tax. Like some other important institutions, the actual property tax frequently displays a 'tragic brilliance mechanism'. It is a mechanism that promises on the face to be brilliant, but when applied may generate much less brilliant, if not tragic, results. Tragic brilliance can be corrected, however.

This paper focuses on recurrent property taxation. Our aim is to address the potential role of property taxation, especially of recurrent taxes on immovable property. We suggest ways to improve the working of the tax and to avoid those features that make the tax disagreeable to taxpayers and unpopular for governments. Our options include self-assessment of value by taxpayers, the adoption of an area based tax by specific localities, the participation of taxpayers to the determination of the tax base with their communication of the physical characteristics of their property.

This would result in the adoption of a banded system for the determination of the tax due, raise significant revenues and also be inequality reducing when these revenues are spent for social purposes (see Ahmad and Viscarra, forthcoming for some estimates for Mexico). Their common aim is to simplify administration, to make the determination of the tax due more transparent and to involve taxpayers.

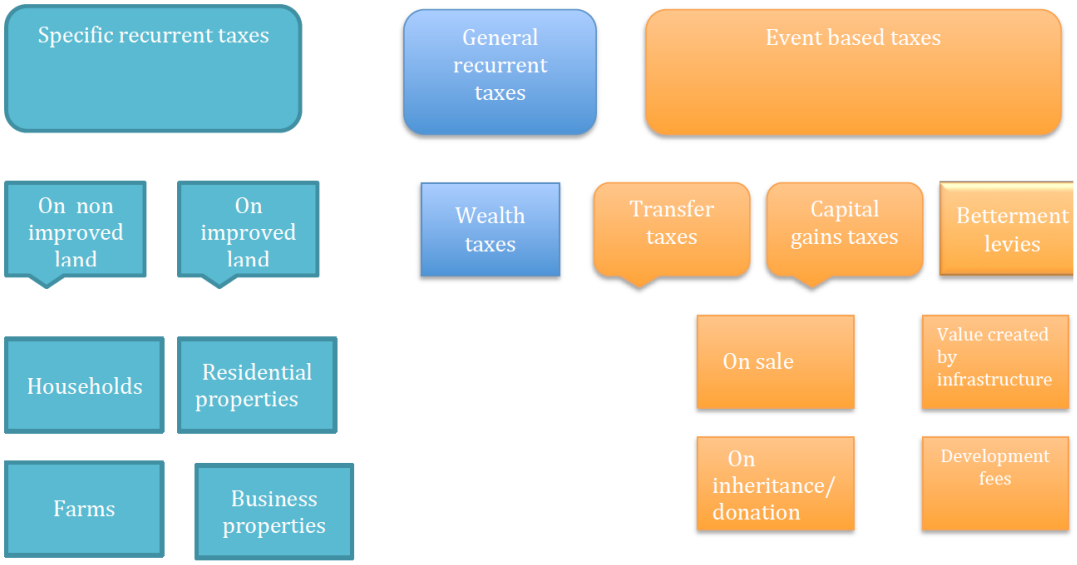
Section I provides a typology of instruments for property taxation, and how much Latin America collects in recurrent taxes. Section II provides an estimate of the potential of area-based type of tax in Latin America. Political economy issues and how these shape actual government policies in Latin America form the content of Section III. Section IV presents the specific reform options for redesigning the property tax.

II. Instruments and models for property taxation

There are different specific instruments to tax land and improvements on it, i.e. buildings of various types. i.e. immovable property. Figure 1 that follows provides a classification.

Immovable property can be taxed on a recurrent basis, yearly in practice; or non-recurrently, i.e. on an event basis. Let's start from the latter which is observable on the right side the Figure. We then focus our attention on specific recurrent taxes that are the object of this paper.[4]

Figure 1. Alternative types of immovable property taxation



4 Useful summaries are provided by Ahmad, Brosio and Gerbrandy (2017); Bahl and Wallace (2008); Mirrlees Report (2001); Norregaard (2013).

Event-based, or non-recurrent, instruments include, first, *taxes on transfer of property*, also frequently called registration or stamp taxes or duties. Transfer taxes are levied on the sale, or purchase of property, donations as well as inheritances. These taxes have existed in almost all countries often over long periods of time and are presently levied almost universally.

The base of transfer taxes is the market value of the property and the tax rates are generally flat, although there are notable exceptions, as in the UK, where a progressive rate schedule is applied to property transfers. Transfer taxes have a substantial revenue potential, and relative ease of administration in the more advanced countries. These are also redistributive, if the frequency of transactions is higher for well to do people. However, in developing countries, these could contribute to the general understatement of property values, affecting also the property tax per se, and consequently generate very little revenue. The causality might also run in the opposite direction. This problem, however, can be addressed by the use of blockchain technology, that is making undervaluation of sales extremely difficult. The tax generates potential distortions in the immovable property market, could it more rigid and, as a consequence, impacting on the mobility of persons. This however has not been the case, for example in the UK, and the effects on mobility of the young, e.g., in London, are more due to the high entry price levels. Also, mobility in emerging market countries is not likely to be significantly affected by such as measure. Transfer taxes add on other expenses associated with transfer of property, such as notary fees, increasing transaction costs. Transfer taxes are roughly equivalent to capital gains taxes. In fact, they would work acceptably well in this sense if sales of property take place at long intervals, typical of intergenerational transfers.

The second type of event-based instruments is the *capital gains tax.* Capital gains taxes are widely used and are generally levied at the time of the transfer, providing substantial revenue, especially when purely monetary gains are also taxed. Capital gains taxes share with transfer taxes the tax base and, in some versions, the moment when they are levied.

Betterment taxes aim to capture the increase in value derived from public infrastructure work. Latin America has a long tradition, in terms both of theory and of experimentation, this instrument.[5] Collections are, however, with a few exceptions disappointing, due to the difficulties of implementing this instrument. As a matter of fact their administration presents a number of challenges in addition to political acceptance. Akin to betterment taxes are *development fees* that are widely used by states in USA, but also in other industrialized countries. The fees aim at channeling to the public pursue part of the value of land created by the granting of a building, or

5 Smolka (2013); Smolka and Furtado (2002).

development, permit. They can contribute substantially to the financing of infrastructure projects. This is one of the components of the "land value capture" option that has become popular among aid agencies.

There are two broad approaches to property taxation. The first alternative is a separate tax on only immovable property (turquoise rectangles in the figure). This is *the property tax*. The second alternative is the inclusion of immovable property into a comprehensive *wealth tax* (blue rectangles in the figure). The first of the two alternatives is the most popular one. This tax is usually assigned to local governments. Comprehensive wealth taxes are not very common and usually assigned to the central government. There are no differences in the way immovable property can be taxed under the two alternatives. This is why in the figure the space below the wealth taxes is empty.

Property taxes can be levied on land only (non-improved land), or on improved land, meaning land plus buildings. Many countries, and also the Latin American ones, distinguish between a urban property tax and a rural property tax. Urban property taxes are generally levied on improved land, while the main, or exclusive object of rural property taxes is land. In developing countries, land is used mostly for agriculture, making a tax on rural property, also called agricultural land tax, a potentially important source of revenue. In estimates for South Asia, a flat rate per acre above a generous exemption limit of 12.5 acres, was seen to produce well over 1-1.5% of GDP, whereas the income tax on agriculture was close to zero (See Ahmad and Stern, 1991). This was also strongly redistributive relative to the existing system.

There are two broad alternatives to the definition of the base of land and property taxation.

The first alternative includes all the variants where the tax base is valued in money terms. Methods of valuation differ, and also the inclusiveness of the tax. Three different options represent the main practices of monetary valuation of property:

a) the annual rental value;

b) the capital value of land and improvement/buildings;

c) the capital value of land.

The annual rental value system is based on notional rents that might be expected in a fair market transaction. It was used for centuries in Britain (and then exported to the British Empire), before being abandoned by Margaret Thatcher. It is still used in part of Francophone Africa, as a proxy for capital market value. In Britain, property sales were infrequent in the past centuries, while renting of property was more frequent, leading to the selection of rental value to assess the tax base. Rental value presents huge problems. First, there is strictly no rental value for vacant land, although it can have a huge value from public policies, both regulation and fiscal. Secondly, it is

arduous to identify the value of market rent in the case of owner-occupied property, which is the most frequent property type found.

The *capital value of land and improvement/buildings* is identified in most countries by the *market value*. This eliminates most of the problems found with rental value, such as vacant land, owner occupied properties, and controlled rents. Identifying the market capital value of properties presents a more challenging problem than rental value in implementing a property tax in developing countries (for example see Bahl and Wallace, 2008), due to the rarity of market transactions.

Complications arise when countries try to separately tax the value of land, and then the value of buildings or improvements to built-up structures. Although theoretically attractive, these combinations have proved difficult to implement given limitations on the numbers of surveyors in most developing countries.

In all the three variants the aim of the tax administration is to approximate as much as possible current market prices. Approximation, i.e. the determination of the tax base, is done according to two approaches. The first or, the more modern, is based on economic modeling. Hedonic models of real estate are used to explain market prices, observed from actual sales of a representative sample of properties. The results, more precisely the estimated implicit market prices of property characteristics, are used for the determination of the value, approximating the market price, of all properties. The hedonic pricing method is based on the fact that prices of goods in a market are affected by their characteristics. For example, the price of a pair of pants will depend on the comfort, the cloth used, the brand, the fit, etc. So this method helps us estimate the value of a commodity based on people's willingness to pay for the commodity as and when its characteristics change. This approach is referred to as the Computer Assisted Mass Appraisal Method (CAMA) and is used presently in a large number of countries, and also by cadastral agencies.

The second approach, or the traditional cadastral method, is based on the expertise of surveyors and tax officials. Property values are assessed individually applying to the reference unit price of property a number of parameters tasked with representing the relevant characteristics of property.

Both approaches require detailed information on all the characteristics of properties impacting on the price. In the literature, a distinction is made between structural characteristics, such as age, maintenance, quality of the materials, and variables reflecting location and access to services. The next subsection provides a simple algebraic notation of these approaches.

The second alternative for the definition of the base of land and property taxation is the area-based approach. The tax base is measured according to the physical size, area, of properties. The tax due is determined, very simply, (as in the case of specific taxes) by multiplying a measure of the tax base (for example, square

meters) by the tax rate *i* expressed in money units (i.e., pesos per square meter). It is also possible to transform the tax base from physical into money terms by applying a reference price of property, such as a per square meter average price, to the size of property and apply then a percentage tax rate (as illustrated also in the next subsection). The tax rate could vary by locality or city, depending on country-specific design.

In addition to area, also other elements can be used that impact on the value of the property and/or reflect the impact of government policies on the value of property, or on the welfare of occupants and/or owners. These are, first, location, with reference to the quality of services and infrastructure, age and a few, basic characteristics of buildings that impact of the market value of property or reflect the (housing) services they provide to their occupants. Taxes using a weighted notion of area to determine the tax base are called "area-based taxes' (see Ahmad, Brosio, Gerbrandy, 2017), "parametric taxes", or also "point-based taxes" (Collier, Glaeser, Venables, Manwaring and Blake, 2018). It is important to note that, as the number of factors/parameters applied to area increases, the tax base calculated with this method comes closer to the tax base estimated by cadasters.

Approaches for the determination of the tax base

1. Area-based approach

The areas-based approach has, as noted above, two variants. According to the first, the tax base is determined in physical terms

$$Tax_1 = m^2\, T_i$$

where:

Tax_1 is the tax due on property *i*

m^2 is number of square meters

T_i is the tax rate (in money units).

According to the second variant the tax base is expressed in money terms.

$$Tax_1 = m^2\, SMRP\, t_i$$

where, in addition,

SMRP is the reference price of a square meter of property

t_i is the tax rate in percentage terms.

2. Value-based approaches (CAMA)

The computer assisted mass assessment (CAMA) method aims to determine the approximated market price (AMP) on the basis of hedonic prices. It consists of two steps.

The first step provides the estimation of the hedonic model

$$P_i = (s_i S_i, l_i L_i)$$

where:

P_i is the market price observed at sale for a random sample of properties

S_i is a vector of characteristics of the structural characteristics of the property

L_i is a vector of characteristics related to the location of properties

s_i and l_i are the estimated coefficients associated to the characteristics. They are usually interpreted as the implicit marginal prices for the characteristics.

The second step approximates the price of property *i* and of the tax due :

$$AMP_i = \sum s_i \boldsymbol{S}_i + l_i \boldsymbol{L}_i$$

where:

$\boldsymbol{S}_i$ and $\boldsymbol{L}_i$ are the actual values of the characteristics of property *i*

$$Tax_1 = t_i \, AMP_i$$

Traditional cadastral approach

$$Tax\ base = SMRPa_i$$

where:

a_i is a vector of coefficients applied to the reference price of a square meter reference price of a square meter. Coefficients are determined by cadastral officers, or surveyors.

$$Tax_1 = t_i \, SMRPa_i$$

The area-based approach converges towards the property value approaches, when additional characteristics of properties are added to physical size. This is almost trivial finding, a graphical explanation of which is provided in the two graphics of Figure 2, below. However, it has important policy implications, since it implies that the choice between the two basic approaches is determined to a large extent by

considerations of administrative ease and cost of accessing information about characteristics of properties, including the quality and range of services. The political economy of the direct linkage with a "package" of basic services constitutes the "beneficial property tax" sub-component.

The horizontal axis of Figure 2a, reports the physical size of property (sq. meters), representing the tax base of the area-based approach. The vertical axis reports the value of a composite index that includes all the characteristics, beside size, that impact on the value of properties. These are referred to as the sum of S_i and L_i or as the a_i coefficients in the value-based approaches. The negatively inclined straight lines are iso price /tax base. They are made of all the combinations of size and composite indicators that lead to the same approximated price and hence tax base. Their level increases shifting westwards. Staying on the same iso tax base line, a decrease in size from point A to point D in figure 2a (or of a linear transformation of size in money terms, using a reference unit price) is exactly compensated by an increase, DE, of the composite index. The main point is that the same size of property, for example point A, again may be associated with different levels of the composite index leading to higher levels of the iso tax base lines, such as points B and C in figure 2A. Assessing the tax base with reference only to size can not be very accurate, obviously, but has the advantage of simplicity, and it is common to include at least one additional locational factor. Finally, the existing/observed tax base has a maximum value, and the composite index has a maximum value as well.

The maximum value are indicated by Max in the figure.

The small arrow ↙ shows the maximum level the price and the tax base can reach in a hypothetical case, as represented in the graphic.

In Figure 2b a location factor has been added, as a weight, to size. It expands the maximum value the tax base can reach, and also its variation. At the same time, the index, its maximum value, and its range are downsized. The substitution rate between the index and the tax base decreases, making the iso lines flatter. Smaller changes of the index than before are able to compensate similar changes in the tax base. The maximum level reachable by the iso tax base, indicated by the arrow at the left upper corner of Figure 2b, is much closer to the horizontal axis. There is, as a consequence, much less variance between the tax base determined according to the (now modified) area-based approach and the tax base determined according to value.

Figure 2a

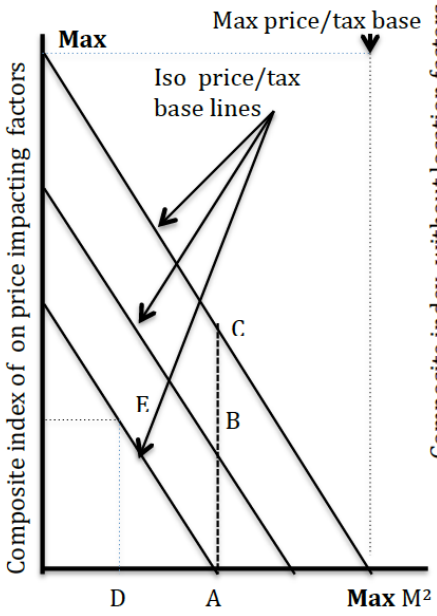
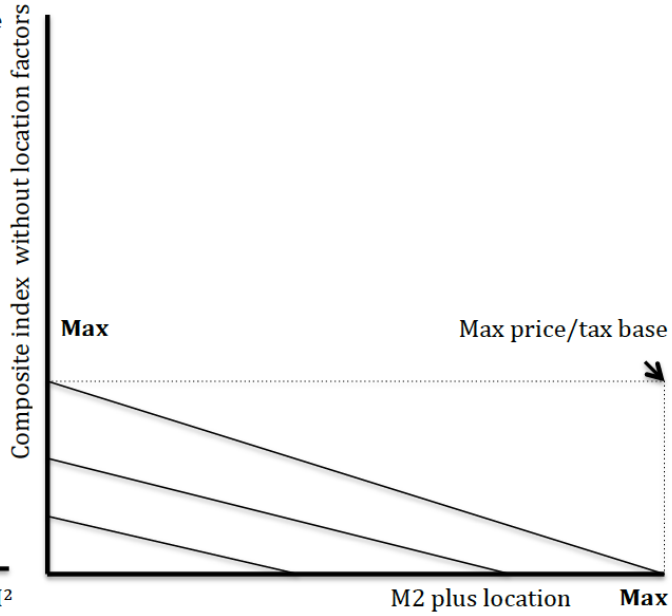


Figure 2b



If the factor shifted from the vertical to the horizontal axis has a relevant impact on price, the area based approach increases its accuracy with a modest increase of complication. This is likely to be the case of location factors, as mentioned by most of literature.

Table 1 that follows shows the impact on the price of residential properties deriving from three, crucial, factors: location, quality and age. As we see location (zone) explains a larger variation than the other two factors, its range being larger. This is consistent with the assertion that including location in an area-based tax improves its working with very little additional complication.

Table 1. Factors impacting on the price of residential property. Montevideo 2107

		Promedio	1er cuartil	3er cuartil
Zone:	Range of price (max/min)	2.03	2.41	2.23
Quality:	price by category			
	Above standard (Confortable)	2,026	1,384	2,755
	Standard (Comun)	1.586	876	2240
	Below standard (Economica)	1,159	680	1,511
Quality:	Range (max/min) by category	1,75	2,04	1,82
Age:	price by date of construction			
	less than 10 years	2,376	1,948	2,933
	10 to 20	1,988	1,335	2,655
	20 to 30	1,936	1,123	2,693

	30 to 40	1,753	903	2,485
	40 to 50	1,775	1,019	2,443
	50 and over	1,380	854	1,809
Age	range (max/min) by age	1,72	2,16	1,62

Fuente: Elaboración de los autores sobre datos del Instituto Nacional de Estadística de Uruguay, *Indicadores de Actividad y Precios Del Sector Inmobiliario, Año 2017*.

Some further crucial classifications

A very important distinction, because of its many policy implications, is that between residential property and non-residential, i.e., industrial and commercial property. As countries grow, revenue from non-residential property increases in importance. In the UK, where the two categories of property are subject to different taxes, collections from the business rates (as the tax on non-residential property is labeled) are larger than collections from the Council Tax, the levy on residential property. This suggests paying increasing attention to the potential of business property taxation and, in case, to apply (partly) different instruments, particularly with reference to the determination of the tax base.

The ownership-valuation approach

The typical model of property taxation used in most industrial countries and followed in most Latin America countries is based on ownership, as in the US, Canada, and many European countries, or alternatively on occupancy of properties, as in the UK, or both, as in France, and on an accurate valuation mechanism. It is also based on a tax base expressed in money terms. To make the model fully operational, there needs to be an accurate record of the property, as well as ownership/or occupancy, and of changes in prices and valuations. Records of properties, ownership and values are typically kept in cadasters.

While the ownership-based model is appealing in many respects, its adoption faces huge challenges in many emerging market and developing countries (as well as some OECD countries). There are several layers of difficulty with this model and we explore them sequentially and suggest ways for its better adaptation to the prevailing context of emerging market and developing countries.

Technical difficulties of the traditional ownership-valuation approach

According to theory, the valuation of the tax base should be as close as possible to market price**.** Prices reflect differences in wealth and capacity to pay. Also, importantly improvements in infrastructure—e.g., opening of a new metro line or station - are immediately reflected in property values, hence in taxes and affect the local government's ability to issue bonds or borrow for the improvements in infrastructure. Property prices are closely linked to quality of public schools and effectiveness of local services. If these services are not provided effectively, people move with their feet to a jurisdiction that provides better quality services, (particularly education in the US). This has an important feedback effect on property values, and taxes, as well as the income tax base. The resulting fiscal pressures are part of the electoral discipline that comes about with yardstick competition.

Valuation is the most difficult administration task and is hugely problematic in many developing and emerging market economies. It was a primary reason for the adoption of the area-based approach in the UK. Markets in emerging market countries do not operate as efficiently as in advanced industrial countries. Furthermore, the information base on ownership is often much more complicated than in the simple market-based model in countries like the US. It is often not clear what buildings or additions are constructed relative to the legacy cadasters. Similarly, it is hard to assess the impact that public policies, such additional improvements in infrastructure, or of changes of preferences have on market prices. Periods of hyperinflation in several Latin American countries also have complicated the valuation mechanisms relating to property taxation.

The above-mentioned factors limit the usefulness of the ownership-valuation model in most emerging market and developing countries. And, when the property tax operates imperfectly, and high-end properties are able to effectively evade taxation, the distributional advantages of a property tax disappear.

Maintaining cadasters is the bedrock of property management systems. However, maintaining cadasters and keeping them up to date is typically a difficult, complex and costly task. Even in industrial countries updates of values take time to materialize. The situation is made more complex in many emerging countries with widespread state or communal land, and migrations leading to "informal" settlements, especially in the environs of large metropolitan areas.

In many developing and emerging market countries, little is known about what properties are located and where. This applies equally to low-end informal properties, as well as to high-end properties as farms and single properties are torn down and replaced by luxury condominiums. In many metropolitan areas in Africa (e.g., Cairo) and in Asia, only properties within the physical limits of the old cities are classified as urban, and many new satellite towns and high-end suburbs remain zoned as rural.

The multiple and often overlapping property rights complicate the ownership-valuation model. An immediate consequence is the mushrooming of informal settlements with substandard living conditions and poor access to public services in and around major cities. Particularly damaging is the absence of incentives to improve the “uncertain” living conditions, together with the inability to access credit. This has deleterious long-term effects on the quality of life of an increasing and mostly vulnerable segment of the population and in meeting the SDG targets.

III. Performance of the property tax and its revenue potential in Latin American countries

Performance

On average, Latin American countries collect around 0.3% -0.5% of GDP (see Table 2). Only the best performers, Colombia and Uruguay, are approaching 1% of GDP, while big and urbanized countries, such as Argentina and Chile, remain far below the 1% threshold.

Table 2. Collections of recurrent property tax in Latin America and In the OECD area. 1990-2017.

	Argentina	Brazil	Chile	Costa Rica	Colombia	Ecuador	Mexico	Peru	Uruguay	Average Latin America	OECD
1990	0,6	0,2	0,6	0,2	0,2	0,1	0,1		0,6	0,3	0,8
1995	0,6	0,4	0,6	0,1	0,4	0,1	0,2		0,90	0,4	0,9
2000	0,6	0,4	0,7	0,1	0,5	0,0	0,2	0,2	0,9	0,4	0,9
2005	0,5	0,4	0,6	0,1	0,6	0,1	0,2	0,2	1,1	0,4	0,9
2010	0,3	0,5	0,6	0,3	0,6	0,1	0,2	0,2	1,1	0,4	1,0
2015	0,4	0,5	0,7	0,3	0,8	0,1	0,2	0,2	0,9	0,4	1,1
2016	0,4	0,6	0,7	0,3	0,8	0,1	0,2	0,2	0,8	0,5	1,1
2017	0,4	0,6	0,7	0,3	0,8	0,2	0,2	0,2	0,9	0.5	1.1

Source: Revenue Statistics in Latin America and the Caribbean 2019 - © OECD 2019

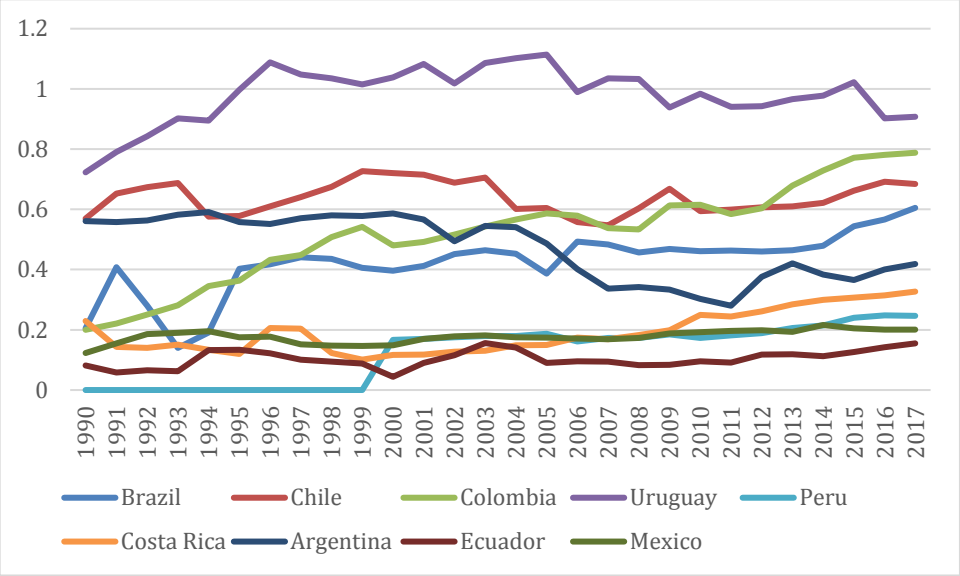
While the long-term share of property tax collections on GDP is stable, short-term fluctuations are very wide. The tax/GDP ratio sometimes doubles, or halves from a year to another, impacting the ability of local governments to finance their expenditures. Inflation prone countries are inherently prone to fluctuations of their property tax revenues. Fluctuations are amplified by government choices as politicians postpone updating of property values when election date comes close, as we will see in a while.

Potential

How much revenue can be collected from a recurrent property tax? The answer derives from the combination of two elements. The first is the size of the tax base. In principle, this is the value of all assets comprising immovable property. The second element is tax effort. In turn, it is determined by the tax rates applied, by the

number and levels of exemptions granted and by the capacity to manage the tax, including, first, the containment of evasion.

Figure 3. Fluctuations of recurrent property tax in a group of Latin American countries. 1990-2017.



Source: Elaboration on Revenue Statistics in Latin America and the Caribbean 2019 - © OECD 2019

An extremely valuable data set on the value of capital constructed by the World Bank (2018) for almost all countries allows us to quantify the first component according to the most comprehensive approach to the tax. The tax base is divided in two components. The first is the value of urban land, plus residential and non-residential buildings (called structures). The second component is rural land, defined as the land that can be dedicated to pasture of cattle and raising of crops. The distinction is well adapted to the circumstances in Latin America. Rural land is an important component of the tax base almost anywhere in the region. As a matter of fact, most Latin American countries have a system that separates (as in Brazil) or differentiates (as in Argentina, Colombia and Uruguay) the taxation of rural land from that of urban land. Table A1 in the Annex provides an illustration of this typology.

We use the analysis of Bahl and Wallace (2008) as the starting point for the determination of the tax effort. These authors, who have pioneered the use of the World Bank (2018) property data set, consider, somewhat optimistically, that an average tax rate of 1 percent is a reasonable burden in all countries for both urban property and agricultural land. However, according to them, only one half of

agricultural land can be taxed. Exemptions can be modest for urban land and their negative impact on revenue can be easily compensated with a small increase of the tax rate, using also a progressive schedule. The largest component of the tax base and of the potential collections is urban land, but rural land is not marginal. Table 3 reports the data and the results of the simulation made specifically for Latin American and with reference to the year 2014.

Applying the tax effort suggested by Bahl and Wallace (2008) the ratio of collections to GDP would always be over 2 percent in Latin America. This is a level reached only by the top world performers, such as France, England, Israel, Japan and the United States. Clearly, this level would be demanding for Latin America, at least in the immediate future. At the same time, it shows that the data used for the estimates does not lead to totally imaginary results.

The target of 2 percent is a high multiple of present collections, even for the best performers in Latin America. As the index reported in column 14 of the Table 2 shows, the best performer, Uruguay, performs at only 40 percent of its potential. Chile and Colombia also considered as relatively good performers are quite distant from full potential, their share of present revenue being only one/fourth of the full potential. The big countries, Argentina, Brazil and Mexico are even more distant, with performance ratio lower than 20 percent.

The table presents also the performance indicator calculated separately for the taxation of rural land for the tiny number of countries that have a separate tax and/or for which the relevant information is available. Interesting and surprising numbers do appear. More specifically, the ratio of actual to potential revenue comes close to 1 for Uruguay and to 0.35 for Argentina and Chile. This reflects the assumption that only fifty percent of the tax base can be actually reached, but also shows that margins for improving the performance are larger for urban land than rural land.

Increased exemptions can foster the political feasibility of the property tax. As an example, we estimate the exemption from the tax of properties deprived of access to basic urban services. This is a practice already implemented in countries such as Bolivia and Brazil.[6] Its effectiveness in terms of exemption is lessened over time by the improvement of access. In principle, the exemption reinforces the revenue-expenditure link, although it might provide wrong incentives to politicians, since the fiscal cost of the exemption could be lower than the cost of providing access to services. As the last column to the right confirms, when compared with column 8, the cost of this exemption in terms of revenue is relatively small, as the ratio of collection on GDP remains over 2 percent. Exemptions to be continued have to refer to other

6 In this country when properties have no access to at least two among five basic services, municipalities are no longer entitled to levy the urban property tax (IPTU). These properties became liable to the rural land tax (ITR).

criteria, such as for example an income threshold of the household that owns, or occupies, the property.

The literature (see, for a review, Ahmad, Brosio and Gerbrandy, 2017) suggests that an initial goal of 1 per cent of GDP is a reasonable target for emerging market countries, such as most of those in the region. This target, also, could be reached with a lower tax rate than the 1 percent suggested according to the Bahl and Wallace approach.

To some extent, available statistics tend to understate the contribution of recurrent property taxation to tax collections in Latin America. For example, in Argentina real property is included in the tax base of the federal wealth tax, *Impuesto a los bienes personales*, but its contribution to the collections is not singled out in the statistics. Castro, Díaz Frers, Alfieri, Bovino (2014) estimate that real property contributes to about 40% of the collection of *Impuesto a los bienes personales*, increasing the share on GDP of recurrent taxation of property from 0.4% to approximately 0.6 %.

In some Latin American countries, the value of real property serves as the base for the determination of fees and charges for the provision of specific local services, such as garbage collection, street cleaning and lighting and, also, sewage systems. Use of property values for assessing these fees increases the beneficial link between revenue and expenditures.

In general, there are many possible positive interrelations between the different variants of property taxation. They derive from good administration practices. For example, the values of property assessed for taxes on transfer of property help to determine and/or control assessed values for recurrent taxes, and vice versa. This can lead to increased generation of total revenue coming from all different variants of property taxation.

Table 3. **Estimates of revenue potential of a comprehensive property. Latin American countries, 2014**

Country	Potential rural tax base per capita US dollars			Potential urban tax base	Potential comprehensive property tax base: cropland +pasture land +urban land and structure	Potential revenue from property taxation with 1 % tax rate and exemption of 50% of crop and pasture land,		Actual property tax revenue collections on GDP	Performance indicator: ratio of actual to potential revenue	Potential revenue from a tax on Crop land + pasture land		Actual revenue from land and pasture tax	Performance indicator: ratio of actual to potential revenue	Share of properties lacking access to basic services	Potential revenue with exemption of urban property with no access to basic services	
	Crop	Pasture	Crop land + pasture land	Urban land + Structures *		$	as % of GDP			$	% of GDP	as % of GDP			$	as % of GDP
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Argentina	5.762	3.390	9.152	32.860	42.012	374	3,06	0,4	0,13	46	0,4	0,132	0,35	95,0	358	2,9
Belize	5.256	816	6.072	10.092	16.164	131	2,73	n.a.	n.a.	30	0,6			91,1	122	2,5
Bolivia	3.329	4.274	7.603	4.568	12.171	84	2,68	n.a.	n.a.	38	1,2			64,5	67	2,2
Brazil	6.313	5.979	12.292	25.746	38.038	319	2,65	0,5	0,19	61	0,5	0,02	0,04	90,9	295	2,5
Chile	3.170	1.019	4.189	38.451	42.640	405	2,74	0,7	0,26	21	0,1	0,049	0,35	100,0	405	2,7
Colombia	2.984	3.331	6.315	24.151	30.466	273	3,42	0,8	0,23	32	0,4			88,3	245	3,1
Costa Rica	9.940	6.124	16.064	19.041	35.105	271	2,55	0,3	0,12	80	0,8			98,0	267	2,5
Ecuador	3.255	3.332	6.587	17.645	24.232	209	3,27	0,1	0,03	33	0,5			89,4	191	3,0
El Salvador	2.191	1.490	3.681	8.591	12.272	104	2,90	n.a.	n.a.	18	0,5			93,2	98	2,7
Guatemala	4.296	1.034	5.330	7.708	13.038	104	2,81	n.a.	n.a.	27	0,7			80,7	89	2,4
Guyana	6.785	1.655	8.440	0	8.440	42	1,05	n.a.	n.a	42	1,0			89,2	42	1,0
Honduras	3.424	2.095	5.519	6.059	11.578	88	3,93	n.a.	n.a.	28	1,2			83,7	78	3,5
Mexico	2.411	3.252	5.663	35.285	40.948	381	3,60	0,2	0,06	28	0,3			91,4	351	3,3
Nicaragua	2.833	3.909	6.742	7.822	14.564	112	5,67	n.a.	n.a.	34	1,7			85,8	101	5,1
Panama	1.804	3.130	4.934	26.268	31.202	287	2,25	n.a.	n.a.	25	0,2			85,7	250	2,0
Paraguay	9.967	7.761	17.728	10.508	28.236	194	3,15	0,4*	n.a.	89	1,4	0,02	0,01	81,9	175	2,8

Peru	3.064	1.958	5.022	16.639	21.661	192	2,95	0,2	0,07	25	0,4			98,3	189	2,9
Uruguay	6.342	10.903	17.245	28.280	45.525	369	2,20	0,9	0,41	86	0,5	0,45	0,87	95,7	357	2,1
Venezuela	1.258	527	1.785	56.277	58.062	572	3,64	n.a	n.a.	9	10,0			97,7	550	3,5

Sources: columns from 2 to 5: World Bank, *The changing wealth of Nations*. 2018. Column 5 is estimated on the basis of Penn World Table and Penn World Table detailed capital table. GDP and share of properties lacking access to basic services are from World Bank, *World development indicators*. Sources of column 13 are reported in table A1 in the Annex.

III. What makes the tax unpopular?

Perceptions and factors of unfairness

Unpopularity is signaled by opinion polls and by governments' actual behavior. Unfortunately, there is no easily available evidence on taxpayers' opinion for Latin American countries, at least according to the knowledge of the authors of this paper. Governments' behavior can be taken as a good substitute, as many policies seem to be dictated by the need to escape, or mitigate unpopularity.

There is lot of direct evidence for the US, as also of indirect evidence deriving form tax payers reactions as shown by referenduma on introducing limitations on access of governments to this source of revenue (such as the well known Proposition 13 for California).[7] For example, the Tax Foundation's 2006 Annual Survey of U.S. Attitudes on Tax and Wealth, quoted by many authors, found that 39% of respondents characterized the property tax as "the worst tax—that is, least fair" of state and local taxes, compared to 20% for state income taxes, 18% for sales taxation, and 7% for the state corporate income tax.

Basically, the property tax becomes unpopular when it is perceived as unfair. In turn, this perception has distinct components the importance of which varies from person to person with no possibility for the expert to establish a ranking.

For many, or for all, starting from the tax base, the way the tax is determined is obscure and taken as product of arbitrariness. As a matter of fact, in the best practices taxpayers are informed only of the results of the assessment. Also, and paradoxically, the more modern and sophisticated the assessment method, the more obscure it can appear to taxpayers. This can well be the case of CAMA, where tax administrations use econometric models to assess values starting from market values actually observed for a sample of properties. Public transparency can co-exist with private obscurity of the assessment method in modern cadasters and with modern tax administrations, provided that the results of assessments are visible to all people, and taxpayers can follow and repeat on-line the process by which the value of their property has been determined. Taxpayers remain in obscurity concerning most relevant

7 According to Sheffrin (2008) as for the year 2006 only 5 of the 48 states of the continental United States had no limits on use of property taxation. See also Rosengard (2012).

factors of the models used, such as the reference prices, when they vary between municipalities, the choice of the parameters, the weighs assigned to them, and the link (in terms of impact and significance) between each parameter and the dependent variable, the tax base.

The only moment owners can verify the real value of their property is at sale. Even when targeted to market price and done with the best method available, individual assessments by cadasters can only approximate market prices. Assessed values are presumptive market prices as Slack and Bird (2014) define them. Hence, there is skepticism from taxpayers.

Passivity in the assessment process can be another source of frustration and sense of unfairness for taxpayers. Shreffin (2008) develops at length this argument. With few notable exceptions, such as the self-assessment experimented in Bogotá and presently used in Ireland and the declaration of property characteristics asked of Bolivian taxpayers, to which we will return below. There is generally no involvement of taxpayers in the assessment process. This is contrary to what happens with most, or most parts, of the administration of modern wide-based taxes, such the personal and corporate income taxes and the VAT, which are based on self-declaration principles, subject to audit and sanction.

Theoretically the use of market prices in determining the tax base is equitable and efficient in revenue generation. Consequently, updating valuations to reflect changes market prices in real time is required. Also minimizing the delay in updating is a good practice, since it allows capturing the increase of values, the main sources of which are public policies, particularly in the area of infrastructure. However, efforts to perfect updating create problems, particularly, but not only, with sudden spikes in prices. Even when changes are moderate, they remain unpredictable for taxpayers. Increases in values do not translate immediately in higher capacity to pay the tax bill, when it suddenly increases.[8]

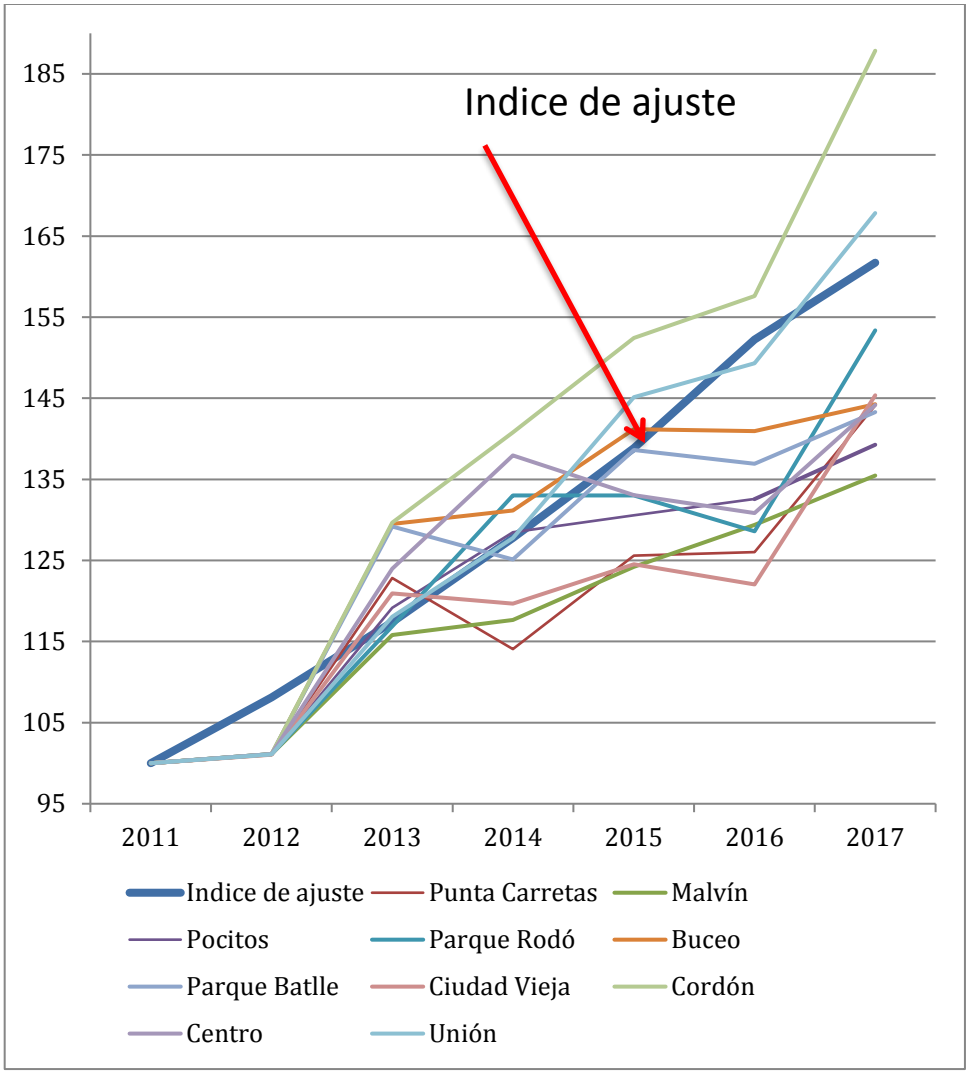
This missing correspondence between the capacity to pay, in the meaning of all public finance literature, and actual capacity to satisfy the tax obligation, when it becomes due, generates annoyance and a feeling of unfairness. Owners of potentially expensive properties may not have the money income available to pay the tax, unless they sell, which may be efficient but also objectionable on equity terms. This leads to the political economy problems of

8 The typical example is an elderly person living, as she did in her active life, in a big apartment whose value has a sudden increase. The person may be indifferent to the increase of value but will not be indifferent to the increased tax bill and will perceive it as unfair. The tax operates efficiently, inducing this person to move to a smaller apartment. However, she will find this pressure as inequitable.

introducing a property tax, or making a dormant system work, as seen recently in both China and India—the issue of large numbers of asset rich people who are unable to pay the tax or move easily. According to tax theory, the welfare effect of property taxation can be much larger than the pure revenue effect.

Figure 4 shows the problems arising in updating of valuations. Lines report the variation of price of properties in the main areas of the city of Montevideo. The common practice is an automatic, equal for all properties, updating of cadastral values. The alternative costly and not always feasible is the valuation of individual properties. Uruguay, the country to which the figure refers, uses for automatic updating the consumption price index.

Figura 4. Precios de los inmuebles en barrios de Montevideo y Índice de ajuste de la base gravable. 2011-2017



Fuentes: Elaboración de los autores sobre datos del Instituto Nacional de Estadística de Uruguay, *Indicadores de Actividad y Precios Del Sector Inmobiliario*, Año 2017; y *Índice de Precios del Consumo*

Automatic updating helps to maintain stable the share of tax collections on GDP. However, it creates problems. Variation of the index, compared to that of individual properties, is either too fast or too slow, as we see in the picture, asking too much tax, or too little, to taxpayers.

On the other hand, perfect updating, tailored to each individual property, is not only costly. It also can impose a large non expected burden on taxpayoers. As Figure 3 shows, prices of properties may be subject to large, sudden increases that, when translated immediately in tax to pay, create problems and resentment.

The last, coming necessarily at the end of the process, source of unpopularity is the mode of payment. The classic way to pay property taxes is to write one check, at most a few ones, during a year to the recipient government. The amount can be so large that a household must either save in advance or increase their credit limits in order to write the check. According to Cabral and Hoxby (2015) the process of paying taxes makes property taxes very salient, or better the most salient, generating animosity and opposition, leading to measures that place binding limits on property taxes. Quite interestingly, Cabral and Hoxby sketch a model in which such salience gives voters greater control over the budget agenda, as opposed to politicians' control. The paper also suggests to water down salience by combining the payment of the tax with other payments such as, in the US practice installments of mortgages (the so called escrow accounts).

Constraints from, and reaction to, unpopularity in Latin America

Governments are perfectly conscious of these problems, especially those in inflation prone countries, where not updating immediately brings down collections in real terms, and as a share of GDP. However, delaying is the most common solution. It is also helped in fact by the lengthy way in which cadasters operate. Latin American countries provide ample evidence. But updating poses the affordability constraints, as nominal incomes may not keep pace with inflation. Indeed, property prices may not rise either, so full indexing might over-compensate the true adjustments.

Christensen and Garfias (2018) show that political reactions to property taxes generate in Brazil a sort of electoral cycle, whereby almost 34 per cent of all cadaster updates are done by term-limited mayors, i.e., by politicians not facing electoral constraints. The process develops as follows. The investment in

updating cadasters generates increases in revenue, although they are partly absorbed by large investment costs. As a matter of fact, when done sporadically, updating involves full cadastral overhauls, including registering properties with faulty or missing records, updating property boundaries, information about ownership and, finally, adjusting assessed values. Political costs delay investment. Politicians face difficult choices. On the one hand, investing in the cadaster leads to higher tax bills disliked by the taxpayers who are already in the net, and to sending new bills to pay to unregistered taxpayers. On the other hand, increased revenues allow continuing payment of benefits to voters and to strengthening of clientelistic ties. Keeping a distance from elections accommodates the conflict of goals.

The same difficult navigation constrains the politics of the property tax in Argentina. As seen above, Figure 2 shows the deep fluctuations in collections of the property tax in a sample of Argentine provinces. In a span of only 5 years, between 2004 and 2009, collections plummeted, as a share of GDP, by almost four times. Provinces' reaction was delayed and took time to show results in term of revenue. In the Autonomous Province of Buenos Aires updating valuation of the buildings for the urban property tax started in 2007 and took four years until 2011 to be completed. A new stalling trend appears in most recent years demanding a new wave of reform. The province of Entre Ríos provides a very interesting case for the variety of fronts that dealt with the reform. This province shows the highest fluctuation patterns with the largest fall of revenue between 2004 and 2009 and highest resurgence between 2009 and 2015. Reform started in 2009 and was completed by 2012, with application of the new assessed values.

In all Argentina's case the updating and overhaul of cadastral systems has been accompanied with changes of legislation referring to exemptions (which have been expanded), tax rate structure (which has made more progressive) and the gradual application of the new values.

A previous cycle of reform in Argentina took place in the 1990's as well. It is illustrated by Castro, Díaz Frers, Alfieri and Bovino (2014). Between 1990 and 1993, 18 out of the 23 Argentinian provinces started cadastre reform projects, of which 14 received World Bank funding. Most projects were completed starting from the year 2000.

Reforms brought an increase of the tax base (assessed values) and of the tax due by about 40 % (see Table 3). Collections increased much more slowly by 12 per cent, due to exonerations, lowering of tax rates and to imposing ceilings on tax bills. This is not, necessarily, a bad practice, when large payment

increases are requested. All this shows sensitivity by politicians to the reaction of taxpayers and to its impact on popularity.

Also interesting is the observation of the cost of reform. For the 19 projects that were started or terminated (3 more than those represented in Table 5) the cost was about 150 million pesos, corresponding to little more than two years of collections. This means that reform could have been profitable in fiscal terms only with no rapid erosion of assessed values in its aftermath. This was, unfortunately, the case of Argentina. Obviously, reform of cadastres yields other returns above the purely fiscal one.

Table 5. Argentina: the impact of cadaster reforms as of end of 2002 and with reference to 16 projects

	Before reform (millions of pesos)	After reform (millions of pesos)	Variation (millions of pesos)	Percentage increase
Assessed values	78	108	30	38%
Taxes due	802	1126	324	40%
Actual collections	562	632	70	12%

Source Castro, Díaz Frers, Alfieri, Bovino (2014).

Centralization of assessments and collections of the tax can neutralize political/electoral cycles at subnational levels. This is the suggestion, among others, of Martinez (2000), who quotes, as supporting evidence, the case of Colombia. The Colombian national cadastre, *Instituto Geografico Augustin Codazzi*, is responsible for assessment of property values outside the big cities (Bogota', Cali, Medellin, Antioquia and, very recently, Barranquilla). The evidence showing (Quete and Cuellar, 2010) that *Instituto* is more efficient than the big cities in updating assessed values to inflation seems to be reversed by more recent evidence (Contraloria de Bogota', 2017, and COMPES, 2018).

However, a disconnect between national administration and local political responsibility may be a source of problems, as the very recent case of Bucamaranga, a Colombian provincial capital, exemplifies. In January *Instituto Codazzi* sent to the municipality the newly re-assessed values referred to 60 % of local properties. New values implied an increase of the tax bills, whose collection is the responsibility of the municipality, varying between 70 and 107 per cent. Taxpayers' reaction was quick and furious, making the issue a national case. *Instituto* retreated immediately declaring that providing new values to the municipality was not a command to apply them and that, in any case, the role of *Instituto* is purely a technical one, while the responsibility of re-assessing

values is up to the municipality. [9] The latter waived the obligation to pay the new increase and gave exonerations.[10]

IV. Viable technical and political approaches for Latin America

Taxpayer self-assessment of the tax base

There are two main examples of full valuation done by taxpayers. The first one is the experiment in Bogotá by Mayor Mockups in 1994. In that year the municipality attempted to expand property tax collections in the framework of a participative reform of the municipality governance system (see Riano, 2002, for an illustration of the self-assessment experiment and Silva, 2009, for the governance reform policy). The second case, still working, of self-assessment of values is provided by Ireland with the reform of 2013 (Mc Cluskey, 2013, Slack and Bird 2014 and the various texts by the Government of Ireland and available at http://www.revenue.ie/en/tax/lpt/index.html).

In Bogotá owners had to declare the value of their properties. The existing cadaster valuation basis was retained as a minimum. However, only 40 per cent of properties were registered in the cadaster at the time. Also, the self-assessed value could not be less than 50 per cent of market value. This was a clearly debatable condition, since for most taxpayers the market price was hard, if not impossible, to ascertain. The self-assessed values updated to inflation would serve as the tax base of the following years. The operation relied on new sanctions up to a maximum of 10 per cent of the value of properties. Also, there was talk about forcible purchase of the property at a multiple of the declared value in egregious cases of under-declaration of property values. The sanction was not widely applied. As a matter of fact, there is no need for a heavy-handed use of the sanction, and one or two examples suffice, if non-compliance remains circumscribed. However, there is the danger that the sanctions might be used for "political" purposes.

The reform was hugely successful in terms of collections. Revenues more than doubled between 1993 and 1994, passing from 45.661 million pesos to

9 https://noticias.igac.gov.co/es/contenido/el-valor-y-cobro-del-impuesto-predial-en-bucaramanga-es-decision-exclusiva-del-gobierno.
10 See El Tiempo January 10, 2019 Bucamaranga Incremento entre el 70 y el 100 por ciento en el pago del impuesto predial.

99.057 million pesos. A slower trend continued until 1999 and was followed by a decline. The policy was meant to be extraordinary and temporary, pending the reform of the cadaster that took time to materialize, and was neglected after the reform minded administrations of Mockus and Peñalosa ended.

A true self-assessment system requires an arms' length trust system, with a high probability of detection, good information on local property values; and credible sanctions. These are all characteristics of a modern property tax administration, and cannot be a substitute for it. Bogotá missed many of these requirements.

Ireland provides, with the Local Property Tax (LPT), the second, most important example of a tax relying fully and on taxpayer self-assessment. The tax came into effect in 2013 when the LPT replaced the existing Household Charge. LPT is charged annually on all residential properties in the country. LPT does not apply to development sites or farmland. The tax base includes buildings and grounds of up to one acre. The tax base is the market value of the property. Taxpayers have to assess it and calculate the tax due on this basis. It is important to stress that the administration gives assistance to taxpayers giving them access to an online guide providing average indicative values for different property types in their local area. This instrument represents the typical observatory of property market that an increasing number of countries are developing. It contains detailed information on market prices of properties. These prices can be used, as in the case of Ireland, for tax purposes. It is interesting to note also that in Ireland the online guide provides for each area a single price of properties of the same type -such as detached houses, apartments, villas etc.- located there. In other words, the size of property is not formally taken into account. This most likely reflects the fact that, due to strict zoning regulations, properties in the same area tend to have the same size and characteristics. Irish taxpayers have also access to the register of residential property sales, published by the Property Services Regulatory Authority (PSRA). All owners of residential property, including rental properties, must pay the tax.

The tax base labeled the chargeable value is defined as the market value that the property could reasonably be expected to be sold for on the open market on the valuation date. In turn, the valuation date is 1 May 2013, and more importantly this valuation applies until 1 November 2020. In other words, there will be no updating of values until 2020, even if taxpayers have made improvements to their property. The planned delay in updating is, as we will see in a while, a quite likely consequence of the banded system Ireland has adopted for the determination of the tax due. The tax administration is engaged to accept self-assessed property valuation if taxpayers "follow Revenue's guidance

honestly". The tax administration can query taxpayers' valuation if it has reason to believe that the property has been under-valued.

An area-based tax on key parameters of properties

Cadastral assessment of values targeted to market prices can be very properly replaced with an area-based tax. With such a tax, the tax liability is determined through the application of a unit tariff (for example *n* dollars) to indicators or parameters of property size and value of use.[11]

With an area-based tax, the traditional cadasters can be replaced by more agile fiscal registers, simplifying, speeding and reducing the cost of the administration process without necessary loss of accuracy.

A simple area-based tax can be expanded from very simple formulation to more encompassing versions. Mauritius has experimented with the simplest possible tax based only on square meters. Two Latin American countries, Colombia and Bolivia, provide interesting experiences. Colombia uses for non-registered properties a tax based on: i) size; ii) type of property (land, individual houses and condominiums); iii) use (residential, or commercial) and, iv) quality (mix of characteristics and location) for residential buildings. Table 6 details the structure of the Colombian area based tax. The ministry of finance determines the values per square meter.

Table 6. Colombia: an area-based tax for non-registered properties

Use of property		Condominiums value per $M^2$of construction (Pesos)	Land value per M^2 of construction (Pesos)	Individual houses value M^2 of construction (pesos)
Residential	1	510.326	234.893	263.510
	2	873.993	329.088	299.279
	3	1.482.091	479.325	379.167
	4	2.549.909	1.083.007	696.657
	5	3.122.877	1.271.359	971.922
	6	3.921.127	2.230.133	1.275.074
Commercial	Punctual	3.395.303	662.695	503.058
	Zonal	5.082.894	1.122.824	672.085
	Urban	7.570.009	2.336.871	802.209
	Metropolitan	11.063.242	4.334.343	1.008.798
	Financial	5.830.100	2.161.135	1.018.189

Source: Ministry of Finance of Colombia

11 A typical basic formula would be: Tax due = n X m2, where n is the unit tariff, let's say 10 Euros, and m2 is number of square meters.

Bolivia is using an interesting version of the area-based tax for its municipal property tax, (*Impuesto Municipal a la Propiedad de Bienes Inmuebles)*. A still largely incomplete urban cadaster run by the *Instituto Geografico Militar*[12] is at the origin of this tax. It started as a temporary solution but has taken firm roots. The three basic ingredients are: a) registers run by municipalities; b) unitary values per square meters of land, buildings and accessorial buildings determined by the central government; and c) information about characteristics of properties provided directly by taxpayers. Municipalities are responsible for administration and collection and use the information about characteristics provided by taxpayers to approximate market value. These parameters include the size of property in square meters, zone, age, quality, slope of land, and access to local services. The list of parameters and of associated values is included in a form to be filled by taxpayers.

Self-declaration of parameters by taxpayers, largely applied around the world for the main taxes, circumvents problems of information and administration capacity. Self-assessment of property ownership/occupancy and of physical characteristics of properties can be a more realistic and permanent solution. It is much less demanding and introduces transparency in the assessment process and its results in term of tax to pay. The cost is much lower than individual cadastral assessments and this solution acts as a complete substitute of them.

This makes the area-based tax a viable solution for most emerging and developing countries.

An area-based tax, often on occupancy rather than ownership, can be adapted to local circumstances, choosing the model according to the availability of information and capacity.

- It can be Implemented quickly with satellite technology, and an easy registration mechanism.
- To the extent that it actually begins to tax high-end properties, this would be an improvement over the un-implementable ownership-valuation model.
- The issue of taxpayers' resistance would be addressed if the tax were linked to the provision of basic local services—enhancing accountability and meeting the SDGs more effectively.

Finally, updating values depends crucially from bringing with no delay to inflation the values per square meters, and from control and use of the information provided by taxpayers**.**

12 Alina Garate, Catastro Territorial en Bolivia. https://prezi.com/iwkvyru1ho4w/catastro-territorial-en-bolivia/

Banded systems

Under this system, property values are divided into bands, or classes, and each individual property is assigned to a band. The same tax is asked to all properties in the same band. This tax is calculated by applying the statutory tax rate to the mean value of the band. Suppose, as an example, that the first band includes properties valued from 0 to 50,000 dollars. If the tax due for this band is 250 dollars, this means that a statutory rate of 1 percent is applied to the mean vale of this band, 25,000 dollars. Banded systems serve to smooth the impact of tax base changes on the tax due. This applies to changes over time of the same property (until it stays within the same band), and to differences in value among properties situated within the same band.

Banded systems dilute the basics of the equity principle in taxation. This principle asserts that same situation should correspond to same tax, while a different situation should lead to a different tax burden. With banded systems while people with exactly the same situation (taxable value of property) will pay the same tax, also the same tax will be paid by people with different situations. Also a change in the situation of an individual will not lead to a change of tax, provided that he/she stays within the same band.

The infringement to equity principle can, however, be attractive to individuals, consequently, to the revenue authorities. As we have seen above, taxpayers may resent changes in the tax bill that are not related to their actions, but derive from factors that they not control. Also, increases in property values, while welcome to owners, do not bring necessarily increases in money income from which to pay the tax bill. Banded systems reduce the cost of determining the value of the tax base. It is a robust and simple system, since it does not demand continuous revaluation and can be used for long periods. However, the same advantage has possible drawbacks originating over long valuation cycles. This is the problem in England, where properties were evaluated in 1991 with no further updating until today. In the meantime, changes in properties values have been substantial within the same area, or between different areas. Updating could bring doubling, or more, of values for some properties and given the progressive tax rate structure, an even bigger increase of the tax bill if it brings up a change of band. Yet, the linkage with the service delivery component introduces a degree of acceptability as taxpayers know exactly what they are financing, the most important element being elderly care. Even if some of the more expensive inner city areas have less elderly people living there, residents in the suburbs are content with paying

more for perhaps less expensive properties. And it is to be noted that the property tax in the UK generates more in revenues (3.3% of GDP) than that in the US (2.6% of GDP).

Together with self-assessment, the most relevant characteristic of Irish LPT is the adoption of the banded system for the determination of the tax due, or a modification of the UK model. More precisely, each property value is assigned to a value band. The first band covers all properties worth up to €100,000. Bands then go up in multiples of €50,000. If a property is valued at €1 million or lower, the tax is based on the mid-point of the relevant band. For properties valued over €1 million the tax is charged on the balance over €1 million, with no banding applied. The adoption of the mid-point of the relevant band implies a smoothing of market values. All properties included in the same band will pay the same tax. Future, i.e. after 2020 updating of value, will not impact on the tax due, until the value stays inside the same band. The basic LPT rate was set at 0.18% for properties valued under €1 million and 0.25% on the amount of the value over €1 million.[13] Since 2015 these basic rates can be increased or decreased by up to 15% by local governments. Ireland has 19 bands smoothing substantially tax payments, while in England their number has been kept to 8.

13 Ireland: example of tax on property valued €245,000.
Market value: €245,000; Value band: €200,000 to €250,000
Mid-point of value band: €225,000
Calculation: €225,000 x 0.18% = €405 for a full year. The amount to pay is €405

Table 7. Ireland's bands system.

Valuation band, €	Mid-point, €	Standard rate	Standard LPT payment, €
0 - 100,000	50	0.18%	90
100,001 - 150,000	125	0.18%	225
150,001 - 200,000	175	0.18%	315
200,001 - 250,000	225	0.18%	405
250,001 - 300,000	275	0.18%	495
300,001 - 350,000	325	0.18%	585
350,001 - 400,000	375	0.18%	675
400,001 - 450,000	425	0.18%	765
450,001 - 500,000	475	0.18%	855
500,001 - 550,000	525	0.18%	945
550,001 - 600,000	575	0.18%	1,035
600,001 - 650,000	625	0.18%	1,125
650,001 - 700,000	675	0.18%	1,215
700,001 - 750,000	725	0.18%	1,305
750,001 - 800,000	775	0.18%	1,395
800,001 - 850,000	825	0.18%	1,485
850,001 - 900,000	875	0.18%	1,575
900,001 - 950,000	925	0.18%	1,665
950,001 - 1,000,000	975	0.18%	1,755

Source: Government of Ireland http://www.revenue.ie/en/tax/lpt/index.html).

Mode of payment

A system of bands, of the sort applied with the English Council Tax and the Irish reform of 2013, would reduce the occurrence of sudden peaks in tax bills, particularly with a progressive rate structure.

To stress the link between tax and benefit of expenditure, in unitary political system, the central government could establish the number of bands and the local governments would determine the precise level of tax within a range reflecting service delivery requirements, illustrating the flat-rate/simple size-based system. This should also be relatively simple to manage quickly, especially in relation to the complex valuation and assessment-based systems.

Inclusion of the tax bill into other periodic payments, such as mortgage installments, or public utility bills reduce the salience of the tax, and make compliance with tax payment easier. Greece introduced in 2013 two distinct property taxes (Slack and Bird, 2014). One on them, the PPC (Public Power Corporation tax is based on area and levied on occupants of residential and

commercial buildings connected to the electricity grid. The electricity company collects the tax and the tax liability appears on electricity bills.

In the US tax escrow is the method, based on inclusion of property tax bills into payments of mortgages, by which about 31 percent of people pay their property taxes (Cabral and Hoxby, 2014).

Inclusion of tax bills in other payments is resisted initially by taxpayers and, above all, by public utilities and banks. To same extent the inclusion shifts unpopularity of the tax on them. It forces taxpayers to take into account the inflated amount of their more inclusive bills. It can also accommodate them, as they become accustomed to set apart with some advance the money needed to pay the tax bill. Cabral and Hoxby maintain that its main advantage is that the tax becomes less salient. However, It is also a way to establish a comparison between the services originating from the payment of the tax and those from electricity or water, or mortgage bills.

V. Conclusions

Recurrent taxes on property are widely used at the local level in Latin America. Collections are largely around 0.5 % of GDP. A higher revenue target, say 1-1.5% of GDP (if not the 2% of GDP estimated by the World Bank) is, however, achievable with adoption of a simplified structure, with arm's-length administration and with a view to make the tax more friendly to its payers. Unpopularity of the tax is a major political obstacle to its enhanced role, and the linkage with local services or benefits becomes critical. This is a plain fact to be recognized by reformers, and experts, as it is done in this paper.

There are two broad classes of options for implementing a tax on immovable property. The first is the traditional ownership-valuation method; including a self-assessment variant. The second broad alternative is an area-based tax on properties, linked to occupancy, rather than ownership.

Complex arrangements based on valuation and detailed cadasters do not work well in Latin American countries, as in other developing and emerging market country contexts. Updating a cadaster takes a long time, even in countries, where there is a long tradition of record-keeping, such as Colombia and Argentina. It is also costly.

An alternative method to cadastral valuation is to utilize self-assessment by property owners. This method has proved, initally very successful in Bogotá. However, its replicability has been limited in Colombia. Ireland provides an interesting example of self-assessment as a permanent solution. Irish taxpayers

have to assess their property, but have access to a tax administration data base showing the market prices of properties situated in their area. Without this type of officially provided information self-assessment is hardly feasible, since it imposes a huge burden on taxpayers and generates conflicts with the tax administration about declared values. However, a growing number of countries, also in Latin America, are developing this kind of information on the basis of timely tracking of property transactions and of updating of cadastral values.

The second option is a simple area-based tax. It should generate adequate revenues to anchor both basic services and collateral for credit for public investment in the metropolitan areas and in facilitating new urban transitions for sustainable employment generation.

This tax should be determined with active participation of taxpayers, who would be asked to provide information, on a yearly basis, referred to the parameters/characteristics of their propertied on which basis the flat tax is determined.

The area-based tax alternative could work well also in a developing country context. It could be based on a simple registration of occupancy that would cut across the Gordian knot of overlapping and 'grey' ownership structures — covering state, traditional, rental and free hold, as well as informal settlements.

The payment of a flat tax by informal settlements should also enable them to be eligible for public services, such as education facilities and health care. Also, a minimal rental period should also make them available for small business and home improvement loans.

Keeping property values aligned to market prices is problem all governments have to face if they want to avoid a declining share of collections relative to GDP. It becomes more urgent and less manageable in inflation-prone countries, such in Latin America. At the same time, governments have to avoid sudden peaks in the tax bills that derive from retarded updating of values. They create solvency problems and animosity from taxpayers.

Governments frequently try to address these problems by granting exonerations, tax holidays and other instruments that distort the structure of the tax. A system of bands, as used in England and Ireland, would be an alternative to exemptions. It would insert a fixed, but predictable, lag between changes of value and changes of tax dues. At the same time, it would make the tax more acceptable to those, who have to pay it.

Finally, the mode of payment has to be made simpler and friendlier for taxpayers.

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Annex 1.

A1. Caracteristicas institucionales y económicas del impuesto a la propiedad en un grupo de países de America Latina.

	Legislación	**Determinacion de las alícuotas y exoneraciones**	**Autoridad responsable para la base imponible y su Valuación de y catastro**	**Autoridad responsable para la recaudación**	**Diferenciación entre propiedades urbanas y rurales. Base imponible y alícuotas**	**Importancia de las recaudaciones de las propiedades rurales sobre las urbanas**	**Recaudaciones totales en % del PIL**	**Base imponible potencial de acuerdo a los datos del Banco Mundial. En puntos porcentuales del PIB**
Argentina Contribución inmobiliaria urbana. Contribución rural	Provincial	Provincias/Municipios	Provincias/ municipios	Provincias/municipios	Diferencias en la base y las alícuotas varían según provincias.	En 1935 en la provincia de Buenos Aires la contribución rural pasa de 1935 hasta 1955 de mas del 50% hasta menos del 20% del total de las recaudaciones a todos los inmuebles. En 2011 subió' al 33%.* En todo el país de 2000 a 2011 las recaudaciones del rural crecieron	0,5 % en 2016 #	3,43

						dos veces mas rápidas que las recaudaciones totales del inmobiliario.**		
Bolivia *Impuesto a la propiedad de bienes inmuebles Impuesto a la propiedad rural*	Nacional	Nacional	Municipal. No se utiliza catastro	Municipios	El impuesto a bienes inmuebles se aplica a edificaciones y tierra; el impuesto rural solamente a la tierra. Las alícuotas son mas bajas en el secundo caso	Datos non disponibles	0,42 % in 2014 ##	3,90
Brasil Impuesto a la propiedad y tierra urbana (IPTU) Impuesto territorial la propiedad rural (ITR)	Nacional	Municipal para el ITPU y nacional para el ITR	Municipal para el ITPU y nacional para el ITR	Municipal para el ITPU y nacional para el ITR	Tierra y inmuebles para el ITPU; tierra para el ITR	Aproximadamente el 5 por ciento	0,43 % en 2013 para el ITPU ###	3,16
Chile *Impuesto territorial*	Nacional	Nacional	Nacional	Municipios	Diferenciación de alícuotas y exoneraciones entre propiedades	En 2013 las recaudaciones de las propiedades agrícolas representan el 7	0,7 % en 2016 #	2,88

					agrícolas y las otras.	por ciento de las non agrícolas.***		
Colombia *Impuesto predial unificado*	Nacional	Municipal adentro de limites máximo y mínimo nacionales	Nacional o municipal	Municipal	Misma base . Diferenciación de alícuotas y exoneraciones entre predios y terrenos urbanos y rurales. Alícuotas inferiores para los predios rurales	Datos non disponibles	0,6 % en 2016 #	3,82
Costa Rica *Impuesto sobre bienes inmuebles (ISBI) Impuesto solidario*	Nacional	Nacional	Municipios (con ayuda del catastro)	Municipios	ISBI se aplica a tierra y edificaciones. El Impuesto Solidario, solamente a las habitaciones con exoneración de las pequeñas.	Datos non disponibles	0,30 en 2016#	3,30
Ecuador	Nacional	Municipal adentro de limites y mínimo nacionales	máximo Municipios	Municipios	Diferenciación de alícuotas entre propiedades urbanas y rurales	Datos non disponibles	0,14 % en 2016 #	3,79
México *Impuesto predial*	Nacional	Estados y municipios	Municipios	Municipios	No hay diferencias		O,25% en 2016#	
Perú	Nacional	Subnacional	Subnacional	Municipios			0,25 % en 2016 #	3,34
P**araguay**	Nacional	Nacional	Municipal	Municipal	Propiedades	Las cuotas	0,39 en 2003	4,59

Impuesto inmobiliario					urbanas se aplica el valor de la tierra mas mejoras. Propiedades rurales gravadas sobre el valor de la tierra. Alícuotas diferenciadas	relativas en las recaudaciones son 80% para las propiedades urbanas y 20 % para las propiedades rurales*****	*****	
Uruguay *Contribución inmobiliaria urbana. Contribución rural*	Nacional	Departamentos	Departamentos	Departamentos	En la Contribución urbana la base es la tierra y la edificación. En la contribución urbana es solo la tierra.	En 2006 las recaudaciones de representaban el 53% del total.******	0,8 % en 2016 #	2,72

Fuentes de los datos

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Annex 2 The property tax in Latin America

There is an extremely wide variety in assignments and administration for property taxation in Latin America. In most countries, the tax rate is set by the local jurisdiction, making it an own-source of revenues. In the other countries, the rate setting power rests with the center (or state level) government and the revenues shared with subnational governments (either state/provincial, or municipal). Most countries rely on traditional cadastral systems, for the determination of property titles and values, and suffer from the difficulties associated with these systems. Other countries have experimented with more innovative and interesting ways of determining values through self-declaration (in some Colombian cities), or parametrical systems (in Bolivia) based on the provision of information about characteristics of properties by taxpayers.

Most recent literature together with the statistical information available (Gomez Sabaini, Jiménez y Martner, 2017; BID-CEPAL-CIAT-OECD, 2017) confirm that property taxation plays a minor role, albeit with some variation, in terms of GDP and in relation to total collections in Latin American tax systems. Even so, property taxes remain the most prominent own-source revenue option for cities and third tier governments.

Table A1 . Revenue sources in Latin America, circa 2016 *(As a % of total tax revenue)*

Country	Recurrent taxes on immovable property	Taxes on production, sale, transfer, etc	Taxes on use of goods and activities	Other	Total tax revenue
Argentina	6,9	75,7	5,5	12,0	100
Brazil	6,2	76,6	0,0	17,2	100
Chile	42,9	14,7	42,4	0,0	100
Colombia	23,7	43,5	0,0	32,8	100
Costa Rica	42,1	1,6	56,1	0,2	100
Ecuador	23,8	37,1	7,9	31,2	100
Mexico*	22,3	3,0	11,8	62,9	100
Peru	45,2	6,4	8,4	40,1	100
Uruguay	57,5	0,0	42,5	0,0	100

Note: The data for Mexico are from 2015.
Source: Revenue Statistics (OECD, ECLAC, CIAT, IBD, 2018)

Recurrent taxes on immovable property provide a significant part of tax revenues in unitary countries, such as Chile, Costa Rica, Ecuador, Peru and Uruguay. These countries follow very different models from Federal countries.

The relevance of property tax collections on total subnational revenue is, obviously, much lower in federal countries, although when their revenue is devolved to municipal governments, it is able to cover a substantial fraction of their expenditure. This is, for example, the case of Mexico, where recurrent taxes on immovable property represents more than 23% of sub-national revenues [14], although overall collections are poor and incentives are problematic, as discussed below.

In Argentina, the property tax is the third largest source of provincial revenues, surpassed by the turnover tax and other taxes. It represents almost one-tenth of the total obtained by these jurisdictions (6.9% in 2015)[15]. In addition, 88% of the resources generated by this tax are generated in five of the 24 provinces, with a predominant role played by the Federal Capital (32.8%) (GCBA) and the province of Buenos Aires (32.2%).

The prevailing tax base takes into account both the value of land and improvements. The province of Buenos Aires appraises separately the land and the construction or improvements of the same property and applies different rates, where rates on improvements are lower than those on land.

Brazil levies two taxes, depending on whether property is urban or rural. The tax on urban property and land (IPTU) is assigned, to the municipalities and the Federal District. The IPTU[16], whose collections amount for 2016 to 0.6% of GDP, is levied on the ownership or possession of real estate in urban areas, and the tax base is assessed according to the market value. However, reassessment is usually delayed. Locally determined tax rates are applied. The rural territorial property tax (ITR) is assigned to the central government and the base is rural land, to the exclusion of improvements and buildings.

A number of Brazilian cities, among then Florianópolis, Belo Horizonte and São Paulo have since 2000 initiated massive programs aimed at updating cadastral values of registered properties and at including new, or missing properties in the cadastral registers. In Belo Horizonte the full process, going from registration of new properties to the reassessment of values, took more than x years, with the risk that the reformed cadaster becomes obsolete at the

14 Ruelas Ávila (2015) shows that the relative importance of this tax averaged 55% of municipal tax revenues in the period 1989-2013, although it has been historically low - about 7% - when it is compared with the total revenues of the municipalities. On the other hand, it is also shown that this tax distorts the territorial equity since 90% of the tax collection is concentrated in only 12% of the municipalities.

15 Some municipalities can fix rates and exemptions relative to the tribute.

16 For a detailed analysis of this tax, see Bruno de Carvalho, (2006).

moment the assessment was completed. In São Paulo the reform started in 2002 and by 2006 the cadaster was updated with the inclusion of new or missing properties. In 2008 the municipality proceeded to the reassess values after a lag of 8 years. Again, the reform turned out to be quite lengthy.

1. Unitary and Regional States

Chile

The Chilean Territorial Tax (IT) is a real estate tax and represents the main component of municipal tax revenues. Currently, 2016, this tax provides revenues amounting to 0.7% of GDP, which corresponds to 43% of total sub-national tax resources[17]. Both the tax base and the exemptions are determined by national legislation, while municipalities, in practice, are only the beneficiaries of the collected resources. The base of the territorial tax is the value of property determined by the Internal Revenue Service (SII). A redistribution of the property tax from rich to poor municipalities takes place through the *Fondo Comun Municipal*, reducing incentives for the rich municipalities to facilitate tax collections and for poor municipalities as well, or to restrain spending. The link of property taxation with the cost of local goods and services that the municipality provides is quite tenuous.

Costa Rica

A very different model prevails in Costa Rica, where local governments are responsible for the valuation of properties, and the collection of the tax due. The property tax in Costa Rica accounts for a large part (42% in 2016) of sub-national tax revenues, which is in turn equivalent to 0.3% of GDP (Table ,,,). The current tax rate, decided by the central government, is 0.25% on the value of the property and is applicable throughout the country.

Ecuador

In Ecuador, recurrent taxes on immovable property account for approximately 24% of sub-national tax revenues (0.14% of GDP). The tax base

17 In the calculations of the sub-national tax burden for the Chilean case, the DIPRES methodology was followed in which the duplications originated in the application of the Municipal Common Fund (FCM) were eliminated. Thus, adding the residual difference to the respective taxes which form it, it is possible to visualize exactly what has been collected for each concept of operating income, although information on what is received by each municipality is lost through participation in this Fund.

corresponds to the total value of the property determined and updated every two years by the municipal cadastre office based on: the value of the land, the value of the buildings and the replacement value as determined by the Municipal Council. The cadastral valuation method combines information provided directly by the owner together with the deed data, due to the logistical difficulties observed in most jurisdictions. The tax rates for urban properties vary between 0.25 and 5,0 0/00, while for rural areas they are between 0.25 and 3 0/00.

Colombia

Colombia has a regional system of government and(along with Uruguay) is the best performing country. Revenue from the Unified Property Tax, originally under departmental jurisdiction, has been assigned by the 1991 Constitution to municipalities, which are empowered to determine the tax rates (within a pre-established range), the exemptions, other preferential treatment. As might be expected, there may exist (and indeed exist) as many regulatory frameworks for the imposition of real estate property as the existing municipalities. The Colombian property tax provides collections of about 0.8 percent of GDP in 2016, and is levied on both urban and rural properties. The tax ranks as the second highest local tax instrument with a relative share of almost 24%).

The taxable base in this case is determined by cadastral valuation carried out by decentralized cadastr offices in Bogota, Antioquia, Cali, Medellín and Barranquilla and by the "Geographic Institute Agustín Codazzi" (IGAC) in the other departments. Real estate values are in principle updated annually according to the variation of the consumer price index. Most municipalities of Colombia have problems with the updating of cadastral values relative to changing market values. In general, tax rates, can be established by the municipal authorities within a certain range with respect to the cadastral valuation, using a differentiated and progressive structure depending on the type of social stratification and land use in the urban areas that determine, ultimately, the taxable value of the buildings affected by the property tax.

Colombia illustrates a relatively successful example of property tax design and revenue generation among emerging market economies, with an interesting experiment with policy design and administration.

As mentioned before, Colombia has presently one of the highest collections of property tax in Latin America, although still below the critical

share of 1% of GDP (see Table 2). The basic problem remains that the valuations are not particularly up to date or accurate. Despite the working of the cadaster, in 1991, the property tax collections were 0.33% of GDP or more or less the Latin American average

There are two factors that led to the increase in the tax collections since the mid-1990s.

- The first is a gradual adoption of modern functional tax administration methods, starting with Bogotá and being rolled out gradually through the major metropolitan areas.
- The second is that Municipalities are allowed to opt for an "autoavalúo" (or self-declaration) system, subject to a minimum criteria based on the IGAC Cadaster. These minimum criteria (size, location) must be approved by the Municipal Council. Particularly important in this case are the sanctions to be applied in case of an egregious misdeclaration.

The self-assessment system as implemented in Bogotá by Mayor Mockus in 1994 generated a substantial and sustained increase in property tax revenues. Based on Ley 1421, Bogotá issued Decree 807 of 1993 that permitted the following:

- Adopting the National Tax Statute to define the tax administration system for the determination, emission and coverage of taxes, with adequate penalties and sanctions;

- Collections managed through commercial Banks, leading to significant reductions in staff with a new focus on financing information consolidation and controls functions.

- Elimination of direct contacts stopped avenues for corruption, and allowed staff to focus on taxpayer services—a critical and seldom utilized function.

- Allowed a simplification of procedures, with better control and audit functions rather than "chasing after the taxpayers and collections".

- Replaced the system of determination of taxes to be paid by the self-declaration mechanism and direct payments on the part of taxpayers. This was supplemented by tighter monitoring and audit as well as sanctions and interest penalties.

It bears emphasizing that none of this would have been possible without a functional structure of the tax administration. The system relies on relatively good information on local property tax transactions to operate the sanction of forcible purchase of the property at a greater than declared value. There is no need for a heavy-handed use of the sanction, and one or two examples suffice. However, there is the danger that the sanctions might be used for "political" purposes, although the Bogotá system is still in operation despite changes in city administrations, and has been extended elsewhere in Colombia, including the city of Barranquilla.

Peru

In Peru, another regional system, the property tax does not perform well, due mostly to generous sharing of natural resources (Canon) between all levels of government. This reduces incentive to use local taxes. The progressive tax rates are set by the Central Government, but this eliminates any accountability.

The revenue (close to 0.25% of GDP) is devolved to the municipalities where it represents about 45% of their total revenues. All administration is municipal, and given the lack of accountability, there is little incentive to impose the tax at the local level.

Bolivia: not keeping up with inflation undermines a well-structured flat tax.

The Property tax, *Impuesto Municipal a la Propiedad de Bienes Inmuebles* (IMPBI), is an annual tax on value of residential and industrial commercial property assigned to the municipalities. Although the rates and base are set centrally, the local government is able to influence the collection, and IMBPI (Brosio, 2012). This could be considered an own-source revenue, given the local manipulation of the base.

Bolivia has an urban cadaster run by the *Instituto Geografico Militar*. It is still largely incomplete (only the city of Cochabamba is fully covered, although information is outdated) and cannot be used for property tax purposes.[18] Bolivia relies instead on registers run by municipalities, and uses a parametric system, leading to a flat tax, for the determination of property values.

18 Alina Garate, Catastro Territorial en Bolivia. https://prezi.com/iwkvyru1ho4w/catastro-territorial-en-bolivia.

An annual presidential decree determines the values of the parameters that municipalities must apply to determine the value of the three main components: land, main building and accessorial buildings, of each individual property. These parameters include the size of property in square meters, zone, age, quality, slope of land, and access to local services. The list of parameters and of associated values is included in a form to be filled by taxpayers. Municipalities are also responsible for actual subdivision of their territory into a predetermined number of zones and for the updating of square meter value according annual reassessment, based on inflation. However, several municipalities have not updated these values in recent years, making the tax base valuations lag behind the evolution of market prices. This is responsible for the decline of the ratio of collections to GDP, which is estimated at around 0.42% of GDP and is still on the low side, and below, say Colombia. However, the estimated per capita base of the property tax in Bolivia is one-ninth of that of Argentina, one-fourth of that of Brazil, and one-fifth of Chile.

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, and recording the changes in the characteristics and thus in the valuation of the existing properties. Municipalities' request for updating is through a yearly questionnaire. A growing number of municipalities are using the services provided by RUAT (*Registro Único para la Administración Tributaria Municipal*). [2] Finally, municipalities are responsible for the whole collection process.

After a period with collections increasing to 0.8% of GDP in 2005, revenues dropped to 0.42% of GDP in 201219 (De Cesare, 2016) mainly due to valuation lags, and the infrequent national adjustments to inflation. While municipalities seem to have continued to update registers of properties bringing new taxpayers into the net, the slipping valuations led to the decline in collections.20

There is huge variation across Bolivian municipalities in the per capita property tax collections. The largest Bolivian municipality, Santa Cruz, is the richest, but collects on a per capita basis less than 50% of La Paz, that is smaller and much poorer. Roughly, about 30 per cent of properties remain out of the tax net. Municipalities can expand their collections and adapt their volume to their increasing expenditure needs by reducing red tape—e.g., by expediting building and renovation permits—and by rapid urbanization of new areas to

19 Note that Bolivia does not subscribe to the IMF's GFSM standards, limiting international comparison of data. While OECD and CEPAL regularly publish national data on Bolivian tax collections, including property tax, this may not be strictly comparable with other cases

20 See, for the case of La Paz, Ramirez (2017).

satisfy the demand for housing coming from the (migrating) population. Providing adequate housing for the growing informal sector—mainly rural migrants—is a key challenge that Bolivia shares with many emerging market and developing countries. Much of the "informal" housing is without legal authorization and cannot be registered and subjected to taxation, as ownership titles are not clear. The migrants, however, would be willing to be subject property tax on an occupancy basis, to strengthen their access to credit and local services.

In addition to the considerable lag time between the construction of new properties and their inclusion in the registry of the municipalities, there are considerable arrears in payments. For the large cities, arrears are estimated to represent about 10-15 percent of tax collections.

Central transfers are largely gap-filling in nature, and there is absence of clear policy control or responsibility for typically local functions, including primary education and preventive health care. These limit the usefulness of the property tax as a policy tool to anchor sustainable development in Bolivia. The gap-filling" transfer system also considerably reduces the local incentives to administer the property or any other local tax.

2. Federal States

Missing incentives in Argentina

In Argentina, both the federal and the subnational jurisdictions levy taxes on real property. The federal government utilizes the framework of the federal wealth tax, *Impuesto a los bienes personales*[21], that includes in its base real property in addition to vehicles, financial assets (with the exception of domestic Treasury Bonds), works of art and furniture. The contribution of real property to the total tax collections is not identified separately in the statistics available.

Provinces levy a recurrent tax on real property, both urban and rural. A few, Corrientes, Chaco, Chubut, Formosa, Salta, Santa Cruz y Tierra del Fuego have delegated the urban tax component to municipalities. Chubut has also transferred the collection of property tax in rural areas to its municipalities. In the other 24 provinces, the immovable property tax remains the responsibility of the provincial governments.

21 This tax should be eliminated, starting from 2019.

It is important to note that most municipalities use the assessed property values as the tax base of the tariffs they charge for the provision of urban services, such as garbage collection, street cleaning and lighting and sewerage.

The immovable property tax is levied on any real property located in the concerned jurisdiction (either a province or a municipality, depending on the case). The taxpayer is basically the owner or the occupant.

Each province is responsible for the organization of the cadastre, but the municipalities also have their own cadastres. However, there is a National Cadastre Law (Law 26.209, enacted in 2006) and the Federal Council of Cadastre whose purpose is to promote, coordinate and guide the execution of cadastres in the country in the physical, economic and legal aspects. This Council is constituted by the cadastre administrations of the 23 provinces and C.A.B.A. However, according to a study by Castro et al. (2014), the cadastre offices usually have a relatively low hierarchy in the governmental structure, and the lack of a more comprehensive planning prevents the coordination of efforts with the corresponding tax administrations. They also note that the cadastral offices often complain about the lack of staff, obsolete technology and lack of training of human resources, factors that also limit the efficiency of the property tax system.

In general, the taxable base is constituted by both the value of the land and the construction, although in some provinces (such as Salta and Santa Fe) the value of the constructions is excluded for the case of rural properties.

Usually the fiscal values of properties are outdated and do not correspond to the market value. Consequently, several provinces apply adjustment coefficients on the fiscal values, or consider the values declared in the deeds of transfers or in the Provincial Public Registries.

Another way of updating fiscal values of property is through self-declaration processes carried out by the taxpayers themselves. Recently, in Mendoza, a regimen of self-declaration has been established for the most valuable properties in order to update the property tax. The taxpayers reached by this regulation must declare the estimated market value of each property, which includes the value of the land and all the improvements. The property tax for these properties is calculated by applying the aliquots provided by law to 50% of the declared market value.

Although the tax rates are determined by the subnational levels of government, recently the signing of the Nation-Provinces Fiscal Consensus (*Consenso Fiscal*) of November 2017 has established that they should be within a range between 0.5% and 2% of the fiscal value of property. In most

jurisdictions, there are progressive aliquots and in several cases surcharges or higher aliquots are applied for urban vacant land.

Collections are not doing well. The collection of this tax fell from 0.6% of GDP in 2003 to 0.4% of GDP in 2016 (Figure A1).

Figure A!. Argentina. Tax Revenues from Provinces and Municipalities

As percentages of PIB- 2003-2016

Source: Prepared by the authors on the basis of data from the Dirección Nacional de Coordinación Fiscal con las Provincias, Ministerio de Hacienda y Finanzas Públicas de la Nación.

Table A2. Argentina. Socioeconomic Characteristics and Collection of the Immovable Property Tax by Jurisdiction

Jurisdiction	Population 2016	Urban population 2010 (% of total)	Share in GDP 2004 a/	Collection of Immovable Property Tax - Year 2016				
				Thousands of USD	% of total collected of Property Tax	% of subnational revenue	USD per capita	% of PBG (2011-2016)
Buenos Aires	16.841.135	97%	32,9%	834.176	37,3%	7,7%	49,53	0,52
Catamarca	400.678	77%	0,9%	3.110	0,1%	2,5%	7,76	...
Córdoba	3.606.540	90%	7,8%	142.025	6,3%	6,4%	39,38	0,52
Corrientes*	1.080.655	83%	1,2%	10.402	0,5%	4,1%	9,63	0,16
Chaco*	1.155.723	85%	1,3%	3.243	0,1%	0,9%	2,81	...
Chubut**	577.466	91%	2,2%	18.358	0,8%	3,9%	31,79	0,23
Entre Ríos	1.334.489	86%	2,4%	135.386	6,0%	19,2%	101,45	1,10
Formosa*	584.614	81%	0,5%	1.937	0,1%	1,8%	3,31	...
Jujuy	736.542	87%	0,8%	8.942	0,4%	4,9%	12,14	0,26
La Pampa	346.191	83%	0,9%	22.736	1,0%	10,6%	65,67	...

La Rioja	372.879	86%	0,6%	1.321	0,1%	1,6%	3,54	0,07
Mendoza	1.907.045	81%	3,9%	45.047	2,0%	4,0%	23,62	0,29
Misiones	1.204.182	74%	1,3%	8.788	0,4%	1,7%	7,30	…
Neuquén	628.897	92%	3,1%	27.701	1,2%	3,6%	44,05	0,26
Río Negro	708.799	87%	1,3%	18.795	0,8%	4,7%	26,52	0,27
Salta*	1.351.878	87%	1,7%	4.481	0,2%	1,1%	3,31	0,11
San Juan	747.488	87%	1,1%	12.113	0,5%	5,4%	16,21	…
San Luis	482.796	89%	1,1%	14.242	0,6%	5,8%	29,50	…
Santa Cruz*	329.499	96%	1,7%	273	0,0%	0,1%	0,83	…
Santa Fe	3.425.656	91%	8,8%	183.554	8,2%	9,0%	53,58	0,45
Sgo. del Estero	938.109	69%	1,2%	19.750	0,9%	10,5%	21,05	…
Tucumán	1.613.476	81%	1,7%	39.218	1,8%	5,4%	24,31	…
Tierra del Fuego*	156.509	99%	0,8%	368	0,0%	0,2%	2,35	…
C.A.B.A.	3.059.122	100%	20,6%	682.578	30,5%	10,7%	223,13	0,67
Total	43.590.368	91%	100%	2.238.543	100,0%	7,7%	51,35	0,41

There is also a huge and hard to explain dispersion of performance among individual provinces, (see Table 4). The extremely high variation in this share has no clear explanation. Rich and poor provinces both show high and low ratios.. Also, the availability of revenue from natural resources does not seem to make an impact. Delegation to municipalities does not show a positive impact on performance; rather the contrary. One has to check, however, if poor results are attributable to delegation, or whether the tax was delegated because of its poor performance.

Five jurisdictions generate 88% of the property tax revenues: Buenos Aires, the C.A.B.A, Santa Fe, Córdoba and Entre Ríos (Figure A3). For this reason, the main reforms and modifications of the property tax that occurred in some of these jurisdictions during the last years are analysed below.

a / Last figures of the Gross Domestic Product by province carried out and published by the INDEC.

* Includes only the rural property tax, since the urban tax is assigned to municipalities.

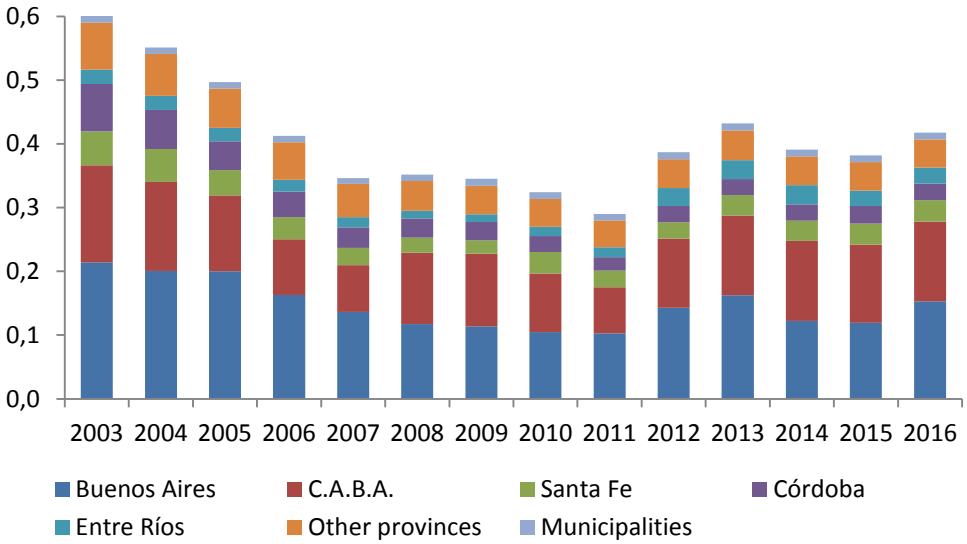
** Collected at municipal level (estimate)

The figures as percentage of the PBG correspond to the last available between 2011 and 2016: For Buenos Aires, Mendoza, Neuquén, C.A.B.A and total country is 2016; Córdoba and Santa Fe 2015; Chubut, Entre Ríos, La Rioja and Misiones 2014; Corrientes and Río Negro 2013; Salta 2012 and Jujuy 2011.

Source: Prepared by the authors on the basis of data from the Dirección Nacional de Coordinación Fiscal con las Provincias, the Ministerio de Hacienda y Finanzas Públicas de la Nación, and INDEC.

Figure A3. Argentina. Collection of the Immovable Property Tax by Main Jurisdictions

As percentages of GDP. 2003-2016



Source: Prepared by the authors on the basis of data from the Dirección Nacional de Coordinación Fiscal con las Provincias, Ministerio de Hacienda y Finanzas Públicas de la Nación.

Performance, as measured by the share of collections on GDP, seems to be dictated mainly by out of date and partial revaluation of properties. Batakis and Lódola (2015) show for Buenos Aires Province that the lack of updating of property values has been a determinant of the tax collections.

In 2005 there was a revaluation of the land free of improvements in this province, and in 2007 the valuation of the buildings for the urban property tax was updated, the implementation was postponed and was carried out gradually until 2011. In addition, tax ceilings in each year were established[22]. Thus, the real estate tax collection, measured in terms of the Provincial Gross Domestic Product, was reduced by half in the period 2004-2011. In 2012, an update was made of urban properties using the Construction Cost Index and changes were made to the aliquot structure. The tax on vacant land was also increased; in 2013 the revaluation of lands located in closed neighbourhoods was applied and the complementary real estate tax was created. A new revaluation was also established for rural properties in the Buenos Aires Province based on the characteristics and land use, together with changes in the aliquots and fixed amounts, which implied a significant approach to market values.

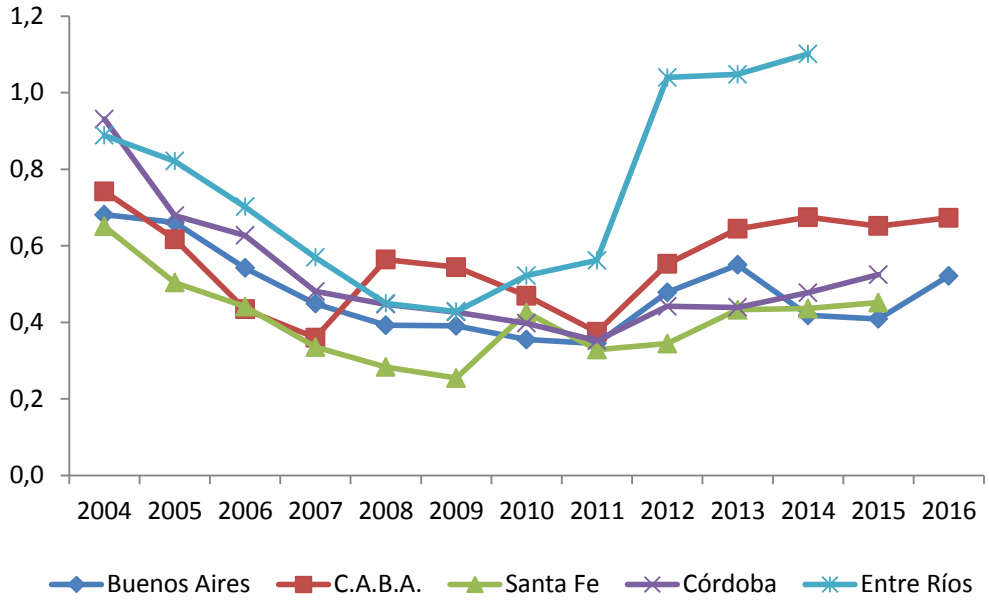
After these reforms, the tax collection (measured in terms of provincial GFP) began to improve after 2012 (Figure 5). It is expected that the collection of

22 For more details on the reforms implemented, see DNCFP (2013); Castro et al. (2014) and Batakis and Lódola (2015).

the real estate tax in the Buenos Aires Province will continue to increase as a result of the actions implemented in 2018, that include the updating of the fiscal value of urban properties, a new scale of aliquots. Further, properties have been detected through satellite and physical inspections of the Province´s Tax Administration, along with a new method of valuation of the land in closed neighbourhoods, under development or that have not yet completed their final registration and the incorporation into the cadastre of constructions, and improvements not declared by taxpayers that.[23]

Figure A4. Argentina. Collection (o Revenue??) of the Immovable Property Tax by Main Jurisdictions

As percentages of provincial PBG. 2004-2016



Source: Prepared by the authors on the basis of data from the Dirección Nacional de Coordinación Fiscal con las Provincias, Ministerio de Hacienda y Finanzas Públicas de la Nación.

In the case of the Autonomous City of Buenos Aires, in 2008, an update of the valuation of properties was carried out, which consisted in applying a zone value coefficient, determined geographically, on the old fiscal valuation of the building. Hence, there is a significant recovery of the property tax revenue during that year.

Subsequently, by 2012, a reform was approved and a new system called Homogeneous Fiscal Valuation (VFH). for determining the fiscal value of each

23 According to information from the ARBA, until July 2018, 1,518,892 square meters had been detected that the owners had not declared. These constructions and improvements were regularized and incorporated into the cadastre, which according to this agency will mean an increase of $ 53 million annually in the collection of the urban real estate tax. (See http://www.arba.gov.ar/NoticiasHome/MasInfo_Noticias.asp?idnoticia=2644)

property was established. The VFH is calculated considering the economic value and incidence of the land tax according to geographical location, environment and commercial activities in the district, as well as the real value of the building according to the category, destination, quality and characteristics of each property. The tariff laws establish ceilings for tax increases, and the Administración Gubernamental de Ingresos Públicos (AGIP) updates the VFH each year. This has led to increases in collection since 2012.

According to Castro et al. (2014), the growth in the property tax revenue in the City of Buenos Aires is explained, firstly by the revaluation and the incorporation of new buildings, and secondly, by the administrative improvements. Regarding the revaluation process, this study highlights two components. On one hand, there is a faster incorporation of new properties to the cadastral register and the updating of the registers. On the other hand, a fiscal intelligence method to detect the case of under-declaration properties by crossing property registers with data from specialized publications on real estate, insurance of workers at construction sector, data on the tax on solid waste, as well as the use of digital tools such as Google Earth to detect improvements properties. Among the administrative improvements in the AGIP, the authors emphasize the greater importance to the tasks of the valuators, the incorporation of more technical workers, the improvement in the quality of the facilities and greater access to information technologies with better equipment.

The province of Entre Ríos provides the most interesting case. This province had the highest growth of property tax and highest property tax revenue in relation to its Provincial GDP (around 1.1% of Provincial GDP). This is mainly due to the reform of the rural property tax and to a lesser extent, to the modifications in the urban property tax[24].

The rural property tax reform, approved in October 2009 established new fiscal values according to the productivity of each zone, based on technical studies. The implementation of the new fiscal values was gradual, and by segments according to the area and productivity of the plots—faster for large properties. By 2012, the new fiscal values were applied to 100%, which resulted in a significant increase in revenue. The tax base scales, fixed amounts and aliquots were also modified. In addition, land values are updated annually from technical studies.

In the urban property tax, the value of the land free of improvements was updated (in 2009) and then annual update coefficients are applied and new values were also determined for the improvements (in 2010 and they are updated in the following years according to the variation of the Construction

24 See DNCFP (2013) and Castro et al. (2014).

Cost Index). Additionally, in some fiscal years the tax base scales and aliquots were modified.

On the other hand, in 2016 the Valuations Law was modified to allow the province to correct deviations of the real estate tax by crossing massive data with the communal cadastres. Thus, in recent years, the *Administradora Tributaria de Entre Ríos* (ATER), within the framework of the M2 program for the detection and incorporation of undeclared improvements, has signed more than 16 agreements with municipalities. These agreements have allowed incorporating nearly 900 thousand square meters that involve more than 20 million pesos in the real estate tax[25]. The cadastral inspection operations carried out by the ATER also helped to the expansion of the tax base, as well as the approval of Law 10,491 of the Cadastral Update Regimen (in 2017) that enabled a massive and voluntary process of declaration of constructive improvements in urban and sub-rural areas, without paying interest and fines.

The concurrent use of the same tax base by a multiple layers of government may be a source of problems, particularly in the case of a visible and, hence unpopular, property tax. In the case of Argentina, the federal tax relies on the valuation of property done by the provinces. When the latter proceed to update property values, they have to bear the full political cost of the operation (taxpayers may ascribe fully to them the cost of the simultaneous increase of two taxes) deriving, while the federal government enjoys the benefit.

This could suggest:

- the assignment of the property tax to municipalities, only, reforming the transfers system to increase incentives to rely more on own-source revenue ;
- A second option would be to trade less progressivity in the tax design, with more frequent, annual updating of property values.

Other options explored in the paper and suggested to all countries would be:

- Rely on a flat tax based on key parameters of properties based on occupancy,;
- In cases where a modern functional tax administration system exists, with good information on property transactions and audit, on self-declaration of the tax;

25 http://www.ater.gov.ar/ater2/NoticiasV2.asp?ID=176

- Rely on simple fiscal registers, leaving detailed cadastres for other uses.

The case of Brazil

As mentioned above, in Brazil there are two taxes that are levied on the immovable property: (1) the Tax on Urban Property and Land (IPTU), and (2) the Rural Territorial Property Tax (ITR). The IPTU is assigned to the municipalities, while the ITR is administered by the federal government. However, in the case that the municipalities require it, the federal government can transfer to them the functions of determination and collection of the rural territorial tax.

The Rural Territorial Property Tax is levied on the property, the productive domain or the possession of real estate located outside the urban area; and its tax base is the value of the land without improvements. The aliquots are based on the property size and degree of use, being higher for larger properties and lower degree of use (there are 30 tax rates ranging from 0.03% to 20%).

In the case of the **Urban Property Tax**, the calculation basis, the taxable event and the taxpayer are defined by the National Tax Code (CTN) and thus they are the same for all municipalities. In contrast, the aliquots, tax brackets, exemptions and other elements are established by the legislation of each municipality.

The IPTU levies the property, use domain or possession of real estate located in urban areas. The taxable base is the value of the property that includes the value of the land and the construction. The aliquots can be proportional (a flat rate tax), progressive or they can vary according to the location and use of the property.

In addition to determining the aliquots and exemptions, Brazilian municipalities are responsible for activities related to the tax administration, such as the organization and updating of the cadastre, the valuation of property, the determination of the tax payable and the collection.

The strategies for the updating of the cadastral data vary among the municipalities. Some only update it when the taxpayer declares the changes made in his property. Others also carry out physical inspections and/or cross information with different databases, either from the same municipality or from other public or private institutions (such as data from the property registry, the Tax on Transmission of Real Estate, cadastre of electricity concession companies or other public services, etc.). In some municipalities, aerial photographs and satellite images are analyzed and the Google Earth

application is used, as well as some of them carrying out, with different periodicity, area-wide updates of the cadastre data.

Although in 2009, the Ministry of Cities of Brazil published an Ordinance with guidelines for the creation, institution and updating of the Multi-Land Territorial Cadastre (CTM) in Brazilian municipalities (*Portaria MCid nº 511*), these guidelines are not mandatory for municipalities. Among the recommendations for the valuation of property, it is mentioned that there must be a technical transparent process, be in accordance with the rules of the ABNT (Brazilian Association of Technical Rules) and utilize the market value as a basis for calculating the IPTU and other property taxes. The guidelines also include minimum parameters for the level and uniformity of fiscal valuations and specify a four-year limit between valuation cycles (for small municipalities the limit is 8 years).

Regarding valuation methods, in general, Brazilian municipalities estimate the land value by the comparative method, using unitary land values for homogeneous zones and considering adjustments to reflect the characteristics of the land and its location. To estimate the value of the building, they consider the average unit costs according to the type of construction and apply an adjustment for depreciation. In general, the municipalities update these values annually using some index of inflation.

According to De Césare (2016), in addition to pressures from the population to update property values, Brazilian municipalities face legal and juridical obstacles, as there is a strong political influence on inherently technical activities. The author points out that the IPTU is the only tax whose update of the taxable base needs the approval of the Legislative Power. In addition, Judicial interventions have prevented the application of new fiscal values of properties that were established legally.

*Regarding the **IPTU performance**,* the following data is included for a sample of 60 municipalities (including the Federal District of Brasilia). There are important differences between jurisdictions about property tax revenue, even when considering different indicators (Table 5).

Table A3. Brazil. Socioeconomic Characteristics and IPTU Revenue in Selected Municipalities

Municipalities	Population 2016	GDP per capita 2013 (USD)	Share in GDP 2013 (%)	Collection of IPTU - Year 2016			
				% of total collected of IPTU	% of municipal revenue	USD per capita	% of P GDP (2013)
São Paulo - SP	11.967.825	22.390	10,73	20,19	32,26	181,52	0,95
Rio de Janeiro - RJ	6.476.631	20.380	5,31	6,20	23,47	103,01	0,65

Municipalities	Population 2016	GDP per capita 2013 (USD)	Share in GDP 2013 (%)	Collection of IPTU - Year 2016			
				% of total collected of IPTU	% of municipal revenue	USD per capita	% of P GDP (2013)
Salvador - BA	2.921.087	8.471	0,99	1,42	26,03	52,14	0,54
Brasilia- DF	2.914.830	29.154	3,30	1,95	5,06	72,02	0,30
Fortaleza - CE	2.591.188	9.042	0,94	1,05	27,27	43,68	0,43
Belo Horizonte - MG	2.502.557	15.233	1,53	2,69	31,93	115,57	0,93
Manaus - AM	2.057.711	14.981	1,20	0,49	19,92	25,65	0,16
Curitiba - PR	1.879.355	19.913	1,49	1,47	23,60	84,12	0,50
Recife - PE	1.617.183	13.468	0,87	0,90	22,94	59,65	0,57
Porto Alegre - RS	1.476.867	18.131	1,08	1,05	20,50	76,20	0,52
Belém - PA	1.439.561	8.383	0,48	0,23	14,40	17,35	0,25
Goiânia - GO	1.430.697	13.466	0,76	0,98	29,91	74,06	0,71
Guarulhos - SP	1.324.781	17.632	0,93	1,10	41,35	89,72	0,69
Campinas - SP	1.164.098	20.802	0,97	1,40	32,22	129,75	0,75
Maceió - AL	1.013.773	7.625	0,31	0,26	23,25	27,66	0,43
Campo Grande - MS	853.622	11.521	0,39	0,83	38,60	104,93	1,13
São Bernardo do Campo - SP	816.925	27.434	0,90	0,88	31,68	115,76	0,56
João Pessoa - PB	791.438	8.944	0,28	0,16	14,30	21,42	0,27
Santo André - SP	710.210	16.467	0,47	0,67	31,61	100,81	0,73
Jaboatão dos Guararapes - PE	686.122	8.205	0,22	0,13	25,59	21,05	0,30
Aracaju - SE	632.744	10.504	0,26	0,35	27,00	59,29	0,48
Joinville - SC	562.151	18.638	0,41	0,33	29,74	62,36	0,39
Juiz de Fora - MG	555.284	11.281	0,25	0,34	31,55	65,78	0,72
Ananindeua - PA	505.404	5.144	0,10	0,04	20,59	7,47	0,18
Florianópolis - SC	469.690	15.020	0,28	0,65	33,54	149,71	0,95
Mauá - SP	453.286	10.673	0,19	0,21	42,05	49,17	0,59
Santos - SP	433.966	20.629	0,36	0,92	34,70	229,24	1,37
Diadema - SP	412.428	15.313	0,25	0,35	46,25	92,31	0,69
Piracicaba - SP	391.449	24.405	0,38	0,23	26,33	64,12	0,33
Olinda - PE	389.494	5.756	0,09	0,05	16,38	13,98	0,27
Rio Branco - AC	370.550	8.788	0,13	0,04	15,54	12,98	0,17
Vitória da Conquista - BA	343.230	6.793	0,09	0,05	19,73	14,69	0,22
Blumenau - SC	338.876	18.172	0,24	0,22	26,54	71,09	0,39
Cascavel - PR	312.778	12.753	0,16	0,11	18,76	36,70	0,25
Limeira - SP	296.440	16.521	0,20	0,18	35,11	66,94	0,53
Santarém - PA	292.520	5.358	0,06	0,01	10,57	5,23	0,14
Camaçari - BA	286.919	24.745	0,28	0,20	29,11	75,04	0,24
Governador Valadares - MG	278.363	7.793	0,09	0,10	32,59	38,43	0,41
Gravataí - RS	272.257	17.580	0,19	0,04	15,49	17,42	0,10
Sumaré - SP	265.955	20.319	0,21	0,11	32,25	44,37	0,27
Criciúma - SC	206.918	12.762	0,10	0,05	16,02	25,54	0,20
Chapecó - SC	205.795	15.496	0,12	0,07	17,09	34,19	0,27
Cabo de Santo Agostinho - PE	200.546	17.407	0,14	0,04	13,57	22,04	0,18

Municipalities	Population 2016	GDP per capita 2013 (USD)	Share in GDP 2013 (%)	Collection of IPTU - Year 2016			
				% of total collected of IPTU	% of municipal revenue	USD per capita	% of P GDP (2013)
Palhoça - SC	157.833	12.229	0,07	0,07	26,37	46,33	0,36
Varginha - MG	132.353	14.426	0,08	0,05	30,08	41,73	0,25
Serra Talhada - PE	84.352	6.005	0,02	0,00	10,41	5,35	0,13
Sapiranga - RS	79.560	12.525	0,04	0,02	34,44	30,55	0,25
Alfenas - MG	78.712	10.422	0,03	0,03	32,18	38,27	0,43*
Gaspar - SC	65.024	13.620	0,03	0,02	20,90	29,86	0,28
Indaial - SC	63.489	14.391	0,04	0,02	27,34	36,62	0,26
Itupeva - SP	54.128	28.171	0,06	0,07	42,98	143,51	0,59
Içara - SC	53.145	13.859	0,03	0,01	15,93	19,28	0,16
Guaxupé - MG	51.911	13.779	0,03	0,02	32,01	31,94	0,25
Campina Grande do Sul - PR	41.821	11.154	0,02	0,01	22,11	34,45	0,41
Orleans - SC	22.449	17.583	0,02	0,01	32,06	32,62	0,23
Urussanga - SC	21.003	13.600	0,01	0,00	23,06	20,04	0,16
Rio Piracicaba - MG	14.602	20.064	0,01	0,00	8,43	5,07	0,02
Guiratinga - MT	14.496	8.259	0,00	0,00	5,79	5,06	0,07
Bela Vista de Minas - MG	10.381	12.668	0,01	0,00	1,82	1,69	0,01
Águas Frias - SC	2.408	22.370	0,00	0,00	12,85	9,00	0,04
Subtotal (60 municipalitiess)	56.061.171	16.830	38,3	49,1	24,3	94,2	0,65
Total Brazil	206.081.432	12.265	100,0	100,0	29,3	52,2	0,47

*/The figure as % of GDP for Alfenas corresponds to 2010 and comes from the Lincoln Institute database.
Source: Prepared by the authors on the basis of SICONFI, Tesouro Nacional for the revenue and population figures by municipalities; IBGE for GDP data and country population; Receita Federal (Carga Tributária no Brasil) for the total revenue of Brazil and CEPAlstat for the exchange rate.

The property tax in Mexico

Mexican property tax revenues at 0.2% of GDP are at the lower end of the developing country spectrum, and have not surpassed 0.29% during the last 20 years (see Figure 3). Shortcomings arise both from the way the tax is structured, implying tax policy issues, and from its actual implementation, with problems in tax administration.

Both issues are compounded by the political economy of the tax, implying in turn adverse incentives facing political appointees and administrators, including those deriving from intergovernmental transfers.

The tax base is the residential and commercial land and improvements (i.e., man-made buildings and other constructions), with some exceptions, where only the land is taxed. The value of the land and improvements is

determined in the cadaster and forms the base on which the tax rate is applied. Tax rates vary from one state to the next. Tax rates are established at the state level, although proposals are submitted from the municipalities and administration is local. This means that in Mexico there is no control over tax rates at the margin on the property tax at the municipal level.

Low property tax collections are not attributable to low tax rates. Administration is thus the big issue. *Impuesto predial* is plagued by a neglect of the cadaster, outdated valuations of property, and low collection efforts. The legal framework is largely undefined and obscure and helps to keep collections low by reducing incentives.

According to the constitution, the municipalities administer the cadaster. There are numerous municipalities (particularly the smaller urban) that do not have the technical or human capacity, nor the financial resources available for efficient cadastral management or collection. This leads to a situation in which over 520 municipalities (22%), collect no property tax at all.

A major obstacle to property tax revenues is outdated or flawed cadastral information. Cadastral values are far below market values. There are numerous "hidden" or omitted land plots and constructions that do not show up in the cadaster, largely because of a lack of updating. This severs the link between municipal policies and the base of the property tax and is particularly relevant for sprawling urban municipalities that have experienced high levels of immigration and construction.

Various programs to modernize cadasters have been instigated over the past 30 years, including by federal institutions. Results have been partial and above all temporary, as shown by other Latin American countries reviewed here.

The property tax is often used in Mexico as a political tool, to generate favours for individuals or groups of taxpayers. Granting exemptions is commonly used as a concession to pressure groups and promises to freeze the property tax is a frequent campaign pledge for winning elections.

Disincentives to collect the property tax are further abetted by the period in office of only three years, with no consecutive re-election and a high staff turnover at the municipal level. The short-term periods of only three years generally mean that the longer term benefits of taxation and public investment are not realized by single term mayors.

As in other Latin American countries, municipalities are heavily dependent on federal government transfers. Introducing a tax collection element in the allocation of transfers would only reward mostly the richest and largest municipalities with major tax bases, rather than those that try to

increase their collections. Making transfers from higher levels of government dependent on adequately evaluated tax effort would counteract against perverse incentives.

An improvement in accountability would be achieved by the state legislatures setting the rates since they have the legal power to do so, but allowing the municipalities to set their own rates within the legislated band.

The creation of autonomous cadastral institutes would go a long way towards depoliticizing the property tax system. Other options also include administration and auditing by an independent agency.