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An aerial view of Detroit.

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Redeveloping Our Cities for the Future

When I was a scholar at Cambridge University in the 1990s, my now-departed colleague and friend Wynne Godley would drop by on Sundays to take me to visit one of the ubiquitous medieval churches in the villages of East Anglia. Wynne frequently noted that “a church is more a process than a building. It unfolds over centuries and involves generations of families in its construction and maintenance.” He had a keen eye for architectural detail and would point out a buttress or belfry that illustrated distinct technical practices, unusual materials, or both. A single church offered a living, layered record of how successive generations of a community solved the challenge of making and keeping large, enclosed, open spaces for worship feasible and beautiful.

In this way, cities are much like medieval churches. Over time, they illustrate the collaboration of generations of residents, as well as the evolution of economic, technical, and even social tools used to build and maintain them. Rome’s marble relics stand testament to ancient values, aesthetics, and building ingenuity, while a modern city thrives around them. Manhattan’s iconic skyline, seemingly fixed, is ever in flux, and is now evolving dramatically to respond to 21st-century demands for sustainability, resilience, mixed-use development, and other concerns.

The boundaries of cities evolve, too, and tell another critically important story. The future of the planet may depend on our capacity to understand that story and to develop the tools and collective will to manage the pattern and progression of urban growth. Shlomo (Solly) Angel documents this trajectory in the *Atlas of Urban Expansion* (Lincoln Institute of Land Policy, 2012), which uses satellite images collected over decades to track the spatial evolution of 120 cities around the world, from Bamako and Guadalajara to Shanghai and Milan. The last half-century of urban growth has provided a cautionary tale about the seduction of sprawl—a path of least resistance that generates quick profits but unsustainable development. Our ability to manage our ecological footprint and minimize our global impact will be tied inextricably to our ability to plan and construct more dense and efficient human settlements. Given the United Nations’ prediction that the global urban population will nearly double



George W. McCarthy

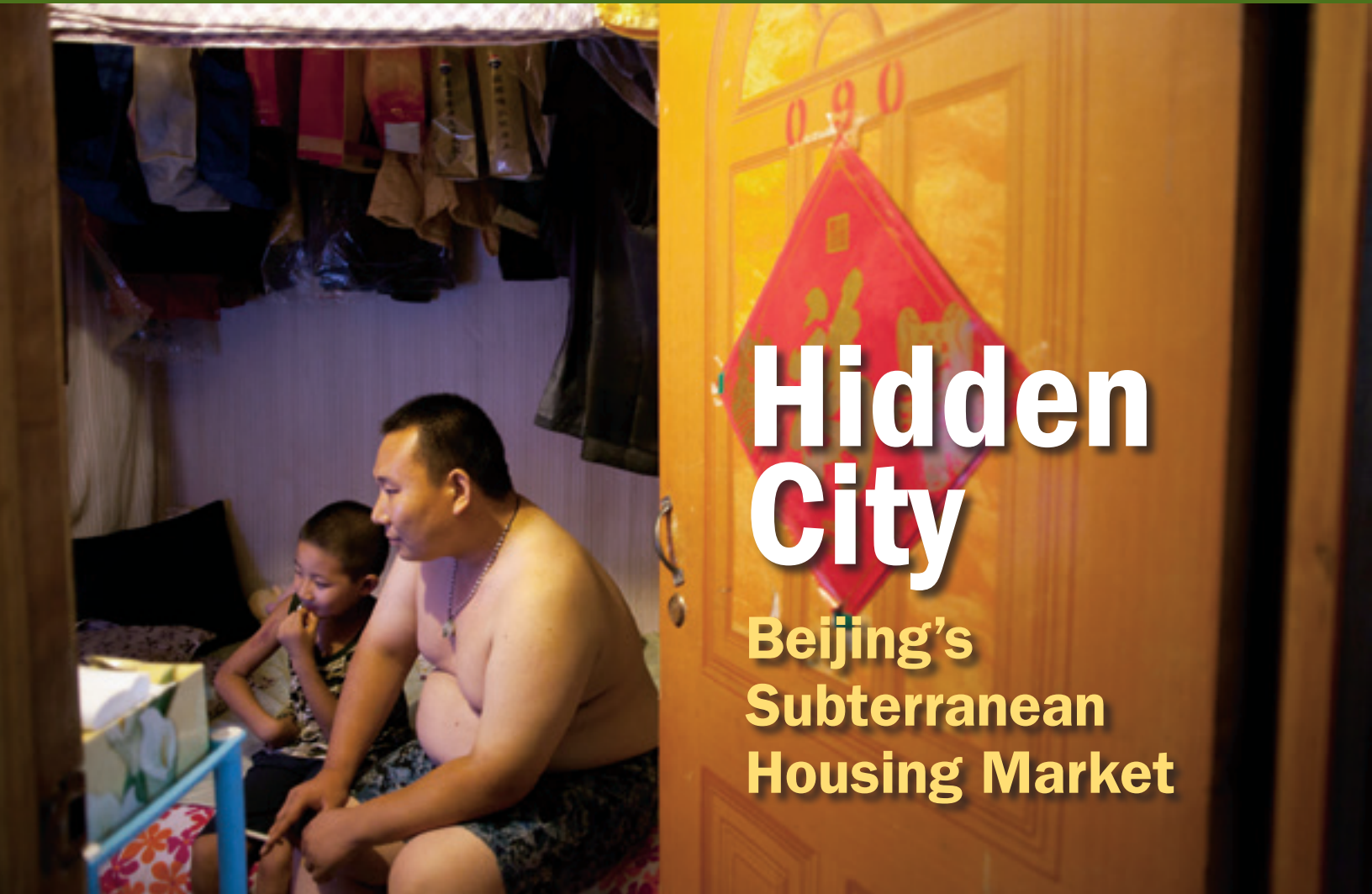
to 6 billion by 2050, the fortunes of the planet will depend on whether we, as a species, adopt a more appropriate development paradigm over this half-century.

As we endeavor to reinvent our urban settlements, we will confront an old foe—land that is already improved and developed, but needs to be adapted to new uses. While we are not unfamiliar with this highly contentious process, it is safe to say that we have not yet cracked the code on how to manage it. This issue of *Land Lines* considers some of the driving needs that will

require creative approaches to redevelopment in different cities and contexts: satisfying the unmet demand for housing that leads millions of workers in Beijing to subterranean habitation; financing infrastructure to manage population pressure in Rio and other Brazilian cities; or repurposing land in the throes of a complete industrial, demographic, and fiscal overhaul in Detroit. These places are quite distinct, but all will face similar challenges as they evolve in the coming decades.

At the Lincoln Institute, we are keenly aware of the need for new ideas and new practices to facilitate sustainable redevelopment of land that is already developed or occupied. Over the next year, we will begin to build an intellectual enterprise around addressing the manifold challenges of urban regeneration—extracting the lessons learned from earlier efforts in the United States and other developed countries since World War II, finding new and creative ways to finance infrastructure that improves the land under the informal settlements that choke cities in developing countries, or rekindling the fiscal health of legacy cities like Detroit by unpacking the causes of insolvency and testing remedies for it.

The medieval churches that I visited during the 1990s offered lessons in stone. These included innovative techniques and materials that permitted medieval architects to defy gravity. Perhaps more importantly, they were monuments to the communal efforts and long-term commitment of the congregations that built and sustained them over centuries. In the end, human survival might hinge on our ability to override similarly the centripetal forces that undermine collective action, and to build and maintain the social structures and policy frameworks to develop and redevelop our cities for mutual and long-term posterity. ■



Hidden City

Beijing's Subterranean Housing Market

Sim Chi Yin/VII

This property management company employee lives with his wife and son in this 7-square-meter basement room in west Beijing.

Annette M. Kim

Today an estimated one million people are living in subterranean apartments in Beijing, where affordable housing near employment is scarce for the greater city's 23 million inhabitants (Xing 2011). These units are often windowless subdivisions in basements and air raid shelters, and the median size is 9.75 square meters.

In August 2010, Beijing instituted a three-year plan to evacuate tenants from these underground dwellings. Evictions started taking place in 2011, particularly in the innermost urban districts with expensive land values, but demand remains high. In some areas of the city, particularly in the outer districts, conspicuous signs on the street advertise subterranean rentals, and the Internet lists thousands of units below street level as well.

This article draws on the author's analysis of this phenomenon from 2012 to 2013, when online advertising for subterranean apartments was active and growing. These listings contain enough infor-

mation on individual units—including location, price, size, amenities, and depth below ground—to assess the dynamics of this low-income rental housing submarket.

Shortage of Affordable Rental Housing

Like most Chinese cities, Beijing suffers an acute shortage of affordable rental housing, driven by the massive migration to urban centers (Liu et al. 2013; Xie and Zhou 2012). It also has a vast amount of subterranean space, resulting from a policy dating to 1950 that requires all new buildings to have common basements and air defense shelters. Construction codes specify building guidelines, including the provision of infrastructure such as electricity, water, and sewers. This supply of underground space has grown exponentially amid China's extraordinary building boom in recent decades. Some complexes contain as many as 600 units below street level.

As a means of addressing the housing deficit, official policy for 24 years encouraged the "economic" utilization of this underground space

during peacetime, and residential shelter was one of the sanctioned uses (BMBCAD 1986). But in 2010, Beijing stopped granting new use permits for underground apartments and instituted the aforementioned three-year plan to evacuate residents. Given the number of people involved and the lack of affordable housing alternatives, the process has posed challenges, including landlords who demand compensation for occupancy rights they had purchased when the units were legal.

State-Sponsored Housing

Since China transitioned to a private market from a centrally planned economy, wherein the state provided all housing, the real estate sector has grown explosively. Treated primarily as an investment vehicle, new private units are accessible only to those with enough savings to purchase a house with little financing.

Restrictions on land supply are another obstacle to the private provision of shelter. Because the state, which owns all land, is trying to protect fertile farmland, development is prohibited in rural areas on the urban periphery. Nevertheless, informal settlers have rapidly built out that landscape into housing projects. These “urban villages” provide private residences for 5 to 6 million low-income people who cannot afford to live closer

to the city center, but the government has been trying to remove them by demolition.

The Chinese state provides four types of affordable housing projects, particularly for public employees with lower incomes (see table 1). The earliest types of assistance included the *lian zu fang* program, which provided rental housing to the poorest families, and *jing ji shi yong fang*, which provided subsidized homeownership opportunities.

The government launched a program in 2011 to construct more rental housing (*gong zu fang*) for recent college graduates and skilled workers in key sectors such as the high-tech industry. Given the relative newness of this program, though, the number of affordable rental units is still relatively small. Meanwhile, *xian jia fang* housing projects are targeted for the displaced. Despite the large number of units constructed for low-income residents over the years, demand far outstrips supply and wait lists are long.

The Hukou Barrier

Beijing *hukou*, or household registration permit, is a prerequisite for all four types of affordable housing. A holdover from central planning, *hukou* entitles households to public services in the

Some complexes contain as many as 600 units below street level. Roughly 50 percent of the advertised units are one or two stories underground.



These mall workers are temporarily sharing a tiny, windowless, underground room in Beijing.

Sim Chi Yin/VII

TABLE 1
Comparative Rent Levels of Affordable Housing Programs

Type	Lian Zu Fang	Jing Ji Shi Yong Fang	Gong Zu Fang	Xian Jia Fang
Translation	Low-rent house	Economic affordable house	Public rental housing	Price limit house
Property Right	Public ownership	Private ownership	Public ownership	Private ownership
Start Year of Program	2001	2001	2011	2007
Size in Square Meters	< 50	N/A	< 60	< 90
RMB per Square Meter	40 Source: www.bjjs.gov	2500~5,000 (Rough estimation) Source: http://m.focus.cn/bj/loupan	20~50 Source: www.bjjs.gov	8000~20,000 (Rough estimation) Source: http://m.focus.cn/bj/loupan

Source: HU Hai-feng, HU Ji-ya, 2012.

Proximity to jobs and transportation makes the tradeoff of living underground worthwhile for many lower-income residents of Beijing.

place of residence assigned to them by the government, but restricts receipt of services in other locations. People born into *hukou* of large cities are eligible for better educational, health, and infrastructure services. Unless a state-sponsored employer requests a change of *hukou* for a worker, those without *hukou* in major cities still face a significant barrier to economic opportunity.

Figure 1 shows the current location of public housing programs for people with Beijing *hukou*. As in other places around the world, affordable housing projects are located in more remote parts of the city, as mentioned, where land is less costly but also less desirable. Also typical

of affordable housing projects, subletting is reportedly widespread, with program recipients collecting rents for their publicly provided apartments.

Analyzing the Underground Market

Our study took advantage of the detailed listings for underground rentals available at Ganji.com, which were optimal for analysis because the site was well organized, with the greatest number of ads. Using the search term “地下室,” or “underground unit,” we captured the monthly rent, square meter area, specific location, amenities, and other descriptors of subterranean apartments, such as the depth below ground level. Of the 7,312 ads we collected from October 2012 through September 2013, we culled 3,677 unique listings with complete information. As figure 1 shows, these units

are well distributed throughout the city, reflecting the requirement that all new buildings in Beijing include underground space.

It is important to mention that the ads represent what is likely the higher end of the underground housing market. Landlords who advertise online tend to be better educated, with more resources. The ads themselves usually feature photos, evincing the relatively high quality of the housing. Moreover, the landlords’ willingness to advertise suggests that they felt relatively secure about their tenure.

Table 2 provides descriptive statistics for the 3,677 subterranean housing units studied. The median size is 9.75 square meters, slightly smaller than Beijing’s 10-square-meter minimum and the overall average housing area per capita (28.8 square meters per person). Even so, the apartments are generally larger than the average worker dormitory housing, which is just 6.2 square meters (Xie and Zhou 2012).

The mean monthly rent of 436 RMB (US\$70) confirms that the apartments are at the higher end of migrant housing. A 2012 government study found that about 48 percent of migrants in Beijing pay less than 300 RMB (US\$48) per month, 27 percent pay 301 to 500 RMB (US\$48–80), and 17 percent pay more than 1,000 RMB (US\$160) (Xie and Zhou 2012). In other words, these underground rental units are generally a higher-valued type of shelter for migrants than the more common worker dormitories and urban village housing.

On average, subterranean units are less than 11 kilometers from the city center, with a standard deviation of 6.2 kilometers, placing them well

within the 5th Ring Road. With these locational advantages, the apartments offer potentially lower commuting costs and better economic opportunities. Similarly, the average distance to the nearest subway station is a little over 1 kilometer, which is considered within walking distance.

Roughly 50 percent of the advertised units are one or two stories below street level. The other 50 percent are half underground, like so-called “garden apartments” in the United States, with a small window near the ceiling of the room. Our preliminary analysis found that whether a unit was one or two stories below ground did not make any statistical difference in price after holding for other variables. As for amenities, the ads for about one quarter of the units advertised the presence of heating, more than half mentioned Internet connectivity, about one quarter mentioned the presence of surveillance cameras, and less than one eighth mentioned the employment of security guards.

TABLE 2
Descriptive Statistics for Sample Underground Apartments

Variable	Mean	Standard Deviation
Monthly Rent (RMB)	436.019	186.963
Size (sqm)	9.752	2.908
Distance to Tiananmen (km)	10.781	6.213
Distance to Nearest Subway Station (km)	1.078	1.285
Number of Subway Lines Within 800-Meter Radius	0.660	0.689
No Window	0.525	0.499
Heating	0.240	0.427
Gas	0.024	0.153
Air Conditioning	0.030	0.170
Internet	0.553	0.497
Security Guard	0.138	0.345
Surveillance Camera	0.261	0.439
Low Season	0.605	0.489

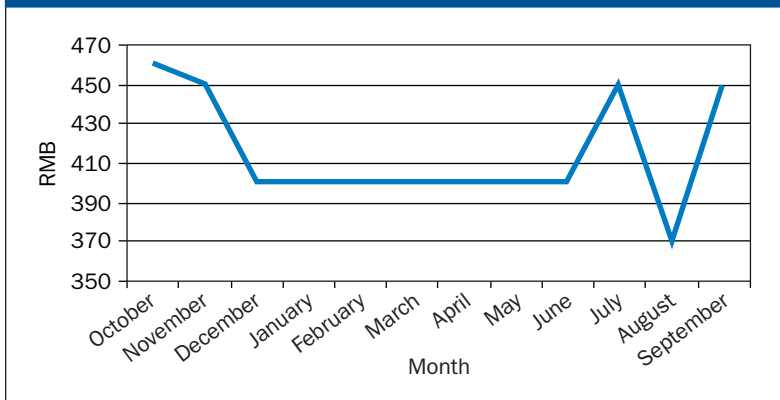
Source: Author's calculations. Number of observations = 3,677.

FIGURE 1
Distribution of Beijing's Affordable Housing Projects and Underground Housing



Source: Author's calculations.

FIGURE 2
Median Monthly Rent for Beijing Underground Housing Units, October 2012–September 2013



Source: Author's calculations.

Analyzing Market Dynamics

Our study examined whether demand in this unusual subterranean housing submarket is similar to the conventional market above ground. In particular, the disadvantage of living below street level may be large, and this type of housing is generally so small that other standard variables in hedonic price models may be more pronounced or differ in some other way.

Our statistical analysis involved a step-wise progression of fitting test variables to a base model

that includes the variables well established in the literature to be significant. It performed predictably with all the variables significant and in the expected direction. For example, rent increases around 3.3 percent for each square-meter increase in unit size, and 3.6 percent for every one-kilometer decrease in distance to the city center. Transportation access is also significant.

Proximity to a subway station raises rent by 1.8 percent per kilometer; for each subway line station within an 800-meter radius of the unit, the rent increases by 2.8 percent.

Given that our hedonic price model performed like other models with the same major significant variables and in the same direction, the underground housing phenomenon is clearly a market. Its emergence suggests that there is strong demand for rental housing—especially among lower-income households—that neither the formal market nor public housing programs are satisfying. This is obvious, given that *hukou* policies do not allow

migrants to apply for public housing programs and that even lower-income Beijingers with *hukou* have been known to live underground.

Our analysis suggests that the highest priority for the lower-income, often migrant population in Beijing is proximity to jobs and transportation. The central location of these units makes the trade-off of living underground worthwhile. Moreover, the comparison with public housing rents in table 1 indicates that while costs per square meter might be higher, the total rent for underground units is much lower (Hu and Hu 2012). The underground market is thus meeting the demand of people with incomes below the levels targeted by affordable housing programs.

Conclusions

Subterranean living is a sizable phenomenon in Beijing. Thousands of advertisements for underground apartments exist on the Internet, and that number was still growing in 2013 despite evictions. But the size of this submarket does not mean it should be incorporated into public policy.

There have been extraordinary accounts of people living on roofs and in sewer wells, trying to find a way to live in central Beijing. Reliance on underground housing is often just another desperate measure that the urban poor resort to in order to live and work in urban areas where they lack *hukou* and therefore cannot access services.

How much can a society minimize living space to make urban locations affordable? This question will become even more pressing as densities in Asian megacities exceed levels of acceptable human decency, forcing policymakers and designers to think more creatively about urban reforms. While underground units are in fact more spacious than dormitories for workers or students, China's extraordinary economic development has raised its citizens' aspirations and expectations for better housing conditions.

Given the fact that most of the renters are single or couples without children, and tenure is temporary, lasting no more than several years, housing policy should consider the need for lifecycle housing for people just starting out in this expensive city, or for those requiring temporary stays for health care, education, and other needs. ■

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There have been extraordinary accounts of people living on roofs and in sewer wells, trying to find a way to live in central Beijing.



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Friends from their hometown in Hebei Province, this business journalist and online editor are saving money by sharing a basement apartment with a small window in west Beijing.

Will a Greenbelt Help to Shrink Detroit's Wasteland?

Mark Skidmore

It is difficult to overstate how ongoing population loss has devastated Detroit. Between 1900 and 1950, when the rise of U.S. automobile manufacturing made the city one of America's premier industrial and cultural centers, the population spiked from 300,000 to 1.85 million. Beginning in 1950, however, it began to fall. And its decline has been continuous to the present day,

By 2010, the average price of a residential property had plummeted to about \$7,000 from \$57,000 in 2006. The current excess would likely suppress house price recovery in the coming years even if the population were to stabilize.

plummeting to just 700,000 in 2010, at a rate of descent nearly as swift as the rate of ascent in the first half of the 20th century.

Despite Detroit's decades-long effort to keep pace with population loss by removing dilapidated housing stock, roughly a quarter of its 380,000 parcels are now abandoned, managed by the city or other public entities. As of July 2014, 114,000 properties have been razed, and 80,000 more are considered blighted (Austen 2014).

While the downtown is recovering and the suburbs remain vital, the "unfathomable

dissolution of [the] built landscape" in vast areas of the city may shock the unsuspecting visitor (Austen 2014).

The first installment in a two-part series, this article considers the fiscal causes and repercussions of Detroit's surplus of housing and vacant property: from the extent and location of abandoned homes and lots throughout Detroit to the downward spiral of house price declines leading to overassessment, property tax delinquency, and foreclosures; the public acquisition of that property; the pattern of land values across the city; and, finally, some

potential ways to reconcile the remaining number of people with the amount of vacant and publicly held property. These measures range from targeting densely populated neighborhoods for redevelopment to establishing a greenbelt and reclaiming vacant parcels for public use as parks, forests, industrial buffers, retention ponds, and other open space (Austen 2014).

Factors Behind the Fall

The reasons for Detroit's demise are numerous and perhaps too familiar. Federally subsidized transportation infrastructure, such as the Interstate highway system, facilitated rapid suburbanization, which was further enabled by permissive development codes. Racial tension, global economic forces, and corruption corroded what remained of the city proper. In the early stages of the malaise, higher-income residents, most of them Caucasian, left for the suburbs in search of a better quality of life, as shown in table 1. By 1990, the African-American population had peaked as well and began to drop in the first decade of the 21st century. Beginning in the 1960s, Michigan auto manufacturing began its long, precipitous decline, disproportionately impacting Detroit and Flint. The loss of well-paying middle-class jobs further harmed the urban demographic and economic base, as households sought new employment opportunities elsewhere. Rising crime rates and continued erosion of public services induced another wave of exits.

Table 1 illustrates this downturn in the city's demographic and economic conditions from 1950 through 2010. By 2012, according to government sources, median household income was just \$25,000, less than half of the national median income. Poverty and unemployment rates were 38 and 27.5 percent, respectively. The labor force participation rate was 54 percent (compared to 63 percent nationwide), and for every 6.35 employed



One block from the stark divide between Detroit and its affluent neighbor Grosse Pointe, Ashland Street (below) is lined with vacant lots and moldering, abandoned homes.

© Google Maps data: Detroit



© Google Street View data: Detroit

TABLE 1
Socioeconomic Trends in Detroit, 1950–2010

	1950	1960	1970	1980	1990	2000	2010
Population	1,849,568	1,670,144	1,541,063	1,203,368	1,037,974	951,270	713,777
Percent African-American	16.2%	29.8%	42.9%	63.1%	74.9%	82.2%	82.7%
Households	501,145	514,837	497,753	424,033	374,057	345,424	271,050
Employed Detroit Residents	758,784	612,295	361,184	394,707	335,462	331,441	203,893
Percent Manufacturing	46.0%	37.3%	55.8%	28.7%	20.5%	18.8%	11.4%
Employed Residents/ Household	1.51	1.19	0.73	0.93	0.90	0.96	0.75
Unemployment Rate	7.4%	9.9%	7.2%	18.5%	19.7%	13.8%	29.0%
Jobs in Detroit	N/A	N/A	735,164	562,120	442,490	345,424	347,545
Median Household Income*	\$31,033	\$52,948	\$55,763	\$36,506	\$25,922	\$37,005	\$28,357

* Adjusted for inflation, 2010 dollars. Sources: US Bureau of the Census, American Community Survey.

Fifteen percent of parcels are now empty, and nearly 25 percent of Detroit's land area is now nontaxable, owned and managed by the city or some other public entity.

workers, there was one person receiving Social Security Disability benefits (compared to 1 of 12 nationwide). More than 34 percent of the city's population received food stamps, and 81 percent of children in the Detroit Public Schools qualified for the Free and Reduced Lunch Program. Revenue streams became increasingly dependent on external sources, including nonresidents, as discussed in box 1. In 2013, when the city finally succumbed to the weight of accumulating fiscal challenges

and declared bankruptcy, its debt and unfunded liabilities amounted to \$18 billion—or \$68,000 per household, which is about 2.7 times the median household income (Turbeville 2013).

The Failed Housing Market

The enormous excess supply of housing that accumulated over decades as a result of winnowing demand in Detroit corroded the value of that property. The real estate crisis of 2007–2008 dealt the final blow, resulting in the near-complete breakdown of Detroit's housing market. By 2010, the average price of a residential property had plummeted to about \$7,000 from \$57,000 in 2006 (Hodge et al. 2014a). Detroit's current excess of land and housing would likely suppress real estate

price recovery in the coming years even if the population were to stabilize.

Property Tax Delinquency, Abandonment, and Public Acquisition of Property

Tax officials have not recalibrated assessment values to reflect house price declines. The resulting overassessment is as high as 80 percent (Hodge et al. 2014a), contributing to a general unwillingness to pay taxes, according to Alm et al. (2014). Their research also shows that additional factors such as high statutory tax rates and limited services such as public safety worsen this delinquency as well.

In the midst of the real estate crisis, property tax delinquency reached an alarming 50 percent (Alm et al. 2014). Figure 2 (p. 13) shows delinquency rates by neighborhood across the city in 2010. Property tax collection depends on a jurisdiction's ability to impose sanctions for nonpayment of taxes, as noted by Langsdorf (1973). When real estate values collapse, taxing authorities have no workable enforcement mechanism; homeowners' savings from nonpayment of property tax are greater than the value of the house they own and would lose in the instance of foreclosure. Further, proceeds from the sale of low-valued tax-foreclosed property are insufficient to cover back taxes owed and the government costs of initiating foreclosure proceedings.

BOX 1

Targeting Nonresidents for Revenue

Detroit’s revenue streams have become increasingly dependent on external sources, including nonresidents, as its population and economic base have declined. This shift occurred in part because over time Michigan state legislatures empowered the City of Detroit to use tax-exporting strategies to help shore up weakening fiscal conditions and deal with massive structural changes to the regional economy. While there were periods during which it appeared that Detroit was on the cusp of recovery, various forces prevented “escape velocity.”

Today, the City of Detroit relies on the income tax, property tax, casino wagering tax, state revenue sharing, a utility user’s tax, federal grants, and various fees and licenses to fund public services. Of these, the casino wagering tax and the city income tax were adopted to bolster fading revenues from more traditional sources.

The casino wagering tax, based on gamers’ winning receipts, has become particularly important to the City of Detroit over the last decade, as shown in figure 2, which summarizes trends in the city’s major revenue sources from 1960 through 2012. The state legislature authorized casino gaming activity and the wagering tax in Detroit in 1996, to help the city address its fiscal challenges. By 2001, casino construction had been completed. The \$180 million in additional annual revenues helped to stave off

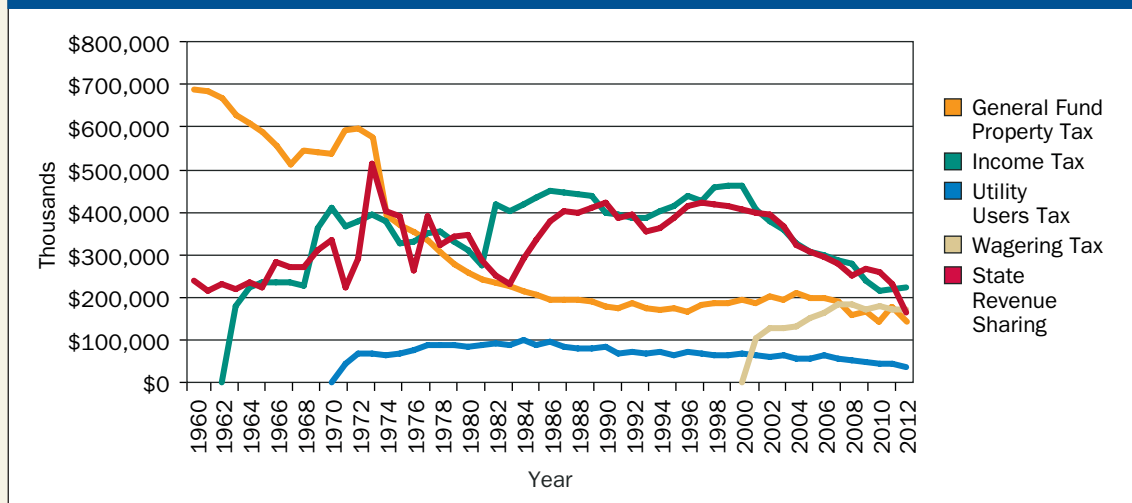
financial pressures even as other sources, such as income taxes and state shared revenues, were in decline. Up to 85 percent of gamers at the three major Detroit casinos are nonresidents, according to recent reports and interviews with gaming experts (Miklojcik 2014).

Since 1963, the city income tax has represented Detroit’s largest and, for a number of years, fastest-growing revenue source. At the time of adoption, the majority of the income tax was paid by city residents. As Detroit’s population has declined, however, the income tax on nonresidents who work in the city has become an increasing share of the city income tax base, composed of wages and salaries earned at a city-based job. The tax rate is 2.4 percent for city residents, whereas nonresidents pay 1.2 percent. While corporations and partnerships also pay an income tax, it is a very small portion of total revenues collected. According to Scorsone and Skidmore (2014), about half of the city income tax revenue in Detroit is paid by nonresidents.

State revenue sharing continues to play a critical role in Detroit’s finances, though population loss has diminished even this income source. In Michigan, state government collects a statewide sales tax and then shares a portion of the proceeds with municipal governments. Sales tax revenues are allocated to local governments based on constitutional

CONTINUED ON PAGE 12

FIGURE 2
Detroit Revenue Trends, 1960–2012



Source: Detroit Audit Reports, 1960–2012.

BOX 1

Targeting Nonresidents for Revenue (continued)

provisions as well as state statute. The constitutional portion of revenue sharing is based on each jurisdiction's share of the total state population. Given the dwindling number of Detroit residents, this portion of state revenue sharing has been falling for decades. The city experienced significant growth in total revenue sharing funds through the 1970s and 1980s, due to increases in statutory

About half the city income tax revenue in Detroit is paid by nonresidents.

revenue sharing, which is distributed by formulae that have been changed by legislators many times in recent decades. But new changes to the statute

combined with stagnation in the sales tax led to declining growth and eventual decline in revenue sharing for cities across the entire state in the 1990s. As Michigan entered a decade-long recession, this decline continued for most local jurisdictions, including Detroit, through the 2000s.

Some have pointed to revenue sharing reductions as a major source of stress for the City of Detroit, and a major catalyst for the bankruptcy. However, these declines affected all cities that received revenue sharing in Michigan; while cuts to revenue sharing likely influenced the timing of Detroit's bankruptcy, they were not the ultimate cause. Further, it is important to note that revenue sharing for Detroit represents a net positive transfer of funds from the rest of the state to the city. According to the 2007 economic census, retail sales in the City of Detroit were \$3.2 billion, or about 2.9 percent of the \$109 billion in the State of Michigan.

In 2012, total state revenue sharing to all municipalities in Michigan was about \$1 billion, and Detroit's share of the total was \$172 million, or 17.2 percent. Given that Detroit represents just 3 percent of total state retail sales in Michigan, one can conclude that the majority of state revenue sharing that flowed to Detroit originated from retail transactions that occurred outside the city.

As of 2014, the City of Detroit had approximately a \$1 billion General Fund, considerably lower than in 2002 when revenue peaked at \$1.4 billion. A 30 percent drop in revenues over time without a commensurate cut in expenditures led to the Detroit fiscal crisis and the eventual declaration of bankruptcy in 2013. By 2012, Detroit had borrowed more than \$1 billion in an attempt to stave off default and a liquidity crisis (Michigan Department of Treasury 2013).

Widespread failure to pay property taxes and the subsequent abandonment of homes has resulted in the public acquisition of thousands of properties throughout Detroit. Fifteen percent of the parcels within the 139-square-mile city are now empty, and nearly 25 percent of Detroit's land area is now nontaxable, owned and managed by the city or some other public entity (Sands and Skidmore 2014), as illustrated in figure 3.

The Downward Spiral of Foreclosures

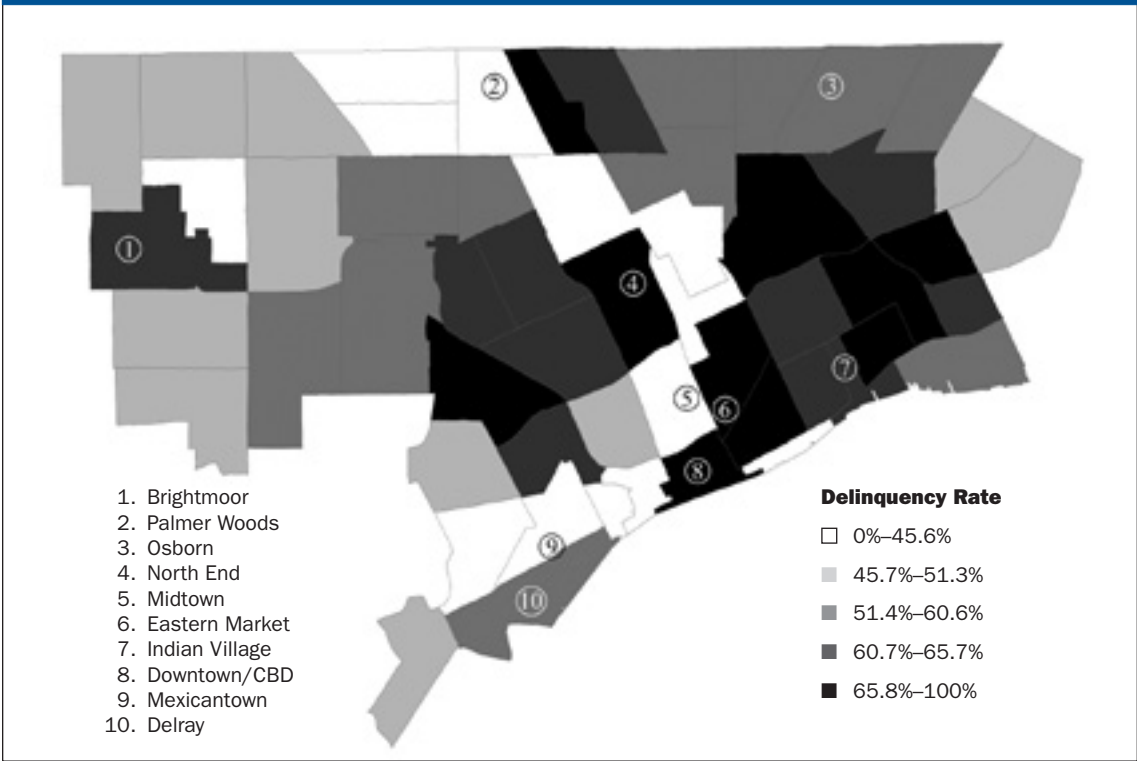
Currently, the number of properties flowing into public hands via tax foreclosure far outpaces the number of publicly held properties being purchased back by private taxpaying owners.

In Michigan, delinquent property taxes are subject to a 4 percent administration fee and 1 percent monthly interest on the delinquent amount computed at a non-compounded rate, beginning in the first month of nonpayment. After one year of delinquency, the city forfeits the property to county government, and the owner becomes subject to an additional 0.5 percent monthly interest charge. During this two-year period, owners may redeem their properties by paying all outstanding taxes and fees.

If property taxes go unpaid for more than two years, the Wayne County Treasurer initiates foreclosure proceedings. After a show cause hearing in the Circuit Court, the County Treasurer publicly auctions the foreclosed parcels. The starting bid equals the unpaid property taxes plus interest and penalties, and the proceeds are distributed proportionately to the taxing jurisdictions. If the property doesn't sell at the first auction, the county lowers the minimum bid to \$500 and holds a second auction. This procedure has led to further tax evasion, as some homeowners elect to ignore their tax bills with the expectation that they will be able to repurchase the parcel for \$500 at the second auction.

Property that doesn't sell at either auction may be transferred to a public body (city or state) or to a state or local land bank, or it may be held for a subsequent auction. County records indicate that 80 percent of the parcels sold to private buyers at auction over the past two years are once again delinquent on taxes (MacDonald 2013). Given that the tax delinquency rate is 67 percent for non-homestead property owners (Alm et al. 2014), it seems likely that a significant proportion of buyers

FIGURE 2
Detroit Delinquency Rate by Neighborhood, 2010



Source: City of Detroit Assessor Data, 2010.

FIGURE 3
Taxable (Privately Held) and Nontaxable (Publicly Held) Properties in Central Detroit, 2010



Source: City of Detroit Assessor Data, 2010.

at auction are absentee landlords who intend to reduce their operating expenses and increase their net rental income by never paying property taxes.

Property taxes are effectively optional on low-valued parcels as well. To minimize the backlog of tax-delinquent lots (MacDonald 2013), the county does not foreclose on homeowners who owe less than \$1,600 in taxes and penalties in aggregate, effectively rendering these debts optional.

Expected revenue from the sale of low-valued parcels is insufficient to cover legal expenses associated with tax foreclosure and unpaid property tax balances. The end result is an increasing rate of delinquency and a growing inventory of unwanted property that ends up in the public sector, where it generates no revenue for the city.

Where to Go from Here?

Another wave of property tax-related foreclosures is expected in late 2014 and early 2015. What can be done to stabilize the situation?

Curbing Property Tax Delinquency

As mentioned, delinquency will abate when tax payers perceive that they receive commensurate returns for their money. Thus, improving the tax-service package by upgrading core services such as public safety will reduce evasion and lateness (Alm et al. 2014). Under the leadership of recently elected Mayor Mike Duggan, city government is taking steps to improve basic public service provision

and put its fiscal house in order. For example, just 35,000 of 88,000 streetlights currently work, so Duggan plans to install 2,400 functioning streetlights per month (Austen 2014). He also increased the number of operating buses from 143 to 190, and improved snow plowing during the particularly harsh winter.

Lowering tax rates would modestly reduce delinquency as well (Alm et al. 2014). Roughly double the regional average, Detroit tax rates are at the state's maximum of 67 mills and 85 mills per assessed value for homestead and non-homestead properties, respectively. While a reduction would improve the competitive position of the city relative to other communities in the region, currently there is no discussion of reducing property tax rates.

Aligning assessed values more closely with actual market conditions will also reduce delinquency. Mayor Duggan recently promised to lower assessments by 5 to 20 percent across the city to reconcile them with state guidelines. However, Duggan's promised reductions are just a small fraction of the 80 percent cut needed to bring assesment to market levels, according to Hodge et al. (2014a).

Removing Land from the Market

In the absence of robust demand for land, which seems unlikely in the near future, the excess must be removed from the market for a period of time

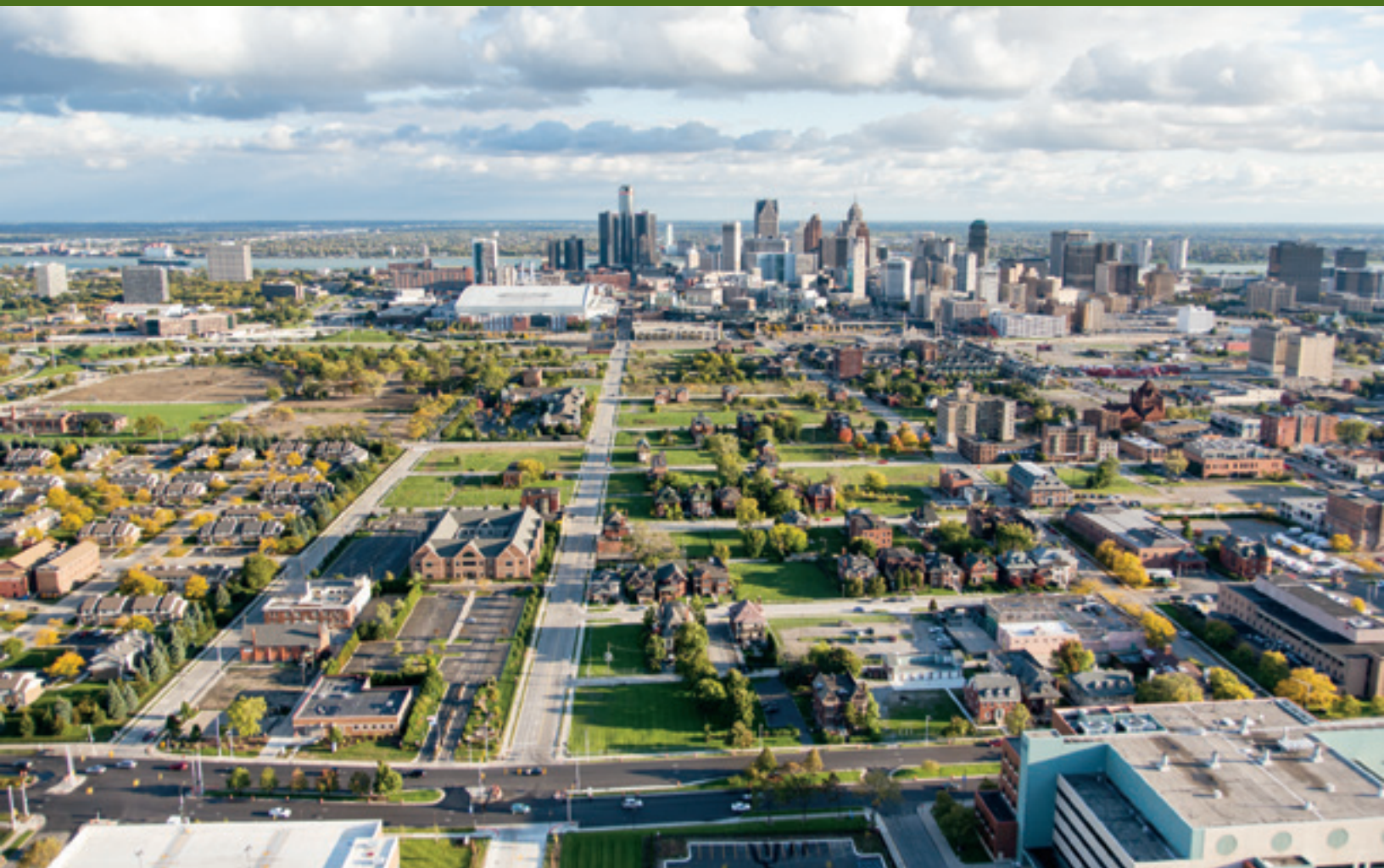
Motor City relics: The parking garage that was once the majestic Michigan Theatre, and rubble that was once the Packard Automotive Plant.



© Bob Jagendorf



© Daniel Lobo



in order for real estate value to improve broadly across the city. Given that public entities now hold so much property, it is within the power of government authorities to credibly remove it from the market. Without this type of policy action, the possibility that these parcels could be quickly transferred to the private sector serves to hamper price recovery.

Currently, public lands are held by many public entities. Authorities from the City of Detroit, Wayne County, and state government are working to consolidate these parcels under a single entity that can manage them more effectively. Detroit Future City (2010) details the extent of the fragmented ownership of public lands:

Public land in Detroit is held by many separate agencies, including city, county, and state agencies, as well as autonomous or quasi-governmental entities such as the Detroit Public Schools, the Detroit Housing Commission, and the Detroit Economic Growth Corporation. Few other cities have such fragmented holding of their public land inventory. There is no consistency

of policy, procedure, or mission among these agencies, while many are hamstrung by burdensome legal requirements and complex procedures. The Department of Planning and Development controls the largest number of properties, yet its ability to do strategic disposition is constrained by procedural obstacles, including the need to obtain City Council approval for all transactions, however small and insignificant from a citywide perspective.

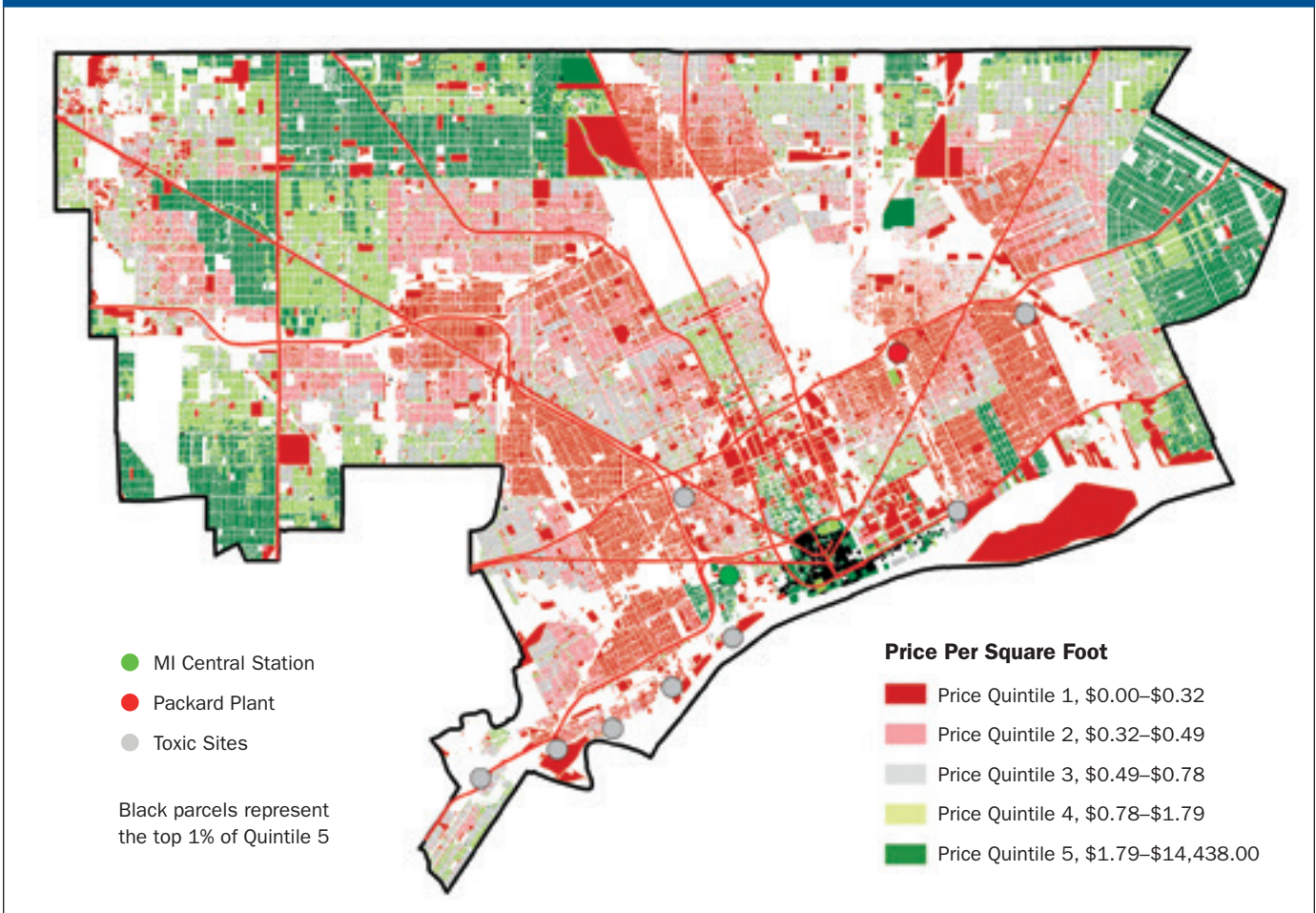
While this consolidation process is necessary, it is not sufficient. Financial resources are required to remove blight and implement land use plans. City leaders are focused mainly on strategies to return these parcels to private ownership. If they can stimulate greater interest in Detroit property, this approach might be viable.

As of July 2014, 114,000 properties in Detroit have been razed.

© Alex MacLean/Landslides

The six national forests in Minnesota, Wisconsin, and Michigan have origins in the mass land abandonment of the Depression Era, as state and federal authorities pieced together a patchwork of adjacent lands purchased from counties eager to sell off their tax-forfeited property.

FIGURE 4
Predicted Detroit Land Values by Quintile



Source: City of Detroit Assessor data, 2010.

Note: Hodge et al. (2014b), use data on 3,788 vacant land parcels that were sold over the 2006–2010 period to estimate the pattern of land values. These recently sold properties are about 4.6 percent of the 81,326 vacant residential and commercial parcels in the city. The coefficients generated from this regression analysis were then used to generate predicted land values for nearly all of the 380,000 parcels in the city.

A federal, state, and local government partnership to reclaim these properties could help stabilize the land market and generate a revenue stream for the city.

Indeed, opportunities for private ownership are emerging in the central business district (CBD).

Daniel Gilbert, founder of Quicken Loans, has moved his headquarters to downtown Detroit and invested \$1.3 billion in city real estate (*Forbes* 2014). And downtown renewal has led to substantial rental price increases (Christie 2014).

Land values are very high in the CBD, as depicted in figure 4 by the black parcels,

which represent the very highest land values on the map. Detroit's land value gradient is very steep,

however. While several areas within the donut around the CBD have retained some worth, land values plunge rapidly as distance from the CBD increases, though they rise again near the city's border, probably because amenities such as shopping are available in the nearby suburbs.

Given the weak demand outside the CBD, it may be more effective to determine which publicly held properties should return to private taxpaying parties, which properties should be taken off the market for a decade or two, with the option of returning land to the market should conditions change, and which should be permanently removed from the market.

The 2012 master plan, as outlined by Detroit Future City, calls for the reclamation of land for

parks, forests, industrial buffers, greenways, retention ponds, community gardens, and even campgrounds (Austen 2014). Full implementation of this ambitious proposal requires significant financial resources. But consider how state and federal authorities intervened in the last major episode of mass tax foreclosure. During the Great Depression, many homesteaders on marginal agricultural lands in Michigan, Minnesota, and Wisconsin were unable to pay their property taxes, and this default resulted in a mass wave of tax delinquency, foreclosure, abandonment, and eventual forfeiture. In these states, county governments frequently became the owners of thousands of acres, much of which was eventually sold to the state and federal governments. The six national forests in Minnesota, Wisconsin, and Michigan, as well as the region's numerous state forests, all have origins in this mass land abandonment of the Depression Era, as state and federal authorities pieced together a patchwork of adjacent lands purchased from counties eager to sell off their tax-forfeited property.

Today, state and federal authorities have no taste for a Detroit "bailout." But history suggests that state and federal governments could help Detroit regain fiscal viability by purchasing patchworks of unwanted parcels, making payments in lieu of taxes, as is typical for other publicly owned lands, and then using the land for the benefit of the general public. Potential uses are mapped out in the aforementioned city master plan which the second installment of this series will explore. A federal, state, and local government partnership to reclaim these properties could help stabilize the land market and generate a revenue stream for the city and the other overlying taxing jurisdictions (including the state government via the state education tax). Property value recovery in combination with downtown reinvestment, continued efforts to improve Detroit's tax-service package and remove blight, and long-run investment in Detroit's human and social capital are essential elements of a sustainable Detroit recovery. □

▶ ABOUT THE AUTHOR

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David Vetter (Ph.D., University of California) has worked for more than four decades on urban finance and economics issues in Latin America. He taught and conducted urban research in Brazil for 17 years at the Brazilian Institute of Geography and Statistics (IBGE), the Graduate Engineering Program (COPPE), the Institute of Urban and Regional Planning and Studies (IPPUR), and the Fundação Getúlio Vargas. In 1990, he joined the World Bank, where he developed subnational investment and reform programs for Argentina, Brazil, Chile, and Ecuador. To push for greater private-sector participation in urban financing, he joined Dexia Credit Local in 1998 as vice president and established lending programs in Argentina, Brazil, and Mexico. Since returning to Brazil in 2004, he has worked as a consultant and researcher for various clients, including the Inter-American Development Bank and the Lincoln Institute of Land Policy, where he has been a visiting fellow since July 2014. He recently authored two articles for Land Lines: “Residential Wealth Distribution in Rio de Janeiro” (January 2014) and “Land-Based Financing for Brazil’s Municipalities” (October 2011).

David Vetter

LAND LINES: *How did you become involved with the Lincoln Institute?*

DAVID VETTER: For many years—whether I was doing research, consulting, or working at the World Bank or in the private sector—I quite often found solid information to help me from the Lincoln Institute. More recently, the Institute financed my research on residential wealth and municipal finance in Brazil.

LAND LINES: *What will you research as a visiting fellow and why?*

DAVID VETTER: I will focus on strategies for financing urban infrastructure in Brazil. Like other Latin American countries, Brazil continually needs to make substantial investments to keep pace with the rapidly growing number of new households and to reduce the number of them without access to urban infrastructure. From 2000 to 2010, the number of households grew by more than 12 million—an increase nearly 7 times the 1.8 million households in the Boston-Cambridge Metro Area in 2010. Given this demographic pressure, the absolute number of Brazilian households without access to urban infrastructure remained high in 2010, despite sizeable investments over the previous decade. And the deficits of some types of infrastructure actually increased. From 2000 to 2010, for instance, the number of Brazilian urban households without adequate sewage systems rose by nearly 2 million—more than the total number of housing units in Metropolitan Boston in 2010.

Brazil’s Ministry of Cities estimated that basic sanitation (potable water, waste water, solid waste, and drainage) would cost more than US\$80 billion just for 2014 to 2018. Highways, street paving, public security, health, and education demand similarly high investments, and the amounts required often greatly exceed existing sources of financing.

LAND LINES: *How could value captured by these infrastructure investments help to finance them?*

DAVID VETTER: The benefits of infrastructure investments are capitalized into land and building prices. The Lincoln Institute’s 2013 forums on Notable Instruments for Urban Intervention showed that many governments in Latin America are effectively using a wide variety of tools to capture value created by their infrastructure investments, as detailed in Martim O. Smolka’s comprehensive review of the literature (2013): sale of development rights; betterment levies for street paving, drainage, and other improvements; and public-private partnerships (PPPs) involving value capture, as in the financial structure of Rio’s massive port renovation (Porto Maravilha). More efficient collection of the real estate property and transfer taxes help as well.

Value capture can generate positive feedback, creating a virtuous circle that generates additional resources for further investments. For example, the increases in value generated would increase the base for the property tax if real estate assessments were conducted in a timely manner, and the resulting revenue could be used to finance further investment.

LAND LINES: *To what extent could Brazilian municipalities increase the use of value capture?*

DAVID VETTER: According to economic theory, the value generated by infrastructure investments should roughly equal their cost. Because the supply of infrastructure would seem to be inelastic due to public finance constraints, the market value generated can actually exceed the cost of the investments.

For example, Brazilian municipalities invested more than US\$82 billion in infrastructure and equipment from 2006 to 2010 (about US\$16 billion per year). But in 2010 alone, state and national governments also invested more than US\$50 billion. Capture of even a relatively small percentage of the value created could provide significant resources for investment. For example, the Rio de Janeiro Metropolitan Region is receiving massive infrastructure investments from national, state, and municipal governments, as well as from private sector partners, for various projects including the new Arco Metropolitano beltway and a new Metro line. Some are concessions or PPPs with significant financing at below-market interest rates from the public development banks (BNDES and CAIXA).

LAND LINES: *What role could value capture play in housing policy?*

DAVID VETTER: Infrastructure investment creates residential wealth, as its value is capitalized into housing value. Residential structures represent about one third of Brazil's total net fixed capital in the national wealth accounts, as is typical for other countries around the world. Given this importance, we ask in our own work on the Rio de Janeiro Metropolitan Region: What generates residential wealth? How much residential wealth exists? Who holds it? We found that there are winners and losers. For example, the increase in value generated by infrastructure investment increases the residential wealth of homeowners, but it raises prices for renters in the benefitted area and housing cost for homebuyers wishing to locate there.

LAND LINES: *Would a housing policy focused on generating residential wealth and the equity of its distribution differ from most low-income housing programs?*

DAVID VETTER: It would be quite different. Most low-income housing programs keep unit costs down by building on low-cost land. Land price is low when it lacks access to employment and basic urban services, so affordable units often end up in these poorly serviced areas. A housing policy focused on residential wealth would emphasize access to employment and basic services, as they are among the key determinants of housing value.

LAND LINES: *But isn't this utopian? How could value capture help to increase the residential wealth of lower-income families?*

DAVID VETTER: The challenge is certainly great. But value capture from higher-income families could allow cross subsidies to lower-income ones, especially renters who wish to locate in the areas benefiting from infrastructure investments.

Let me illustrate. The number of households in the Rio de Janeiro Metropolitan Region increased by more than 600,000 from 2000 to 2010 (that's twice the number of households in Washington, DC, in 2010). As a result, the region's urban infrastructure deficits remain high despite high investments. A recent impact study of metropolitan Rio de Janeiro's

new beltway (Pontual et al. 2011) explored the possibility of developing whole new socially integrated and fully serviced neighborhoods to hold the huge expected increase in the number of households along the beltway. This development could be financed in part by capturing value generated by the massive infrastructure investments planned and being implemented. Part of the value captured from higher-income families could be used to finance lower-income ones.

This impact study analyzed where such neighborhoods might best be located. Which value capture instruments might work best in this case? It is interesting that the private sector is already developing what they describe as "green neighborhoods" in the outlying regions of metropolitan Rio. Does it make sense to plan individual housing projects when such large increases in households are involved?

LAND LINES: *Would lower-income families be able to pay for infrastructure?*

DAVID VETTER: In Latin America, the eligibility criteria for value capture programs almost always include a test for capacity to pay. Of course, value capture should only be applied to families who can afford it.

LAND LINES: *How do you respond to the Brazilian professionals working on urban issues who argue that it is impossible to capture value for legal or cultural reasons?*

DAVID VETTER: Although Brazil's constitution provides broad powers for value capture, only the largest municipalities, such as São Paulo and Rio de Janeiro, appear to be using them. Other sub-national and national governments are doing much less to capture the value of considerable public investments.

This failure is probably due in part to resistance by some who think that value capture is legally impossible. Yet while betterment levies meet with similar resistance, Silva and Pereira (2013) estimate that total revenue from them exceeded US\$300 million among municipalities in the states of São Paulo, Paraná, and Santa Catarina from 2000 to 2010, even though relatively few municipalities employed them. This amount is not very

significant for states of this size, but it does show that betterment levies are feasible.

One reason why betterment levies were successful in Paraná and Santa Catarina was that the World Bank and Inter-American Development Bank have required cost recovery in their municipal development projects since the 1980s. This success supports the idea that incentives of a national or state program can encourage use of value capture at the municipal level.

In addition, many cases of value capture seem to go unnoticed. In the City of Rio de Janeiro, for example, the sale of excess land from the existing subway system partly financed the expansion of a whole new line, and developers provide water and sewerage trunk lines as a condition for project approval in a higher-income neighborhood, Barra da Tijuca.

LAND LINES: *How might national or state government programs encourage greater use of value capture?*

DAVID VETTER: One way would be to provide access to financing as an incentive for the municipalities that use value capture. Ecuador's development bank (Banco del Estado) uses such access to encourage municipalities to employ betterment levies. Access to financing could be used to provide access to a broader range of value capture instruments, such as the sale of development rights and impact fees, as well as betterment levies.

LAND LINES: *How can the Lincoln Institute encourage infrastructure financing through value capture?*

DAVID VETTER: Lincoln has done an excellent job of generating knowledge about value capture through its research, forums, training program, and publications. The Institute could scale up its excellent work on value capture in the region through more forums and publications, and by directly advising policy makers regarding program design and implementation. ■

Conservation Catalysts: The Academy as Nature's Agent

Twenty-first-century conservationists are contending with biodiversity loss on an unprecedented scale, compounded by the interrelated threat of climate change. These global challenges call for first-rate talent, highly sophisticated technology, and advanced financial and organizational tools that can be used across jurisdictional boundaries and professional disciplines. Academic institutions—from colleges and universities to research institutes and field stations—are surprisingly powerful and effective catalysts for integrating all these elements into strategically significant and enduring large landscape conservation initiatives. This edited volume gathers more than a dozen first-hand accounts of the long-term impacts academics are making on the ground, from the University of Nairobi to Harvard. With measurable results, their efforts are protecting wildlife habitat, improving water quality, building sustainable economies, and bettering public amenities around the world now and for centuries to come.

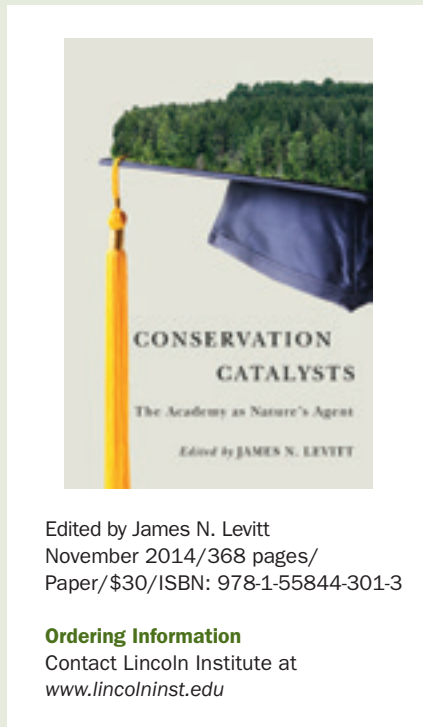
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James N. Levitt is director of the Program on Conservation Innovation at the Harvard Forest, a fellow at the Lincoln Institute of Land Policy, and a senior fellow at Highstead. Email: james_levitt@waverleyresources.com

International Symposium on Land Management Systems

Beijing, China

May 31–June 1, 2014

More than 100 policy makers, academic scholars, practitioners, and central and local Chinese government officials gathered in Beijing to attend the International Symposium on Land Management Systems from May 31 to June 1, 2014. This symposium was co-organized by the Peking University-Lincoln Institute Center for Urban Development and Land Policy (PLC) and the Development Research Center (DRC) of the State Council. It featured presentations by several international experts on a range of topics including land markets and property rights, farmland preservation, planning and land use control, expropriation, land concession and property taxation, land value capture, and land policy and housing issues.

The experts included Rachelle Alterman of Technion University in Israel; Roy Bahl of Georgia State University; Ku Chung Chuang, Instructor at Department of Real Estate Management, De Lin Institute of Technology, and Department of Finance, Providence University, Taiwan (China); Yu-Hung Hong of MIT, Senior Fellow of the Lincoln Institute and Executive Director of Land Governance Laboratory; Harvey Jacobs of University of Wisconsin, Madison; Barrie Needham of Radboud University Nijmegen in the Netherlands; and Bertrand Renaud, international consultant and president of BRI Associates.

Also in attendance were officials from the Chinese Ministry of Land and Resources and the Development Research Center of the State Council. Three vice-ministerial officers and one national congress member also spoke of their direct experiences with these topics and discussed the current land policy issues in China. Following each topical presentation, the participants engaged in a vivid discussion on the relevant issues. The symposium successfully ended with a request from the participants for the production of a symposium volume, which is currently in progress by the speakers and PLC staff.

Latin America Program Doctoral and Graduate Student Thesis Candidates, 2014–2015

The Lincoln Institute's Program on Latin America and the Caribbean supports doctoral and masters candidates who are preparing their theses on topics related to urban land policy. The students listed below received thesis support for the 2014–2015 academic year. Applications for thesis support for 2015–2016 will be announced in Spring 2015.

Nathyeli Yethzi Acuña Castillo

Masters candidate in Urban Economy, Torcuato di Tella University, Buenos Aires, Argentina

Social and economic factors that influence the location of companies in the metropolitan area of Costa Rica (2008–2010)

Paulina del Pilar Aguirre Bustamante

Masters candidate in Urban Economy, Torcuato di Tella University, Buenos Aires, Argentina

Land prices and land policies in the City of Medellín

Wagner Vinicius Amorim

Doctoral candidate in Geography, School of Science and Technology, State University of São Paulo (UNESP), São Paulo, Brazil

Real estate production and restructuring of mid-sized cities: The examples of Londrina and Maringá, Paraná state, Brazil

Eliana Rosa de Queiroz Barbosa

Doctoral candidate in Architecture and Urbanism, Mackenzie Presbyterian University, São Paulo, Brazil

Urban projects: Latin translations

Laura Natalia Brener Maceiras

Masters candidate in Zoning and Urban Development, University of the Republic, Montevideo, Uruguay

Lessons learned about value capture in Uruguay in the light of the new Zoning and Sustainable Development Law (No 18308)

Juan Carlos Castellanos Puentes

Masters candidate in Urbanism, National University of Colombia

Social habitat production through grassroots housing organizations as a laboratory on building sustainable cities. Case study: Association for Integral Housing (ASOVIVIR), Bosa, Bogotá, Colombia

Patricia Cezario Silva

Doctoral candidate in Architecture and Urbanism, University of São Paulo, Brazil

Barriers to access to land as an impediment to social interest housing production

Jonathan Edgardo Cohen

Masters candidate in Urban Economics, Torcuato di Tella University, Buenos Aires, Argentina

Modeling the growth of informal settlements in the Buenos Aires Metropolitan Region

Nayana Corrêa Bonamichi

Masters candidate in Urban and Regional Planning, Institute for Research and Urban and Regional Planning (IPPUR), State University of Rio de Janeiro, Brazil

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Lillian Lincoln Howell

1921–2014



The Lincoln Institute honors the memory of Lillian Lincoln Howell (1921–2014), who served on the boards of both the Lincoln Foundation, from its founding in 1946, and the Lincoln Institute of Land Policy, from 1974 until she became an emerita member in 2006. Lillian was 93 when she passed away on August 31, 2014, in Hillsborough, CA. She is survived by her son, Lincoln, his wife, Barbara, and their daughter, Alisha.

Lillian's work attested to the ideals she learned from her father, John C. Lincoln, who created the Lincoln Foundation to promote the work of Henry George, as expressed in his book *Progress and Poverty* (1879). A 1943 graduate of Pomona College, where she studied science and philosophy, Lillian maintained a lifelong interest in the workings of the human mind. In 1976, as owner of the Lincoln Broadcasting Company, she became the first woman to develop a television station in a top-ten market when she founded San Francisco's KTSF to serve the Bay Area's Asian-American community. One of the nation's first multiethnic stations, KTSF today offers news and entertainment programming in 12 languages, reaching an audience of about 1.4 million viewers.

"Lillian's objective for the television station was to serve the underserved, which was illustrative of her nature. She wanted to help others but in a way that did not spoil them," says David C. Lincoln, Lillian's brother and a board member of the Lincoln Institute.

Land Lines

OCTOBER 2014

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