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Valuation and Assessment of Immovable Property

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JEL Classification: H10, H11, H20, R51

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VALUATION AND ASSESSMENT OF IMMOVABLE PROPERTY

Richard Almy

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ABSTRACT

This paper addresses the following questions about immovable property taxation in OECD and partner countries: What is valued? How is it valued? And who values? It draws on published information and data on property tax policy and administration in 172 countries. It focuses on value-based taxes and the features of mass valuation systems. Main system options (such as whether taxes are based on annual rental values or capital values as reflected by sales prices) are described and briefly evaluated. It notes that valuation practices frequently ignore revaluation requirements; it identifies four areas for improving valuation performance based on the experiences of leading systems.

JEL classification codes: H20; R51; H10; H11

Keywords: Land *tax*; property tax; immovable property tax; real estate; tax system; taxation, taxes

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VALUATION AND ASSESSMENT OF IMMOVABLE PROPERTY

Richard Almy[1]

Introduction

This paper discusses valuation and assessment of immovable property for purposes of recurrent (annual) taxation. It focuses on the situation in OECD countries and in its partner countries.[2] It addresses these questions: What is valued? How is it valued? And who values? It draws upon a database containing information on the property tax systems in 220 areas (chiefly sovereign countries) and the paper, "A global compendium and meta-analysis of property tax systems," prepared for the Lincoln Institute of Land Policy," and on other sources identified in the references.

A focus on valuation is appropriate. Of 166 countries known to have recurrent taxes on immovable property, 93 per cent have at least one value-based property tax.

Although the underlying principles are similar, valuation and taxation terminology (and practices) vary widely across the globe. Here the focus is on methods that analyse evidence of current *market* values, such as open-market, arm's-length sales and rents of immovable property. The purpose of the analyses is to produce assessments for property tax purposes (that is, cadastral or assessed values). Rating and rates are terms generally synonymous with assessment and property taxes. Valuation and appraisal are synonymous, as are the verbs to value and to appraise and the nouns valuer and appraiser. Assessor is used when valuation is a corporate responsibility of the property tax assessment authority. (Appraisal and related terms are most commonly used in the United States; valuation is more common elsewhere.)

What is valued?

The question "What is valued?" addresses one of the three main elements of a system for taxing immovable property recurrently. It is concerned with the *objects* or *coverage* of the tax, that is, the things that are taxable. An element outside the scope of this paper is the *subjects* of the tax (that is, who is responsible for paying the tax), but see the following box. The third element is the basis of the tax (discussed below).

As background, immovable property comprises *land* and *improvements* to land. Here, land is defined as a demarcated piece of the Earth's surface—a *parcel* or a *plot* of land. (Sometimes "land" is synonymous with immovable property.) As such, a plot of land has physical features that affect its value. Improvements to land are chiefly buildings but can include other types of structures and constructions. Units in a building and other occupancies also are considered to be buildings in the categories defined here. It should be noted that sometimes *movable* property (which is all property that is not immovable) is subject

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2 Brazil, China, India, Indonesia, and Russia.

to taxation. Usually only a few categories of movable property are taxable (such as business machinery and equipment, vehicles, aircraft, and watercraft). Some movable property is taxed in at least twenty-one countries, including Ireland, Japan, Korea, Netherlands (houseboats), Poland, Russia, Switzerland and United States (some states).

The answer to the question "What is valued?" depends on how a country defines taxable property in its laws. The main options are to tax only land, to tax only buildings, or to tax both land and buildings in some fashion. Sometimes, only property within defined areas, such as municipalities, urban areas, or rural areas, is taxable.

Box 1. Who pays the property tax?

"Who pays the property tax?" is a question that has been debated for more than a century (Mandell 2001). The answer has to do with whether the person who is obligated to pay a property tax can shift some of the burden to another. That is, what is the ultimate incidence of the tax? Is the tax inherently "regressive"? That is, are its burdens greater on the poor or on the rich? The popular view is that property taxes are inherently regressive. Although inaccurate and outdated valuations can increase regressivity, this conclusion may not be warranted. Researchers have propounded three "views" of the nature of property taxes (see Mandell 2001 and Almy, Dornfest, and Kenyon 2008, pp. 321-324):

- The "traditional view"—the tax on land is progressive while the tax on structures is regressive.
- The "new view"—overall, the tax is progressive.
- The "benefit view"—the regressivity debate is irrelevant, "you get what you pay for."

A related area of debate is the neutrality of the property tax. As Mandell has observed, the conclusions reached via theoretical models depend on the assumptions made. Empirical studies have the additional difficulty of controlling for extraneous factors. For reasons outlined in Dye and England 2010, visible effects are weak at best or are inconclusive. Mandell has concluded that better models and more empirical research are needed. Among the issues is whether the results of studies would vary if explicit attention were given to the subject of the property tax (much research assumes that owners, not occupiers, are liable for the property tax. There also is a need to consider the relief measures that are in place in most countries. In any case, policy makers should not assume that a substantial tax on immovable property is detrimental to society. In fact, a well-designed and –administered tax on immovable property is a key component of a balanced revenue system (Brys 2011). They also should evaluate how poor administration can affect the tax.

Practices in OECD and partner countries

Of the 167 countries for which information was available, one OECD country, Estonia, has *only* a land tax. See Table 1. There are no OECD countries that have *only* a building tax. Twenty-five OECD and partner countries, tax both land *and* buildings under a single tax on land and buildings. In Switzerland, cantons can impose a recurrent tax on immovable property and decide the basis of any such tax. They may authorize municipalities to impose a tax as well. A similar situation prevails in Canada and the United States. Although South African municipalities have no discretion over the property to be taxed, they are required to develop (and publish) a rates policy that justifies tax differentials and exemptions.

Australia, New Zealand, Poland, and Slovak Republic plus Brazil have a land tax *plus* a tax on immovable property tax (a real estate or a real property tax). In Australia, each state designs its property tax system. In general, however, there is a state land value tax, and municipalities impose a real property tax. In New Zealand, the law authorizes municipalities to select the base of the tax. Some (mostly rural) municipalities tax only land, while others tax real property. Poland has an urban property tax and separate agricultural and forest property land taxes. In Slovak Republic, a single law governs land and building taxation, but since 2005 the bases differ. In Brazil, there is a rural land tax (*Imposto sobre a Propriedade Territorial Rural*, ITR) and an urban real estate tax (*Imposto sobre a Propriedade Predial e Territorial Urbana*, IPTU).

Greece, Ireland, and United Kingdom are the only countries that have a building tax *plus* a real property tax. Greece has two real property taxes (the 2010 State (Large) Real Estate Tax (FAP) and the 1997 Local Real Estate Duty (TAP). Greece also has a building tax, the 2011 Special Duty on Buildings Powered by Electricity. Ireland has separate taxes on residential and on non-residential property. In the latter, the property occupied, often a unit in a building is the object of taxation. In the United Kingdom, England, Scotland, and Wales have different regimes for residential property ("council taxes") and non-residential property (rates).

Table 1: Immovable property tax bases in OECD and partner countries

A land tax only				
Estonia				
A tax on land *and* buildings (a single immovable property tax)				
Austria	Belgium	Canada	Chile	Czech Republic
Finland	Germany	Iceland	Israel	Italy
Japan	Korea	Luxembourg	Mexico	Netherlands
Norway	Portugal	Spain	Sweden	Switzerland
Turkey	United States			
India	Indonesia	South Africa		
A land tax plus an immovable property tax				
Australia	New Zealand	Poland	Slovak Republic	
Brazil				
A building tax plus an immovable property tax				
Greece	Ireland	United Kingdom		
A land tax, a building tax, and an immovable property tax				
Denmark	France	Slovenia		
China	Russian Federation			
A separate land tax and a separate building tax				
Hungary				

Denmark, France, and Slovenia plus China and Russia have a land tax, a building tax, *and* a real property tax. Denmark has a (1926) land tax (*Grundskyld*), a (1961) commercial building tax (*Daekningafgift*), and a (2000) residential real property tax (*Ejendomsvaerdiskat*). France has a land tax (*Taxe Foncière (sur les proprietés non bâties)*), a building tax (*Taxe d'Habitation*), and two real property taxes (*Taxe Foncière (sur les proprietés bâties)* and *Contribution Économique Territorale*). Slovenia currently has a charge for use of building ground, a land tax; a property tax, a building tax; and a tax on high-value real property, a real property tax, but a single real property tax is expected in 2014.

A common option chosen only by Hungary among OECD countries and its partners is a land tax *and* a building tax governed by separate laws. Hungary allows municipalities to impose a tax on certain undeveloped plots of land, a general tax on buildings, and real property tax on holiday properties.

Within these broad categories lie many variations, as the above examples reveal. Some countries limit taxable property to properties within municipal boundaries. In a similar vein, some countries only tax properties considered to "urban" or "rural." Alternatively, some tax both urban and rural properties but in different manners. And some tax only properties in specified use categories.

Related to the issue of the objects that are taxable is the unit of assessment (which, in turn, is related to the subjects of the tax). That is, the unit of assessment can be the entire property (whether a land parcel, building, or both together) or only the property occupied by a single taxpayer. Each legally recognized cadastral property can be valued alone, or the valuation can be of the economic unit, which can comprise several individual parcels (so-called multi-parcel properties). In some countries tax base is the sum of a taxpayer's holdings, not each individual property.

Some countries tax only properly registered properties or properly constructed properties. Thus, persons who have customarily used land or who have received property rights under a restitution or privatisation program may be reluctant to take the final steps to register their rights, because they will become liable for taxation. Similarly, persons who have constructed buildings without a construction permit or occupancy permission can avoid taxation. Clearly such policies and practices create incentives to construct buildings without authorization and conceal inheritances and other ownership changes. They may also encourage bribery.

Some countries tax only land *not covered* by a building or structure. For example, Hungary allows taxation of only "net unimproved area." The same is true in Czech Republic. Thus the taxable area of a 300 m^2 land plot with a 100 m^2 house on it is 200 m^2.

Some types of property, such as public rights-of-way and routes of transportation (waterways, state-owned railroads, and streets and roads), often are excluded from cadastres and the property tax base on grounds of administrative convenience. This is a common practice, because there is no market evidence of the value of long-established public routes of transportation. Mines and mineral rights can be excluded from the property tax base (but according to Lewis 2002, mineral property is an important part of the property tax base in Indonesia).

Evaluation of base options

Regarding the choice of the object of a recurrent tax on immovable property, the main policy debate has to do with the extent to which buildings should be taxed. There essentially are two schools of thought: those who believe that the base for the tax should be broad (and hence include buildings in the tax base) and those who believe that only land should be taxed.

The latter school holds that taxing only land or *site* value encourages the most efficient use of land. That is, because a tax on land value cannot be shifted to others or avoided in a well-administered tax system, hoarding or land speculation is discouraged. Moreover, because the supply of land largely is relatively fixed, the value of each tract of privately owned land essentially derives from the actions of society, not from the actions of individual landowners. Through land taxes, governments can recoup part of the value created by society, and land prices can be driven down. On the other hand, a tax on the value of buildings and other improvements tends to discourage land development. It also is contended that land tax administration is less expensive because it is not necessary to value buildings and hence maintain records about their characteristics.

The chief argument for retaining or adding building value to the property tax base is largely fiscal: the tax base in typical urban settings is about three-times greater than if it only consisted of land value. Thus, a given amount of revenue can be raised at a lower rate when both land and buildings are taxed.

In short, there is no denying the theoretical economic arguments for a site value tax. However, empirical evidence of the efficacy of land taxes in spurring optimal land use is limited at best, as is evidence supporting the administrative efficiency argument. There are several reasons for this. Some of the more enthusiastic advocates of site value taxation oversimplify what is needed to reform a property tax

system or neglect relevant factors. (For a fuller current examination of the pros and cons of land value taxation, see Dye and England 2010.)

As has been generally recommended when advocating a property tax reform (Bahl 2009 and Norregaard 2013), there is a need to analyse the existing situation systematically. When considering a change to a land value tax, questions that should be considered include:

- Are there other policy objectives such as preserving the ambiance of historic city centers, open-space land (including farmland), and historic or culturally significant properties that need to be taken into account? How will the land tax be reconciled with any such objectives?

- Are current or proposed effective property tax rates (taxes as a percentage of market value, regardless of the basis for property taxes) sufficient to have a significant effect on decisions to hold land in a suboptimal use? If taxes are a minor factor in decisions to hold or develop land, any incentive or disincentive effects may be negligible. For an interesting note on this point, see Ingram 2008. If a proposed tax rate is high, and the tax is based on capital value, have the capitalization effects on future (lower) capital values and potential tax revenues been taken into account by policymakers?[3] Moreover, will the salience of a high land tax make it difficult to impose?

- Are property tax system features (such as the subject of the tax, the unit of assessment, and relief measures), land tenure patterns, market conditions, cadastral systems, and development pressures commensurate with the requirements of an effective land value tax?

On the matter of valuation, if the goal is market value, it is generally easier to produce defensible estimates of the value of land and improvements as an economic entity. However, it can be said that land valuation in a developed, urban area is challenging, but it is equally challenging under a land value tax or a real property tax that requires a breakdown between land and buildings. As will be discussed under "How is it valued?" many valuation systems neither measure up to the requirements of a well-administered land value tax nor take full advantage of modern methods that maximize the utility of available evidence of market values.

How is it valued?

The question "how is it valued?" touches on a number of policy and administrative issues. First, of course, is whether the tax should be based on property value or some other basis. This paper focuses on value-based property taxes. Non-value based taxes also are briefly evaluated.

Value bases

When a measure of value is the basis for an immovable property tax, there are several options: (current) market value, restricted market value (such as current use value), or some notional (or normative) value. Moreover, value can be on a capital value (property price) basis or an annual (rental) value basis. Under annual value, only a single year's rental value serves as the basis for a tax. Under capital value, the present value of future rents and other benefits of owning property serve as the basis for a tax. When annual value is the basis, it can be expressed on a gross or net basis. Under the former, the owner would be assumed to pay all operating expenses; under the latter, the renter would be assumed to pay (specified) operating expenses (such as repairs and insurance, as is the case with the British uniform business rate, which is levied on the occupier of a property).

[3] See Policy Advice Division of the Inland Revenue Department and New Zealand Treasury

As shown in Table 2, three OECD countries have only an area-based property tax. Belgium, France, and Italy have immovable property taxes based *only* on annual value. Table 2 also shows that twenty-one OECD and partner countries base immovable property taxes *only* on capital value. Twelve OECD and partner use more than one basis.

Table 2: Basis of immovable property taxes in OECD and partner countries

Area basis only				
Czech Republic	Israel	Poland		
Annual value basis only				
Belgium	France	Italy		
Capital value basis only				
Austria	Canada	Chile	Denmark	Estonia
Finland	Germany	Iceland	Japan	Korea
Luxembourg	Netherlands	Norway	Portugal	Spain
Sweden	United States			
Brazil	Indonesia	Russia	South Africa	
Multiple bases for immovable property taxes				
Australia	Greece	Hungary	Ireland	Mexico
New Zealand	Slovak Republic	Slovenia[4]	Switzerland	United Kingdom
China	India			

Evaluation of basis options

The policy debate regarding the basis for a recurrent tax on immovable property chiefly has to do with whether the tax should be value-based or based on area or some other measure. Although there are different strengths and weaknesses, as discussed below, there is not much debate about whether a value basis should be annual value or capital value. It would seem, however, that there has been a gradual shift toward capital value and away from either annual value or surface area. This probably is a result of changes in land tenure patterns and immovable property markets, which make capital values easier to determine. In addition, meaningful uniformity in effective property tax rates and annual property tax burdens can only be achieved when assessments are based current market values (whether on an annual or capital value basis).

Area and other non-value bases versus value bases

Land area, building area, or both is the usual basis for a non-value property tax system (four countries have other bases). Under area-based property tax systems, taxes are determined simply by multiplying measurements of area by the appropriate rate and any applicable modifying coefficients. Thus, area-based systems are comparatively simple to administer. Only property classifications and area measurements made according to uniformly applied rules are needed. Area-based property taxes are easier to implement than value-based systems, because market data do not have to be collected and analysed. Fewer attribute data need to be collected and analysed. There is no need for revaluations. Area-based property taxes also are more objective than value-based systems in that area measurements are less contestable than value determinations. Classification is no more problematic in an area-based system than in a value-based system. On the other hand, area-based property tax systems are often perceived to be unfair. In the absence

[4] A new market value-based immovable property tax is expected to be implemented effective 1 January 2014.

market-informed adjustment coefficients and tax rates, highly desirable properties can pay the same taxes as undesirable properties. Individual assessments bear little relationship to either ability to pay or benefits received, which reduces public acceptance. Although taxpayers might see this as an advantage, area-based property taxes are less buoyant than value-based systems, unless frequent adjustments are made to tax rates and any adjustment coefficients.

As suggested above, the disadvantages of area-based systems can be offset by the introduction of market-related adjustment coefficients. Doing so reduces simplicity and objectivity, of course. Many urban area-based systems involve adjustment coefficients for the size of a municipality, the zone within a municipality, the story in a building in which an apartment is located, and the like. In rural systems, rates or coefficients commonly reflect difference in soil quality and other productivity factors. Arguably, a well-designed area-based system can meet tests of equity as well as—or better than—a poorly designed or long neglected value-based system. The World Bank (2004) reports on recent reforms in Bangalore, India, regarding a tax based on simple value per-unit methods; also see Connolly and Bell 2009.

Annual value versus capital value

In most of the countries in this survey, the decision to impose an annual value tax instead of a capital value tax probably was influenced by land tenure arrangements (concentrated ownership) and available market evidence (many rents and few sales) at the time of the imposition of the tax.

The advantages and disadvantages of each basis often are linked with other facets of the immovable property tax system, namely the subject of the tax and the unit of assessment. Among the arguments made in favour of annual value (when the subject of the tax is the occupant) is that because there are more occupants than owners, there is a larger number of taxpayers. With a greater number of persons with a direct stake in the quality of government, the more accountable the government will be. (Owners of rented property doubtless find this arrangement beneficial as well.) It also is argued that a year's rental payment is a better relative measure of the benefits a taxpayer receives in the course of a fiscal year than a property's capital value.

When occupants are the subject of the property tax and other things being equal, a greater number of taxpayers implies higher costs in tax billing and collection (more bills to distribute; more payments to process). Enforcement of arrears can be more difficult if the population is mobile. Valuation costs could be lower, because rental value models tend to be simpler. However, establishing annual rental values for unoccupied (vacant) land can be difficult when the valuer must hypothesize both a tenant and a rent. Consequently, if unoccupied property is taxed, it usually is taxed at a fraction of the amount of occupied properties.

As to the size and composition of the immovable property tax base, annual value and capital value normally are *not* mathematically equivalent ways to apportion property taxes. The bases vary in proportion to the capitalization factors that convert annual rental values to capital values. These factors are influenced by market conditions, including the perceived certainty that future rents will be paid. In general, the greater the likelihood that the assumed rents will not be received, the lower the capital value of the property in question. This unstable relationship makes it difficult to coordinate annual values with transfer and capital gains taxes (Ball and Wallace 2010, 174). However, some countries define annual value as a percentage of capital value in their laws. Others use a standard percentage in practice. Because the sum of a year's rental values is much smaller than the total values of the properties involved, tax rates must be higher to obtain equivalent amount of revenue. (McCluskey, Bell, and Lim 2010 offer additional thoughtful perspectives on the advantages and disadvantages of the various bases for assessment.)

Issues: The value definition, purpose, and assumptions

Customarily, immovable property tax laws lay out a number of assumptions which valuers should take into account during the analysis of available market evidence and in valuation. These include the definition of value, the rights that taxpayers are assumed to possess, property use (whether current use or most profitable, legally permitted use—the so called "highest and best use"), and the date of the valuation. The aims are to simplify the valuation problem, clarify what the valuations represent, and value immovable property on a uniform basis.

When values are subject to such assumptions, the results often are styled as "cadastral values." Thus the definition says what the values are used for (taxation usually), not how close they are to current market values. This is particularly important when valuation methods (and data) are deficient and when values are outdated.

Cadastral values can be used for a variety of purposes (see Federal Land Cadastre Service of Russia 2001, pp. 35-36). They frequently are used in transfer taxation (e.g., in Denmark, Iceland, Lithuania, Netherlands, and Sweden) and especially in countries where people frequently under-declare sales prices. When the assessed value is higher than the declared value, it may be used as the basis for the tax. Cadastral value can be used in net wealth taxation (Austria and Switzerland), in capital gains taxation (Finland) and in imputing the income derived from owner-occupied property (Italy and Netherlands). In Netherlands, valuations made for municipal property tax assessments are used for water (polder) board taxes on built property. Cadastral values also can be used for other purposes. In Denmark and Sweden, they are considered in mortgage finance. In Iceland, they are used in fire insurance. In Latvia, cadastral values are used in a variety of public purposes. In Spain, they are used in expropriation.

Main valuation methods

Three basic valuation approaches have been developed: sales (or rent) comparisons, income capitalization, and cost of construction. There are many different ways of applying them, and some hybrid methodologies combine elements of two or more approaches. As will be evident, the approaches differ chiefly in the types of market evidence used. Data on open-market, arm's-length sales are required in all three approaches but are integral to the sales comparison approach, which is the generally preferred approach when there are sufficient sales. Information on rents and often the expenses of renting properties are needed in the income approach and in the direct comparison of rents in the determination of annual rental values.

Sales comparison approach

In the sales comparison approach, the aim is to analyse how differences in the characteristics of recently sold properties (use, size, location, quality of buildings, and so on) influence their prices. This information is then used to develop valuation "models" (equations) that are then used to estimate the values of both sold and unsold properties. Where there are several hundred recent sales of the type of property being valued, as is often the case with dwellings and can be the case with smaller office and retail properties, statistical techniques can be used to assign values to each measurable characteristic, and the valuation can be done with considerable reliability.[5] Where sales are infrequent or are spread over a broad territory and where properties tend to be distinctive, the sales comparison approach is more difficult to

[5] Minimally, there should be about five sales or other indicators of value for every property characteristic (variable) evaluated. Ideally there would be fifteen. Thus if a model had twenty variables, 100 to 300 sales would be sufficient, although more would be better.

apply satisfactorily. Other indicators of values than actual sales can be used, including offering (asking) prices and expert valuers' opinions.

Income capitalization approach

The income approach estimates the present value of future income, and there are two different approaches: direct capitalization and discounted cash flow (DCF).

The direct capitalization approach involves (a) estimating current market rents and expenses applicable to the property and (b) using an *overall capitalization rate* capitalizes the projected income stream into a present value as of the valuation date. The basic mathematical relationship is:

$$\text{Value} = \text{income} \div \text{rate}.$$

Income is estimated based on actual rents of comparable properties net of taxes, insurance, other operating expenses and capital expenditures, and adjusted for expected occupancy rates.

Estimating value with DCF analysis requires estimates of each year's cash flow (net operating income) over an assumed holding period, the terminal value at the end of the period, and each year's capitalization rate. These expected incomes are then discounted at the appropriate discount rate to obtain the market value as of the valuation date, as follows:

$$\text{Value} = \frac{CF_1}{(1+i)} + \frac{CF_2}{(1=i)^2} + \ldots + \frac{CF_n}{(1+i)^n} + \frac{CF_{terminal}}{(1+i)^n},$$

where $CF_1, \ldots, CF_n$ is each annual cash flow over the holding period; n is the number of periods; $CF_{terminal}$ is the residual (capital) value at the end of holding period; and i is the discount rate applicable in each period.

Although it lacks the flexibility of DCF, direct capitalization is normally used in valuation for property tax purposes. Models (discussed below) can be developed for rents and rates. Usually direct capitalization is used to estimate the terminal value.

The income capitalization approach is theoretically preferred over the other approaches when valuing commonly rented properties, because it mirrors the thinking of participants in investment property markets. Practical difficulties in obtaining the necessary data sometimes limit the use of the approach. When rental property income and expense data are available, mass valuation applications of the income approach have proved highly satisfactory in the valuation of common income-producing properties.

Cost approach

The cost approach involves estimating and land value and building (improvement) value separately and adding them to obtain an estimate of immovable property value. Land value is what *vacant* (undeveloped) land with the same location, area, shape, physical characteristics, and allowable uses as the actually *improved* plot would sell for in the open market. Vacant land sales provide the best evidence of the market value of land, but there are techniques for estimating land values from sales of developed (improved) properties.

In theory, building value is the replacement (or reproduction) cost minus accrued depreciation. Replacement cost is what it would cost to replace existing structures and other improvements with new

ones of equivalent usefulness but not necessarily the same design and construction technologies and materials. This cost concept normally is used for practical reasons. Reproduction cost is what a replica of the existing improvements would cost. Accrued depreciation is any loss in value due to physical deterioration, functional obsolescence, and economic (or location or external) obsolescence.

Although sometimes overlooked, location can positively affect building values as well as land values. That is, when a building or a unit in a building is sold, its price will reflect the value of its location (also an element of land value). Thus, some cost approach systems allow for "economic condition factors," which can be positive, so that the resulting total property value can be greater than the sum of the land value and the cost of constructing the buildings. Economic condition factors can also be negative to compensate for any shortcomings in normal depreciation allowances. Economic condition factors are developed by analysing the ratios of cost approach values to actual sales prices, as discussed later. Any failure to recognize underlying market realities can result in under-estimated property values and might distort land use patterns, especially in urban areas. Proper handling of location value is especially important when land and buildings are valued separately and taxed differentially.

Some countries rely on valuation methods that use virtually no current, direct market evidence. Some are based on socialist-era notions of land desirability that virtually ignore actual prices and rely instead on such factors as population, urban infrastructure (streets, transportation, utilities, and so on), proximity to governmental and other services (schools, hospitals, shops, and so on), attractiveness of surroundings (the general quality of buildings), and environmental quality (biological, air, water). Such methods are difficult to maintain because they require a lot of data. Although some of the factors do influence values, the methods do not use direct market evidence. That is, the various indices produce values that are essentially arbitrary (but can be better than completely ignoring location factors).

The scale of the valuation problem: Mass valuation versus single-property valuation

Immovable property valuation is a broad and evolving field. Although based on the same principles, different practices have evolved to address two broad types of valuation problems: (1) the valuation of individual properties on an as-needed basis (sometimes called "single-property valuation") and (2) the simultaneous or *en masse* valuation of groups of properties for the same purpose, as of the same date, and at low per-property cost (mass valuation). The driving force for the development of mass valuation methods has been immovable property taxation. In recent years, mass valuation methods also have been used for general information purposes, often by private companies in the real estate industry. Mass valuation is characterized by use of standardized procedures and common data housed in a database (fiscal cadastre). Nowadays, mass valuation relies on computers and statistical analysis. Like all spheres of valuation, it requires experience and judgment.

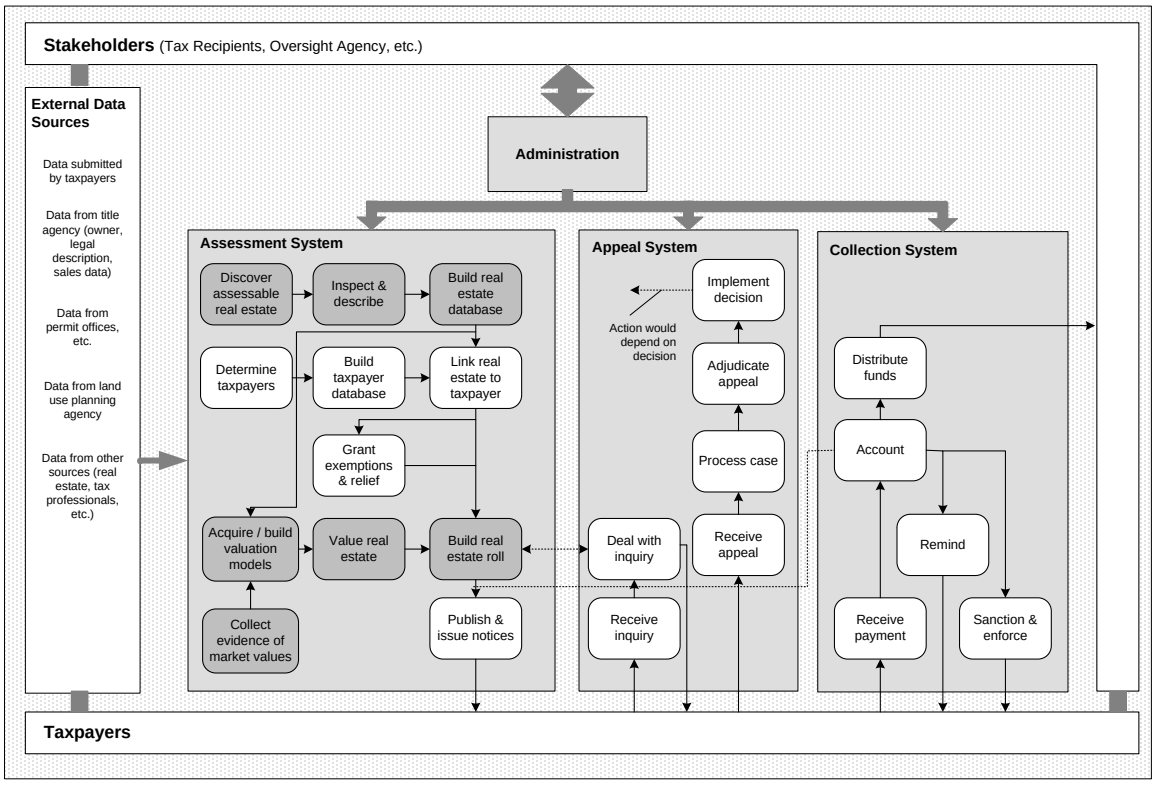
Mass valuation systems

Although the boundaries between a mass valuation system and the other systems that constitute an immovable property tax system vary, a mass valuation system generally comprises sub-systems and procedures for:

- Collecting and maintaining data on properties and their attributes
- Collecting market evidence (sales prices, rents, etc.)
- Market analysis (trends in prices across time and among locations and types of properties)
- Developing and applying mass valuation models
- Evaluating value accuracy (ratio studies) of current and proposed values
- Communicating values to tax authorities, taxpayers, and other stakeholders
- Responding to appeals and other objections about values.

Figure 1 provides a graphical illustration of a property tax system with mass valuation functions highlighted in gray.

Figure 1: Generalised schematic of a property tax system



Specialized computer software, sometimes known as CAMA (computer-assisted mass appraisal) systems, often is used. Nowadays, these are integrated with a database management system and a GIS.

There are several considerations in the design and operation of a mass valuation system (see Federal Land Cadastre Service of Russia, 2001). One is the "ambition" of the system: Is the system to produce values that are close to current market values, or are the values to be only generally related to market values? In any case, since true market values are unobservable (only prices are observable), some divergence between estimated (cadastral) values and actual prices is to be expected. The degree of divergence can be attributed to deliberate policy choices and to practical considerations.

One factor is the level of taxation. The higher the effective tax rate (defined here as the typical ratio between taxes assessed and the capital values of properties), the greater the expense that could be justified in operating a valuation system. Table 3 suggests the interplays among property values, effective tax rates, taxes, and taxes at stake with a 10 per cent valuation "error." Tax amounts are shown for two representative values (EUR 100,000 and EUR 200,000) and for three tax rates—a very low rate of 0.01 per cent, a low rate of 0.1 per cent, and a moderate rate of 1 per cent. An "error rate" of 10 per cent was chosen because discrepancies between estimated values and actual sales prices typically average about 10 per cent in high-quality mass valuation systems. The annual cost *per property* of operating such a high-quality system currently is about EUR 20 (based on experience in Canada, Netherlands, and United

States).[6] Scanning column 3 of Table 3 suggests that a high-quality valuation system would be completely uneconomic in a property tax system with effective tax rates on the order of 0.01 per cent and becomes easily justifiable only when effective tax rates reach at least 1 per cent—if typical property values are as high as those illustrated. Data such as are shown in column 4 illustrate that typical valuation or tax errors produced by an inferior system need to considerably higher than 10 per cent before upgrading the system could be easily cost-justified.

Table 3: Interplay among hypothetical values, tax rates, taxes, & taxes at stake with a 10% valuation error

Illustrative value EUR	Effective tax rate (%)	Tax EUR	Tax at stake with a 10% error EUR
(1)	(2)	(3)	(4)
100 000	0.01	10	1
200 000		20	2
100 000	0.1	100	10
200 000		200	20
100 000	1.0	1 000	100
200 000		2000	200

In other words, low-tax systems need to be less ambitious. Whatever the level of taxation, the costs of valuation need to be kept to a small percentage of the revenues raised from the property tax. Unfortunately, the costs and effectiveness of valuation systems seem little studied. However, total annual expenditures for property tax administration generally are in the range of 5 to 10 per cent of annual property tax revenues in developed countries.[7]

Mass valuation models

Mass valuation involves the development of models expressed in equations or tables that are applied to every property in a group in order to compute each property's value.[8] Early models simply expressed *average* prices (capital values or rents) for properties in a group defined by a specified use, size, type of construction, and the like. Using hedonic pricing techniques, valuers in Scandinavia and North America in the 1970s began to develop *multivariate* models that expressed the *marginal* contribution of such descriptive variables for use in immovable property taxation. Well-constructed multivariate models can be applied to a broader range of properties than can a single stratified per-unit model. The construction of a multivariate model involves these iterative aspects: specification, calibration, and application and final testing (models also are evaluated during the calibration phase). Specification is theoretical or speculative and involves deciding which valuation approach to use, which property characteristics (from among available data) likely have a significant effect on property values, and how those characteristics and variables based on them likely affect values. Calibration is the empirical or analytical work of quantifying the coefficients (rates) associated with each variable in the model. Several tools are available for this, but the most widely used one is multiple regression analysis (MRA). A valuation model can then be applied to a group of property sales or rents that were not used to calibrate the model. Thus, the model can be evaluated by how well it performs on the test group.

A commonly used evaluation technique is a "ratio study" in which the ratios of predicted values to actual prices are analysed (see Gloudemans and Almy 2011). There are three areas of concern: general

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6 A comprehensive revaluation costs about $50 per property, which is about one-tenth of the cost of an appraisal of a house for mortgage purposes.

7 Valuation costs can be as low as 1 to 2 per cent in high property tax countries like the United Kingdom and the United States. Total administrative costs are higher, of course.

8 More information on mass valuation practices can be found in Gloudemans and Almy 2011.

level of valuation, uniformity of the ratios, and evidence of any systematic bias in the valuations, such as low-value properties tending to have higher ratios than high-value properties. This formal empirical analysis of the accuracy of a model is perhaps the thing that most distinguishes mass valuation from single-property valuation. The valuation of a single property depends mostly on the valuer's conforming to accepted procedures (standards) and to no one contesting the valuer's conclusion.[9] Contesting a valuer's conclusion usually requires the unhappy party to commission a new valuation. Differences in the two valuations need to be arbitrated. Such arbitration can be much more expensive to use than the appeals process in a property tax system. Another significant difference between mass valuation and single-property valuation is that the former makes use of more market evidence than single-property valuation, which involves highly selective use of market evidence. On the other hand, mass valuation requires the assembly of necessary attribute data for every property that eventually will be revalued before a model can be applied in immovable property taxation.

Another issue in the design of a mass valuation system is how values are communicated to taxpayers and stakeholders. Complex models are difficult to explain. One approach is to strive for simple, logical models that can be presented in a "base home" format, which allows taxpayers to understand how the features of their properties affect values (Müller 2005). Another, more complicated approach is to convert multivariate models into a series of tables that display prices per unit of area for different classes of properties. In Netherlands, models are made public, and taxpayers can request a valuation report that includes valuation data for several comparable properties. Several valuation organisations (e.g., Hong Kong) publish market analyses that by providing useful data serve to demonstrate the competence of the agency).

Fiscal cadastres

The chief repository of the information obtained about properties and taxpayers and needed for property taxation generally is known as a "fiscal cadastre." This land record system often is distinct from the cadastre that contains information about the persons who possess rights to property (a "legal" or "juridical" cadastre), but it may be part of a larger, multipurpose cadastre. Usually, cadastres are the responsibility of central governments. Historically, different agencies were responsible for fiscal and legal cadastres, but the number of countries with single multipurpose cadastres is growing (examples, include Iceland, Northern Ireland, and New Zealand).[10] This is part of a trend toward the computerization of cadastral maps and records and the use of geographical information system (GIS).

The assembly and maintenance of property attribute data on use, location, size, and other features of land plots and buildings by traditional field inspection methods has been a major obstacle to the introduction of new value-based immovable property taxes and to revaluations. However, there are ways to make data collection and maintenance cost-effective. In the first instance, valuers can often be more judicious in determining which data elements are needed in valuation. For instance, direct comparison models typically require fewer data elements than models based on construction costs. Second, field data entry can now be automated, reducing the need to write down data and then have them transcribed. Alternatively, well-designed taxpayer declarations, such as Sweden has developed, can reduce if not

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9 Single-property valuations may be subject to various national valuation standards or the *International Valuation Standards* (IVS), promulgated by the International Valuation Standards Council (http://www.ivsc.org/). Mention of mass valuation was deleted from the latest version of the IVS, and the International Association of Assessing Officers (http://www.iaao.org/) is issuing a guidance paper on mass valuation in response to this deletion. The Fédération Internationale des Géomètres (FIG, http://www.fig.net/) also is studying the subject.

10 The State Enterprise Center of Registers in Lithuania is another interesting example.

eliminate the need to send inspectors in the field.[11] Finally, low-level, oblique aerial imagery can be used to detect un-assessed properties and new construction. They also are used to supplement or confirm information obtain in other ways.

Codification of valuation methods

There are differences in the extent to which valuation methods and rules are entrenched in laws or regulations. In Canada, Denmark, Netherlands, United Kingdom, and United States, the laws merely establish standards, and valuers have considerable discretion regarding methods and the valuation models employed. In other countries (Brazil, Germany), the law governing valuation often requires that valuation models (or tables) be formally adopted by the government and published in a regulation containing the necessary rates and coefficients. In this way, valuer discretion is limited after the valuation model has been incorporated in the law. When valuation methods are highly codified, taxpayers enjoy greater certainty about what their property tax obligations will be. On the other hand, maintaining accuracy and fairness is more difficult unless the legislative framework facilitates frequent changes in the legislation or regulations governing valuation. The degree of codification of valuation methods also has implications for the appeal system and for supervision and control.

Keeping assessments current: indexing and revaluation

The frequency with which valuations are updated and the methods used to update them are as important as the valuation methods used. In principle, revaluations should be frequent enough to maintain an acceptable degree of uniformity in effective tax rates. That is, valuations should be adjusted upward or downward to keep pace with market developments and changes in price levels (including those caused by inflation). Ideally, valuations would be updated annually if necessary, but this frequency is not common in practice (among unitary states, only Iceland and Netherlands currently maintain this frequency). More commonly, legislation specifies a revaluation schedule, but too often these schedules are ignored, even in OECD countries. An interval of no more than six years is recommended (IAAO 2013). When properties are reappraised on a fixed cycle, one option is to revalue all districts at the same time in one large project. Another is to stagger the reappraisals (so-called "rolling revaluations"), as is the current practice in Denmark, which revalues on a two-year cycle. And some countries have no legal revaluation requirements, including Austria (which last had a revaluation in 1973), Estonia, and United Kingdom (in the case of the Council Tax, which is a residential property tax and which is based on 1991 values).

Especially when the interval between reappraisals is long, indexing can maintain overall buoyancy in the tax base. Austria, Belgium, Finland, France, Germany, Spain, and Sweden follow this approach. If separate factors are developed for different property types and areas, the *overall* level of valuation accuracy can be improved, thereby increasing property tax buoyancy. However, indexing does nothing to address inequities within a group of properties. But indexing can reduce shocks caused by reappraisals. Too often, the index used is not based on trends in property prices alone but is based on consumer prices generally or on construction costs. Over-reliance on indexing or reliance on a poor index can have the same kinds of distortionary effects on land use as failing to revalue.

When the interval between revaluations is greater than a year, rules are needed for valuing new properties and for revaluing existing properties that have undergone physical changes. There are two approaches to valuing properties after a general revaluation. One is to apply the existing valuation standards to new properties, which may not be problematic as long as there have not been fundamental changes in property markets. This approach is taken in the United Kingdom. The other approach is to

[11] Properties are not physically inspected by tax administrators in Sweden.

value the property as of the date of the new appraisal. Over time, either approach results in valuation inequities between older and newer properties and between more- and less-desirable properties.

Who values?

As background, the main functions of an immovable property tax system are to:

1. Identify and link taxable subjects (taxpayers) and taxable objects;
2. Produce tax assessments (whether based on value or some other quantity) that reflect policies that provide for differential tax burdens; and
3. Collect taxes.

This report is concerned with aspects of the first two functions. It discusses different organisational designs. It also addresses oversight, self-assessment, and the role of the private sector

Administrative arrangements for valuation

As with many aspects of property taxation, opinion is divided on administrative arrangements. There are two areas of debate: (1) the tier of government that should be responsible for immovable property valuation and (2) the type of agency that should be responsible.

Tier of government and type of agency responsible for valuation

Of the 150 or so countries with a value-based property tax, information has been obtained on the tier (or tiers) of government responsible for valuation in 100 countries. The central government is responsible for valuation in forty-three; regional governments in two; and local governments in twenty-eight. There is a mixed pattern in twenty-seven countries. Table 4 provides information on responsibility for valuation in OECD and partner countries. Of the seventy-four countries in which the kind of agency responsible for valuation was identified, the most common (forty-four) was a tax or revenue agency. A cadastral agency was responsible in fifteen countries, and a standalone valuation agency was responsible in twelve. When information was available about the type of agency responsible for valuation, Table 5 illustrates the pattern in OECD and partner countries.

Evaluation of options

Regarding the tier of government that should be responsible for valuation, the question is whether responsibility should be centralized at the state or regional level or decentralized (at the lowest feasible level). In the United States, this debate centers on whether states or local governments should be responsible.[12] A number of reasons have been advanced for centralizing responsibility for valuation. Chiefly, there is a belief that higher tiers of government can more readily marshal the expertise and resources needed. This is coupled with a belief that central agency valuers would be less subject to political pressures. Another reason is that valuations for the property tax may be used for other purposes (as previously noted). The arguments for decentralization include the beliefs that local valuers can be more familiar with the nuances of immovable property markets and that because local governments have a greater stake in the outcome, they have a greater incentive to keep valuations up to date. Although there are clear exceptions, there is some evidence of neglect of valuation and assessment by higher-tier governments. The reason seems to be that because immovable property taxes are comparatively unimportant in many countries, it is reasonable to justify allocating scarce administrative resources

[12] In practice, valuation is overwhelmingly the responsibility of local governments; only two states have responsibility for valuation.

elsewhere. On the other hand, some local governments are too small to justify the expense of a competent valuer, to manage contracts with valuation companies competently, or to have a sufficient number of local sales or rents to develop defensible valuation models.

Table 4: Level of government responsible for valuation in OECD and partner countries

Central government				
Belgium	Chile	Denmark	Estonia	Finland
France	Iceland	Ireland	Italy	Portugal
Spain	Sweden			
Regional government				
Austria	Germany	Mexico		
Local government				
Netherlands	New Zealand	Norway	Slovak Republic	Switzerland
India	South Africa			
Mixed				
Australia	Canada	Japan	Slovenia	Turkey
United Kingdom	United States			
Brazil	Indonesia	Russian Federation		

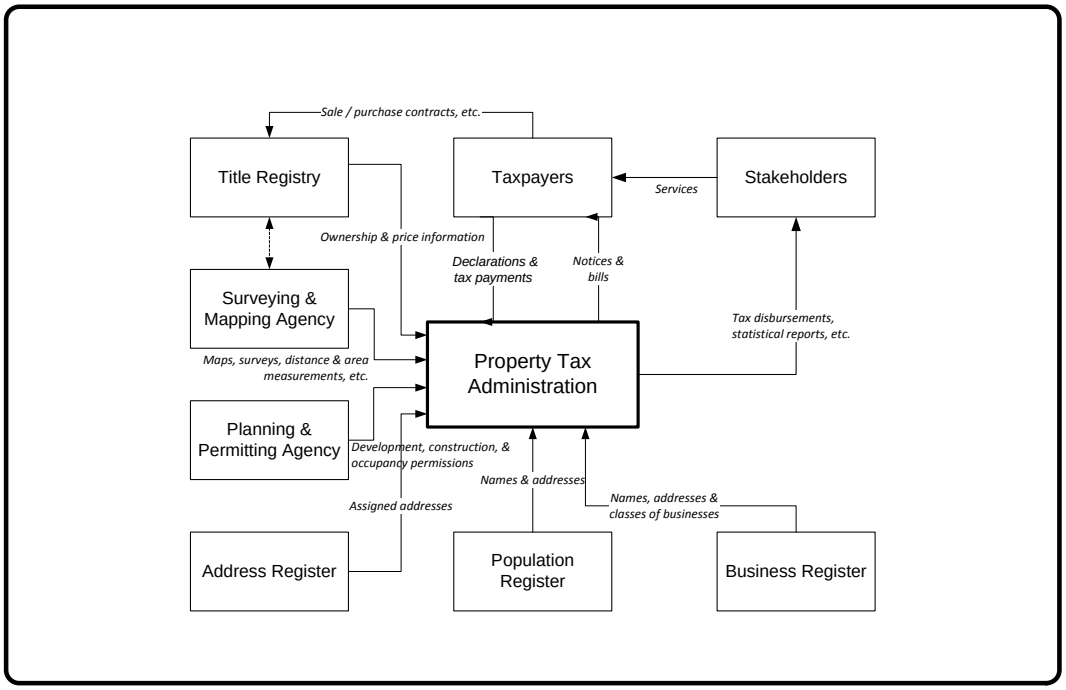
Table 5: Type of agency responsible for valuation in OECD and partner countries

Cadastral agency				
Estonia	France	Iceland	Italy	Portugal
Spain				
Russian Federation				
Tax agency				
Austria	Belgium	Chile	Denmark	Finland
Germany	Norway	Slovak Republic	Switzerland	Turkey
United States				
Indonesia				
Standalone valuation agency				
Ireland				
Mixed				
Australia	Canada	Slovenia	Sweden	United Kingdom

Turning to the kind of agency that should be responsible for valuation, there is less debate in the literature. The arguments for assigning the responsibility to a specialized valuation agency mirror the arguments for centralisation: the ability to develop and maintain valuation expertise, the ability to assemble sufficient valuation data, and insulation from political interference. Although a valuation agency theoretically can appropriately allocate its expertise across the full range of its valuation responsibilities, sometimes traditionally schooled valuers prefer to focus on valuation problems that equip them for a career in single-property valuation. Thus, there can be institutional reasons for neglecting mass valuation.

Regardless of how responsibility for valuation is assigned, there is a need for cooperation and smooth data flows among the bodies that hold data used in valuation and taxation. Figure 2 graphically illustrates the linkages that are needed. For details in some European countries, see Federal Land Cadastre Service of Russia 2001, p. 24.

Figure 2: Typical property tax system external data linkages



Self-reporting and valuation

Collecting and maintaining information about land and buildings can be the most expensive facet of taxing immovable property. In the United States and a few other countries, inspectors from property tax administrations do this work. It has been estimated that such work accounts for about 75 per cent of the costs of assessment and valuation. Elsewhere (as noted), taxpayers are required to help by filing declarations that detail their property holdings, thereby reducing administrative costs (while increasing their compliance burdens). OECD and partner country examples include Slovenia, Sweden, Turkey, Indonesia, and Russian Federation. In Turkey, taxpayers figure their valuations and the taxes due. Tax return forms contain the information needed to calculate building values. Land value rates are published in books available in tax administration offices.

In addition to a general reporting requirement, a declaration can be required in connection with an event, such as when ownership is transferred or when there is a physical change; or only when the tax administration or cadastre requests. In Canada, Denmark, Sweden, and United States, buyers can be required to file a sales declaration. Owners or occupants of rental properties can be required to report rents and sometimes the expenses of maintaining the rented property. Examples of countries with such requirements include Denmark, Netherlands, Sweden, and United Kingdom (for the Uniform Business Rate).

Several considerations can influence decisions about data collection methods. Relying on taxpayers to provide information means that a lot of information can be obtained quickly—sending trained inspectors

into the field typically is time-consuming. On the other hand, it is more difficult to ensure the accuracy of information supplied by taxpayers. Even if they want to supply complete and accurate information, they may lack the technical expertise.

Private sector roles in property tax administration

Although immovable property valuation commonly is the responsibility of government officials, some countries hire private-sector firms to assist, particularly in revaluations. Private sector valuers are optionally used in at least Canada, Estonia, Mexico, Netherlands, New Zealand, Russia, South Africa, and United States. (Private-sector valuers and real estate agents in England and Wales did about 50 per cent of the work initially involved in assigning residential properties to bands under the Council Tax.) Private-sector valuers are used in appeals in Portugal.

Several countries recently have created specialised governmental (or government-owned) organisations to furnish the services needed to administer property taxes. All may provide services for a fee instead of relying exclusively on appropriations from governmental budgets (although compensation for valuation services for property taxation generally comes from an appropriation). An example of a government organisation is Registers Iceland; an example of a government-owned corporation is the Lithuanian State Enterprise Center of Registers. The Canadian provinces of British Columbia and Ontario have similarly constituted assessment and valuation organisations.

By consolidating land title-related functions and valuation functions in a cadastral agency, some of the difficulties in coordinating work and data flows can be avoided. However, it can be desirable to separate property tax-related activities, such as property attribute data collection and valuation, from activities directly related to title registration. That is, title registry customer services should be kept distinct from property tax administration. If buyers believe that one of the "costs" of title registration is property taxation, they may have an incentive to avoid registration or conceal the true nature of the transaction.

The creation of an umbrella agency is not a panacea. Mandating that such an agency provide services related to administering a property tax without adequate compensation risks inadequate performance, unfairly transferring costs to customers paying for other services, or both. The agency can regard essentially public information about taxable properties as proprietary. Attention to the governance of the organisation can avoid such issues.

Oversight of valuers and valuations

There is a need for an independent supervisory or control function when overall responsibility for immovable property tax administration is divided among different agencies and tiers of government. Each agency or unit of government needs to be held accountable for carrying out its responsibilities properly and in a timely fashion. A smooth flow of information and data throughout the property tax system needs to be ensured.

When local governments value property; have considerable latitude in setting tax rates, granting exemptions and relief, and the like; or both, safeguards are needed to prevent some local governments from under-valuing or under-taxing property in hopes of receiving a larger equalization grant from the central (or regional) government. This issue arises when a factor, such as taxable value per capita, is used in calculating the amount of the grant. There also is a need to guard against local corruption.

In unitary governments, supervision generally is the responsibility of the ministry of finance. It usually proposes legislation, prepares regulations, and generally oversees the taxation of property. There may be administrative roles as well. These may be assigned to an agency in charge of tax administration,

which can be an arm of the ministry of finance. However, supervision usually is neither systematic nor rigorous. In contrast in Netherlands, the Council for Real Estate Assessment (*Waarderingskamer*) sets standards and audits municipal performance. In a similar vein, the Valuer-General of Land Information New Zealand supervises revaluations in New Zealand. Similar supervisory agencies can be found in some Canadian provinces and in most states of United States.

Conclusion

OECD and partner countries provide a wide range policies and practices in the area of valuation and assessment of immovable property for property tax purposes. Some are models that other countries could emulate; some arguably could benefit from reform. Specific reform proposals are outside the scope of this paper. However, some general points can be made.

First, many mass valuation systems lack the methodological and technological advancements that make accurate valuations cost-effective. OECD countries with modern systems include Denmark, Iceland, and Sweden.[13] Such systems also can be found in parts of Australia, Canada, Netherlands, New Zealand, and United States. In short, the fact that existing valuation procedures are so labour-intensive as to make revaluation impracticable is insufficient grounds to tolerate indefinitely the plain inequities that discredit the tax.

Second, few countries monitor the performance of valuers and the accuracy of valuations adequately. Performance measures include the coverage ratio (the percentage of potentially taxable properties that are accurately registered in the fiscal cadastre), the valuation ratio (the ratio of cadastral values to current market values), and the collection (or enforcement) ratio (taxes collected in the current year as a percentage of taxes billed). Gauging the efficiency of a tax regime also requires on administrative and compliance costs.[14] Without such data, policy makers cannot realistically assess system strengths and weakness (especially tax inequities) or the likely effect of proposed reforms. Again, doing is not wise policy.

Third, valuation data are not public in several countries, including Belgium, Germany, and Switzerland, making it difficult for taxpayers to evaluate the fairness of their assessments. In contrast, the data (including sales data) are public in Denmark, Estonia, Finland, France, Italy, Slovak Republic, and Sweden. Persons with an interest in a property such as ownership can gain limited access to valuation data in Austria, Netherlands, Spain, and United Kingdom. The data will become fully public in Netherlands.

Fourth, the thing that seems to result in a system worth emulation is enlightened management. Good managers seem to have a knack for making the best of available data and resources and for building a case for reforms and the investments needed to achieve them.

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13 Latvia and Lithuania also have advanced mass appraisal systems.

14 OECD 2011 contains data on tax system administrative costs overall. There are no breakdowns by type of taxes, and compliance costs are not addressed. These can be substantial: it is estimated that tax planning and reporting costs equal 14 per cent of U.S. federal income tax revenues.

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