

# Land Lines

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# Land Lines

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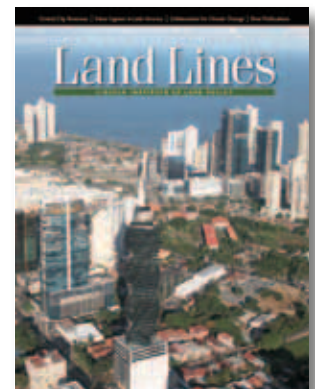
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Different building types and sizes, as in Panama City, have untapped potential for raising public revenues from the sale of building rights.

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## Infrastructure

Infrastructure, defined to include transport, telecommunication, electric power, water, and sanitation, is high on the agenda of both industrial and developing countries. In the United States, concern has been mounting about insufficient maintenance and the resulting decline in the quality of infrastructure facilities and services, especially in transport. Additional investments in infrastructure have also figured heavily in proposals to stimulate demand, employment, and economic growth. In developing countries, infrastructure's challenges relate more to increasing capacity to provide services to both existing urban residents and the two billion new urban residents projected to arrive by 2050. The Lincoln Institute's seventh annual land policy conference, held in early June 2012, addressed many aspects of infrastructure including investment, maintenance, and its externalities.



Gregory K. Ingram

**Economic aspects.** Empirical work carried out over the past 25 years on the macroeconomic returns to infrastructure investment have produced a wide range of outcomes—from negative returns to those above 30 percent annually. A careful survey of more recent studies indicates that infrastructure investment in transport, power, and telecom is likely to have positive macroeconomic effects and raise productivity.

At the same time, many countries allocate only modest sums to infrastructure maintenance, even though a broad consensus of opinion and empirical evidence indicate that the returns to maintenance—particularly transport—are very high. Inadequate maintenance may result from donor preferences to fund new capacity in developing countries, but maintenance shortfalls are also common in developed countries, suggesting that other institutional factors are likely to be important.

Networked infrastructure normally is subject to scale economies, and some networks are natural monopolies. Such infrastructure must be subject to economic regulation to prevent firms from engaging in monopoly pricing. While the need for regulation is most apparent when infrastructure is provided by private firms, regulatory oversight is often necessary when provision is by a public enterprise.

**Spatial aspects.** Infrastructure has a strong influence on spatial development patterns and can be used to direct

growth and—along with zoning and other incentives—to encourage more dense and compact development patterns. While only a few studies are available, however, empirical work indicates that the cost of redeveloping brownfield sites exceeds the cost of greenfield development including the costs of new infrastructure service.

The de-industrialization of cities has been going on for a long time, but recently some cities, such as San Jose, California, have stopped supporting the conversion of industrial or office space to residential or commercial use. They seek to maintain appropriate space for employment when economic growth returns so that they can compete for new firms and encourage local job creation.

**Externalities.** Metropolitan areas produce about three-quarters of global anthropogenic greenhouse gas emissions annually, with a large share coming from transport and electric power. The replacement of aging systems and installation of new capacity provide a major opportunity to switch to more energy- and emission-efficient systems in urban areas. System management also can be improved with congestion tolls, parking fees, and transit expansion; by ensuring that tariffs cover the costs of water and electric power; and by promoting green buildings.

Relocating households in the path of infrastructure expansion involves a large number of people displaced by new roads or the widening of existing roads, the location of new facilities such as power plants, and reservoirs that flood broad areas behind dams. Estimates indicate that between 10 and 23 million persons are resettled involuntarily in developing countries each year, and that the majority of relocations are related to infrastructure. Some of these involuntary resettlements meet the safeguard standards promulgated by the World Bank or other standards such as the Equator Principles, but most resettlement is subject to only national or provincial policies.

These topics and many others—including the impacts on infrastructure of mega-events such as the Olympics, the taxation of utilities, the locational effects of congestion tolls, the variation in quality of infrastructure services, and the remarkable impacts of mobile telephony in Africa—will be covered in the conference proceedings that will be available as a printed volume in May 2013 and later as an eBook. [L](#)





# Central City Revenues after the Great Recession

**Providence, Rhode Island, collects nearly 90 percent of its tax revenue from the property tax.**

*Howard Chernick, Adam H. Langley, and Andrew Reschovsky*

**T**he Great Recession of 2007–2009 and the sluggish recovery since then have produced extraordinarily large state budget gaps. Even as the fiscal condition of most state governments is slowly improving, many central cities have only recently begun to feel the full impacts of the economic slowdown and the disruptions to the housing market.

A number of indicators have been flashing signs of local government fiscal distress. From its peak in 2008 through May 2012, local government employment has fallen by 528,000, or 3.6 percent (U.S. Bureau of Labor Statistics 2012). The media has also been reporting large cuts in public services in some cities. Newark, New Jersey, has been forced to make substantial cuts in municipal employment, as well as imposing significant increases in taxes and fees. Stockton, California, is reportedly on the verge of bankruptcy. A number of counties

in New York State are either in or close to fiscal receivership, and the school district of Providence, Rhode Island, which comprises half the city's total budget, is facing a nearly \$40 million shortfall for the coming academic year.

The most recent comprehensive data on central city finances are from the U.S. Census Bureau for the year 2009. In the absence of more recent data, we have developed a forecasting model of the revenues of the nation's largest central cities, based on a specially constructed multiyear database. We focus on large cities not only for their sheer size, but also because they are crucial to the economic success of their surrounding regions.

The prosperity of cities depends on effective public services, provided at competitive tax rates. The deep recession, reinforced by the decline in housing prices and extensive housing foreclosures, has put pressure on local tax revenues and local public services. Deep cuts in state aid to many local governments have only added to the fiscal pain. Given the ongoing sluggishness of the U.S.

economy, the prospects for a robust recovery in revenues over the next few years are highly uncertain.

### **The Difficulty of Comparing City Revenues**

The U.S. Census Bureau provides the only comprehensive source of fiscal data for cities. Information is collected separately for each type of governmental unit—general-purpose municipal governments, which include cities and towns; independent school districts; county governments; and special districts. Because the delivery of public services is organized in very different ways in different cities, direct comparisons of revenues across cities by source can be highly misleading.

While some municipal governments are responsible for financing a full array of public services for their residents, others share this responsibility with a variety of overlying governments. For example, Boston, Baltimore, and Nashville have neither independent school districts nor county governments serving local residents. Each of those municipal governments is responsible for providing core municipal services, plus education, public health, and other social services. By contrast, municipal governments in El Paso, Las Vegas, Miami, and Wichita collect only about one-quarter of the revenues that finance the delivery of public services within their boundaries. The remaining three-quarters are the responsibility of one or more independent governments serving city residents, and in some cases people who live beyond the city boundaries as well.

To illustrate the difficulty in making revenue comparisons, census data indicate that in 2009, the City of Tucson, Arizona, which relies heavily on a local sales tax, collected only 14 percent of its total tax revenue from the property tax, while Buffalo, New York, collected 88 percent of its tax revenue from the property tax. However, when we take account of the revenues paid by city residents to their overlying school districts and county governments, the situation is reversed. Property taxes accounted for 68 percent of the total local tax revenue paid by Tucson residents, but only 50 percent of tax revenue paid by the residents of Buffalo. In the latter case, the county government relies heavily on sales tax revenue.

Our approach to dealing with the variation in the organizational structure of local governments across the country is to account for all local government revenues received by governmental entities that provide services to city residents and businesses.

The basic idea is to include all revenues collected by a central city municipal government and by that portion of independent school districts and county governments that overlay municipal boundaries. We refer to the result of this calculation as a “constructed city” government.

To create constructed cities we take the following steps. For cities with independent school districts that are coterminous to city boundaries, we combine the school district and municipal values of all revenue variables. For school districts that cover a geographical area larger than the city, and for cities served by multiple school districts, we use data on the spatial distribution of enrollments to allocate a pro-rata share of total school revenues to the constructed city. For each school district serving a portion of the central city, we draw on geographical information system (GIS) analysis of census block group level data from the 1980–2000 decennial censuses to determine the number of students in each school district that live in the central city.

For counties, we allocate the portion of revenues associated with city residents on the basis of the city’s share of county population. Because geographic boundaries are not readily available, and fiscal data is intermittent, our calculations do not take account of special districts. For the country as a whole, special districts are relatively unimportant, and failing to include them should do little to distort fiscal comparisons among central cities.

Constructed city revenues are calculated for the nation’s largest central cities for the years 1988 through 2009. The source for the data is the quinquennial Census of Governments, and, for non-census years, the Annual Survey of State and Local Government Finances. The sample includes all cities with 2007 populations over 200,000, except those with 1980 populations below 100,000, and all cities with 1980 populations over 150,000 even if their 2007 population was below 200,000. In 2009, the population of the 109 central cities in our sample was 58.9 million, equaling 60.3 percent of the population of all principal cities within U.S. metropolitan statistical areas.

While prior studies have recognized the importance of overlying jurisdictions, they have been less systematic in taking account of the variations in governmental structure. Carroll (2009) ignores overlying jurisdictions, while Inman (1979) and Sjoquist, Walker, and Wallace (2005) use dummy





**Less than 20 percent of Atlanta's revenues are from state and federal aid.**

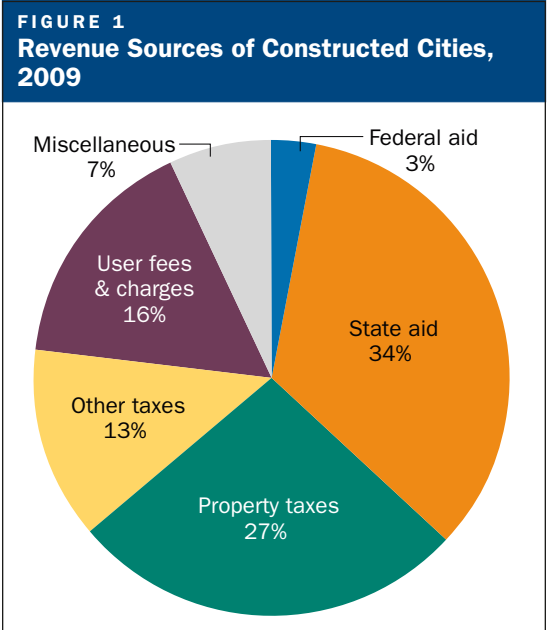
variables as a partial adjustment. Ladd and Yinger (1989) focus on the revenue capacity of municipal governments by adjusting for the capacity “used up” by overlying governments.

**Constructed City Revenues**

Figure 1 displays the average share of total general revenues that came from each revenue source in the 109 constructed cities in 2009. The most important sources are state aid (34 percent) and property taxes (27 percent). User fees and charges contributed 16 percent, while taxes other than the property tax contributed 13 percent.

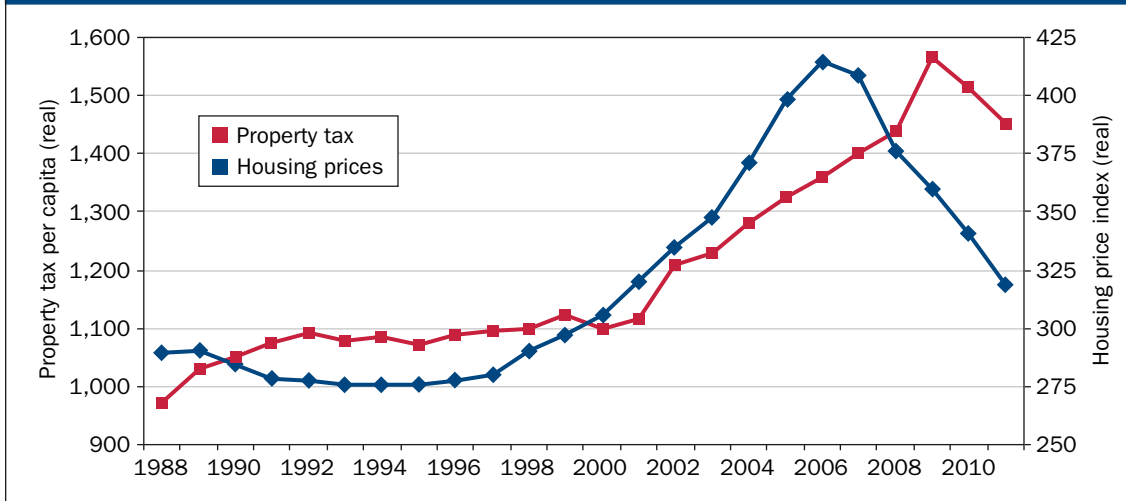
Sources of revenue vary enormously among constructed cities. For example, 60 percent or more of general revenue came from state and federal aid in Springfield (Massachusetts), Fresno, and Rochester, while aid contributed less than 20 percent of revenues in Atlanta, Dallas, and Seattle. The reliance on the property tax also varies across cities, with over 90 percent of tax revenue coming from the property tax in Providence, Boston, and Milwaukee, but less than 30 percent in Philadelphia, Birmingham, and Mobile.

Because the importance of counties and independent school districts varies enormously, revenue comparisons that rely only on data from municipal governments are highly misleading. For example,



Source: Authors' tabulation of data from the U.S. Census Bureau's 2009 Annual Survey and State of Local Government Finances.

**FIGURE 2**  
**U.S. Property Taxes and Housing Prices, 1988–2011**



Note: Property taxes and housing price index values are U.S. averages for each calendar year.

Sources: Federal Housing Finance Agency, U.S. All Transactions Index; U.S. Census Bureau, Quarterly Summary of State & Local Taxes; Consumer Price Index, All Urban Consumers.

in 2009 per capita general revenue of the city government of Pittsburgh was \$1,958, while the per capita revenue for Baltimore was \$5,306. However, per capita revenues in the two constructed cities were nearly identical. This pattern is not atypical among cities.

Comparing per capita revenues across central city municipal governments overstates the differences across cities because it forces us to compare city governments that have very different sets of public service responsibilities. Utilizing the concept of constructed cities provides the basis for more accurate intercity comparisons, and allows us to generate comprehensive revenue forecasts for the cities in our sample.

### Forecasting Revenues for Constructed Cities

To forecast general revenues for 109 constructed cities for the four years from 2010 to 2013, we sum projections for five separate revenue streams: property taxes; nonproperty tax revenues; nontax own-source revenues; state aid; and federal aid (Chernick, Langley, and Reschovsky 2012). We use econometric models fitted with actual and projected metropolitan area-level data to forecast the three sources of own-raised revenue. We then make a range of projections about intergovernmental revenues based on information from surveys and published revenue estimates.

### Property Tax Revenues

Predicting the exact relationship between changes in tax revenues and changes in the size of the tax base is particularly difficult in the case of the property tax. Property tax rates are adjusted much more frequently than sales or income tax rates to reflect changes in assessed values and revenue needs. Predicting the revenue impact is further complicated by the existence in some states of legislatively or constitutionally imposed limits on tax rates, changes in tax levies, or changes in assessed values. Major changes in the fiscal relationships between state and local governments, such as school funding reforms, are often motivated by the goal of reducing reliance on the property tax.

Although property taxes are generally levied on all real property, comprehensive data on property values over time and across states do not exist. Thus, researchers have had to focus on changes in housing prices. Data collected on the Lincoln Institute's website, Significant Features of the Property Tax (2012), indicate that in the large majority of states where data are available residential property accounts for well over half of total property value.

Figure 2 demonstrates the relationship since 1988 between housing prices in the United States and per capita local government property tax revenues. Inflation-adjusted housing prices rose steadily from 1998 until 2006, but by 2011 they

had fallen by 25 percent. Per capita property tax revenues followed a similar pattern, with sharp growth beginning in 2001 and continuing until 2009, three years after housing prices peaked.

The lag between changes in housing prices and changes in property tax revenues occurs because changes in assessed values, on which property taxes are levied, typically lag behind changes in market values. The lag may be as little as a year, in cities with annual reassessments, or longer in cities that reassess less frequently or have explicit policies to phase in changes in market value.

The housing price indices for our 109 constructed cities indicate very different patterns of boom and bust in different parts of the country. Willingness of city residents to support increases in property taxes may reflect both changes in the value of their homes and changes in their income. Furthermore, as property tax rates are often adjusted in response to changes in other revenue sources, changes in state aid are likely to affect changes in property tax rates and revenues. To capture these various factors, we estimated a statistical relationship between annual changes in per capita property tax revenues and lagged changes in housing prices, metropolitan area personal incomes, and per capita state aid. Data on property tax revenues are for the years 1988 through 2009. Our statistical model also accounts for city-specific factors that remain constant over time.

The results of our analysis indicate a statistically significant relationship between changes in property tax revenues and changes in housing prices, lagged three years. Our results also indicate that changes in personal income two years ago lead to current year changes in property taxes revenues. This suggests that the impact of the decline in housing prices from 2006 to 2012 and reductions in personal income during the recession will exert negative pressure on property tax revenues from 2009 until at least 2015. Changes in state aid were found to be statistically insignificant.

We estimate that, on average, a 10 percent change in housing prices in our constructed cities results in a 2.5 percent change in tax revenues. This implies that the average city will offset about three-quarters of the revenue effect of falling market values by raising effective tax rates.

To forecast changes in per capita property tax revenues, our coefficient estimates are combined with actual and projected values of metropolitan

housing prices, personal income, and state aid, which are then added to actual 2009 property tax revenues to calculate annual per capita revenue for each year between 2010 and 2013. Adjusting for inflation we find that per capita property tax revenue in the average constructed city will decline by \$40 or 3.1 percent over the period from 2009 through 2013. Predicted changes range from increases of about 14 percent in the Texas cities of Lubbock and San Antonio to declines of 20 percent in some cities in California, Arizona, and Michigan, where the bursting of the housing bubble was most severe.

### ***Other Locally Raised Revenues***

As demonstrated in figure 1, revenue raised from local sources other than the property tax in the average constructed city accounts for a little over one-third of total revenues. These revenues come from local government sales taxes, income taxes, user charges, fees, licenses, and other miscellaneous sources. The importance of these revenue sources varies tremendously across cities, ranging from 6 percent of general revenues in Springfield (Massachusetts) to 60 percent in Colorado Springs.

As we did in forecasting property tax revenues, we started by estimating the statistical relationship between annual changes in revenues and changes in metropolitan area personal income, lagged one year. We estimate separate equations for tax revenue from taxes other than the property tax and for local-source revenue from nontax sources. Using the coefficients from our estimated equations and actual and forecast data on metropolitan area per capita personal income, we forecast a \$20 per capita (2.1 percent) increase in tax revenue from sources other than the property tax and a \$29 (1.2 percent) increase in nontax locally raised revenues over the four-year period between 2009 and 2013.

### ***State Aid to Cities***

Over the past few years, most state governments have faced large budget shortfalls. Budget adjustments have occurred mainly on the spending side, and in many states there have been large reductions in state aid to local governments. To forecast reductions in state aid through 2013, we draw on a survey of changes in state education aid between 2008 and 2012 by the Center on Budget and Policy Priorities (Oliff and Leachman 2011). We assume that the reported percentage change in





each state's education aid applies to the school districts in every constructed city in that state, and that the same percentage change in aid applies to noneducation aid as well.

Given the uncertainty over future legislative actions, we make three alternative predictions. The base case assumes that state aid stays constant in real terms from 2012 to 2013. Our best case assumption is that state aid increases in each city by 3 percent in that period, while our worst case is that state aid changes by the same amount in real terms as in 2011–2012, i.e., an average reduction of about 6 percent. Under our base case, per capita state aid is forecast to decline by \$153 (9.5 percent) between 2009 and 2013.

### ***Federal Aid to Cities***

Cities receive federal grants through a myriad of different programs. In the past few years, fiscal

pressure at the federal level has led to a number of proposals to sharply reduce such spending. President Obama's FY2013 budget calls for large cuts in a wide range of programs that provide revenue to cities. Based on alternative assumptions about Congressional actions, we take as a base case assumption a 15 percent reduction in federal aid between 2009 and 2013, a worst case of a 37.7 percent reduction in federal grants between 2009 and 2013 (the current budget proposal), and a best case of a 9.5 percent cut.

### ***Total General Revenues***

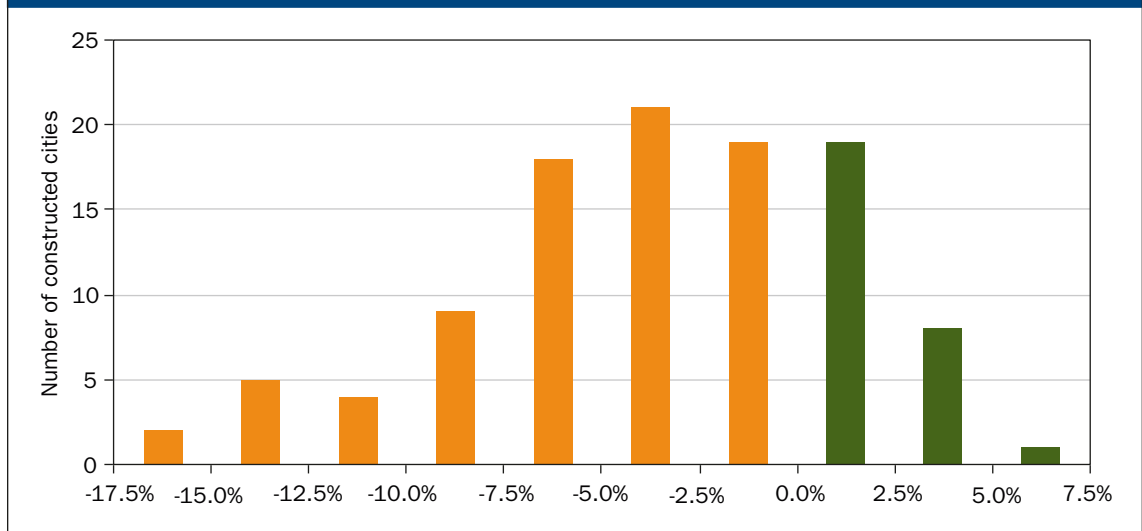
General revenues are defined as the sum of the five sources of revenues discussed above. Adding up the forecasts, we predict that on average inflation-adjusted per capita general revenues will decline between 2009 and 2013 by 3.5 percent (\$169). Though the variation in revenue forecasts across

**Los Angeles and other constructed cities in California will experience among the largest projected revenue declines.**

the nation is substantial, nearly three-quarters of central cities face some level of reductions (figure 3). The largest projected revenue declines are in California and Arizona, where 11 cities have declines of greater than 10 percent. There is no particular regional pattern to the cities where we forecast growth in revenues. For example, per capita revenue growth in excess of 3 percent is predicted for such diverse cities as Atlanta, Cincinnati, and Lubbock.

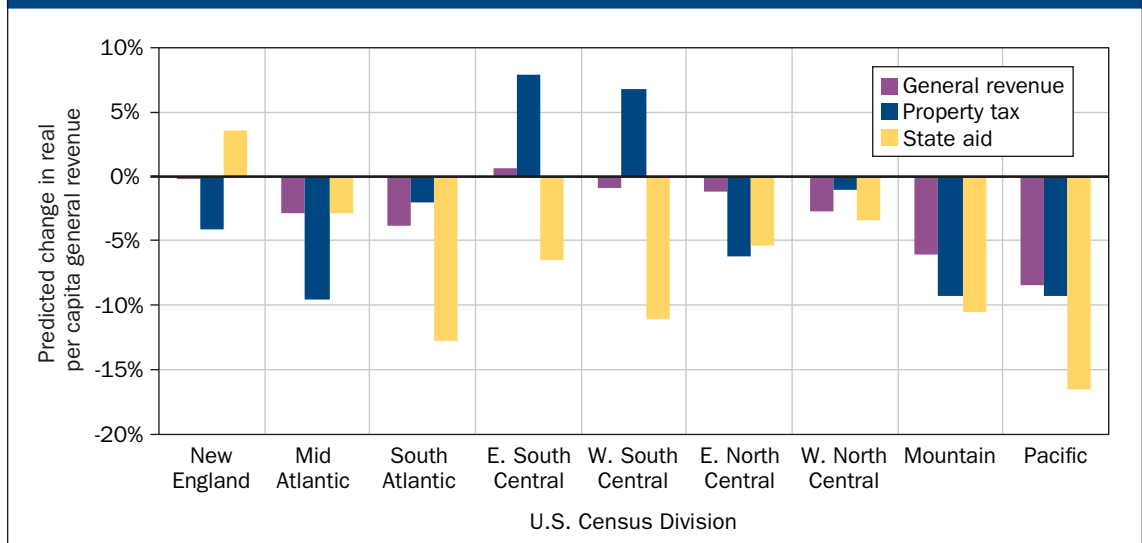
Figure 4 groups constructed cities by their census division. Above-average revenue declines are forecast in the Pacific, Mountain, and South Atlantic divisions. Revenues are declining in the central cities in these regions because they are facing a combination of reduced property tax revenues and sharp reductions in state aid. By contrast, in the East and West South Central divisions, real general revenues remain largely unchanged because declines in state aid are

**FIGURE 3**  
**Distribution of Constructed Cities by Forecasted Percentage Change in Real Per Capita General Revenue, FY2009–FY2013**



Note: For this forecasting exercise, we excluded three Indiana cities (Indianapolis, Gary, and Fort Wayne) because changes in property taxes and state aid in Indiana reflected a major reform starting in 2008 that included over 50 percent increases in state education aid combined with large property tax reductions.

**FIGURE 4**  
**Predicted Changes in Revenue in U.S. Regions, 2009–2013**



Notes: Revenue changes for the E. North Central census division excludes Indiana cities. See note in figure 3 for an explanation.

offset by increases in property taxes. The opposite is true in New England, where property tax reductions are offset by state aid increases.

Forecasting future levels of state and federal aid to central cities is extraordinarily difficult. Our approach is to choose a range of estimates for 2012–2013 changes in intergovernmental aid. From the cities' perspective, our worst case calls for steep cuts in both state and federal aid, while our best case calls for smaller cuts in federal aid and modest increases in state aid. When combined with cities' own sources of revenue, under the worst case scenario, real general revenues will decline by \$295 per capita (6.1 percent) between 2009 and 2013. This decline is \$126 per capita more than our base case forecast. Even under our best case, we forecast that on average general revenues will decline by \$116 per capita or 2.4 percent over the four-year period.

## Conclusions

These predicted reductions in revenue place many of the nation's largest central cities in uncharted territory. While these revenue declines may appear modest, they contrast quite sharply with the resiliency of city revenues following the previous three recessions. For example, real per capita revenues grew by a robust 17 percent in our 109 constructed cities during the four years following the recession of 1981–1982. Given the severity of that recession, the current revenue declines highlight the unprecedented magnitude and duration of fiscal pressure on cities that has resulted from the housing market collapse and the Great Recession in 2007–2009.

Demographic and economic trends, such as the aging of the population and the persistence of high poverty rates, contribute to the rising costs of providing government services in central cities. In many cities legally binding pension and health care benefits for retirees constitute a large and growing component of total compensation. Facing both rising costs and reduced revenues, many central cities have no choice but to implement substantial cuts in locally provided public services. There is little question that these reductions, when combined with projected cuts in federal and state government programs that provide direct assistance to city residents, such as Food Stamps, Medicaid, and unemployment insurance, will cause substantial harm to central city economies.

While the governments serving central city residents must continue to search for ways to reduce costs without harming service quality and to explore potential new sources of revenue, it is also critically important that the federal government and state governments take an active partnership role in mitigating the adverse impact of the recession on the nation's central cities. **L**

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Note: This article is a condensed and updated version of the article published in *Publius* in 2012.

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# A New Look at Value Capture in Latin America

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**The City of São Paulo has been successful in generating revenue from the sale of building rights along Faria Lima Avenue.**

*Martim O. Smolka*

**M**any countries in Latin America have passed legislation that supports value capture policies as a way to recoup some or all the unearned increase in private land values resulting from public regulations or investments. Thus far, however, only a few jurisdictions in certain countries have applied this potentially powerful financing tool systematically and successfully.

In 2011 and 2012 the Lincoln Institute of Land Policy surveyed public officials and academics in the region to discover why value capture has not been used more often. The 2012 questionnaire was designed to elicit respondents' views about the prospects for designing, institutionalizing, and implementing two emblematic value capture instruments—betterment contributions and the sale of building rights.

Betterment contributions (known as special assessments in the United States) are charges imposed on owners of selected properties to defray the cost of a public improvement or service from which they specifically benefit (Borrero 2011; Borrero et al. 2011). Under the sale of building rights, in contrast, the government charges for special

rights that it grants, such as allowing a higher floor-to-area ratio (FAR), a zoning change (e.g., from residential to commercial), or conversion of land from rural to urban use (Sandroni 2011).

The results of both surveys challenge much of the conventional wisdom about the use of value capture policies in Latin America. In particular, respondents with actual experience in using these tools consider legal and technical difficulties less of an obstacle to implementation than the lack of understanding among key government executives about their potential payback. Moreover, value capture is still viewed primarily as a tool to promote equity in cities rather than as a way to improve municipal fiscal autonomy.

## **Survey Distribution**

Launched in the spring of 2011, the first survey was distributed to 436 public officials and academics who had participated in one or more of the Lincoln Institute's previously offered courses and workshops on value capture issues. A second questionnaire with a different set of questions was sent by email in February 2012 to 14,355 people affiliated with the Institute's Program on Latin America and the Caribbean. Respondents (134 and 1,066 respectively) included officials at all levels of government,

city planners, academics, independent scholars and consultants, and members of nongovernmental organizations (NGOs).

When classified by country, responses to individual choices for many questions numbered fewer than ten. For this reason and to simplify the presentation, the analysis combines the responses from countries with similar sociopolitical characteristics in terms of value capture into three groups.

1. Bolivia, Ecuador, Paraguay, Uruguay, and Venezuela. All five countries have some national legislation on value capture and are currently run by governments sympathetic to value capture policies. Uruguay in 2008 (Law No. 18.308 of 18.VI.2008) and Ecuador in 2010 (with its new national code, COOTAD) approved national legislation enhancing the scope of government prerogatives with regard to land value increments.
2. Argentina, Chile, Mexico, and Peru. These fast-growing, mature countries are still struggling to introduce more explicit national legislation on value capture, in addition to imposing betterment levies.
3. Central America and the Dominican Republic. Countries in this region comprise a single group because they are relatively small and have liberal urban development regimes.

Brazil and Colombia are presented separately because they make up a significant share of survey respondents, and they have the most experience with value capture tools. The number of respondents generally follows the size of the population of the country group, except for Brazil and Colombia, which account for disproportionately large numbers of respondents (table 1).

### The Pragmatic Character of Value Capture

Even though only a few countries explicitly prescribe value capture in their legislation, the smaller 2011 survey revealed detailed information about jurisdictions that had recovered some land value increment resulting from changes in land use.

Of 13 countries covered in that survey, respondents cited 22 cases of value capture in 30 jurisdictions in 8 countries. In general, these cases involved some kind of benefit exactions for the community achieved through direct negotiation between developers and public authorities.

On average, though, the value extracted was less than one-third of the estimated land value increment. The likelihood of the contribution exceeding one-third of the total value was higher when the contribution was made in cash rather than in kind. These cases occurred in countries without explicit legislation on the sale of building rights, such as Bolivia, Costa Rica, and Peru, illustrating the pragmatic approach to value capture on the part of officials in charge of urban land management.

Overall, survey respondents consider themselves familiar with the topic, and the findings of the 2012 survey reinforce the point that awareness of value capture instruments is not limited to countries that have institutionalized the practice. Relatively few respondents claimed to be unfamiliar with value capture instruments, although the real number of officials may be larger, given the self-selection bias of the survey respondents (table 2). The share of respondents unfamiliar with value capture instruments in Brazil and Colombia is about half the share of respondents from other countries.

Country Group	Survey Respondents		Country Group Population (000s)	
	Number	Percent	Number	Percent
<b>Brazil</b>	191	16.8	193.7	35.0
<b>Colombia</b>	286	25.2	45.7	8.3
<b>Bolivia, Ecuador, Paraguay, Uruguay, Venezuela</b>	130	11.5	61.5	11.1
<b>Argentina, Chile, Mexico, Peru</b>	401	35.4	193.9	35.1
<b>Central America and Dominican Republic</b>	126	11.1	58.4	10.6
<b>Total</b>	1,134	100.0	553.2	100.0

**The Implementation Challenge**

One of the common arguments raised about the chances of applying value capture policies in Latin America relates to the technical difficulty of implementation—specifically, assessing the land value increment resulting from public interventions. To probe the importance of this issue, the 2012 survey asked whether respondents consider a 30-percent margin of error in valuation acceptable enough to justify application of value capture. The overwhelming majority of respondents (89 percent) stated that, regardless of the margin of error, value capture policies should be applied. Only 11 percent argued to the contrary.

The main reason cited for supporting value capture is again a pragmatic one. Similar margins of error occur in other contexts, such as valuation for property taxation purposes (36.9 percent). A close second is the “need to establish the principle” (31.8 percent). The fact that value capture instruments are contemplated in the legislation places third (21.4 percent). As expected, respondents from Brazil and Colombia rank the legal reason for applying value capture as more important (27 percent and 31.6 percent, respectively) than respondents in other countries (15.2 percent on average).

It is notable that 41.8 percent of respondents in Argentina, Chile, Mexico, and Peru—countries still striving to pass national legislation on value capture—ranked “need to establish the principle” higher than other respondents. In contrast, Colombian respondents ranked this reason third. Reasons

given by respondents from the other country groups are not significantly different from the sample average (31.8 percent). Among the 11 percent of respondents opposed to value capture policies, legal and legitimacy arguments prevail over pragmatic ones (illegitimacy of policy or administrative and judicial costs).

**The Known versus the Unknown**

Laws throughout Latin America support betterment contributions, and local governments frequently count on revenues from that source in their budgets. However, these revenues are generally modest and rarely account for more than 1 percent of local own-revenues in most places except in Colombia and to a lesser degree in certain cities with experience using this instrument, such as Cuenca, Ecuador, and San Pedro Sula, Honduras, and in a few Brazilian jurisdictions in the State of Paraná. The sale of building rights, in contrast, is still being established as a value capture tool and is legislated in only a few countries.

Survey respondents were also asked about their preference between betterment contributions (the familiar value capture tool that performs poorly) and the sale of building rights (the newer instrument with stronger revenue-generating potential). Across all countries the results show greater support for betterment contributions: 59 percent versus 41 percent.

Even among respondents from Brazil, the only country where preference for the sale of building

**TABLE 2**  
**Familiarity of Respondents with Value Capture Instruments by Country Group and Experience**

Country Group	Not Familiar (percent)	Familiar (percent)				Number of Cases
		With Experience	Without Experience	Not Interested	Total	
Brazil	5.2	53.4	37.7	3.7	100.0	191
Colombia	6.4	50.7	41.8	1.1	100.0	282
Bolivia, Ecuador, Paraguay, Uruguay, Venezuela	12.3	46.9	39.2	1.5	100.0	130
Argentina, Chile, Mexico, Peru	10.5	45.1	44.1	0.3	100.0	399
Central America and Dominican Republic	11.1	50.0	35.7	3.2	100.0	126
Percentages	8.9	48.7	41.0	1.5	100.0	
Number of Cases	100	549	462	17		1128



rights was significantly above average (48.9 percent), betterment contributions still rank as the preferred value capture instrument (51.1 percent). This is remarkable in light of São Paulo's success in generating considerable revenue from selling building rights. For example, the April 2012 auction of Certificates of Additional Construction Potential (CEPACs) in São Paulo added US\$420 million to public coffers, on top of about US\$2.5 billion from previous auctions (São Paulo Stock Exchange 2012).

The survey evidence suggests that most respondents are not fully aware of the difference in the revenue potential of these two value capture tools. In fact, only 10 percent of respondents cite revenue potential as the main reason to prefer one over the other. Proponents of value capture give top priority to promoting equity rather than to generating revenue—another surprising finding given the potential of value capture to strengthen municipal autonomy.

When asked how they would characterize the arguments for value capture, respondents in the 2011 survey could choose from 50 terms related to land policy attributes. The eight terms that received the most responses (49.7 percent of the total) were associated with equity issues such as charges and benefits, redistribution, social function of property, anti-speculation, equity, and social justice. The one exception was a financial term, which ranked fourth.

In contrast, terms such as fiscal autonomy, fiscal harmony, decentralization, tax, self-sufficiency, financing, and additional resources received only 18.7 percent of the votes, while terms related to the functioning of urban markets, such as efficiency and market discipline, received just 11 percent. Arguments against value capture were associated with such terms as tax, fiscal burden, acquired rights, and double taxation, as well as abuse, violation of rights, and illegitimacy.

Respondents to both the 2011 and 2012 surveys cited ethical and sociopolitical legitimacy as the primary reason for preferring one value capture tool over the other. Indeed, the 59 percent of respondents favoring betterment contributions over the sale of building rights mention ethical and sociopolitical legitimacy as the most important reason for their choice. The 41 percent of respondents favoring sales of building rights gave the same reasons for their preference. At the same



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time, 24.4 percent of respondents favoring the sale of building rights consider the capacity to generate revenues the second most important reason for choosing that instrument, but only 17.6 percent of respondents favoring betterment contributions share the same opinion.

All in all, this suggests that officials in Latin America often tolerate a wide gap between the equity-legitimacy principle and revenue generation, based on a perception of greater technical ease in charging betterment contributions. From another perspective, it appears that they favor the quicker path to the moral high ground rather than one leading to higher local revenues.

### Experience Matters

After ethical and sociopolitical legitimacy, the next most important reason for preferring a particular value capture instrument varies according to the respondent's level of experience. Strong confirmation of the importance of implementation

**Despite the lack of specific value capture legislation in Cordoba, Argentina, changes in building rights were charged for this mixed-used project.**



© Borrero Ochoa Asociados

**Betterment contributions funded the construction of this bridge over Street 100 where it crosses Avenue 15 in Bogotá, eliminating former congestion nuisance to neighbors.**

experience comes from the two countries that have applied the tools: Colombians favor betterment contributions, and Brazilians prefer the sale of building rights.

Colombia has long experience with betterment contributions, which may explain why 16 percent of respondents from that country cite technical ease of implementation as the reason to choose that approach. By comparison, only 7.9 percent of respondents in other countries mention that reason. Meanwhile, 12.6 percent of respondents in Brazil favor the sale of building rights due to ease of implementation, compared with just 5 percent of respondents from other countries. These results underscore how much experience shapes opinions about the technical constraints involved in applying value capture tools.

### Obstacles to Implementation

Respondents to the 2012 survey attribute the reluctance of public officials to apply value capture policies primarily to lack of information (23.2 percent) and political risk (22.5 percent). Other explanations include complicity with landowners' interests (18.4 percent) and technical difficulties in implementation (15.4 percent). Few consider lack of legislation as an important reason for not using

value capture instruments (1.5 percent), with ideological motives (3.2 percent) and administrative costs (3.8 percent) ranking somewhat higher.

Pragmatic reasons are important only among respondents from countries lacking significant experience with such tools. While 13 percent of respondents from Brazil and Colombia mention technical implementation difficulties as the primary obstacle, 31 percent of respondents from other countries cite that reason on average. This reinforces the finding that experience with value capture tools counts. Brazilians explain why value capture instruments are not used in terms of land interests and political risk, which together account for 59 percent of responses. Among Colombians, 26 percent see no reason not to use value capture instruments. This is a much higher share than among respondents from other countries (7.2 percent on average), indicating a perception in Colombia that the tools are getting the attention they deserve.

### Targeting Key Stakeholders

The 2012 survey asked respondents to select which stakeholders involved in the debate should be the primary targets of capacity building in order to overcome resistance to value capture policy. High on the list are heads of the executive branches of government, such as mayors and directors, followed by members of the legislature, including members of congress and city councilors (table 3). Planners—who are frequently on the front line of policy operations—rank third.

Surprisingly, only 6.2 percent of respondents cite members of the judiciary (judges, lawyers, and public attorneys), even though the courts often block value capture initiatives. Brazilian respondents are the only ones to assign a higher importance to members of the judiciary. Consistent with the institutional advances their countries have made in value capture, respondents from both Brazil and Colombia give lower priority to legislators (20.7 percent) than respondents from other countries (32.3 percent on average).

Respondents from all occupation groups rank academics and journalists last. As a result, the strategy of training the trainers would seem counterproductive as long as academics are not considered critical stakeholders in reducing resistance to value capture policies. This result supports the Lincoln Institute's program focus on building

**TABLE 3**  
**Priority Targets for Capacity Building among Stakeholders by Respondent's Occupation**

Respondent's Occupation	Value Capture Stakeholders by Occupation Group (percent)						
	Planner	Jurist	Journalist	Academic	Legislator	Government Executive	Total
Planner, Architect, Engineer	20.7	5.7	2.0	3.4	28.3	40.0	100.0
Social Scientist	15.9	3.7	4.2	5.1	28.0	43.0	100.0
Lawyer	9.4	15.1	0.9	2.8	25.5	46.2	100.0
<b>Total</b>	18.6	6.2	2.4	3.7	27.9	41.2	100.0

capacity of public officials directly involved in the policy debate or tool implementation, rather than on building capacity in graduate schools. The low priority given to journalists as a target for capacity building is puzzling, but may reflect the fact that the value capture discussion is still largely confined to public agencies and academia. Nevertheless, greater involvement of the media could have a positive influence in broadening the debate.

One other interesting result of the survey is that responses across various groups are relatively consistent. Occupation, institutional affiliation, place of employment, level of education, and even size of the respondent's city make little difference. Indeed, only the distinction between respondents from countries with and without significant experience with value capture seems to stand out as important.

### Conclusions

The survey results point to a relatively consistent understanding about the state of the debate and implementation of value capture across Latin America. The prospects for successfully implementing value capture policies in the region, however, are less clear. The social justice rhetoric still seems to prevail even among "informed" supporters. In addition, decision makers in critical executive positions are seen as ill-informed or lacking in political will. Moreover, as the experiences of Brazil and Colombia attest, institutionalizing value capture policies is a process of painstaking trial and error that takes time to succeed.

Three lessons follow from the work done by the Lincoln Institute on value capture in Latin America. First, land value increments are captured more successfully from specific actors who receive

greater benefits from a public sector intervention than from the general community (the win-win condition). Second, value capture tools are more likely to succeed when conceived to address a locally recognized problem than to emulate alleged best practices.

Third, strengthening the legitimacy of value capture policies is essential. This can be achieved by publicizing successful projects, especially in countries where value capture initiatives are still isolated and sporadic. It is important to shift the debate on value capture from ideological, wishful-thinking rhetoric to a more technical and practical context grounded in evidence that it can be done and, most importantly, that it has been implemented effectively in many cases. **I**

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# Managing Risk and Uncertainty: Collaborative Approaches for Climate Change

*Elizabeth Fierman, Patrick Field,  
and Stephen Aldrich*

Climate change is presenting a variety of risks, uncertainties, and difficult choices that communities must learn to address: How should future risk and uncertainty be dealt with in today's land use decision-making processes? How can stakeholders be involved in decision making in a way that helps to both clarify trade-offs and build consensus on the best ways forward?

Through the joint venture partnership between the Consensus Building Institute (CBI) and the Lincoln Institute of Land Policy, we are helping to answer these questions by drawing on CBI's own conflict resolution theory and practice, as well as the expertise of other partners on topics such as risk management and scenario planning. We have developed a series of workshops on collaborative approaches to managing risk and uncertainty in decision making. In this article, we reflect on these experiences and the lessons on climate change adaptation to be drawn from them.

As a neutral organization helping to resolve land use disputes of all kinds, CBI has distilled discrete lessons and best practices for planners and others in a position to manage land use disputes (Nolon, Ferguson, and Field 2013). Increasingly though, climate change and its related risks, uncertainties, and complexities are seen as an important part of the broader land use conflict "story." For example, disputes around locating a facility near a shoreline raise questions about the impact of the facility on the surrounding area and environment, as well as concerns about the likelihood that sea level rise could make the site itself untenable years from now.

Stakeholders inevitably have different perceptions of how certain, imminent, and preventable climate change is, and what risks it will present. Moreover, problems involving climate change are

incredibly complex. Understanding the impacts of climate change on the Colorado River, for example, involves thinking through a web of hydrological, legal, social, economic, historical, and other considerations.

In short, confronting climate change involves reconciling different perceptions of risk, moving forward despite a high degree of uncertainty, and finding ways to leave room for adapting and changing course within a complex environment. Our series of workshops has focused on bringing these threads together through the lens of joint fact finding, joint risk management, and collaborative decision making.

## **Risk Management Workshops**

With support from the Lincoln Institute in 2009, CBI developed its first two-day workshop on climate change adaptation, which aimed to bring together expertise in risk management, scenario planning, and consensus building. Our goal was to share best practices in these areas to help land use decision makers consider different ways to approach climate as a key element of uncertainty in planning. CBI's training partners were Paul Kirshen, a risk management expert, and Stephen Aldrich, president of Bio Economic Research Associates (bio-era), an independent research and consultancy firm, and a longtime scenario planning practitioner.

Together we developed a curriculum that included presentations on each area of expertise, along with an interactive exercise based on the real threats that sea level rise is expected to pose to East Boston, Massachusetts. The course was revised and offered again in 2010 and 2011. In parallel, we developed an online version of the course that is now available on the Lincoln Institute website (see inside back cover).

The main premise of this set of workshops is that climate change should be seen through a risk management lens, and should be dealt with



through a process that is inclusive of the broadest possible range of stakeholder attitudes toward the probability of any particular climate change outcome or impact. If stakeholders feel their views and beliefs are treated as legitimate within the process, they are much more likely to participate and to buy into the outcomes.

In addition, scenario planning can help stakeholders approach potential climate change impacts by testing alternative actions against different possible futures to identify actions that best represent a “no regrets” decision. Implicit in this approach is the understanding that it is as foolish to ignore the possible impacts of climate change as it is to spend funds extravagantly to prepare for threats that may not emerge in the future. In this way, scenario planning truly recognizes uncertainty.

CBI began working with the Sonoran Institute in Phoenix, Arizona, in 2011 to bring the workshop to the western United States, with a particular focus on collaborative scenario planning. With Jim Holway, director of the Sonoran Institute’s Western

Lands and Communities Program (another Lincoln Institute joint venture partner), and Stephen Aldrich we developed a one-and-a-half day workshop, held in Phoenix in March 2012. It focused on scenario planning methods as a way to move diverse, competing interests forward despite uncertainty, disagreement, and even political polarization, on topics such as climate change, water resource planning, and growth management.

The scenario planning method outlined by Aldrich involves convening a multi-stakeholder group to generate jointly a set of plausible scenarios for the future of a place or problem over a given time horizon. Policy options are measured against the scenarios using a set of criteria that are also generated jointly. Two key distinguishing features of this approach are the involvement of stakeholders throughout the process and the assumption that all of the scenarios should be regarded as equally probable.

This approach to scenario planning is not simply an analysis of alternatives, but an effort to

**The Glen Canyon Dam on the Colorado River is critical to water management in the southwestern United States.**

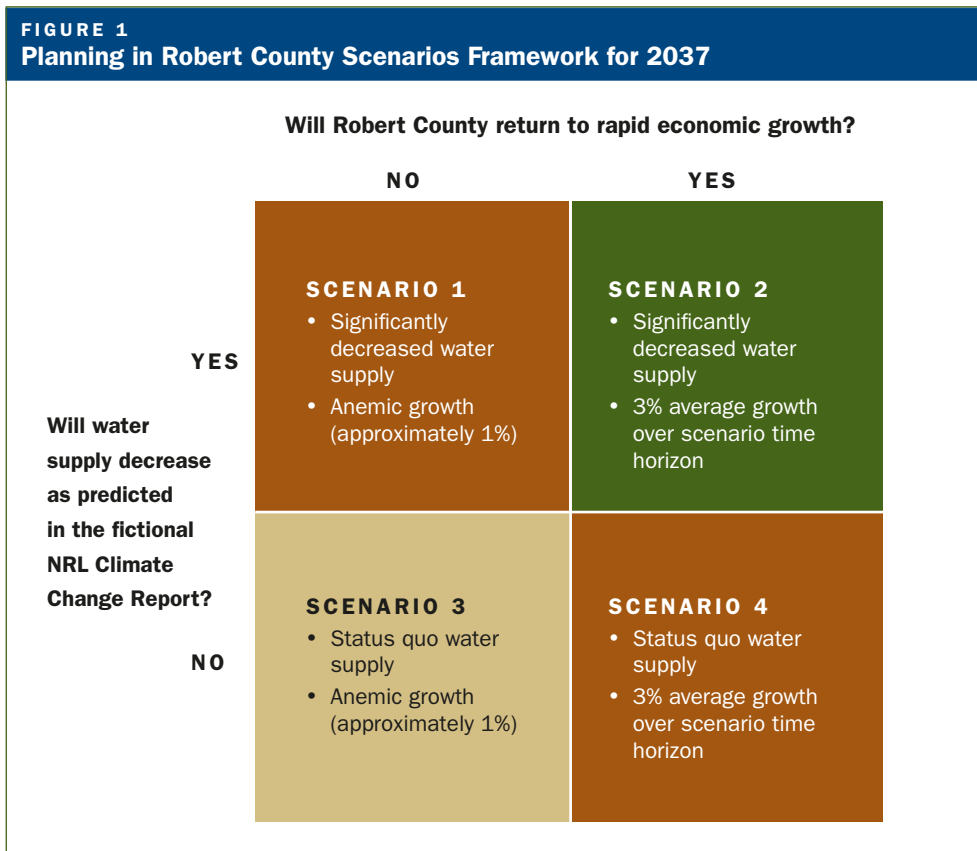
imagine different futures based on what is known today, what is most uncertain, and what are considered the most important drivers of change in the system being considered. The next step is to consider how multiple policy options and other actions fare across those different futures when measured against key criteria such as cost, efficacy, and adaptability.

Throughout the Phoenix workshop we reinforced these concepts and the process steps using an interactive exercise based on the real threats that climate change is expected to pose for water in the southwestern United States. The exercise, called “Planning in Robert County,” presented a fictional Sun Corridor county facing pressure to increase development even as the water supply was projected to decrease due to climate change. The participants used this case study to identify the most important factors for the county, and then translate them into elements of future scenarios by categorizing them as “pre-determined elements,” “major uncertainties,” or “driving forces.”

In the final exercise, participants were given roles that represented common stakeholder groups

and interests (e.g., Robert County Board of Commissioners, Robert County Agricultural Association, or Andres River Environmental Organization). They also received a scenarios framework based on two major uncertainties: Would Robert County return to rapid economic growth; and would decreases in water supply due to climate change predicted in the fictional “NRL Climate Change Report” prove correct (figure 1)? The participants had to evaluate a set of water policies using this scenarios framework, while also taking into account the interests and perceptions provided in the role descriptions assigned to them.

The participants, who came from state and local agencies, academia, and the private and NGO sectors, reported that the workshop was extremely helpful for understanding both how collaborative scenario planning works and how it could be useful in their professional contexts. Engaging in a step-by-step simulation of a scenario planning process helped them gain a clearer understanding of what such a process is like, and the benefits and challenges of working with multiple stakeholders.







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Many participants were asked to play a role that had very different interests and perceptions of climate change from their own personal or professional situation. This experience provided an opportunity to learn about how other stakeholders might view this type of problem. Several participants asked for more information about the consensus building aspect of process, such as convening the process at the start and conducting an assessment to understand which stakeholders to involve and what issues to address. Many participants agreed that collaborative scenario planning was potentially useful as a dispute resolution tool.

### Lessons Learned

The progression and ongoing development of these workshops has helped us distill several lessons on teaching and utilizing collaborative tools for addressing risk, uncertainty, and complexity in decision making.

#### ***Clarify Terminology at the Outset***

Terms such as *consensus building* and *scenario planning* mean different things to different people. Some interpret consensus building as compromise. We often hear from stakeholders concerned that if they participate in a consensus building process

they may be forced to give in on their most important interests. When CBI talks about consensus building approaches, however, we mean efforts that aim to meet stakeholders' key interests in a way that results in an agreement that maximizes joint gains (Susskind, McKernan, and Thomas-Larmer 1999).

For some people scenario planning suggests a way of working toward a preferred or "official" future, while for others it is a method for forecasting. By contrast, Aldrich's methodology emphasizes the formulation of a portfolio of plausible futures that are taken to be equally probable, and then tests proposed policy actions and/or strategies within each scenario to uncover which one would perform well across most or all of the scenarios, and thus could be considered the most robust.

Aldrich emphasizes that this method is best utilized for "wicked" problems, which are characterized by high degrees of both uncertainty and complexity. Likewise, he distinguishes expert scenario planning processes from multi-stakeholder approaches. We argue that involving a diverse set of stakeholders throughout the scenario planning process helps ensure that local knowledge is tapped, that diverse points of view are represented, and ultimately that decisions taken will be seen as more legitimate and thus more easily implemented.

**Workshop participants simulate a multi-stakeholder scenario planning process.**

### ***Allow Time to Build Comfort with Complexity***

Most people don't spend their days thinking about highly complex and uncertain problems in terms of multiple possible futures. Rather, we are more comfortable with linearity, and with rational decisions based on facts and our own perceptions and preferences. By their nature, though, methods to tackle the complex issue of climate change require a different way of thinking and a certain comfort with the unknown. Thinking about equally plausible futures is new for many people, whether they are participants in a workshop or in a real scenario planning process.

This dynamic was evident at our workshop in Phoenix, for example, when participants in the Robert County exercise were asked to think about how specific water policies—such as transferring existing water rights and increasing water prices—performed in a scenario that was essentially status quo versus a scenario in which water supplies were significantly decreased while economic growth continued apace.

Participants found it difficult to apply one policy across different futures, and to separate their own policy analysis from the interests and priorities of the role they were asked to play. The person whose role required vehement opposition to the idea of paying more for water, for instance, had a hard time recognizing that this policy might work very well in a scenario of scarce water and high growth. This difficulty of separating interests and perceptions from “objective” scenarios translates into real life as well.

To help manage this dynamic, it is important to name the mental shift that is required to handle complexity and uncertainty, recognize that it is not an easy one to make, and give people plenty of time to get used to it. For the purposes of the workshop we found it helpful to regard the exercise of helping the participants measure one policy against four plausible futures as a legitimate and important goal in itself. In the context of real scenario planning, practitioners might find it worthwhile to help stakeholders build their capacity for working with scenarios early in the process.

### ***Leave Time for “Interactive Doing”***

Making any workshop interactive is usually helpful, both pedagogically and to keep the audience engaged. Interactivity is especially important for

teaching heavily conceptual approaches to handling risk, uncertainty, and complexity. Many people work better when concepts and theory can be tied directly to a relevant reality. Giving people a concrete example or exercise that is familiar, but does not directly reflect their real-life situation, can help bring concepts “down to earth” while leaving room for the participants to experiment with new ideas and points of view (Plumb, Fierman, and Schenk 2011).

Another reason for “interactive doing,” as we came to call it in Phoenix, is to help people see both the challenges and the value of going through a process such as collaborative scenario planning. For example, it may be clear in principle that using major uncertainties to structure future scenarios makes sense, but when it is time to select those uncertainties, this decision making becomes harder than it sounds.

When we asked participants to identify the major uncertainties for Robert County, a strong debate unfolded: Should climate change be treated as a major uncertainty, or is it a predetermined element? Is economic growth a driving force, or is it a major uncertainty? Participants commented afterward that they were surprised at the debate, but found it immensely valuable to see how a group of people could draw such different conclusions based on the same three-page fact pattern.

Building in time to practice the concepts, then, is critical to reinforce ideas, link them to real problems and issues, and illustrate the value of voicing different interests and perceptions. In the context of workshops, we recommend fictionalized but realistic interactive exercises such as Planning in Robert County, which can provide relevant information, reinforce concepts, and encourage participants to take on perspectives to which they may be unaccustomed.

### ***Utilize Consensus Building in Cases of Risk, Uncertainty, and Complexity***

The common thread throughout our experience in developing and revising these workshops is the notion that consensus building techniques have an important place in climate change adaptation, and in other decision-making processes that confront risk, uncertainty, and complexity. Engaging representatives of affected stakeholder groups in a meaningful way helps ensure that a range of perspectives and interests are expressed, that local knowledge is utilized, and that the process leads

to a robust way forward that is widely viewed as legitimate and credible. Moreover, stakeholder groups can be involved in implementing policies if that is appropriate, especially if a collaborative adaptive management approach is pursued (Islam and Susskind 2012).

Particular consensus building tools and techniques used in collaborative scenario planning and other processes include assessment and process management. At the beginning of a process, an assessment can be done to identify stakeholders and issues to discuss, take account of stakeholders' capacity to work with scenarios, and design a process for moving forward based on the findings.

Assessments are often done by a neutral party, who begins by conducting confidential interviews with a broad range of stakeholders. The interviews are summarized in an assessment report that synthesizes the main points of view and issues that were voiced, without attributing any particular statement to any particular stakeholder. Stakeholders should be given the opportunity to ensure that their perspective was captured accurately. On the basis of the assessment findings, the facilitator and the convener can decide whether to move forward with a multi-stakeholder process, and if so how the process should unfold.

A facilitator or team of facilitators can also be used to manage the collaborative process, if it is decided that one should move forward. Neutral process managers can help keep the conversation productive and collaborative, and can help the group reach agreement at key points, such as when selecting scenario elements and criteria to assess policy options.

For example, CBI, with support from the Lincoln Institute, recently facilitated a sea level rise summit designed to boost urban coastal resilience in New York City. The facilitators were able to bring together representatives of state and local agencies, advocacy groups, and other stakeholders whose discussions had stalled, and then to enable a conversation that produced concrete next steps for building coastal resilience and a commitment to continue working together. Facilitators can also help groups think through implementation of any policies or agreements that result from the process, including collaborative adaptive management efforts.

## Conclusion

In order to make decisions today that relate to the impacts of climate change in the future, CBI's recent work has reinforced the notion that it is necessary to build capacity for managing risk, uncertainty, and complexity in a way that remains closely connected to the real problems and issues that communities face. Moreover, it is important to engage in decision-making processes that accommodate these challenges, rather than try to make decisions in spite of them, by using methods such as scenario planning and adaptive management. In many situations, however, it is not enough for experts to use these tools without consulting other stakeholders. Often the most robust decisions are those informed by the stakeholders who will be affected by climate change and by the decisions made to try to manage it. **L**

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## Siqi Zheng

**LAND LINES:** *How did you become associated with the Lincoln Institute of Land Policy and its programs in China?*

**SIQI ZHENG:** I first learned about the Lincoln Institute when I did my post-doctoral research at Harvard University in 2005–2006. I joined the Peking University–Lincoln Institute Center for Urban Development and Land Policy (PLC) as a research fellow soon after it was established in 2007. From that time I became fully involved in PLC's research activities, such as conducting research projects, reviewing research proposals, and participating in conferences. I was awarded an international research fellowship by the Lincoln Institute in 2008–2009, with my colleagues Yuming Fu and Hongyu Liu, to study urban housing opportunities in various Chinese cities. I now lead the housing team at PLC in conducting policy-relevant research in the areas of housing market analysis and low-income housing policies.

**LAND LINES:** *Why is the study of the urban economics and the housing market so important to China's future?*

**SIQI ZHENG:** China is experiencing rapid urbanization at a rate of about 50 percent in 2011, but it is expected to reach 70 percent over the next 10 to 20 years. Up to 1.5 million new migrants already move to Chinese cities per year. Such rapid urban growth offers potentially large economic benefits, as cities offer much better opportunities to trade, to learn, and to specialize in an occupation that offers an individual the greatest opportunity to achieve life goals.

However, rapid urbanization also imposes potentially large social costs, such as pollution and congestion, and urban quality of life suffers from a fundamental tragedy of the commons problem. Urban economics research addresses these issues and tries to figure out a way to maximize agglomeration economies and at the same time minimize congestion diseconomies. This is crucial for China's future, because urbanization is the engine for China's growth.

The housing sector is a key determinant of both the quantitative and qualitative dimensions of urban growth. Along the quantitative dimension, everyone in the city needs some place to live. Housing supply has important influences on a city's overall size and its living cost, and thus the labor cost. Along the qualitative dimension, intensive social interactions happen in vibrant urban communities and neighborhoods. The spillover effect arising from such activities reduces the cost of learning and contributes to human capital improvement.

Low-income housing is a major policy issue in China. Income inequality is rising and housing prices are very high in major Chinese cities, so low-income households face severe affordability problems. For years the Chinese government had overlooked the supply of affordable housing, but it has recently began to understand that well-designed policies for low-income housing are crucial for achieving more inclusive urban growth opportunities for all residents.

**LAND LINES:** *How do you approach the study of urban economics and China's housing market?*

**SIQI ZHENG:** I am doing cross-city and within-city studies on the intersection of urban and environmental economics. With increasing labor mobility across cities, China is moving toward a system of open cities. Under the compensating differentials framework, I use city-level real estate prices to recover households' willingness-to-pay for urban amenities, such as better air quality, more green space, and educational opportunities. My basic finding is that Chinese urban households do value quality of life. As China's urbanites grow richer over time, their desire to live in clean, low-risk cities is rising.

Within a city, I examine the jobs-housing spatial interactions—where people live, where they work, and how they choose their commuting mode. I use

household survey data and real estate transaction data to model these behaviors, since individual choices determine the basic pattern of urban form. Those individual behaviors (“snowballs”) also have important implications for the interrelationships among land use, transportation, and the urban environment, because car ownership is rising and the increase in vehicle miles traveled has become a major contributor to pollution in Chinese cities.

I also focus on housing market dynamics and low-income housing policies. Our Tsinghua team constructed the first quality-controlled hedonic price index based on transaction data in 40 Chinese cities. My coauthors and I estimate the income elasticity of housing demand and the price elasticity of housing supply, and examine the determinants of such elasticities. Using microdata, I investigate how land and housing supply and public investments affect price and quantity dynamics in the urban housing market. I pay close attention to the housing choices of low-income households and rural migrants. Based on my behavior-based empirical study using microdata, I explore the kinds of urban and housing policies that can improve the position of these disadvantaged groups in both housing and labor markets.

**LAND LINES:** *What challenges do you think China will face in this field in the coming decade?*

**SIQI ZHENG:** The major challenge is how to achieve a successful transition toward sustainability. China’s rapid economic growth in recent years was largely export-based and benefited from low labor, land, and regulatory costs. The environmental disasters and social unrest that have occurred in many places in China indicate that the current approach is not sustainable for the long term.

Policy makers should reshape urban policies in a variety of ways. Remaining institutional barriers on labor mobility should be removed. Negative externalities of urban production and consumption activities (such as pollution and congestion) should be priced correctly so that individuals’ behaviors are consistent with the socially optimal solution. Income inequality and spatial inequality issues should be addressed. More investment in

human capital is needed. Housing plays a pivot role because it is the largest asset a household owns, and it also affects accessibility to urban opportunities and the quality of social interactions.

**LAND LINES:** *What are some potential policy implications of this research on the housing market?*

**SIQI ZHENG:** Most of my work is empirical analysis with microdata, so I can focus on the incentives and choices made by individuals, firms, and governments. I also look at how these choices determine urban form, local quality of life, the labor market, and housing market outcomes. In this way I can provide key parameters for policy makers to support their policy design. For instance, I identify the cities with different housing supply and demand conditions, and suggest that officials should offer different low-income housing policy choices. Cities with an abundant housing stock can use demand-side instruments such as housing vouchers, but those without enough housing should use supply-side instruments such as building more public housing.

**LAND LINES:** *Is China’s experience with housing market development useful to share with other developing countries?*

**SIQI ZHENG:** Yes, because many countries also face difficult situations in their housing sectors. Some of the common challenges are how to house the vast numbers of rural migrants in cities; how to provide more affordable housing for increasing numbers of low-income people; where and by what means to provide such housing; and, as cities expand spatially, what are the appropriate urban planning policies and infrastructure investment strategies that can achieve efficient and inclusive urban growth? Through the research conferences and publications produced by the Peking University–Lincoln Institute Center, China’s experiences are already providing lessons for other developing countries.

**LAND LINES:** *Can you describe some examples of housing supply in the informal housing sector?*


**SIQI ZHENG:** Nations such as Brazil, India, and China have many poor migrants living in squatter and informal areas. Local governments have little incentive to provide

public services to such areas because the improvements, including clean water and sewerage facilities, will simply stimulate more urban migration.

*Chengzhongcun* (urban village) is a typical type of informal housing in large Chinese cities. It represents a match between migrants’ demand for low-cost housing and the supply of housing available in the villages being encroached upon by urban expansion. High crime rates, inadequate infrastructure and services, and poor living conditions are just some of the problems in urban villages that threaten public security and management. My research on *Chengzhongcun* shows that local governments at first liked this kind of low-cost informal housing because it can lower labor costs and thus contribute to higher GDP growth in their cities. However, the low quality of social interaction and the shortage of basic public services do not provide a sustainable way of life for the poor rural migrants.

As the industrial sector moves toward a more skill-intensive economy, local governments should consider how to improve the quality of human capital rather than focus on the quantity of cheap labor. This may provide the incentive to upgrade informal housing and transform it to formal housing, or provide public housing to those migrants so they can access more urban opportunities and improve their skills. This transitional process is now occurring in China, and will soon happen in other developing countries that can benefit from China’s experience.

Another example is the role of housing supply in urban growth. Many studies already show that housing supply can support or constrain urban growth because the size and price of housing stock influence labor supply and living costs. In developing countries land and housing supply are influenced by government regulations and behaviors to a greater extent than in developed countries. The design of housing supply policies needs to accommodate future urban growth for all sectors of society.

I have written many working papers on these topics and contributed to the 2011 Lincoln Institute book, *China’s Housing Reform and Outcomes*, edited by Joyce Yanyun Man, director of the Peking–Lincoln Center at Peking University. 

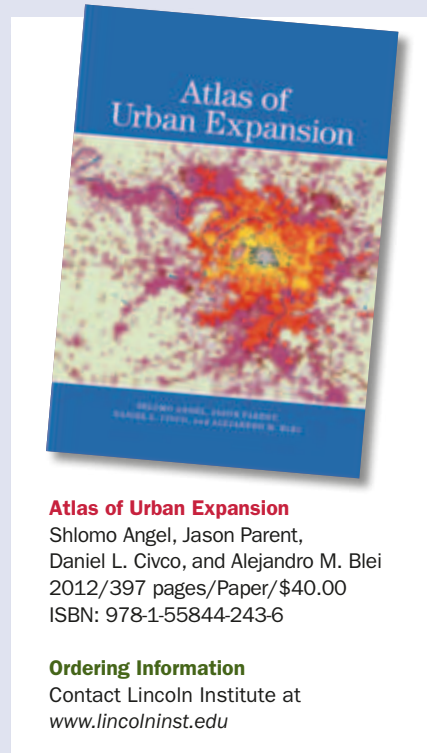
## Atlas of Urban Expansion

By 2010 more than half of the world's total population lived in cities, and this share is expected to increase to 70 percent or more by 2050. The world's urban population is expected to increase from 3.5 billion in 2010 to 6.2 billion in 2050, and almost all of this growth is expected to take place in less-developed countries. Cities in developed countries will add only 160 million people to their populations during this period, while cities in developing countries will need to absorb 15 times that number, or close to 2.6 billion people, thereby doubling their total urban population of 2.6 billion in 2010. Given the expected decline in urban densities, these cities are likely to more than triple their developed land areas by 2050.

Increased global awareness is needed to better understand and plan for this massive expansion of cities in developing countries. Local and national governments, civic institutions, international organizations, and concerned citizens will need to advocate for and implement minimum adequate preparations. For example, it is vital that cities acquire the rights-of-way for arterial roads that can carry public transport and trunk infrastructure and protect selected open spaces from encroachment in advance of the coming expansion.

The main objective of this *Atlas of Urban Expansion* is to increase understanding and help residents, policy makers, and researchers around the world come to terms with the expected global urban expansion in the coming decades. This call for action is timely because the urbanization process now underway will be largely completed by the end of the twenty-first century.

Most people who desire to live in urban areas will already be in them by 2100, but by that time it will be too late to act. If the land required for public works or public open spaces is not protected from encroachment before it is developed, it will



be next to impossible to ensure the orderly development of cities to make them more efficient, equitable, and sustainable.

This atlas is part of a long-term research project that includes a series of related publications and online resources that are available for free downloading on the Lincoln Institute's website ([www.lincolninst.edu/subcenters/atlas-urban-expansion/](http://www.lincolninst.edu/subcenters/atlas-urban-expansion/)): three Lincoln Institute working papers; the policy focus report *Making Room for a Planet of Cities*; and the online version of the *Atlas of Urban Expansion*.

This book introduces the project and presents two sets of full-color maps and a set of raw data tables. The first map section contains pairs of urban land cover maps from circa 1990 and 2000, representing a global sample of 120 cities. The second map section includes composite maps of a global representative sample of 30 cities, showing the historical expansion of their urbanized areas from 1800 to 2000. In both sections, the maps shown are paired

with numerical and graphical data, making it possible to compare cities in terms of their metric values on key attributes of urban expansion. The third section contains four extensive tables of urban, national, and regional data for each of the 120 cities.

### ABOUT THE AUTHORS

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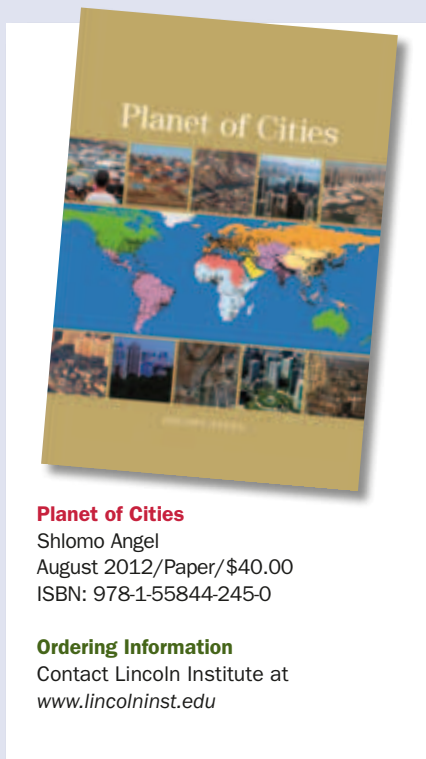
## Planet of Cities

Nearly 4,000 cities on our planet have populations of 100,000 people or more today. We know their names, locations, and approximate populations from maps and other data sources, but there is little comparable knowledge about all these cities, and none that can be described as rigorously scientific. This book, together with its companion volume, the *Atlas of Urban Expansion*, contributes to developing a science of cities based on studying all these cities together—not in the abstract, but with a view to preparing them for their coming expansion.

This book puts into question the main tenets of the familiar Containment Paradigm, also known as smart growth, urban growth management, or compact city, that is designed to contain boundless urban expansion, typically decried as sprawl. It examines this paradigm in a broader global perspective and shows it to be deficient and practically useless in addressing the central questions now facing expanding cities outside the United States and Europe.

In its place Shlomo Angel proposes to revive an alternative Making Room Paradigm that seeks to come to terms with the expected expansion of cities, particularly in the rapidly urbanizing countries in Asia and Africa, and to make the minimally necessary preparations for such expansion instead of seeking to contain it. This paradigm is predicated on four propositions:

1. The expansion of cities that urban population growth entails cannot be contained. Instead we must make adequate room to accommodate it.
2. City densities must remain within a sustainable range. If density is too low, it must be allowed to increase, and if it is too high, it must be allowed to decline.
3. Strict containment of urban expansion destroys the homes of the poor and puts new housing out of reach for most people. Decent housing for all can be ensured only if urban land is in ample supply.



**Planet of Cities**  
Shlomo Angel  
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4. As cities expand, the necessary land for public streets, public infrastructure networks, and public open spaces must be secured in advance of development.

The first part of the book explores planetary urbanization in a historical and geographical perspective, in order to establish a global perspective for the study of cities. It confirms that we are in the midst of an urbanization project that started in earnest at the beginning of the nineteenth century, has now reached its peak with half the world population residing in urban areas, and will come to a close, possibly by the end of this century, when most people who want to live in cities will have moved there. This realization lends urgency to the call for preparing for urban expansion now, when the urbanization project is still in full swing, rather than later, when it would be too late to make a difference.

The second part of the book seeks to deepen our understanding and thus lessen our fear of urban expansion by providing detailed quantitative answers to seven sets of questions regarding the dimensions and attributes of urban expansion.

1. What are the extents of urban areas everywhere and how fast are they expanding over time?
2. How dense are these urban areas and how are urban densities changing over time?
3. How centralized are the residences and workplaces in cities and do they tend to disperse to the periphery over time?
4. How fragmented are the built-up areas of cities and how are levels of fragmentation changing over time?
5. How compact are the shapes of urban footprints and how are their levels of compactness changing over time?
6. How much land will urban areas require in future decades?
7. How much cultivated land will be consumed by expanding urban areas?

By answering these questions and exploring their implications for action, this book provides the conceptual framework, basic empirical data, and practical agenda necessary for the minimal yet meaningful management of the urban expansion process in both developed and developing countries.

### ▶ ABOUT THE AUTHOR

**Shlomo Angel** is a visiting fellow at the Lincoln Institute of Land Policy. He is also adjunct professor of urban planning at the Robert F. Wagner Graduate School of Public Service of New York University, and a lecturer in public and international affairs at the Woodrow Wilson School of Princeton University. Contact: [solly.angel@gmail.com](mailto:solly.angel@gmail.com)

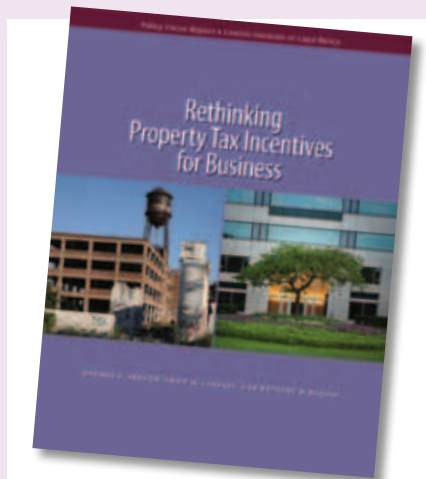
## Rethinking Property Tax Incentives for Business

The use of property tax incentives for business by local governments throughout the United States has escalated over the last 50 years. While there is little evidence that these tax incentives are an effective instrument to promote economic development, they cost state and local governments \$5 to \$10 billion each year in forgone revenue.

Three major obstacles can impede the success of property tax incentives as an economic development tool. First, incentives are unlikely to have a significant impact on a firm's profitability since property taxes are a small part of the total costs for most businesses, and average much less than 1 percent of total costs for the U.S. manufacturing sector. Second, tax breaks are sometimes given to businesses that would have chosen the same location even without the incentives. When this happens, property tax incentives merely deplete the tax base without promoting economic development. Third, widespread use of incentives within a metropolitan area reduces their effectiveness, because when firms can obtain similar tax breaks in most jurisdictions, incentives are less likely to affect business location decisions.

This report reviews five types of property tax incentives and examines their characteristics, costs, and effectiveness: property tax abatement programs; tax increment finance; enterprise zones; firm-specific property tax incentives; and property tax exemptions in connection with issuance of industrial development bonds.

Despite a generally poor record in promoting economic development, incentives can be helpful in some cases. When these incentives attract new businesses to a jurisdiction they can increase income or employment, expand the tax base, and revitalize distressed urban areas. In a best case scenario, attracting a large facility can increase worker productivity and draw related firms to the area, creating a positive



### Rethinking Property Tax Incentives for Business

Daphne A. Kenyon, Adam H. Langley, and Bethany P. Paquin  
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Policy Focus Report/Code PF030

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feedback loop. This report offers recommendations to improve the odds of achieving these economic development goals.

**Alternatives to tax incentives** should be considered by policy makers seeking more cost-effective approaches, such as customized job training, labor market intermediaries, and business support services. State and local governments also can pursue a policy of broad-based taxes with low tax rates or adopt split-rate property taxation with lower taxes on buildings than land.

**State policy makers** are in a good position to increase the effectiveness of property tax incentives since they control how local governments use them. For example, states can restrict the use of incentives to certain geographic areas or certain types of facilities; publish information on the use of property tax incentives; conduct studies on their effectiveness; and reduce

destructive local tax competition by not reimbursing local governments for revenue they forgo when they award property tax incentives.

**Local government officials** can make wiser use of property tax incentives for business and avoid such incentives when their costs exceed their benefits. Localities should set clear criteria for the types of projects eligible for incentives; limit tax breaks to mobile facilities that export goods or services out of the region; involve tax administrators and other stakeholders in decisions to grant incentives; cooperate on economic development with other jurisdictions in the area; and be clear from the outset that not all businesses that ask for an incentive will receive one.

#### ABOUT THE AUTHORS

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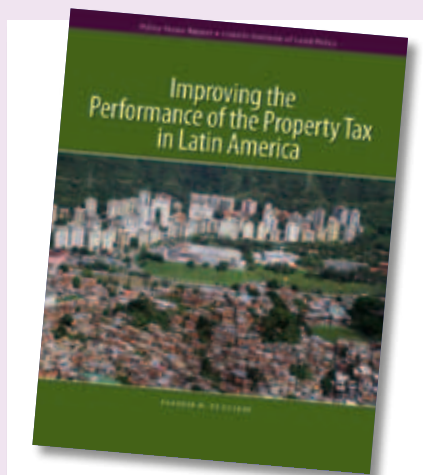
## Improving the Performance of the Property Tax in Latin America

Property taxation is of central importance in Latin America, where the tax remains the best way to support local public expenditures. However, there is great diversity in property tax administration among Latin American countries, and most have a poor performance record in terms of efficient tax collection. Even though aggregate revenue figures are low, many jurisdictions have embarked on successful property tax reform with tangible benefits for financing urban development and enhancing the sustainability of local governments. These cases demonstrate that there is ample room for improvement throughout the region.

In spite of the challenges of establishing a successful and sustainable property tax, it is an important revenue source because of its familiarity to taxpayers, its progressivity relative to taxes on consumption, and the difficulty of tax avoidance. This report presents a comprehensive framework that could help overcome many of the traditional roadblocks to successful property taxation in Latin America. Recommended reforms focus on three areas.

**Fiscal policy.** Property tax reforms should support local autonomy, avoid duplication of effort across levels of government and agencies, improve the clarity of legislation, support under-resourced cities and towns, and guarantee the universality of the tax. These goals can be achieved by adopting policies that adhere to basic principles of equity, ability to pay, universality, legality and certainty, effective administration, and transparency.

**Tax policies.** Certain tax policies—such as those benefiting tax delinquents and limiting the universality of the tax—create inequities and inefficiencies in the system. Other policy choices can help create sustainable property tax systems, such as having the same level of government both decide on public expenditures and set property tax rates.



### Improving the Performance of the Property Tax in Latin America

Claudia M. De Cesare  
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**Assessment practices and collection procedures.** Better tax administration requires increased efforts to design cadastres for sustainability and apply more flexible cadastral and valuation approaches to improve the accuracy and uniformity of valuations. Encouraging tax payments, negotiating tax debts, and consistently applying sanctions in cases of tax evasion can help to improve collections. Effective public information campaigns on taxation procedures and the use of tax revenues can strengthen fiscal culture and promote trust in the property tax system.

Municipalities that implement these reforms can benefit from the tax revenues to invest in local public services and other needs. Improvements in property tax collections should strengthen local governance while underscoring the shared responsibility of citizens and public authorities for urban development.

This report reflects years of extensive research and practical insights gained from training and research projects as part of the Lincoln Institute's property tax programs in Latin America. One such initiative is Capacity Building for the Property Tax in Brazil, a program designed to assist more than 5,600 municipalities in their fiscal administration of the property tax and to provide training on issues associated with cadastres, property valuation, and tax assessment.

The report also draws on the results of an ongoing survey to compare property tax systems in the region. The survey provides financial, legal, and administrative data on a large number of jurisdictions, along with indicators on tax performance as a revenue source, efficiency in tax collections, assessment practices, and the use of cadastres. The information is systematically recorded to allow comparative analyses across countries and is constantly updated on the Lincoln Institute website at <http://www.lincolninst.edu/subcenters/property-tax-in-latin-america>.

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John Anderson

**Estimating Agricultural Use Value for Property Tax Purposes: How Do State Programs Assess Use Value?**

Howard Chernick, Adam Langley, and Andrew Reschovsky

**Predicting the Impact of the Housing Crisis and the "Great Recession" on the Revenues of the Nation's Largest Central Cities**

Howard Chernick, Adam Langley, and Andrew Reschovsky

**Revenue Diversification and the Financing of Large American Central Cities**

Katrina Connolly and Michael Bell

**Strengthening the Local Property Tax: the Need for a Property Tax Expenditure Budget**

Gerald Korngold

**Conservation Easements Outside of the United States**

Gerald Korngold

**Denial of Municipal Services to Taxpaying Condominium and Homeowner Association Unit Owners**

Nicolai Kuminoff and Jaren Pope

**The Value of Residential Land and Structures during the Great Housing Boom and Bust**

J. Richard Kuzmyak, Jerry Walters, Hsi-hwa Hu, Jason Espie, and Dohyung Kim

**Travel Behavior and Built Environment: Exploring the Importance of Urban Design at the Non-Residential End of the Trip**

Stanley Longhofer

**Less Than Nothing: Land Value Taxation When Land Values are Negative**

Anna Trentadue and Chris Lundberg

**Subdivision in the Intermountain West: A Review and Analysis of State Enabling Authority, Case Law, and Potential Tools for Dealing with Zombie Subdivisions and Obsolete Development Entitlements in Arizona, Colorado, Idaho, Montana, New Mexico, Nevada, Utah, and Wyoming**

Aaron Twait

**Property Assessment Limits: Effects on Homestead Property Tax Burdens and National Property Tax Rankings**

Darshana Udayanganie

**Current Use Property Taxation in the Conservation of New Hampshire Land: An Empirical Investigation Using Multiple Imputations**

**Lincoln Institute eBooks**

The Lincoln Institute is now publishing selected new and existing titles as eBooks to broaden the availability of our publications across multiple platforms. The following Lincoln Institute eBooks are now available (or will be later in the summer) through the Amazon Kindle Store:

- *A Tale of Two Taxes: Property Tax Reform In Ontario*, by Richard M. Bird, Enid Slack, and Almos Tassonyi (2012)
- *Resilient Coastal City Regions: Planning for Climate Change in the United States and Australia*, edited by Edward J. Blakely and Armando Carbonell (2012)
- *Property in Land and Other Resources*, edited by Daniel H. Cole and Elinor Ostrom (2012)
- *Climate Change and Land Policies*, edited by Gregory K. Ingram and Yu-Hung Hong (2011)
- *Regional Planning in America: Practice and Prospect*, edited by Ethan Seltzer and Armando Carbonell (2011)
- *The Community Land Trust Reader*, edited by John Emmeus Davis (2010)
- *Municipal Revenues and Land Policies*, edited by Gregory K. Ingram and Yu-Hung Hong (2010)
- *Working Across Boundaries: People, Nature, and Regions*, by Matthew McKinney and Shawn Johnson (2009)
- *Property Rights and Land Policies*, edited by Gregory K. Ingram and Yu-Hung Hong (2009)
- *Land Policies and Their Outcomes*, edited by Gregory K. Ingram and Yu-Hung Hong (2007)

These publications can be ordered and read on Amazon's Kindle, as well as on the Apple iPad and other eReaders by downloading the free Kindle app. The eBook display includes the original cover, text, illustrations, charts, and tables, and allows navigation such as bookmarking and easy viewing of citations.

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# What's New on the Web



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## New Online Courses

[www.lincolinst.edu/education/online-education](http://www.lincolinst.edu/education/online-education)

THE LINCOLN INSTITUTE'S ONLINE EDUCATION OFFERINGS TAKE MANY FORMS, AND TWO NEW COURSES HAVE BEEN ADDED RECENTLY.

### **Local Communities Adapting to Climate Change**

This course is adapted from the two-day classroom course developed by Lawrence Susskind and Patrick Field at the Consensus Building Institute, in collaboration with Steve Aldrich of Bio Economic Research Associates (bio-era™), and Paul Kirshen of Battelle. It introduces decision makers to tools for climate change adaptation planning. Using videos, interactive exercises, and self-assessments, the course walks learners through lessons on climate change risks, climate downscaling, collaborative decision making, and scenario planning. Decision makers can use these practical tools for everyday land use, development, and infrastructure decisions to reduce vulnerability and enhance resilience.

### **Practical Ecology**

Dan Perlman of Brandeis University in Waltham, Massachusetts, introduces key lessons from the sciences of ecology and conservation biology to help land use planners, developers, and members of planning boards manage the interface between humans and nature for the benefit of all parties. Incorporating ecological and conservation insights into planning and development will increase human health and safety, enhance quality of life, and help protect native species and ecosystems.

A total of 12 self-paced online courses based on popular Institute-sponsored classroom courses are now available in English on topics such as Taxation and Economic Development, Valuing Land Affected by Conservation Easements, and Comprehensive Planning. These courses include a video of the teacher, a course outline, PowerPoint slides, a policy resource section, and a website link. Using simple control buttons, the user determines the pace and sequence of the course.

The Program on Latin America and the Caribbean offers its own series of online courses that are moderated and taught in Spanish or Portuguese by faculty who interact with participants throughout the course. Participants must apply and be accepted into these programs ([www.lincolinst.edu/education/online-education/leo-lac.asp](http://www.lincolinst.edu/education/online-education/leo-lac.asp)).

## Land Lines

**JULY 2012**

### 2012–2013 Program

The Lincoln Institute's annual Program for 2012–2013 presents a comprehensive overview of the Institute's mission and its diverse programs for the new academic year. It includes department descriptions; courses, seminars, conferences, and online education programs; research, demonstration, and evaluation projects; publications and multimedia products; Web-based resources and tools; and lists of fellows and faculty.

The complete Program catalog will be posted on the Lincoln Institute website for free downloading in late August. To request a print copy, contact [help@lincolninst.edu](mailto:help@lincolninst.edu).

