

**Taxed Out:
Illegal property tax assessments and the epidemic of tax foreclosures in Detroit**

By: Bernadette Atuahene* & Christopher Berry**

Detroit is experiencing historic levels of property tax foreclosure. More than 100,000 properties, or one-in-four throughout the city, have been foreclosed upon for nonpayment of property taxes since 2011. Simultaneously, there is strong evidence that the City is over assessing homeowners in violation of the Michigan Constitution, calling into question the record number of property tax foreclosures. This Article is the first attempt to measure the impact of unconstitutional tax assessments on property tax foreclosures. Analyzing residential properties that sold in Detroit since 2009, we show that properties assessed at higher rates were more likely to experience a subsequent tax foreclosure controlling for purchase price, location, and time-of-sale. We estimate that 10 percent of all these tax foreclosures were caused by illegally inflated tax assessments. Moreover, since lower priced homes were over assessed at a greater frequency and magnitude than higher priced homes, we estimate that 25 percent of tax foreclosures among homes in the bottom price quintile (less than \$9,000 in sale price) were due to unconstitutional property tax assessments. Consequently, property tax malfeasance has unjustly displaced thousands of Detroit homeowners, most of whom are African-American. While the numbers in Detroit are extreme, there is reason to be concerned that similar practices are widespread.

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I. Introduction

Detroit is in the midst of a property tax foreclosure crisis of a magnitude not experienced in American history since the Great Depression. From 2011-2015, the Wayne County treasurer foreclosed on approximately 100,000 Detroit properties for unpaid property taxes.¹ Since there are about 385,000 properties in the city, this means that 1 in 4 Detroit properties has completed the property tax foreclosure process during this five year period.² If we consider only residential properties with a structure, then roughly 30 percent of Detroit homes have completed the tax foreclosure process during this period (See Figure 1).³ In 2015 alone, the treasurer foreclosed on roughly 25,000 Detroit properties, equating to approximately 3,500 property tax foreclosures per 100,000 people, which is drastically higher than other cities (New York City: 52; San Francisco: 48; LA county: 4; Erie County, NY (Buffalo): 62; St. Louis County, MO: 197).⁴ African-Americans have been most acutely impacted since they account for 80 percent of Detroit's current population.⁵

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¹ Authors' calculations. Tax foreclosure records for 2011 to 2013 from *Archival Tax Foreclosures in Detroit, 2002 – 2013*, Data Driven Detroit (last visited June 13, 2016), <http://bit.ly/2bpFd8A>. Tax foreclosure records for 2013 to 2015 from the Wayne County Treasurer. We used data from the City of Detroit's Assessor's Office from 2009 to ascertain whether properties were residential and contained structures. The city's published file on their open data portal has 384,675 records. Of these, 310,318 are classified as *residential*, 275,354 are classified as *improved* (i.e., containing a structure), and 248,646 are both residential and improved. See also <https://data.detroitmi.gov/>. Also see Alex Alsup, *A Recent History of Tax Foreclosure*, LOVELAND BLOG, (Nov. 9, 2015), <https://makeloveland.com/blog/a-recent-history-of-tax-foreclosure>.

² *Id.*

³ *Id.*

⁴ See U.S. CENSUS BUREAU, 2010 CENSUS, <http://www.census.gov/2010census/> (last visited Feb. 20, 2016) (these numbers were calculated by dividing the number of tax foreclosed properties in foreclosure sales in each region in 2015 by the 2010 census population from each region and multiplying by 100,000. New York City had a 2010 population of 8,175,133, San Francisco (805,704), LA County (9,818,605), Erie County, NY (919,040), and St. Louis County, MO (998,954)); See also Alsup, *supra* note 1 (stating that in Detroit, 28,158 properties were sent to the tax foreclosure auction in 2015, and in New York City, 4,228 property tax liens were sold in 2015); SAN FRANCISCO TREASURER & TAX COLLECTOR, PUBLIC AUCTION SALES OF TAX-DEFAULTED PROPERTY, <http://bit.ly/2aSN36v> (stating that in San Francisco, 389 tax foreclosed properties were auctioned in 2015); LA COUNTY TREASURER & TAX COLLECTOR, PUBLIC AUCTION LIST, <http://bit.ly/2aRr2q5> (stating that in LA County, 379 tax foreclosed properties were auctioned in 2015); ERIE COUNTY, NY, AUCTION & FORECLOSURE INFORMATION (August 25, 2016), <http://tinyurl.com/jec19ez> (PDF found at "In Rem Book 159, 160, 161, 162, and 163") (stating that in Erie County 569 properties went to the 2015 tax foreclosure auction); SAINT LOUIS COUNTY DEP'T OF REVENUE, 2015 AUCTION BOOK <http://tinyurl.com/hxcgkph>, (last visited August 25, 2016), (indicating that in St. Louis County, 1,964 properties were going through either the first or second tax sale in 2015).

⁵ U.S. CENSUS BUREAU, 2012-2016 AMERICAN COMMUNITY SURVEY 5-YEAR ESTIMATES, <https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF> (last visited Dec. 19, 2017).

While the underlying causes of Detroit’s tax foreclosure crises are complex, we argue that excessive property tax assessments have played a significant role. Detroit’s Mayor, Mike Duggan, has on several occasions admitted that the City of Detroit is over assessing its residents.⁶ A study by Atuahene and Hodge found that Detroit is not only over assessing its residents, but it is doing this in violation of the Michigan Constitution, which states that no property can be assessed at more than 50 percent of its market value.⁷ Between 2009 and 2015, the City of Detroit assessed 55 to 85 percent of its residential properties in violation of the Michigan Constitution.⁸ Such unconstitutional assessments belie the legitimacy of Detroit’s unparalleled property tax foreclosure rates.

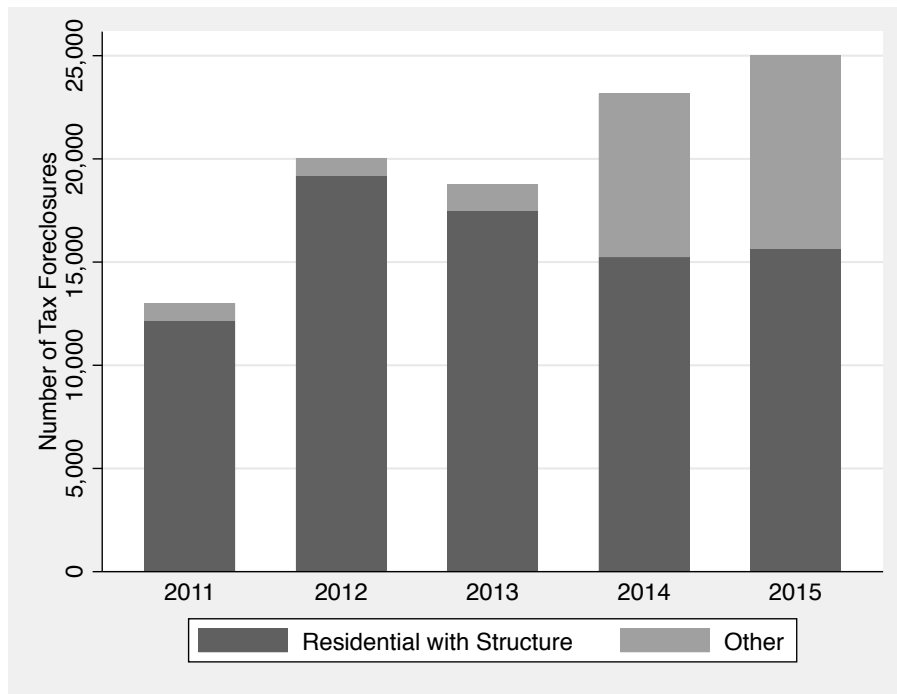


Figure 1. Foreclosures of Residential Properties with Structures in Detroit

⁶ Mayor Mike Duggan, Address (Jan. 28, 2015) (“As I said when I was campaigning, I felt like the assessments in this city were higher than the actual sales price that people could sell their house for. We made a commitment to have honest assessments. Last year, you remember that most Detroiters got assessment cuts between 10 and 20 percent and we have embarked on a parcel by parcel assessment the first one in fifty years and that's going to be done at the end of 2016. We are assessing each individual home. We didn't want to wait for that parcel to parcel assessment to be done to continue to try to do the best we can to make sure our assessments are accurate. And so we are again doing significant assessment cuts for 2015.”); CITY OF DETROIT, MOST DETROIT HOMEOWNERS TO SEE PROPERTY ASSESSMENT REDUCTIONS THIS SUMMER (Jan. 28, 2015), <http://bit.ly/2aRyTa5> (Mayor Duggan stating, “For years, homes across the city have been over assessed”); Steve Neavling, *Mayor Duggan: Property Tax Bills to be Substantially Reduced*, MOTOR CITY MUCKRAKER, (Jan. 28, 2014), <http://bit.ly/2bpGfBh> (Regarding the 2014 reductions, Mayor Duggan stated, “While some neighborhoods have maintained their sales value, most of the northwest side was over-assessed by a minimum of 20%.”).

⁷ MICH. CONST. art. IX, § 3.

⁸ Bernadette Atuahene & Timothy R. Hodge, *Stategraft*, S. CAL. L. REV. (forthcoming 2018).

Although the later portion of this paper is devoted to statistical analyses that demonstrate the connection between illegal tax assessments and tax foreclosures, we begin with two case studies that provide texture to the phenomenon we are studying and highlight what is at stake for common people in Detroit.

Mrs. C is a gregarious African-American woman born and raised in Detroit.⁹ Her radiant cheerfulness causes even the most churlish individuals to adore her. She is the proud mother of eight children and grandmother of three. In 2011, Mrs. C purchased her first home on the eastside of Detroit for \$18,000 on a land contract from a company called Flip Detroit Homes.¹⁰ Although the home had some fire damage and needed all new electrical, plumbing, and a roof, the Detroit assessor taxed her home as if it was worth about \$74,000.¹¹ Mrs. C knew the property taxes were unfair and high, but she did not know she could protest her taxes. She was also unaware that living under the federal poverty threshold meant that she qualified for the Poverty Tax Exemption, which would release her from paying all property taxes. The Wayne County treasurer eventually foreclosed upon Mrs. C and her children because they could not pay the illegally inflated property taxes that they should not have been paying in the first place. The stress of the foreclosure and subsequent eviction exacerbated her existing mental health problems, causing her to have a complete nervous breakdown.¹²

Mr. B is a soft spoken 48 year old white man born in a Southwest Detroit home first purchased by his great great grand parents in 1907.¹³ The home was imbued with multigenerational memories and was the physical embodiment of his family's legacy. In 1992, Mr. B inherited the family home from his mother. But unlike his family in preceding generations, Mr. B was very poor. He did not finish high school and worked in grocery stores for most of his working life, earning a salary that was below the federal poverty line. Mr. B was unable to keep up with his property taxes, so the Wayne County treasurer foreclosed upon his family home in 2011. A speculator based in a neighboring city called Dearborn purchased the family home for \$750 at the Wayne County tax foreclosure auction and sold it back to him for \$4000 on a land contract.¹⁴ After a few years, Mr. B successfully paid off the land contract and regained ownership of his family home, but he soon was again delinquent on his property taxes because they were illegally inflated. In 2009, the Detroit's assessor estimated that his home was worth about \$28,000 and taxed it accordingly.¹⁵ In reality, some rooms were unlivable making the home worth less than \$2,400. Again unable to afford the property taxes, in 2016, the Wayne County treasurer

⁹ Confidential interview with Mrs. C, April 6, 2018.

¹⁰ 26 M.L.P. 2d REAL PROPERTY: CONTRACTS FOR SALE OF REAL PROPERTY § 451 (a "land contract is an agreement for the sale of an interest in real property under which the purchase price is to be paid in installments, other than an earnest money deposit and a lump-sum payment at closing, and no promissory note or mortgage is involved between the seller and the buyer.").

¹¹ In 2011 and 2012 the State Equalized Value (SEV) for the home was \$37,163, which multiplied by 2 equals the assessor's estimated market value of the home. MICH. COMP. LAWS § 211.27a (2017).

¹² *See generally*, MATTHEW DESMOND, *EVICTED: POVERTY AND PROFIT IN THE AMERICAN CITY* (2017).

¹³ Confidential interview with Mr. B, March 9, 2018.

¹⁴ Homeowners are not allowed to bid on their own homes in the auction, so Mr. B was unable to purchase his own home for \$750. Mich. Comp. Laws § 211.78m(2)(a) (2018) (requiring that the winning bidder execute and file an affidavit stating that he or she does not hold an interest in a property with delinquent property taxes in the same county as the property bid on).

¹⁵ In 2009 the State Equalized Value (SEV) for the home was \$13,979, which multiplied by 2 equals the assessor's estimated market value of the home. MICH. COMP. LAWS § 211.27a (2017).

foreclosed on Mr. B's home for the second time. Because he earned less than \$10,000 per year, Mr. B qualified for the Poverty Tax Exemption and should not have been paying property taxes at all, but he did not know about it. In sum, the local government kicked Mr. B out of a home his family owned since 1907 for non-payment of illegally inflated property taxes that he should not have been paying in the first place. He is now living with friends who kindly took him in after his eviction.

The City of Detroit has unconstitutionally assessed thousands of homes, leading to inflated property taxes, which homeowners like Mr. B and Mrs. C could not afford to pay, so the county confiscated the homes through tax foreclosure. This Article is the first to estimate the extent to which unconstitutional property tax assessments cause tax foreclosure. We estimate that 10 percent of all tax foreclosures were caused by illegally inflated assessments. But, since lower priced homes were over assessed at a greater frequency and magnitude than higher priced homes, for homes in the bottom quintile (less than \$8,000 in sale price) we estimate that 25 percent of tax foreclosures were due to unconstitutional property tax assessments. That is, 1 in 4 of Detroit's poorest homeowners who lost their homes did so due to illegally inflated assessments. In Detroit, the stories of Mr. B and Mrs. C are not uncommon.

While the extent of tax foreclosure in Detroit is unprecedented, it is far from the only city in which inequitable property tax assessments are commonplace. A recent series of articles in *The Chicago Tribune* brought to light tax inequities that had been noted by academics for years.¹⁶ Their analyses found that homes in poor, minority neighborhoods on the city's south and west sides were paying effective tax rates twice as high as those in wealthier neighborhoods on the north side.¹⁷ Minority neighborhoods were not only especially likely to be over-taxed, but they were also especially unlikely to appeal, deepening existing inequities. As a result, two community groups have recently filed a class action lawsuit against Cook County Assessor, Joseph Berrios, alleging that he has systematically and illegally shifted "residential property tax burdens from Whites to Hispanics and African-Americans and from the rich to the poor."¹⁸

Property tax inequities are not restricted to the largest cities. The Gullah Geechee population on Sapelo Island claims that McIntosh County and the State of Georgia have subjected them to

¹⁶ Jason Grotto, *Part I: An Unfair Burden*, THE CHICAGO TRIBUNE, (June 10, 2017), <http://apps.chicagotribune.com/news/watchdog/cook-county-property-tax-divide/assessments.html>; Jason Grotto: *Part II: The Problem with Appeals*, THE CHICAGO TRIBUNE, (June 10, 2017), <http://apps.chicagotribune.com/news/watchdog/cook-county-property-tax-divide/appeals.html>; Jason Grotto, *Part III: An Era of Errors*, THE CHICAGO TRIBUNE, (June 10, 2017), <http://apps.chicagotribune.com/news/watchdog/cook-county-property-tax-divide/houlihan.html>; Jason Grotto & Sandhya Kambhampati, *Part IV: Commercial Breakdown*, THE CHICAGO TRIBUNE, (Dec. 7, 2017), <http://apps.chicagotribune.com/news/watchdog/cook-county-property-tax-divide/index.html>. Daniel McMillen & Rachel Weber, *Thin Markets and Property Tax Inequities: A Multinomial Logit Approach*, 61 NATIONAL TAX J. 653 (2008). DANIEL McMILLEN, ASSESSMENT REGRESSIVITY, A TALE OF TWO ILLINOIS COUNTIES, LAND LINES, LINCOLN INSTITUTE OF LAND POLICY (January 2011), available at <http://www.lincolnst.edu/publications/articles/assessment-regressivity>.

¹⁷ *Id.*

¹⁸ Complaint at 1, Brighton Park Neighborhood Council and Logan Square Neighborhood Ass'n v. Joseph Berrios and County of Cook, No. 2017-CH-16453 (Cook Cty. Cir. 2017); Press Release, Chicago Lawyers' Committee for Civil Rights, Community Organizations Sue Cook County Assessor's Office for Discrimination Against Hispanic and African-American Homeowners in Property Tax Assessments (Dec. 14, 2017) (on file with author).

discriminatory property tax assessments and inflated property tax bills. In the ongoing case of *Drayton v. McIntosh County*,¹⁹ many plaintiffs witnessed unprecedented increases in their assessed values, placing several people at risk of losing their homes to property tax foreclosure or being forced to preemptively sell their land.²⁰ The assessed value of Benjamin Hall’s home, for instance, skyrocketed by 3,059 percent in one year, increasing from \$10,500 in 2011 to \$331,650 in 2012.²¹ The court has not yet made a final ruling in *Drayton*.

The lawsuits in Chicago and Sapelo Island show that inequitable assessments are not unique to Detroit. As such, better understanding Detroit’s experience may shed light on a larger phenomenon experienced in many American cities.

II. Detroit’s Housing Market



Figure 2: Average Value of Single Family Homes in Detroit²²

Many people are aware of Detroit’s 2013 headline-grabbing bankruptcy because it was the nation’s largest, restructuring over 18 billion dollars in debt and long-term liabilities.²³ Leading up to this monumental moment, Detroit had been in economic decline for decades because its fate was so closely tied to that of America’s struggling auto industry.²⁴ Its 2007 mortgage

¹⁹ See Complaint & Demand for Jury Trial, *Drayton et al. v. McIntosh County, Ga. et al.*, No. 2:16-CV-00053, 2016 WL 3443919 (S.D. Ga. 2016).

²⁰ *Id.*

²¹ *Id.*

²² See *Detroit Home Prices & Values*, ZILLOW, <http://www.zillow.com/detroit-mi/home-values/> (last visited Dec. 16, 2016).

²³ See James Spiotto, *Detroit’s Bankruptcy Is the Nation’s Largest*, N.Y. Times, (July 18, 2013), http://www.nytimes.com/interactive/2013/07/18/us/detroit-bankruptcy-is-the-largest-in-nation.html?_r=0 (reporting that the city’s bankruptcy is the largest municipal bankruptcy in US history in terms of debt).

²⁴ See THOMAS J. SUGRUE, *THE ORIGINS OF THE URBAN CRISIS* 3 (2005) (“In the 1940s, Detroit was America’s “arsenal of democracy,” one of the nation’s fastest growing boomtowns and home to the highest-paid blue-collar workers in the United States. Today, the city is plagued by joblessness, concentrated poverty, physical decay, and racial isolation. Since 1950, Detroit has lost nearly a million people and hundreds of thousands of jobs. Vast areas of the city, once teeming with life, now stand abandoned. Prairie grass and flocks of pheasants have reclaimed what was, only fifty years ago, the most densely populated section of the city. Factories that once provided tens of thousands of jobs now stand as hollow shells, windows broken, mute testimony to a lost industrial past. Whole rows

foreclosure rate of 5% was the highest in the nation.²⁵ In 2008, the situation worsened when the Great Recession caused housing prices in Detroit to plummet (see Figure 2). According to estimates from Zillow, the average home in Detroit was worth roughly \$80,000 in 2008. By 2010, that number had fallen to roughly \$25,000. The sharp decline in housing prices prolonged the existing mortgage foreclosure crisis, so that one in every 275 housing units faced mortgage foreclosure in Detroit during the first quarter of 2009.²⁶ With rampant foreclosures and housing prices in free fall, many banks stopped originating loans in Detroit’s embattled housing market. Traditionally, banks do not provide mortgages to homes worth less than \$50,000.²⁷ According to Zillow (see Figure 2), the average home value in Detroit has been below \$50,000 every year since 2009. Moreover, according to our analysis of sales data from the City of Detroit’s Open Data Portal,²⁸ 71 percent of home sales since 2009 were for a purchase price less than \$50,000. In 2001, banks issued 6599 mortgages within the City of Detroit, but by 2012 there were only an astonishing 203 originations in the entire city (See Figure 3).²⁹

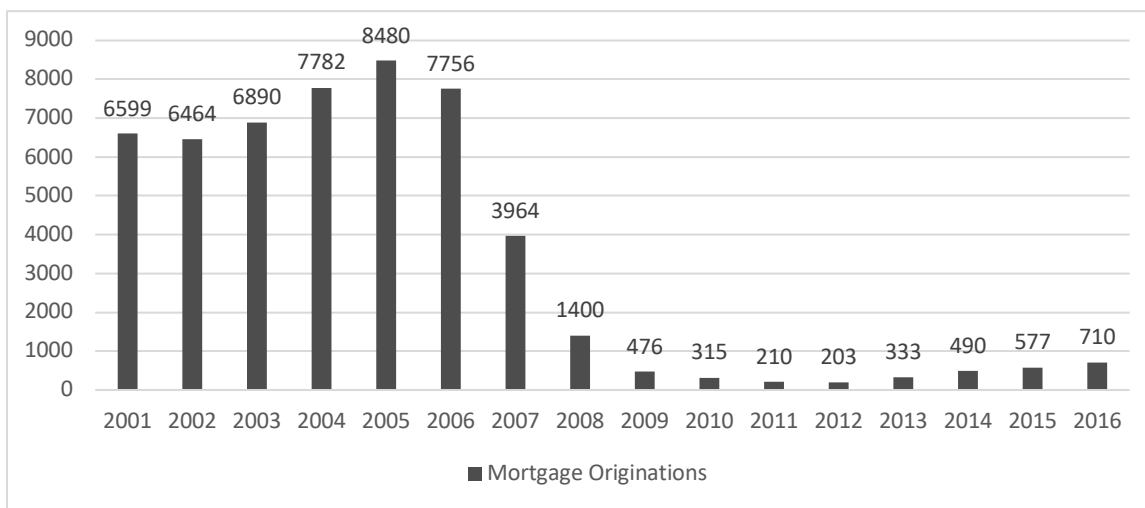


Figure 3: Mortgage Originations in Detroit from 2001-2016³⁰

of small shops and stores are boarded up or burned out. Over ten thousand houses are uninhabited; over sixty thousand lots lie empty, marring almost every city neighborhood. Whole sections of the city are eerily apocalyptic. Over a third of the city’s residents live beneath the poverty line, many concentrated in neighborhoods where a majority of their neighbors are also poor. A visit to the city’s welfare offices, hospitals, and jails provides abundant evidence of the terrible costs of the city’s persistent unemployment and poverty.”)

²⁵ MICHIGAN STATE HOUSING DEVELOPMENT AUTHORITY, *SAVE THE DREAM: MICHIGAN FORECLOSURE DATA*, http://www.michigan.gov/documents/mshda/Data_230191_7.pdf (accessed July 31, 2016) (“Highest foreclosure rate in the nation 2007 (5%)”).

²⁶ *Id.*

²⁷ See Joel Kurth, *Loose Regulations Make Land Contracts a Tool to Exploit Low-Income Homeowners*, CRAIN’S DETROIT BUSINESS, (June 24, 2017), <http://www.craisdetroit.com/article/20170521/NEWS/170529985/loose-regulations-make-land-contracts-a-tool-to-exploit-low-income>.

²⁸ Detroit’s Open Data Portal provides access to public data and information about city governments and service delivery. More information about the Portal can be found at: <https://data.detroitmi.gov/>.

²⁹ See POETHIG ET. AL, *THE DETROIT HOUSING MARKET: CHALLENGES AND INNOVATIONS FOR A PATH FORWARD*, URBAN INSTITUTE RESEARCH REPORT 24 (2017), https://www.urban.org/sites/default/files/publication/88656/detroit_path_forward_0.pdf.

³⁰ Urban Institute calculations from Home Mortgage Disclosure Act data; Joel Kurth & Mike Wilkinson, *Home Mortgages Remain a Detroit Rarity*, CRAIN’S DETROIT BUSINESS, (Mar. 30, 2017), <http://www.craisdetroit.com/article/20170330/NEWS/170339996/home-mortgages-remain-a-detroit-rarity>.

Consequently, most home purchases in Detroit now occur through land contracts, which resemble both a rental contract and a mortgage. With a land contract, the seller finances the sale instead of the bank and buyers pay monthly installments, similar to rent. The buyer receives title to the home only after the contract is paid in full.³¹ Unlike a mortgage, if a buyer misses one payment she can lose all her equity.³² In addition, unlike a traditional rental contract, buyers give the sellers a down payment, buyers assume responsibility for all repairs, and buyers are not safeguarded by the warranty of habitability or any other legal doctrine that protects consumers from low quality housing unfit for habitation.³³ Most detrimentally, land contracts are poorly regulated, leaving Detroiters vulnerable to predatory sellers who target low information, first time homebuyers. Because Michigan law does not require land contract sellers to have homes appraised or disclose debts or liens on the property,³⁴ it is very common for individuals to provide a down payment, complete their installment payments, successfully have the deed transferred to their name, and only then discover that the property has delinquent property taxes.³⁵

For these reasons, tax foreclosure is prevalent among people who acquired their homes through land contract. Tax foreclosure is also common among people who inherited their homes and were unaware that they had a right to protest their inflated taxes. In both instances, the homeowner may not have full disclosure of property taxes owed prior to acquisition.

III. Property Tax Administration in Detroit and Wayne County

Before measuring the impact of unconstitutional property tax assessments on tax foreclosure rates, it is important to understand the entire cycle of events from a property's assessment to its foreclosure. More specifically, this section will explain how Michigan localities are supposed to calculate assessments, describe how and why unconstitutional assessments have become routine in Detroit, identify the steps homeowners must take to correct unconstitutional assessments, and illustrate how the foreclosure process operates for those unable to correct their assessments and pay their illegally inflated property taxes.

A. Assessment process

State authorities calculate property tax bills by multiplying the assessed value of a property (minus any exemptions) by the property tax rate.³⁶ Consequently, if assessed values are too high, then the property tax bills will also be inflated. To ensure fairness, every jurisdiction has specific

³¹ 26 M.L.P. 2d REAL PROPERTY: CONTRACTS FOR SALE OF REAL PROPERTY § 451.

³² Ta-Nehesi Coates, *The Case for Reparations*, THE ATLANTIC, June 2014; BERYL SATTER, FAMILY PROPERTY (Rutgers University Press, 2009).

³³ See generally 49 AM. JUR. 2D LANDLORD AND TENANT § 449 (Feb. 2018 update).

³⁴ See Joel Kurth, *Loose Regulations Make Land Contracts a Tool to Exploit Low-Income Homeowners*, CRAIN'S DETROIT BUSINESS, (June 24, 2017), <http://www.craindetroit.com/article/20170521/NEWS/170529985/loose-regulations-make-land-contracts-a-tool-to-exploit-low-income> (“And in Michigan, there's no law requiring land contract sellers to disclose debts and liens or have homes appraised before sales.”).

³⁵ *Id.*

³⁶ See MICHIGAN LEGISLATURE, MICHIGAN TAXPAYER'S GUIDE 4 (2015) (explaining the state assessment process); See also Naomi E. Feldman, Paul N. Courant & Douglas C. Drake, *The Property Tax in Michigan*, in MICHIGAN AT THE MILLENNIUM 577-602 (Charles L. Ballard et al. eds. 2003) (explaining how the property tax rate is established).

legislation dictating how property tax assessments are calculated.³⁷ Some states go beyond legislation and constitutionally mandate that assessments are uniform, fair, or equal.³⁸ Only a few state constitutions, however, add more specific restrictions on how local officials calculate property tax assessments. For instance, the Illinois constitution mandates that the tax rate of properties in the county's highest class will not be more than 2.5 times the tax rate of properties in the county's lowest class.³⁹ The Washington State Constitution limits annual property taxes on an individual parcel to 1% of the parcel's "true and fair value."⁴⁰ Most importantly, the Michigan Constitution states that:

The legislature shall provide for the uniform general ad valorem taxation of real and tangible personal property not exempt by law except for taxes levied for school operating purposes. The legislature shall provide for the determination of true cash value of such property; the proportion of true cash value at which such property shall be uniformly assessed, which shall not, after January 1, 1966, exceed 50 percent; and for a system of equalization of assessments.⁴¹

Michigan's Supreme Court has declared that true cash value and fair market value are synonymous, and this is now a well settled legal principle.⁴² Also, Michigan's legislature has

³⁷ See e.g., COOK COUNTY, IL., CODE OF ORDINANCES §74-64; COOK COUNTY, IL., ORDINANCE 08-O-51 (Sept. 17, 2008) (setting assessments as a percentage of market value, varying according to class of property); CONN. GEN. STAT. § 12-62(a) (2017) (assessing all property "at a uniform rate of seventy per cent of present true and actual value."); WASH. REV. CODE § 84.40.030 (2017) ("All property must be valued at one hundred percent of its true and fair value in money and assessed on the same basis unless specifically provided otherwise by law.").

³⁸ See e.g., ARK. CONST. art. XVI, § 5 ("All real and tangible personal property subject to taxation shall be taxed according to its value, that value to be ascertained in such manner as the General Assembly shall direct, making the same *equal and uniform* throughout the State."); IND. CONST. art. X, § 1(a) ("[T]he General Assembly shall provide, by law, for a *uniform and equal* rate of property assessment and taxation and shall prescribe regulations to secure a just valuation for taxation of all property, both real and personal."); KAN. CONST. art. XI, § 1(a) ("The provisions of this subsection shall govern the assessment and taxation of property on and after January 1, 2013, and each year thereafter. Except as otherwise hereinafter specifically provided, the legislature shall provide for a *uniform and equal* basis of valuation and rate of taxation of all property subject to taxation."); LA. CONST. art. VII, § 18(A) ("Assessments [:] Property subject to ad valorem taxation shall be listed on the assessment rolls at its assessed valuation, which, except as provided in Paragraphs (C) and (G), shall be a percentage of its fair market value. The percentage of fair market value shall be *uniform* throughout the state upon the same class of property."); MISS. CONST. art. IV, § 112 ("Taxation shall be *uniform and equal* throughout the State. All property not exempt from ad valorem taxation shall be taxed at its assessed value. Property shall be assessed for taxes under general laws, and by uniform rules, and in proportion to its true value according to the classes defined herein."); N.J. CONST. art. VIII, § 1(a) ("Property shall be assessed for taxation under general laws and by *uniform* rules. All real property assessed and taxed locally or by the State for allotment and payment to taxing districts shall be assessed according to the same standard of value, except as otherwise permitted herein, and such real property shall be taxed at the general tax rate of the taxing district in which the property is situated, for the use of such taxing district."); NEV. CONST. art. X, § 1 (The legislature shall provide by law for a *uniform and equal* rate of assessment and taxation, and shall prescribe such regulations as shall secure a just valuation for taxation of all property, real, personal and possessory").

³⁹ See ILL. CONST. art. IX, § 4.

⁴⁰ WASH. CONST. art. VII, § 2.

⁴¹ MICH. CONST. art. IX, § 3.

⁴² C.A.F. Inv. Co. v. Michigan State Tax Comm'n, 221 N.W.2d 588, 592 (Mich. 1974); see also Great Lakes Div. of Nat'l Steel Corp. v. City of Ecorse, 576 N.W.2d 667, 672 (Mich. Ct. App. 1998) ("True cash value is synonymous with fair market value."); Samonek v. Norvall Twp., 527 N.W.2d 24, 26 (Mich. Ct. App. 1995) ("[T]he value determined must represent the usual price for which the property would sell."); Jones & Laughlin Steel Corp. v. City of Warren, 483 N.W.2d 416, 419 (Mich. Ct. App. 1991) ("[E]vidence of the price at which an item of property

defined true cash value as “the usual selling price at the place where the property to which the term is applied is at the time of assessment, being the price that could be obtained for the property at private sale. . . .”⁴³ As a result, if Michigan properties are assessed at more than 50% of their fair market value, there is a direct breach of the state constitution.

While some states instruct their Assessment Divisions to assess properties every other year or every third or sixth year,⁴⁴ jurisdictions in Michigan are legally required to assess all property annually.⁴⁵ Assessments in Michigan involve three distinct calculations: Assessed Value, State Equalized Value, and Taxable Value.⁴⁶ Michigan assessors must estimate the market value of properties on December 31 of the previous year to ensure that Assessed Values (AVs) do not exceed 50 percent of each property’s market value.⁴⁷

The courts recognize three standard approaches for calculating market value: (1) cost-less-depreciation, (2) sales-comparison or market, and (3) capitalization-of-income.⁴⁸ The industry standard for residential housing is the market approach, which evaluates a property’s value by analyzing recent sales of comparable properties sold voluntarily in the market.⁴⁹ This approach takes into account factors such as the property’s size, age, condition, location, existing use, and

actually sold is most certainly relevant evidence of its value at an earlier time within the meaning of the term “relevant evidence.” MRE 401.”).

⁴³ MICH. COMP. LAWS § 211.27(a)(1) (2016).

⁴⁴ See, e.g., ILLINOIS TOWNSHIP ASSESSOR, INTRODUCTORY COURSE, 5 (2013) (stating that Illinois’ Cook County has a three-year reassessment cycle); JILL A. THOMPSON, COUNTY AUDITOR’S ASS’N OF OHIO, EXPLANATION OF DUTIES UNDER THE OH REVISED CODE 14 (2015) (stating Ohio County Auditors conduct full reappraisals for all properties every six years, and conduct updates every three years); COLO. REV. STAT. § 39-1-104(10.2) (2016) (requiring a two year assessment cycle for Colorado properties).

⁴⁵ See MICH. COMP. LAWS § 211.10(1) (2013) (“An assessment of all the property in the state liable to taxation shall be made annually in all townships, villages, and cities by the applicable assessing officer as provided in section 3 of article IX of the state constitution of 1963 and section 27a.”); MANUAL OF THE COMMON COUNCIL: AND OF THE MUNICIPAL GOVERNMENT OF THE CITY OF DETROIT 4 (1886) (stating that the Board of Assessors has a duty to assess the true cash value of all real and personal property each fiscal year).

⁴⁶ MICHIGAN TAXPAYER’S GUIDE, *supra* note 36, at 1.

⁴⁷ MICH. CONST. art. IX, § 3. See also DETROIT, MICH., CODE OF ORDINANCES § 18-9-1 (1964) (“[A]ssessment rolls are prepared as of the thirty-first day of December and will be completed and available for inspection beginning on the first day of February”); MICH. COMP. LAWS § 211.2(c) (2013) (stating that December 31st is Tax Day in Detroit, which is when the taxable status of real and personal property is established).

⁴⁸ See generally *Samonek v. Norvall Twp.*, 527 N.W.2d 24, 26 (Mich. Ct. App. 1995) (recognizing the three standard approaches); *Jones & Laughlin Steel Corp. v. City of Warren*, 483 N.W.2d 416, 419 (Mich. Ct. App. 1991) (acknowledging the three standard methods, but noting that all three approaches are not equally applicable to all properties); *Meadowlanes Ltd. Dividend Hous. Ass’n v. City of Holland*, 473 N.W.2d 636, 642 (Mich. 1991) (recognizing the three most common methods, but acknowledging that others “may be useful if found to be accurate and reasonably related to the fair market value of the subject property.”); *Wolverine Tower Assoc. v. City of Ann Arbor*, 293 N.W.2d 669, 671 (Mich. Ct. App. 1980) (discussing three common methods, but noting that reliability and accuracy are more important than blind adherence to any one method).

⁴⁹ INT’L ASSOC. OF ASSESSING OFFICERS, STANDARD ON MASS APPRAISAL OF REAL PROPERTY § 4.3 at 9 (2013) (The sales comparison approach “is usually the preferred approach for estimating values for residential and other property types with adequate sales.”); See also *Jones & Laughlin Steel Corp.*, 483 N.W.2d at 419 (“The market approach is the only valuation method that directly reflects the balance of supply and demand for property in marketplace trading.”) (citing *Antisdale v. Galesburg*, 362 N.W.2d 632, 277-78, n.1); See also MICH. COMP. LAWS § 211.27(1) (2013) (stating that true cash value means the price that could be obtained for the property at private sale).

zoning.⁵⁰ Generally, the appraisal's accuracy increases as the number of comparable properties recently sold increases.⁵¹

The second calculation is the State Equalized Value (SEV). The Michigan Constitution requires the AV to be uniform at the city, county, and state levels.⁵² To achieve uniformity, each county's board of commissioners can equalize the AV for any class of property by applying an adjustment factor (also called equalization factor), which is designed to ensure that every property owner in the county is paying her fair share.⁵³ The Michigan Assessor's Manual explains the equalization process:

Each property must be given individual treatment, but the treatment must be uniform and standardized, and essentially no different than that given to any other property. All the factors affecting value must be analyzed and evaluated for each and every property within the entire political unit. It is only by doing this that equalization between properties and between classes of properties can be ultimately effected.⁵⁴

The County's mechanism for ensuring uniformity is its annual equalization study, which determines the assessment to market ratio in each of its localities for each class of property.⁵⁵ The goal of equalization is to bring the total valuation of all assessing units *within the county* as close to the 50 percent constitutional limit as possible.⁵⁶ The county will apply an equalization factor to a class of properties only if its study indicates that this is necessary. After the county

⁵⁰ See generally *Great Lakes Div. of Nat'l Steel Corp. v. City of Ecorse*, 576 N.W.2d 667, 679 (Mich. Ct. App. 1998) (discussing the appropriate factors to take into account under the market approach); *Meadowlanes Ltd.*, 473 N.W.2d at 642 (stating that appraisers should take into account factors such as property size, age, condition, and location, when adjusting the sale price of comparable properties); MICH. COMP. LAWS § 211.27(1) (2013) ("In determining the value, the assessor shall also consider the advantages and disadvantages of location; quality of soil; zoning; existing use").

⁵¹ See *Antisdale*, 362 N.W.2d at 638 ("The market approach to value has the capacity to cure this deficiency because evidence of the sales prices of a number of comparable properties, if sufficiently similar, supports the conclusion that factors extrinsic to the properties have not entered into the value placed on the properties by the parties.").

⁵² See MICH. CONST. art. IX, § 3 (stating that true cash value is the proportion at which property shall be uniformly assessed); MICH. COMP. LAWS § 211.34 (2016) (tasking county commission "in the matter of equalization of assessments" in accordance with the Michigan Constitution); DETROIT, MICH. CODE OF ORDINANCES, Ch. IV (citing duties under MICH. CONST. art. IX, § 3).

⁵³ See MICHIGAN TAXPAYER'S GUIDE, *supra* note 36 at 1 (stating the board of commissioners in every county can apply an equalization factor to assessed values to ensure that property owners pay their fair share of taxes).

⁵⁴ See MICH. STATE TAX COMM'N, 3 MICHIGAN ASSESSOR'S MANUAL 7-3 (2003).

⁵⁵ *Id.* at 11-7 ("The equalization director is responsible for making an equalization study of the assessed valuations and true cash value of each class of real estate and of personal property in each assessment district in the county each year for the purpose-of determining the total value of the county and the valuation of each assessing district, township and city, for county and state equalization purposes.").

⁵⁶ See MICH. ADMIN. CODE r. 209.41(6) ("The equalization director of each county shall prepare a report each year which shall recommend the equalized value of each class of real property and of personal property for each township and city in the county and shall present it to the county board of commissioners not later than the second Monday in April of each year."); MICH. COMP. LAWS § 211.27(d) (2004) (requiring the county equalization director to report to the state tax commission by last Monday in June regarding property values in county); See *School Dist. v. Board of Supervisors*, 67 N.W.2d 165, 172 (Mich. 1954) (noting that the purpose of equalization is not only to provide basis for apportionment of property taxes, but also to "carry out provisions relating to uniformity of taxation" contained in the constitution).

level equalization, the State Tax Commission also applies an adjustment factor, if necessary, to equalize the assessments of all counties *within the state*.⁵⁷ This two-step process yields the SEV.

The third calculation is the Taxable Value (TV), which is the number that the assessor multiplies by the authorized millage rate to determine the amount of property taxes homeowners owe annually.⁵⁸ Proposal A—a constitutional amendment approved on March 15, 1994—governs how assessors calculate TV. It states,

For taxes levied in 1995 and each year thereafter, the legislature shall provide that the taxable value of each parcel of property adjusted for additions and losses, shall not increase each year by more than the increase in the immediately preceding year in the general price level, as defined in section 33 of this article, or 5 percent, whichever is less until ownership of the parcel of property is transferred.⁵⁹

Proposal A caps the annual increase in a property's TV, so long as it is owned by the same person.⁶⁰ To calculate the capped value, the assessor starts with the previous year's taxable value and then adjusts this number to reflect physical additions and losses, which increase or decrease the value of the home.⁶¹ The assessor then multiplies this number by either the inflation rate or 5 percent, whichever is less.⁶² The TV is equivalent to this capped value or the SEV, whichever is less.⁶³ Consequently, if a property's market value escalates substantially over the years, then TV will be less than SEV. But, when the owner transfers her property, Proposal A eliminates the cap and SEV=TV.⁶⁴

⁵⁷ See *Ann Arbor Twp. v. State Tax Comm'n*, 227 N.W.2d 784, 787 (1975) (noting that previous courts have "said that the process of equalization is designed to enhance the goal of uniformity. This goal is achieved by both intra- and inter-county equalization, by uniformity within and between the counties.").

⁵⁸ See generally MICHIGAN TAXPAYER'S GUIDE, *supra* note 36, at 3-4 (explaining that property taxes can be determined by multiplying the total local millage rate by the taxable value of property).

⁵⁹ See MICH. CONST. art. IX, § 3; See also MICH. COMP. LAWS § 211.27(a)(2) (2016).

⁶⁰ MICH. CONST. art. IX, § 3.

⁶¹ See MICHIGAN STATE TAX COMM'N, GUIDE TO BASIC ASSESSING 44-45 (2013) ("The term 'additions' includes value added for omitted property, new construction, previously exempt property, replacement construction, and remediation of environmental contamination. The term 'losses' includes value reductions for property destroyed or removed, property which has become exempt from taxation, property which has experienced a decrease in value due to decreased occupancy rates, and property which has experienced a decrease in value due to environmental contamination.").

⁶² *Kok v. Cascade Charter Twp.*, 660 N.W.2d 389, 391 (Mich. Ct. App. 2003) ("[T]he taxable value, in the absence of a transfer of ownership of the parcel of property, is the lesser of the property's taxable value in the immediately preceding year minus any losses, multiplied by the lesser of 1.05 or the inflation rate, plus all additions.") (citing MICH. COMP. LAWS § 211.27a(2)(a) (2003)).

⁶³ MICH. CONST. art. IX, § 3 ("For taxes levied in 1995 and each year thereafter, the legislature shall provide that the taxable value of each parcel of property adjusted for additions and losses, shall not increase each year by more than the increase in the immediately preceding year in the general price level, as defined in section 33 of this article, or 5 percent, whichever is less until ownership of the parcel of property is transferred.").

⁶⁴ See MICH. CONST. art. IX, § 3 ("When a property sells it [taxable value] is uncapped and the state equalized value and the taxable value are the same for the next year. It is then recapped until it sells again."); see also MICH. COMP. LAWS § 211.27(a)(3) ("[T]he property's taxable value for the calendar year following the year of the transfer is the property's state equalized value for the calendar year following the transfer. GUIDE TO BASIC ASSESSING, *supra* note 41, at 46-47 (stating that the following transfers are not considered transfers of ownership: ". . . . 1. Spouse to spouse, 2. Tenancy by entireties, 3. Life lease, 4. Foreclosure/forfeiture, 5. Redemption – forfeited land for non-payment of taxes, 6. Conveyance to trust when beneficiary is same as settlor, 7. Court order, 8. Joint tenancy, 9. Security interest, 10. Affiliated group, 11. Normal public trading, 12. Common control, 13. Tax free reorganization, 14. Relationship by first degree of blood or affinity to the first degree").

Detroit's Assessment Division is charged with determining the assessed, taxable, and capped values for all residential, commercial, personal, and industrial properties in the City.⁶⁵ The goal of Detroit's Assessment Division is to discover, identify, record, and value property.⁶⁶ This requires the division to maintain property and sales records as well as conduct site visits and sales studies.⁶⁷ But, an evaluation of Detroit's Assessment Division by the city's Auditor General found that their operations were in disarray. The Auditor's report states that "[a]ssessing activities and data management activities are inefficient and are not effective, and they lack sufficient internal controls."⁶⁸ The report also found that the Assessment Division "failed to retain sufficient documentation to support revenues and collections of taxes."⁶⁹ Importantly, if assessments are inaccurate, the resulting property tax bills will also be inaccurate.

B. Unconstitutional assessments

Prior research confirms that assessments in Detroit are indeed inaccurate and inequitable. Hodge et al. find high levels of regressivity—lower priced homes have significantly higher assessment ratios—in Detroit.⁷⁰ More importantly, Atuahene and Hodge show that the City of Detroit's assessment practices systematically violate the Michigan Constitution.⁷¹ In the years they study, 2009 to 2015, a majority of properties was assessed above the constitutional limit of 50% in every year, and in some years more than 80 percent of properties were unconstitutionally over-assessed.⁷²

While inaccuracy and regressivity in assessments afflict many jurisdictions,⁷³ Detroit has experienced particular problems in its assessment office. One of the primary reasons that Detroit's assessment office was unconstitutionally assessing properties in a systematic fashion is that it lacked the personnel to annually update the market value of properties in its taxing

⁶⁵ PERFORMANCE AUDIT, *supra* note 66, at 3 ("The Assessments Division handles the assessments of all 387,000 parcels of residential, commercial, personal, and industrial properties in the City of Detroit. They are responsible to discover, identify, record, and annually determine the assessed, taxable, and capped values for the purpose of levying taxes that generate substantial revenue for the City . . .").

⁶⁶ CITY OF DETROIT OFFICE OF THE AUDITOR GEN., PERFORMANCE AUDIT OF THE FIN. DEP'T ASSESSMENTS DIV. JUNE 2018-JUNE 2011 3 (Sept. 10, 2012), <http://bit.ly/2hu2XJK> [hereinafter PERFORMANCE AUDIT].

⁶⁷ *See id.* at 9-15 (outlining the failure of the Assessment Division to adequately assess properties, inaccuracy of record-keeping systems, and other barriers that have prevented them from achieving this objective in Detroit).

⁶⁸ *Id.* at 2.

⁶⁹ *Id.* at 2.

⁷⁰ Timothy R. Hodge et al., *Assessment Inequity in a Declining Housing Market: The Case of Detroit*, 45 REAL ESTATE ECONOMICS 237 (2016).

⁷¹ Bernadette Atuahene & Timothy R. Hodge, *Stategraft*, S. CAL. L. REV. (forthcoming 2018).

⁷² *Id.*

⁷³ *See generally* John W. Birch & Mark A. Sunderman, *Regression Modeling for Vertical and Horizontal Property Tax Inequality*, 23 J. OF HOUS. RESEARCH 89 (2014); John M. Clapp, *A New Test for Equitable Real Estate Assessment*, 3 J. OF REAL ESTATE FINANCE AND ECON. 233 (1990); Robert H. Edelstein, *An Appraisal of Residential Property Tax Regressivity*, 14 J. OF FINANCIAL AND QUANTITATIVE ANALYSIS 753 (1979); Olha Krupa, *Housing Crisis and Vertical Equity of the Property Tax in a Value-based Assessment System*, 42 PUB. FINANCE REV. 555 (2014); DANIEL McMILLEN, LINCOLN INSTITUTE OF LAND POLICY, ASSESSMENT REGRESSIVITY, A TALE OF TWO ILLINOIS COUNTIES (Jan. 2011) available at <http://www.lincolninstitute.org/publications/articles/assessment-regressivity>; Justin M. Ross, *Interjurisdictional Determinants of Property Assessment Regressivity*, 88 LAND ECON. 28 (2012); G. Sirmans, Barry A. Diskin & Swint Friday, *Vertical Inequity in the Taxation of Real Property*, 48 NAT'L TAX J. 71 (1995); G. Sirmans, David A. Macpherson & Dean H. Gatzlaff, *Horizontal and Vertical Inequality in Real Property Taxation*, 16 J. OF REAL ESTATE LIT. 167 (2008).

jurisdiction, as required by law.⁷⁴ An audit of the Assessment Division found that 75% of employees interviewed identified lack of adequate staffing as the most pressing challenge confronting the Division.⁷⁵ Likewise, management noted that staff members are required to work excessive overtime and suffer from fatigue.⁷⁶ In fact, the average number of parcels per appraiser was 6,911, which is nearly double the recommended ratio.⁷⁷ Most importantly, given the shortage of personnel, the Assessment Division could not carry out state mandated site visits, which are designed to update property characteristics and values.⁷⁸ Detroit's Auditor General reports that, "the Division does not comply with state requirements or its internal metric to conduct site visits for 30% of properties annually. Instead, based on our sample, the average number of years since the last recorded site visits is 22.8 years for commercial and industrial properties, and 30.0 years for residential properties."⁷⁹ Without regular site visits, property records can become inaccurate, and therefore so will the assessments derived from them.⁸⁰

In addition to the under-staffing issues, there is another major cause of unconstitutional assessments: the switch from the Assessment Division's legacy mainframe system to the City's new electronic assessing system (known as *Equalizer*), which occurred between 2002 and 2003. In the opinion of a senior assessment official, "the conversion should have happened over several years with officials going into the field and verifying the information. But, in 2002 things began going south in Detroit and we did not have the manpower or funding to do the switch properly."⁸¹ As a result, the conversion was bungled and significant data lost because the legacy system had capacity to hold about 100 building attributes, but *Equalizer* could only hold about 10, which meant that only building values were transferred to the new *Equalizer* system without the underlying property attributes on which the estimated values were based.⁸² In a sample testing of the database, the audit uncovered several significant errors.

⁷⁴ CITY CLERK OF DETROIT, MICH., MUNICIPAL MANUAL OF THE CITY OF DETROIT 4 (1886); *See also* PERFORMANCE AUDIT, *supra* note 66, at 12 ("[D]uring the budget hearings, City Council questioned the Assessments Division's proposed 2010-2011 budget noting that in spite of the Division 'confronting an increasing caseload of work . . . the Finance Department asked for fewer resources in terms of full time equivalent (FTE) and dollars than the Mayor's recommended budget.'").

⁷⁵ *See id.* at 43 ("Twelve of sixteen (75%) of the employees interviewed ranked 'the lack of adequate staffing' as the number one challenge facing the Division.").

⁷⁶ *See id.* ("Management indicated that the staff faces 'burn-out' because of the excessive overtime, and the Division has issues with a proper work-life balance for its employees").

⁷⁷ *See id.* at 50 ("The Michigan's State Assessors Board (MSAB) recommends as a general rule, 'that an effective assessment system requires one full-time employee, including clericals per 1,500 to 3,500 parcels'. . . . In fiscal year 2010-2011, the Assessments Division had a staff of 52 employees (including one contractor) versus the approved budget of 56 positions.").

⁷⁸ *Id.* ("Division Management stated that while their goal is to conduct site reviews of 30% of all properties annually, it is a goal and not based on actual performance. It was stated that they do not have staff to routinely do site visits.").

⁷⁹ *See id.* at 9.

⁸⁰ *See* PERFORMANCE AUDIT, *supra* note 66, at 11 ("The effect of not conducting the required annual site visits results in detailed property records (including data in *Equalizer*), assessments, and the City's tax rolls that are not accurate. Assessments can only be as accurate as the property data on which they are based. Understated assessments results in lost revenues for the City, while overstatements increase revenues at the expense of property owners."); *See also id.* at 36 (" . . .[A]nnual sales studies which are used to determine assessment ratios and ultimately, assessed values would be adversely affected if data relating to sales is missing or not accurate.").

⁸¹ Confidential Interview with Senior Assessment Official, Michigan (June 15, 2017).

⁸² *Id.* *See also* PERFORMANCE AUDIT, *supra* note 66, at 9 ("The Assessments Division maintains assessment information on manual property record cards and electronically in *Equalizer*. Several issues were associated with

Prior to the conversion a property listed three commercial buildings, however, after the conversion the property listed one store, and two apartment buildings; A vacant lot which still included the original building [and] assessed values were not updated appropriately; A property that was improperly listed as tax exempt, and the apartment building only had a base rate of \$5 per square feet; The error rate for accuracy of property information on property record cards (the manual assessing system), as well as information in Equalizer, was greater than 5%, which is not a passing score according to the Michigan State Tax Commission (STC)...The results of site visits by the OAG, revealed that for five of the 22 (22.7%) residential properties audited, the actual condition of the building or property did not match its condition in Equalizer.⁸³

After the Assessment Division adopted the new software system in 2003, the records were riddled with inaccurate and incomplete information as well as errors in property descriptions and valuations.⁸⁴ Consequently, from 2003 until the City concluded a complete residential reassessment in 2017,⁸⁵ the new system was in override.⁸⁶ When in override, officials calculate property values manually rather by the sales-comparison method.⁸⁷ That is, Detroit's assessments were based on incremental, ad hoc adjustments to previously estimated values rather

converting data from the manual property record cards, to IPDS, and subsequently to Equalizer. Information on property record cards did not match information in the system, or the actual physical property. Management acknowledged that they have accuracy issues with property information because of the conversion, economic conditions, and changing property valuations. The result is inaccurate or incomplete information and errors in property descriptions and valuations in the Equalizer.”).

⁸³ See *id.* at 10.

⁸⁴ *Id.* at 17 (“Many exceptions were found during our review of sales and acquisitions of city-owned property handled by the Planning and Development Department (P&DD): A majority (or 37 out of 48) of P&DD sales of city-owned property were not accurately reflected in Equalizer.”).

⁸⁵ Christine Ferretti, *Property Taxes Going Down for Over Half of Detroiters*, THE DETROIT NEWS (Jan. 23, 2017), <http://www.detroitnews.com/story/news/local/detroit-city/2017/01/23/detroit-property-assessments/96946512/> (“The Duggan administration unveiled the proposed 2017 property assessments on the heels of the first parcel-by-parcel reappraisal of the city’s nearly 255,000 residential properties in 60 years”). See also Bernadette Atuahene, *Detroit’s Homeowners Deserve Better*, THE DETROIT NEWS (Jan. 31, 2017), <http://www.detroitnews.com/story/opinion/2017/01/31/property-assessments/97304442/> (discussing the need for the Mayor to come up with a plan to repair the widespread damage that unconstitutional assessments caused prior to the city’s reassessment initiative).

⁸⁶ “In the City’s electronic assessing system known as ‘Equalizer’, a property is in an ‘override status’ when its assessed value is input as a total amount, versus the system method of calculating a value based on physical property attributes and other assessment criteria. The property’s assessed value is ‘disconnected’ in the system. Assessed values in Equalizer are historical aggregate amounts, which were transferred from the previous assessing system known as ‘IPDS’ (Integrated Physical Data Systems): Of the 42 properties audited, 28 (66.7%) remain in override status; A representative in the Assessments Division estimated that 92% of the City’s parcels 387,000 remain in override status in Equalizer.” PERFORMANCE AUDIT, *supra* note 66, at 9.

⁸⁷ GUIDE TO BASIC ASSESSING, *supra* note 61, at 23 (“The principle of substitution states that a property’s value tends to be set by the cost of acquiring an equally desirable substitute. This principle applies to all three approaches to value: in the sales comparison approach, the value of the subject property is determined by the cost of purchasing a substitute property; in the cost approach, value is determined by the cost of constructing a similar substitute property; and in the income approach, value is determined by the cost of acquiring a substitute property that will provide a similar income stream. In each case, the substitute properties must be equally useful and desirable, and there must be no costly delays with either the purchase or construction.”).

than on the recent sale prices of comparable properties, as legally mandated.⁸⁸ When property values plummeted in 2008 (see Figure 2), this makeshift system became sorely unworkable.

Not only did the City of Detroit break the law by not basing assessments on comparable sales, but so did Wayne County.⁸⁹ The Michigan General Property Tax Act is clear: The Wayne County Board of Commissioners is responsible for examining the assessment roles and verifying that they are “equally and uniformly assessed at true cash value.”⁹⁰ That is, the County was supposed to hold the city accountable, but it failed. Furthermore—after the conversion to the new assessment system was botched and assessments were no longer based on comparable sales—the Wayne County Board of Supervisors could have used their authority under Section 211.23(a) of the General Property Tax Act to “employ an independent appraisal firm to make a county-wide appraisal for the purpose of assisting local assessing officers in arriving at a true cash value for assessment purposes and of assisting the board of supervisors in reviewing and equalizing assessments.”⁹¹ The county could have also used its authority under Section 211.34(3) of the General Property Tax Act to “furnish assistance to local assessing officers in the performance of duties imposed upon those officers by this act, including the development and maintenance of accurate property descriptions, the discovery, listing, and valuation of properties for tax purposes, and the development and use of uniform valuation standards and techniques for the assessment of property.”⁹² But, instead of using their statutory authority to assist the City of Detroit, Wayne County failed to intervene. As a result, the majority of homeowners in Detroit continued to be unconstitutionally assessed.

In January 2017, things began to change. The City finished a multi-year, citywide reappraisal of residential property, the first in 60 years.⁹³ This massive reappraisal—based on aerial and street-level imagery as well as thousands of site visits—will provide the city with the data necessary to once again use the comparable sales method for assessing property.⁹⁴ When, however, Mayor Duggan was asked what his administration planned to do to compensate Detroit residents for assessments that were, for years, in violation of the Michigan Constitution, he said that while it is unfortunate that this occurred, all Detroit residents had an opportunity to appeal their assessments and rectify the situation, so the city is not liable for any damages resulting for the

⁸⁸ MICH. CONST. art. IX, § 3; MICH. COMP. LAWS § 211.27 (2013).

⁸⁹ Bernadette Atuahene, *Fair Housing Act* (forthcoming 2018).

⁹⁰ MICH. COMP. LAWS § 211.34(2) (1986) (“If, on the examination, the county board of commissioners considers the assessments to be relatively unequal, it shall equalize the assessments by adding to or deducting from the valuation of the taxable property in a township or city an amount which in the judgment of the county board of commissioners will produce a sum which represents the true cash value of that property, and the amount added to or deducted from the valuations in a township or city shall be entered upon the records.”).

⁹¹ *Id.* § 211.23(a) (1956).

⁹² *Id.* § 211.34(3) (1986).

⁹³ Christine Ferretti, *Property Taxes Going Down for Over Half of Detroiters*, THE DETROIT NEWS, (Jan. 23, 2017), <http://www.detroitnews.com/story/news/local/detroit-city/2017/01/23/detroit-property-assessments/96946512/> (“The Duggan administration unveiled the proposed 2017 property assessments on the heels of the first parcel-by-parcel reappraisal of the city’s nearly 255,000 residential properties in 60 years”); Reuters Staff, *Detroit Tax Foreclosures Plummet Over Two Years*, REUTERS, (Sept. 19, 2017), <https://www.reuters.com/article/detroit-foreclosures/detroit-tax-foreclosures-plummet-over-two-years-idUSL2N1M0290>.

⁹⁴ *Id.*

unconstitutional assessments.⁹⁵ As a result, it is important to understand the process for appealing property tax assessments.

C. Appeal process

Relying on Detroit residents to appeal their assessments in lieu of the city basing assessments on market values is problematic for two reasons. First, appeal processes are intended to remedy errors in individual cases, not systemic and normalized errors.⁹⁶ Adjudicators are limited to the facts before them and they cannot correct errors for individuals who have not brought legal action. The exception to this rule is class action litigation, where the beneficiaries of the litigation extend beyond the named plaintiffs. But, Detroit's process for appealing assessments applies only to individuals and there is no class action facility. As such, the appeal process did not afford Detroit taxpayers the opportunity to legally protest the fact that assessments were *systemically* unconstitutional.

Second, while the data discussed here indicate people who owned lower-valued homes were most acutely impacted by unconstitutional assessments, prior research shows that poor people are less likely to appeal their property tax assessments; and when they do, they have lower success rates than wealthier people.⁹⁷ That is, the Detroit homeowners who most needed to appeal their assessments were the least likely to do it. Mayor Duggan's assertion that homeowner's are at fault for not contesting their unconstitutional assessments is tantamount to charging all homeless people who enter the City of Detroit with the crime of trespass and then requiring them to appeal this unconstitutional action if they want the charge dropped, knowing that most of them will not. Does the blame belong to the homeless woman for not knowing her rights and failing to appeal this unconstitutional action; or to the City for knowingly breaking the law by charging her with trespass in the first place? To understand why the city is to blame, a full understanding of the cumbersome appeal process is necessary.

All cities in Michigan must mail assessment notices to property owners.⁹⁸ The assessment notice is not a bill. Instead, it contains information such as the property address, legal description, property classification, and informs taxpayers what their AV, SEV, and TV are for the current

⁹⁵ Mike Duggan, Detroit Mayor, Mayoral Press Conference at City Hall, Question and Answer (Jan. 23, 2017); *See also* Atuahene, *supra* note 85; Jason Grotto, *The Problem with Appeals*, THE CHICAGO TRIBUNE, (June 10, 2017), <http://apps.chicagotribune.com/news/watchdog/cook-county-property-tax-divide/appeals.html>.

⁹⁶ Steven Shavell, *The Appeals Process as a Means of Error Correction*, 24 J. LEGAL STUD. 379, n. 59 (1995); Chad Oldfather, *Error Corrections*, 85 IND. L. J. 49, 52 (2010).

⁹⁷ William M. Doerner & Keith R. Ihlanfeldt, *The Role of Representative Agents in the Property Tax Appeals Process*, 68 NAT'L. TAX. J. 59, 60 (2015) (discussing the compensation model for tax appeal representatives, and the incentives for them to "target affluent neighborhoods in making their solicitations."); William M. Doerner & Keith R. Ihlanfeldt, *An Empirical Analysis of the Property Tax Appeals Process*, 11 J. PROP. TAX ASSESSMENT & ADMIN. 5 (2014) (discussing the fact that richer property holders have disproportionately more success with appeals than do poorer and minority populations); ROBERT ROSS, THE IMPACT OF PROPERTY TAX APPEALS ON VERTICAL EQUITY IN COOK COUNTY, IL (University of Chicago, Center for Municipal Finance, May 2017), *available at* http://harris.uchicago.edu/files/ross-vertical_equity_in_cook_county_0.pdf; Rachel N. Weber & Daniel P. McMillen, *Ask and Ye Shall Receive? Predicting the Successful Appeal of Property Tax Assessments*, 38 PUB. FIN. REV. 74 (2010).

⁹⁸ *See* MICH. COMP. LAWS § 211.24(c)(4) (2016) ("The assessment notice shall be addressed to the owner according to the records of the assessor and mailed not less than 14 days before the meeting of the board of review. The failure to send or receive an assessment notice does not invalidate an assessment roll or an assessment on that property.").

and prior year. It also flags any changes in the actual tax bill. If a Detroit homeowner disagrees with any information contained in the assessment notice, they must *first* file an appeal by mail or in person with the Board of Assessors between February 1 and February 15.⁹⁹ Notwithstanding, in past years, the City of Detroit has lengthened the assessor's review period from January 25 to February 18.¹⁰⁰ Review by the Board of Assessors is not required by state law, but rather it is an extra step in Detroit's appeal process mandated by city ordinance.¹⁰¹ The Board of Assessors must complete their review and issue all decisions by the second Monday in March.¹⁰²

If the homeowner is not satisfied with the decision from the Board of Assessors, then the *second* step is to appeal to the March Board of Review.¹⁰³ By state law, each taxing jurisdiction must mail assessment notices no later than 14 days prior to the Board of Review meeting,¹⁰⁴ but since Detroit has an additional step in its appeal process, then the City must mail notices much earlier, giving taxpayers sufficient time to protest their assessments before the Board of Assessors review period closes.

The Board of Review consists of nine Detroit residents appointed by the City Council and their job is to review the assessment rolls and correct any discovered mistakes to ensure the rolls are accurate and equitable.¹⁰⁵ To protest an assessment that is ostensibly inaccurate, homeowners can bring documentation such as their own sales comparisons, cost of repair records, and images showing structural damage adversely affecting the property's value. The

⁹⁹ DETROIT, MICH., CODE OF ORDINANCES § 18-9-3 (“The period for the review by the board of assessors shall be February first (1st) to February fifteenth (15th), inclusive, each year.”).

¹⁰⁰ Joe Guillen, *Detroit Extends Time to Appeal Property Valuation*, DETROIT FREE PRESS, (Jan. 31, 2017), <http://www.freep.com/story/news/local/michigan/detroit/2017/02/13/detroit-extends-time-appeal-property-valuation/97850946/> (Due to late property assessment determinations, the city extended the assessment review period to allow for same two-week opportunity to challenge property valuation); Property classified as commercial, industrial, or utility can appeal directly to the Michigan Tax Tribunal. MICH. COMP. LAWS § 205.735(a)(4)(a) (2008).

¹⁰¹ DETROIT, MICH., CODE OF ORDINANCES § 18-9-3.

¹⁰² See DETROIT, MICH., CODE OF ORDINANCES § 18-9-3 (stating revision and correction of the rolls by the board of assessors shall begin February sixteenth (16th) and shall conclude on the first Monday).

¹⁰³ See DETROIT, MICH., CODE OF ORDINANCES § 18-9-7 (“The board of review shall hear and determine all appeals in a summary manner and correct any errors which they may discover in the assessment rolls, shall place thereon the names of any persons and the descriptions of any property not already assessed and assess the same and may increase or diminish any assessment as they see fit; provided, that the board of review shall not increase any assessment without giving a reasonable opportunity to persons owning or having charge of the same, if known, to appear and object thereto. Hearings on appeals shall be held at such time, date and place as the board of review shall specify as soon as practicable after the appeal has been filed. Board of review may adopt, change or amend the same assessment rolls in whole or in part.”); MICH. COMP. LAWS §§ 211.28-.30 (2016) (“Board of Review [is responsible for reviewing] the assessment roll to ensure the assessments are equitable and the capped and taxable valuations are properly calculated.”).

¹⁰⁴ See MICH. COMP. LAWS § 211.24(c)(4) (2016) (“The assessment notice shall be addressed to the owner according to the records of the assessor and mailed not less than 14 days before the meeting of the board of review.”).

¹⁰⁵ See DETROIT, MICH., CODE OF ORDINANCES § 18-9-5 (“The board of review shall be comprised of nine (9) residents of the city, who shall be appointed by a majority of the city council members serving. The board members shall not be members of any city agency, department, commission or other board of city government.”); MICH. COMP. LAWS § 211.28(1) (2016) (“Those electors of the township appointed by the township board shall constitute a board of review for the township. At least 2/3 of the members shall be property taxpayers of the township. Members appointed to the board of review shall serve for terms of 2 years beginning at noon on January 1 of each odd-numbered year . . .”).

March Board of Review issues all decisions by the first Monday in April and submits its assessment rolls to the county by the first Wednesday in April. There is, however, also a July and December Board of Review, which gives taxpayers who miss the March deadline up to three years to file for various exemptions and correct errors of mutual fact (i.e. a garage was torn down, but this was not reflected in the assessed value of the home).¹⁰⁶ But, if taxpayers want to challenge the assessor's declared marked value of their home, they must do this during the March Board of Review.

The long time Board of Review president, Willie Donwell, stated that he knew the Michigan Constitution requires all assessed values not to exceed 50 percent of the property's market value.¹⁰⁷ More importantly, he was also well aware that annual assessments in Detroit were not based on market value because the Assessment Division failed to update property values by conducting annual site visits, as mandated by the law. But, Mr. Donwell said that, although their charge was to ensure assessments were accurate, he and the other members of the Board of Review did not have the authority or resources to correct the systemic problems in the Assessment Division because the Board's mandate is narrow—review the appeals brought before it.¹⁰⁸ So, Mr. Donwell stated that he tried to compensate for the assessor's failure to use market values by actively reaching out to communities and encouraging them to file appeals.¹⁰⁹

If homeowners fail to protest their assessments at the March Board of Review, then they will not be able move to the *third* step—an appeal to the Michigan Tax Tribunal—which homeowners must file by July 30 of the tax year under protest.¹¹⁰ The Tribunal is an administrative court that hears appeals for all Michigan taxes, but the case load consists primarily of property tax appeals.¹¹¹ It is composed of seven people who are appointed by the

¹⁰⁶ See MICHIGAN STATE TAX COMM'N, BOARDS OF REVIEW 5 (2016), https://www.michigan.gov/documents/treasury/BOR_QA_423899_7.pdf (indicating Board of Review Schedules for 2017- July Board of Review: Tuesday following the third Monday in July; December Board of Review: Tuesday following the second Monday in December). MICH. COMP. LAWS § 211.53(a) (1958) (discussing procedure regarding payments made due to mutual mistakes made by the assessor and taxpayer. “Any taxpayer who is assessed and pays taxes in excess of the correct and lawful amount due because of a clerical error or mutual mistake of fact made by the assessing officer and the taxpayer may recover the excess so paid, without interest, if suit is commenced within 3 years from the date of payment, notwithstanding that the payment was not made under protest.”); See e.g., *id.* § 211.7 (Taxpayers can file for Principle Residence Exemption (PRE), Veterans Exemption, or Principal Residence of Persons in Poverty Exemption and the Housing Exemption for Elderly or Disabled Families, for current year plus the three preceding years).

¹⁰⁷ Interview with Willie C. Donwell, Administrator/Chairman- City of Detroit Board of Review, in Detroit, Mich. (Feb. 3, 2017).

¹⁰⁸ See 3 MICHIGAN ASSESSOR'S MANUAL, *supra* note 54, at 5-3 (“The Board of Review cannot make across-the-board changes or adjustments to a class of properties. The Michigan Courts have held such practices are not authorized.”).

¹⁰⁹ Interview with Willie C. Donwell, Administrator/Chairman- City of Detroit Board of Review, in Detroit, Mich. (Feb. 3, 2017).

¹¹⁰ See MICHIGAN TAX TRIBUNAL, PROPERTY ASSESSMENT APPEAL INFORMATION, <http://www.detroitmi.gov/How-Do-I/Appeal/Property-Assessment-Appeal-Information> (last visited Feb. 21, 2017) (“To appeal a decision of the Board of Review, [an aggrieved property owner] must write to the Michigan Tax Tribunal by July 30th each year.”).

¹¹¹ There are two divisions: the entire tribunal and small claims. *Tax Tribunal Improves Efficiency and Transparency through New E-Filing, Case Management and Docket Search Systems*, LARA TAX TRIBUNAL, <http://www.michigan.gov/taxtrib/0,4677,7-187--321948--,00.html> (last visited Feb. 21, 2017) (“With the exception of principal residence and qualified agricultural exemption appeals, any case may be filed in the Entire

Governor and confirmed by the State Senate.¹¹² If the homeowner is still not satisfied after the Michigan Tax Tribunal, then she can take the *fourth* step: filing a case in the Michigan Court of Appeals and then the State Supreme Court, which have jurisdiction to review appeals from the Michigan Tax Tribunal, but only if it has committed “fraud, error of law, or adoption of wrong principles.”¹¹³

Unlike residential properties, commercial properties can skip the Assessor’s Review and the March Board of Review and go straight to the Michigan Tax Tribunal, making the appeal process far less ponderous. Conversely, for homeowners the appeal process can be opaque and onerous, especially for poor and working class families who have limited time, low information, and insufficient monetary resources to hire an advocate. Only a small fraction of homeowners appeal their property taxes and hence the majority of people have paid inflated property tax bills based upon unconstitutional assessments. Those who could not pay were subject to tax foreclosure. As such, it is important to understand how the tax foreclosure process works.

D. Foreclosure process

The Delinquent Property Tax Foreclosure Public Act (1999) changed how Michigan handles real property tax delinquency and forfeiture. When Detroit property owners fail to pay their property taxes in any given year, the Wayne County treasurer reimburses the City for the unpaid taxes and acquires the right to foreclose.¹¹⁴ Under the revised process, delinquent properties are forfeited to the Wayne County treasurer in their second year of delinquency and the foreclosure process begins if the property taxes remain unpaid as of March 31 in their third year of delinquency.¹¹⁵ The County is responsible for inspecting the property and delivering due process notifications. Once a foreclosure judgment is entered, the property owner still has 21 days to redeem the property by paying all unpaid taxes, interest, penalties, and fees; an additional 0.5% non-compound interest per month; and all fees for recording, notice, and service of process.¹¹⁶

Tribunal. Only certain cases—property disputes involving residential property, poverty and disputes involving other classifications with amounts in contention under \$100,000 may be filed in the Small Claims Division”).

¹¹² See MICHIGAN TAXPAYER’S GUIDE, *supra* note 36, at 3 (stating that the tax tribunal is made up of seven members); See generally Jack L. Van Coevering, *The Model State Tax Tribunal Act: Measuring Fairness and Efficiency in Michigan’s State Tax Appeal System*, 36 MICH. TAX LAWYER 16 (2010) (discussing the politics involved with appointment of Michigan Tax Tribunal members).

¹¹³ See MICH. CONST. art. IV, § 28 (“In the absence of fraud, error of law or the adoption of wrong principles, no appeal may be taken to any court from any final agency provided for the administration of property tax laws from any decision relating to valuation or allocation.”).

¹¹⁴ Catherine Coenen, et al., *From Revenue to Reuse: Managing Tax-Reverted Properties in Detroit* 12, URBAN AND REGIONAL PLANNING PROGRAM, UNIVERSITY OF MICHIGAN: TAUBMAN COLLEGE OF ARCHITECTURE AND URBAN PLANNING (2011), https://taubmancollege.umich.edu/pdfs/student_work/planning/revenue_to_reuse.pdf (“Each year in March, the local taxing jurisdiction returns tax-delinquent properties from the previous year to the county treasurer’s office. This prompts the treasurer’s office to attempt the collection of delinquent taxes. The treasurer advances money to the local governments by floating bonds through the delinquent tax revolving fund, in expectation of delinquent tax collection.”).

¹¹⁵ MICH. COMP. LAWS § 211.78(g) (2015). Also, Wayne County can choose to accelerate the foreclosure process for abandoned properties. MICH. COMP. LAWS § 211.963 (1999) (“Therefore, the local unit of government hereby notifies residents and owners of property within the local unit of government that abandoned tax delinquent property will be identified and inspected and may be certified as certified abandoned property under the certification of abandoned property for accelerated forfeiture act and subject to accelerated forfeiture and foreclosure under the general property tax act.”).

¹¹⁶ MICH. COMP. LAWS § 211.78(g)(5) (2015).

If at the end of the three year period the property taxes remain unpaid and the redemption period has passed, the Wayne County treasurer can dispose of the property through one of three mechanisms: the right of first refusal, the first auction, or the second auction.¹¹⁷ In the right of first refusal, the state, county, or city government can purchase the delinquent property by paying all unpaid taxes, interest, and fees owed to other governmental entities.¹¹⁸ The remaining properties go to the first auction, where the minimum bid is all unpaid taxes, interest, and fees.¹¹⁹ Properties that do not sell at the first auction go to the second one, where the opening bid is \$500.¹²⁰ Any properties that do not sell at the second auction are owned by the Wayne County Treasurer, unless the City of Detroit accepts them.¹²¹

In conjunction with the right to foreclose, Michigan counties also have the right to collect all fines, fees, and interest associated with the delinquency. From the time property taxes become payable, the County levies 0.5% interest on the amount due on the first day of each month.¹²² If taxes remain unpaid as of September 1, the interest rate increases to 1.5 percent on the first day of every month.¹²³ On March 1 of the following year, the interest increases to 18 percent and is applied retroactively to the date when the property became delinquent.¹²⁴ In addition to interest payments, as the property moves towards foreclosure, the taxpayer will also owe a significant sum in fees, including an administration fee (4%),¹²⁵ an annual fee for providing notice of delinquency (\$1-5),¹²⁶ per parcel fee (\$15),¹²⁷ title search fee (\$175),¹²⁸ forfeiture certificate

¹¹⁷ Margaret Dewar, Eric Seymour & Oana Druță, *Disinvesting in the City: The Role of Tax Foreclosure in Detroit*, 51 URB. AFF. REV. 587, 591 (2015) (“Prior to a first auction, the state, the city, and the county governments could purchase property for specified purposes for a minimum bid equal to the sum of unpaid taxes, interest, and fees, minus the taxes owed to that jurisdiction. This opportunity was termed the “right of refusal.” The Treasurer then offered all remaining property at a first auction for the minimum bid of unpaid taxes, interest, and fees. If property did not sell at this auction, the Treasurer offered it at a second auction with an opening bid of US \$500, an amount meant to cover the county’s costs of handling the property.”).

¹¹⁸ MICH. COMP. LAWS § 211.78m(1) (2015).

¹¹⁹ MICH. COMP. LAWS § 211.78m(2) (2015).

¹²⁰ MICH. COMP. LAWS § 211.78m(5) (2015) (allowing county to establish a reasonable opening bid to recover cost of sale). *See* Dewar et al., *supra* note 117, at 591 (noting that Wayne County has set \$500 as cost recovery amount).

¹²¹ MICH. COMP. LAWS § 211.78m(6) (2015).

¹²² DETROIT, MICH., CODE OF ORDINANCES § 18-9-89 (“All delinquent property taxes or special assessments shall have added thereto interest computed at the rate of one-half of one per cent per month, to be added the first day of each month from the time that such tax or special assessment became due and payable.”).

¹²³ DETROIT, MICH., CODE OF ORDINANCES § 18-9-90 (“No addition for interest when taxes paid before thirty-first day of August. No addition for interest shall be made to general city taxes paid on or before the thirty-first day of August. Interest in the amount of one and one-half (1½) per cent of every unpaid tax shall be added thereto on September first, and an additional one-half of one per cent of such tax shall be added on the first day of each succeeding month, until such tax is paid in full.”).

¹²⁴ MICH. COMP. LAWS § 211.78g(3)(b) (2015).

¹²⁵ *See* Coenen et al., *supra* note 114, at 15 (stating delinquent tax bills are subject an administration fee of 4%).

¹²⁶ *See* MICH. COMP. LAWS § 211.78(a)(4) (2015) (“Annual Fee to receive Notice Property Returned Delinquent: Notice to Persons with an Unrecorded Property Interest--\$5.00; Notice to Holders of Undischarged Mortgages--\$1.00”).

¹²⁷ *Id.* § 211.78(d) (“County Treasurer shall add a \$15.00 fee on each parcel of property for which the delinquent taxes, interest, penalties, and fees remain unpaid [as of October 1].”).

¹²⁸ *Id.* § 211.78(g)(1) (2015) (indicating Title Search Fee is \$175.00).

filing fee (\$9),¹²⁹ redemption certificate recording fee (\$9),¹³⁰ mailing and publication fee (\$40),¹³¹ and posting fee (\$100).¹³² The City treasurer has the power to abate these penalties for taxpayers who have a hardship or just cause for nonpayment.¹³³

Although a home may sell for as low as \$500 if it gets to the second auction,¹³⁴ Wayne County is grossing significantly more than this through fees and interest. In fiscal year 2015-2016, the county anticipated revenue of \$8,175,328 from charges, fees, and fines from the property tax forfeiture program.¹³⁵ A few examples of properties subject to foreclosure in 2017 well illustrate this point.¹³⁶ There is a property in the Brightmoor neighborhood on Fielding Street with an SEV of \$12,100. This means that the assessor has estimated the home is worth \$24,200 (although the home last sold in 2012 for \$6200). The owner owes \$8187 in taxes, \$2659.93 or 32% of which is fees. There is another home on Bentler Street, which the assessor values at \$25,800. The owner owes \$3723.49 in delinquent taxes, and 27% of the amount owed is fees. The assessor valued a home on Westbook street at \$21,600. The property is subject to tax foreclosure because the owner owes \$3339.09 in back taxes, 35% of which is fees.

In sum, this section outlines Wayne County's property tax cycle, documenting the process from a property's assessment to its foreclosure. The next section explains the methodology that we use to determine if unconstitutional property tax assessments in Detroit impact tax foreclosure rates.

IV. Methodology

The central question of this paper is whether unconstitutional property tax assessments contribute to tax foreclosures. In order to answer this question, we must compare a property's assessed value with its market value. For properties that have recently sold in an open market, the sale price reveals the market value. The ratio of a property's assessed value to its sale price is known as a *sales ratio* or *assessment ratio*. We begin by computing the assessment ratio for each home that sold and then relating that ratio to the probability of a future tax foreclosure.

We obtained data on assessed values, property sales, and tax foreclosures from various sources. Data Driven Detroit provided parcel-level information on assessed values for all Detroit

¹²⁹ *Id.* § 211.78(g)(2) (2015) (indicating Forfeiture Certificate Fee Receivable is \$9.00).

¹³⁰ *Id.* § 211.78(g)(5) (2015) (indicating that Redemption Certificate Fee is \$9.00).

¹³¹ Coenen, et al., *supra* note 114, at 12 ("Property owners have the right to redeem their properties by paying the taxes, interest, and fees. The taxes collected go into an earmarked proceeds fund that the treasurer creates each year for the collection of delinquent taxes. All fees and interest accruing on the property go into this delinquent tax revolving fund.")

¹³² *Id.* at 13 (charging the delinquent taxpayer for the listing, should they attempt to redeem the property prior to auction).

¹³³ See DETROIT, MICH., CODE OF ORDINANCES § 18-9-100 ("Abatement of Penalty. The treasurer of the city shall have the authority to abate the penalty on delinquent real and personal property taxes or a part thereof in cases of hardship or for just cause.")

¹³⁴ Coenen, et al., *supra* note 114, at 13 ("In 2010, more than 8,000 tax-foreclosed properties in Detroit failed to sell at a public auction even for the opening bid of \$500.")

¹³⁵ FISCAL YEAR 2015-2016, WAYNE COUNTY GOVERNMENT BUDGET: TREASURER 22-5 http://www.waynecounty.com/documents/mb/2015-2016_treasurer.pdf#toolbar=1&view=FitH (last visited July 17, 2017).

¹³⁶ Loveland technologies assembles and posts on its webpage public information about all Detroit properties subject to tax foreclosure and delinquency. *Detroit*, LOVELAND, <https://detroit.makeloveland.com/2017/mi/wayne/detroit> (last visited Feb. 20, 2017).

properties from 2009 to 2014.¹³⁷ We used the City of Detroit’s Open Data Portal to secure data on all property sales in Detroit from 2008 through 2014, as well as assessed values for 2015.¹³⁸ Tax foreclosure records for 2011 to 2013 are from Data Driven Detroit.¹³⁹ Tax foreclosure records for 2013 to 2015 are from the Wayne County Treasurer. For 2016 tax foreclosures, we used data from Loveland Technology.

We study residential properties that sold between 2009 and 2013. Because our study was completed in 2017 and the foreclosure process begins in the third year after property taxes go unpaid, 2013 is the latest year of sale for which we could possibly observe a tax foreclosure in our data. Michigan law requires assessors to include only arm’s length transactions—which is when there is a willing buyer and a willing seller, and thus the sale price reflects the demand and supply for property in the market—in their assessment ratio studies.¹⁴⁰ In compliance with Michigan law, we study only the transactions during this period that the assessor classified as “arm’s length.” We also restrict our analysis to residential properties with built structures (that is, we exclude vacant lots). Because we are interested in the experience of ordinary homebuyers, we exclude properties purchased by investors. We define an *investor* as a buyer who purchased more than one residential property between 2009 and 2013.¹⁴¹ With the above case selection criteria, we are left with a total of 4,195 observations in our analysis. Based on parcel identification numbers, we match each property sold during this period with its assessed value in the following year. We then search the tax foreclosure database, by parcel number, to identify all the properties that experienced a tax foreclosure subsequent to sale.

Our basic estimation strategy is to regress a dummy variable indicating whether a property experienced a tax foreclosure subsequent to sale against the assessment ratio applied the year after the sale took place.¹⁴² If assessment inaccuracies occur at random, then our estimates will correctly describe the causal relationship between assessment ratios and tax foreclosures. However, if assessment inaccuracies are systematically correlated with other factors that might

¹³⁷ Data Driven Detroit (D3) is a Low-Profit Limited Liability Company (L3C) focused on providing access to information about and analyses for Detroit and the surrounding region. More information about D3 can be found at: <http://datadrivendetroit.org/>.

¹³⁸ Detroit’s Open Data Portal provides access to public data and information about city governments and service delivery. More information about the Portal can be found at: <https://data.detroitmi.gov/>.

¹³⁹ *Archival Tax Foreclosures in Detroit, 2002 – 2013*, Data Driven Detroit (last visited June 13, 2016), The city’s published file on their open data portal has 384,675 records: <https://data.detroitmi.gov/> (search “Foreclosures” in “Property and Parcels”).

¹⁴⁰ MICH. COMP. LAWS § 211.27(1) (2013). There is, however, an exception for instances where auctions are the “common method of acquisition” for properties in the area. Although our data show that auctions have become a common method of acquisition, our estimates rely only on arm’s length transactions so that they are as conservative as possible.

¹⁴¹ There are a total of 5,166 arm’s length transactions between 2009 and 2013 according to the assessor’s classification. We find that 971 of these purchases were made by investors (buyers who purchased more than one property) leaving a total of 4,195 non-investor purchases for analysis. Our results do not change substantively if we use a higher threshold—from two to ten purchases—for defining investors.

¹⁴² If assessments were accurate, every home would have a ratio of .5. It’s also true that the average would be .5. But if every home had the same sales ratio, the sales ratio could not possibly predict tax foreclosures since a constant cannot predict a variable. In this scenario, the assessment ratio would be a constant and would drop out of the regression model.

also influence the probability of foreclosure, we must control for such confounders. We are particularly concerned with three potential confounding factors: price, location, and time. Below we describe how we account for each of these confounders. In addition, because there are likely to be omitted confounders even after accounting for price, location, and time, we subsequently present a sensitivity analysis to assess how much confounding would be required to invalidate our inferences in the main analyses.

Most notably, prior research has shown that assessments in Detroit are regressive, with lower-priced homes being assessed at higher rates, relative to their sale price, than higher priced homes.¹⁴³ If low-priced homes are more likely to experience a tax foreclosure for reasons unrelated to assessments—perhaps the income of the owners is less stable or owners are more likely to abandon the property when economic conditions change—then the relationship between assessment ratios and foreclosures would be confounded by price. To guard against this sort of bias, we control for price in the analyses presented below. We also split the data into smaller bins of sale price and even match properties exactly according to their sale price, which allows us to estimate whether homes that sold for the same (or virtually the same) price were more likely to experience a tax foreclosure when they were excessively assessed.

A second potential confounding variable is location. Different parts of the city may have distinct housing markets. In addition, some housing policies, such as Neighborhood Enterprise Zone designations, vary at the neighborhood level.¹⁴⁴ If assessment officials adjust assessments using locational factors, assessment ratios may differ across neighborhoods in a manner correlated with foreclosure rates. To control for such possibilities, we include geographic fixed effects. We estimate models using increasingly detailed geographies, ranging from 10 Master Plan “neighborhood clusters,” to 34 zip codes, to 174 unique neighborhoods identified by the City’s Department of Neighborhoods.¹⁴⁵

Time-of-sale presents a third potential confounding factor. While the precise methodology by which assessments are estimated remains unclear, we do understand that when prices fell steeply in Detroit beginning around 2007, assessments were slow to catch up. When market values fall more quickly than assessments, assessment ratios will increase. In this case, properties that have experienced greater declines in price will have higher assessment ratios.

To address general variation over time in assessment ratios, we control for year-of-sale fixed effects. These fixed effects will account for both citywide variation over time in market conditions and assessment ratios. In addition, the time fixed effects will account for the fact that homes sold earlier in our study period have a longer post-sale history in which we can observe a foreclosure, meaning that we expect to observe higher foreclosure rates for homes that sold

¹⁴³ Timothy R. Hodge et al., *Assessment Inequity in a Declining Housing Market: The Case of Detroit*, 45 REAL ESTATE ECONOMICS 237 (2016).

¹⁴⁴ STATE OF MICHIGAN, MICHIGAN ECONOMIC DEVELOPMENT CORPORATION, NEIGHBORHOOD ENTERPRISE ZONE (NEZ) (2008). https://www.michigan.gov/documents/taxes/MEDCGuidelines_280249_7.pdf (last visited Dec. 19, 2017).

¹⁴⁵ See CITY OF DETROIT, MASTER PLAN OF POLICIES 2009, 67-203, <http://www.detroitmi.gov/Portals/0/docs/Planning/Master%20Plan%20Text.pdf?ver=2017-07-11-095829-547> (last visited Dec. 19, 2017); CITY OF DETROIT, DETROIT NEIGHBORHOODS MAP <https://data.detroitmi.gov/Government/Detroit-Neighborhoods/5mn6-ihjv> (last visited Dec. 18, 2017).

earlier, all else equal. The year-of-sale fixed effects will also account for any possible “cherry picking” by the assessor in the classification of arms’ length transactions from year to year.¹⁴⁶ With year-of-sale fixed effects, we are effectively only comparing homes that sold in the same year.

While the year-of-sale fixed effects account for citywide trends, it is also possible that properties in different neighborhoods of the city experienced different housing market shocks that influenced both assessment ratios and tax foreclosures. For example, a neighborhood that experiences an idiosyncratic downturn in prices, relative to the rest of the city, might experience both high assessment ratios—if assessments are slow to catch up with market conditions—and high tax foreclosure rates, if owners are less likely to keep up with their tax payments when their homes are “under water.” Therefore, in some specifications, we also allow each neighborhood to have a unique linear time trend, which controls for neighborhood specific trends that could be associated with both changing assessment ratios and foreclosures rates.

In sum, our main estimating equations are linear probability models regressing a dummy variable indicating foreclosure against the assessment ratio, purchase price, location fixed effects, year-of-sale fixed effects, and, in some specifications, neighborhood-specific time trends.¹⁴⁷ We use linear probability models rather than conditional logit models for ease of interpretation. However, we emphasize all results are statistically and substantively comparable when we use conditional logit estimation. This estimation strategy will show the effect of assessment ratios on subsequent foreclosures under the assumption that there are no omitted variables correlated with both assessment ratios and foreclosures but unrelated to purchase prices, location, and year of sale. Given that purchase price is a sufficient statistic for all property-specific attributes valued in the market and fixed effects capture all observable and unobservable time-invariant attributes of neighborhoods, we believe this assumption is plausible. In other words, an omitted variable that operates through price or location will not bias our estimates of the assessment ratio. That said, the assumption is untestable and without more detailed knowledge of the process through which the assessor estimates market values—a process that is, as explained in Section II, opaque—we cannot rule out the existence of omitted confounders. Therefore, following the main analysis, we also present a sensitivity analysis assessing how strong confounding factors would have to be in order to invalidate our inferences.

V. Data Analysis

We begin by examining the bivariate relationship between assessment ratios and the probability of a subsequent foreclosure with no control variables included. As shown in Figure 4, foreclosure rates increase as the property’s assessment ratio increases. For example, at the median assessment ratio of .82, just over 20 percent of properties experienced a subsequent tax foreclosure. This rate of foreclosure is comparable to the rate observed at the constitutionally mandated ratio of .5. As assessment ratios increase, especially at levels above 2, however, a steep

¹⁴⁶ For properties that were sold multiple times in the same calendar year, we took the last sale in a year as the determinant of the property’s value.

¹⁴⁷ We cluster standard errors by Master Plan district to account for potential geographic correlation in the errors. See generally Colin Cameron & Douglas Miller, *A Practitioner’s Guide to Cluster-Robust Inference*, 50 J. OF HUMAN RES. 317-71 (2015); JOSHUA ANGRIST & JORN-STEFFEN PISCHKE, *MOSTLY HARMLESS ECONOMETRICS*, at Ch. 8 (Princeton, 2009).

increase in the proportion of foreclosures is observed in Figure 4. Among properties with assessment ratios over 2.4 (in the top quarter of properties), the tax foreclosure rate was roughly double, at 40 percent. For properties with assessment ratios over 4.9 (in the top 10 percent of properties), the foreclosure rate is an astonishing 56 percent.

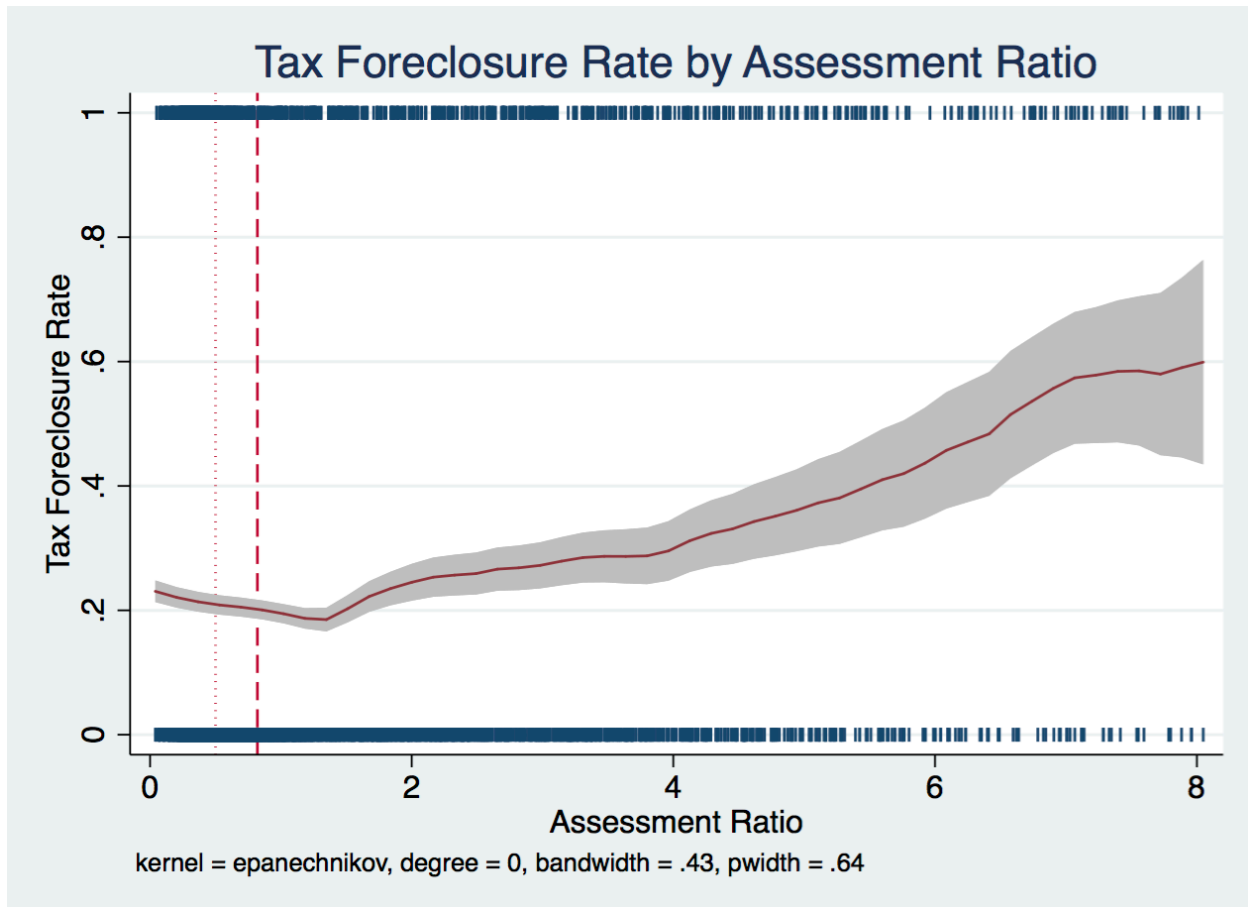


Figure 4: Tax Foreclosure Rate by Assessment Ratio

Notes: The solid red line shows a moving average of foreclosure rates across assessment ratios. We estimate the moving average by local linear regression. The grey area around the line is the 95% confidence interval. The hash marks at 0 and 1 on the y-axis show the distribution of the data. Each hash represents one property that was either subsequently foreclosed (1) or not (0). The vertical dotted line shows the constitutionally specified maximum ratio of .5. The vertical dashed line shows the median ratio of .82. The x-axis is truncated at 8 (the 95th percentile value) to improve interpretability in the range where most of the data points lie.

Clearly there is a strong association between unconstitutional tax assessments and tax foreclosures in Detroit. But, are there other factors associated with having high assessment ratios that might also independently lead to tax foreclosures? As noted above, one obvious candidate is the property's purchase price. Figures 5 and 6 confirm that assessments are indeed regressive, meaning that lower priced properties are more likely to have higher assessment ratios. Figure 5 compares the assessed value produced by the assessor with the property's actual selling price. Because the assessed value should be 50% of the market price, we double the assessed value to infer the assessor's estimated market value. The solid blue line shows a moving average of the assessor's estimated market value against the property sale price. The 45-degree dashed red line

shows the correct value. Most homes are over-valued by the assessor. For instance, the median home sold for \$29,000 dollars but was valued nearly double that amount. Lower priced homes were even more over-valued by the assessor. For example, the average home that sold for \$8,000 to \$10,000 was valued at \$56,000 by the assessor. However, the highest priced homes were actually undervalued. The average home that sold for \$100,000 to \$125,000 was valued at only about \$89,000 by the assessor.

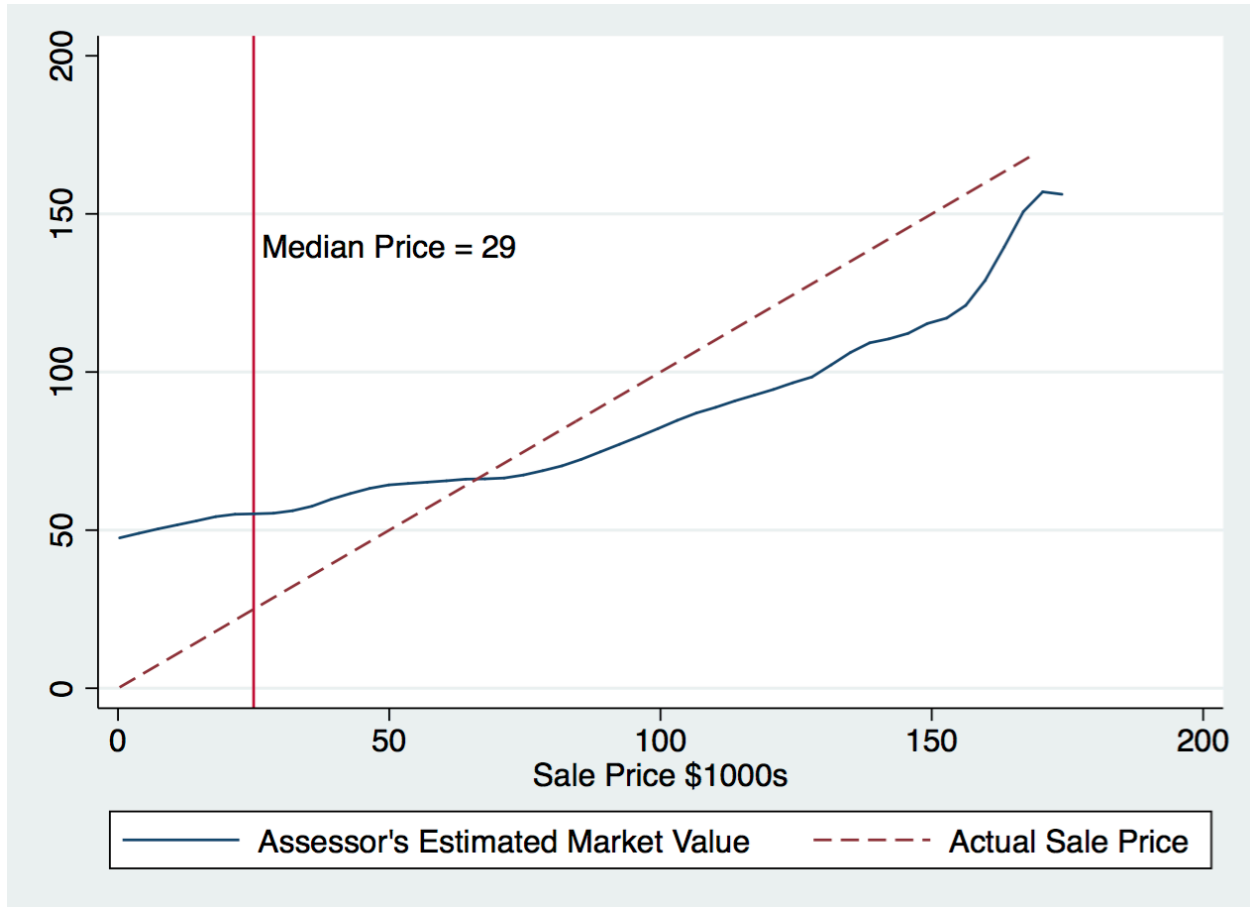


Figure 5: Over-valuation of Low-Priced Homes

Notes: The solid blue line is a moving average of the assessor’s estimated market value against actual sale prices. The moving average is estimated by local linear regression. Because assessed values should be 50 percent of market value, we double the assessed values to recover the implied market value used by the assessor. The dashed red line is the line of identity, showing accurate values for reference. The x-axis is truncated at the 99th percentile value to improve interpretability in the range where most of the data points lie.

The result of the assessor’s faulty valuations is that assessment ratios are highly regressive, as shown in Figure 6, which is a binned scatter plot of assessment ratios against sale price. We divided the data into deciles according to sale price, then computed the average sale price and average assessment ratio in each decile. Each dot in the graph represents the values in one of the deciles. In the bottom decile of sale price, properties were assessed on average at nearly 10 times their sale price. In the top decile, the average property was assessed at only 40 percent of its sale price.

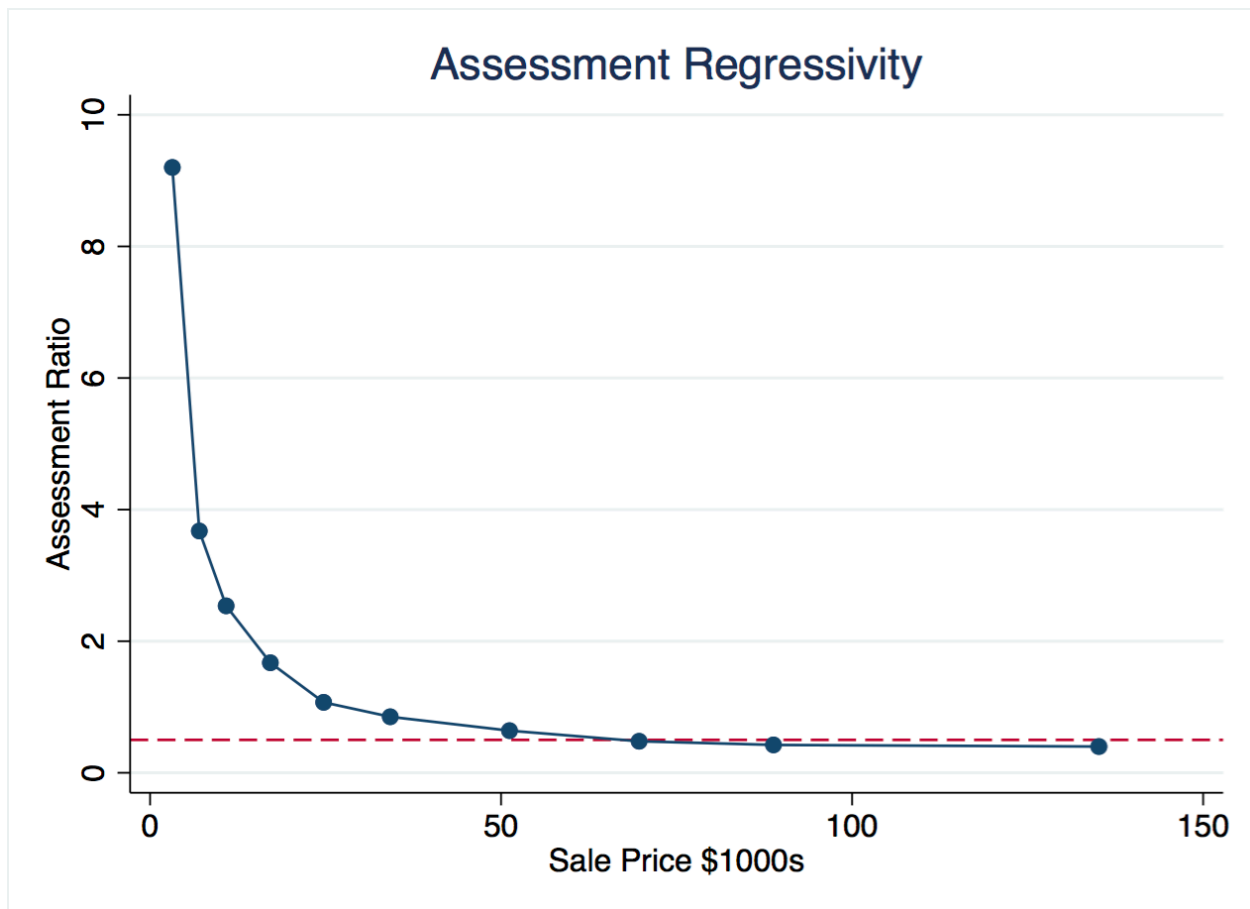


Figure 6: Assessment Regressivity

Notes: This figure is a binned scatter plot of assessment ratios against sale price. Each dot represents 10% of the data, grouped into equally sized bins according to sale price. The location of the dot represents the average sale price and average assessment ratio within one bin. The dashed red line shows the constitutionally specified maximum assessment ratio of 0.5.

To account for price and other confounders, Table 1 presents a series of linear probability models that control for property sale price and locational factors, as explained above. To establish a baseline estimate, model (1) of Table 1 presents the bivariate regression of foreclosure against the assessment ratio. The coefficient indicates a one-unit—i.e., 100 percent—increase in the assessment ratio is associated with roughly a 2.7 percentage point increase in the probability of foreclosure. Model (2) controls for the log sale price of the property. The estimated coefficient on the assessment ratio is reduced slightly, but remains highly significant statistically. It appears that the association between the assessment ratio and subsequent foreclosure is not merely due to a spurious correlation with price.

Table 1: Linear Probability Models of Tax Foreclosure

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|------------------------------|------------------------|------------------------|------------------------|-------------------------|-------------------------|------------------------|------------------------|
| Sales Ratio | 0.0273*** (0.00314) | 0.0248*** (0.00510) | 0.0172*** (0.00469) | 0.0141*** (0.00140) | 0.0134*** (0.00121) | 0.0165*** (0.00150) | 0.0152*** (0.00180) |
| Log of Sale Price | | -0.0111 (0.0187) | -0.0324* (0.0166) | -0.0363*** (0.00764) | -0.0382*** (0.00885) | -0.00840 (0.00525) | -0.0160** (0.00511) |
| Constant | 0.203*** (0.0329) | 0.321 (0.212) | 0.623** (0.201) | 0.664*** (0.0824) | 0.685*** (0.0918) | 0.363*** (0.0557) | 249.5*** (3.185) |
| Observations | 4,195 | 4,195 | 4,195 | 4,195 | 4,172 | 4,186 | 4,186 |
| R-squared | 0.054 | 0.055 | 0.108 | 0.134 | 0.145 | 0.218 | 0.253 |
| Year-of-sale FE | No | No | Yes | Yes | Yes | Yes | Yes |
| Location FE | No | No | No | District | Zip | Neighborhood | Neighborhood |
| Location-specific time trend | No | No | No | No | No | No | Neighborhood x Year |

Robust standard errors clustered by master plan district in parentheses. Each observation is a property that sold between 2009 and 2013. The dependent variable is a dummy equal to one if the property subsequently experienced tax foreclosure, zero otherwise.

*** p<0.01, ** p<0.05, * p<0.1

Model (3) adds year-of-sale fixed effects to the model. The year fixed effects account for two factors that may influence the foreclosure rates. First, properties that sold earlier have a longer track record in which to experience a foreclosure, so we would expect the subsequent foreclosure rates to be higher for properties that sold earlier, all else equal. Second, if the assessor was “cherry picking” sales starting in 2011, as suggested by Atuahene and Hodge,¹⁴⁸ the year fixed effects will account for it by restricting comparisons to homes that sold in the same year. Indeed, addition of the year-sale-dummies reduces the estimated coefficient on the assessment ratio, consistent with one or both of the preceding factors being in play. Nevertheless, the assessment ratio remains a highly significant predictor of subsequent foreclosure.

Models (4), (5), and (6) add increasingly detailed location fixed effects to the model. The location fixed effects account for the possibility that homes in different parts of the city experienced idiosyncratic local shocks associated with both prices and foreclosures. Model (4) includes fixed effects for the ten neighborhood clusters established in the city’s master plan. Model (5) uses zip-code fixed effects. There are 33 unique zip codes represented in our data. Model (6) includes fixed effects for neighborhoods as defined by the City of Detroit Department of Neighborhoods. 174 of the city’s 209 neighborhoods are represented in our data.¹⁴⁹ The estimated coefficient on the assessment ratio changes little with the addition of the location fixed effects, nor is there much difference associated with increasing the specificity of the geography from 10 master plan districts to 174 neighborhoods, which suggests that neighborhood-level factors are not strong confounders in our analysis.

Model (7) allows for more refined locational effects by adding neighborhood-specific linear time trends in the year-of-sale. That is, we allow each of the neighborhoods from model (6) to have not only a different intercept, but also a different linear time trend. These neighborhood-specific time trends allow for the possibility that different neighborhoods evolved differently over time in ways that might influence both assessment ratios and tax foreclosures. But again, the coefficient on the assessment ratio is essentially unaffected. Collectively, the results of models (4) through (7) suggest that locational differences do not explain the association between unconstitutional tax assessments and tax foreclosures.

The results from Table 1 suggest that the association between assessment ratios and subsequent foreclosures is not due to price differentials or locational factors. Comparing homes in the same neighborhood, sold in the same year, and controlling for price, we still see that excessively assessed homes are more likely to end up in a tax foreclosure. Moreover, the effects are economically meaningful. The coefficient from model (7), our most restrictive specification, indicates that a one unit increase in the assessment ratio is associated with a 1.5 percentage point increase in the probability of a subsequent tax foreclosure. The standard deviation of the assessment ratio is 3.75, so a one-standard deviation increase in the assessment ratio is associated with a 5.7-percentage point increase in the probability of tax foreclosure. Given the average foreclosure probability of 26 percent, a 5.7-percentage point increase corresponds to a 22 percent increase from the baseline.

¹⁴⁸ Atuahene & Hodge, *supra* note 8.

¹⁴⁹ See CITY OF DETROIT, DETROIT NEIGHBORHOODS MAP <https://data.detroitmi.gov/Government/Detroit-Neighborhoods/5mn6-ihjv> (last visited Dec. 18, 2017).

One concern with the analyses from Table 1 is if there are few high-priced properties that are substantially over-assessed, or few low-priced properties that are under-assessed, then the linear extrapolation when controlling for price may have no basis in the data. Indeed, Figure 6 suggests that concerns about the lack of overlap in the distribution of assessment ratios for high- and low-priced homes are well founded. Nearly the entire distribution of assessment ratios is higher among lower priced homes. It is evident that extremely excessive assessments almost exclusively affect the lowest quintile of homes. In fact, while the *median* assessment ratio in the lowest quintile is 4.8, the single *highest* ratio observed in the top price quintile is 2.4. These results are consistent with prior studies, which also find high variation in assessment ratios among the lowest priced homes.¹⁵⁰ As such, linearly controlling for price, as in Table 1, is likely to involve extrapolating outside the range of actual values observed in the data.

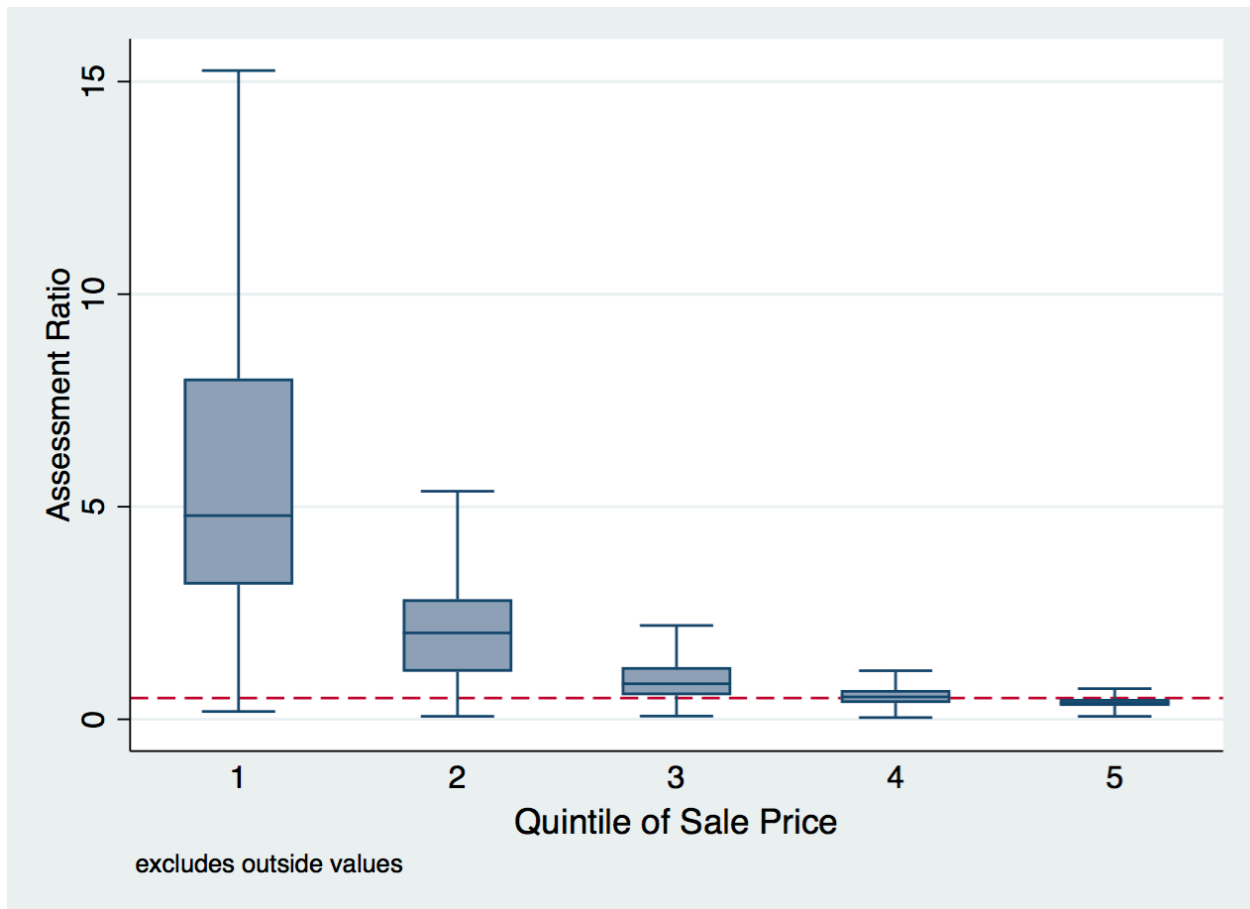


Figure 7: Box Plot of Sales Ratio over Price Quintile

Notes: Within each box, the center line marks the median. The outer boundaries of the box are the 25th and 75th percentiles. The whiskers mark 1.5 times the interquartile range above and below the 25th and 75th percentiles. The plot excludes values outside 1.5 times the interquartile range above the 75th percentile. The dashed red line shows the constitutionally specified maximum assessment ratio of 0.5.

To address this issue, we present a series of analyses in Table 2 in which we restrict our estimation sample and employ nonparametric techniques for matching on price. In model (1) we

¹⁵⁰ Hodge et al., *supra* note 143.

restrict our analysis to properties that sold for below the median price of \$29,000, thereby excluding high-priced homes with almost uniformly low assessment ratios. We continue to include year-of-sale and neighborhood fixed effects. Although our sample size is halved, the estimated coefficient on the assessment ratio remains positive and significant, albeit smaller in magnitude relative to Table 1.

In model (2), while continuing to restrict our analysis to properties below the median price, we additionally introduce a set of dummy variables capturing \$1,000 increments in price. Using the full set of dummies provides flexible nonparametric method to control for price. That is, we control for each \$1,000 increment in price up to the median price of \$25,000. With these price-interval dummies, our identification comes from within-interval variation, meaning that we effectively compare only homes within \$1,000 in price of each other. Even with this highly restrictive model, we continue to find a significant positive effect of assessment ratios on subsequent foreclosures.

In model (3) we further restrict our estimation sample to homes in the bottom quintile (i.e., those below \$9,000 in price). Still including the \$1,000-interval price dummies, the coefficient on the assessment ratio is again positive and significant.

In model (4), we take advantage of the fact that a large proportion of properties in the bottom quintile sold for round numbers in intervals of \$1,000. In fact, roughly half of the homes that sold for \$9,000 or less sold at exactly \$1,000, \$2,000, and so on. As a result, we can conduct a form of exact matching on sale price. We do so by pooling all the homes in the bottom quintile that sold at an exact increment of \$1,000 and then including dummy variables for each specific price. In this model, identification comes only from variation in assessment ratios for properties that sold at *exactly* the same price. The coefficient is significant at the 10 percent level and slightly larger in magnitude than the other estimates reported in Tables 1 and 2. If we drop the neighborhood fixed effects, the coefficient is virtually unchanged and significant at 5 percent.

Table 2: Analysis of Low Priced Properties

| | (1) | (2) | (3) | (4) |
|------------------|-----------------------|-----------------------|----------------------|---------------------|
| Assessment ratio | 0.0130** (0.00463) | 0.00978* (0.00514) | 0.0131* (0.00601) | 0.0207* (0.0102) |
| Constant | 0.742** (0.278) | 0.470*** (0.102) | 0.424*** (0.122) | 0.113 (0.0984) |
| Observations | 2,117 | 2,095 | 839 | 441 |
| R-squared | 0.271 | 0.286 | 0.347 | 0.435 |
| Price controls | Log price | Interval dummies | Interval dummies | Exact match |

Robust standard errors clustered by master plan district in parentheses. All models include year-of-sale and neighborhood fixed effects. Models (1) and (2) are restricted to properties that sold below median price of \$29,000. Models (3) and (4) restricted to the bottom quintile of properties, which sold for less than \$9,000. Model (4) is further restricted to properties that sold at an exact interval of \$1,000.

*** p<0.01, ** p<0.05, * p<0.1

Collectively, the results from Table 2 demonstrate that the relationship between assessment ratios and subsequent foreclosures is not due to differences between homes that sold at different prices. Even for homes that sold at exactly the same price, those with a higher assessed value were significantly more likely to experience a subsequent tax foreclosure. The point estimate from the most restrictive model, model (4), is comparable in magnitude to the estimates reported in Table 1 based on the whole sample. The point estimates from models (1) to (3) are slightly smaller, but they are statistically indistinguishable from the coefficient in model (4).

The preceding analyses have demonstrated that, controlling for purchase price, location, and time-of-sale, homes that were assessed at higher rates were more likely to experience a subsequent tax foreclosure. This relationship can be interpreted as causal if there are no omitted confounders, a proposition that is unfortunately difficult to evaluate given the lack of transparency in the assessment process in Wayne county. However, it is reasonable to suspect that there are omitted variables systematically correlated with both the assessment ratio and the likelihood of foreclosure. Therefore, we next present a sensitivity analysis to assess how much confounding would be necessary to invalidate our inferences.¹⁵¹

In our setting, a confounder is variable correlated with both the assessment ratio and the likelihood of foreclosure. Omitted confounders are a source of bias in our inferences about the effect of assessment ratios on foreclosures. The magnitude of the bias depends on the strength of the association between the omitted confounder and assessment ratios and foreclosures, respectively. Rather than assuming no confounding, we estimate the magnitude of violations of that assumption that would invalidate our inferences. While the sensitivity analysis does not establish whether such omitted confounders actually exist, we can compare the magnitudes of the necessary correlations with those observed for the covariates included in our analysis as one gauge of how a powerful a confounder would have to be, relative to known covariates, in order to invalidate our inferences.

Using methods and software due to Kenneth Frank,¹⁵² we conducted a sensitivity analysis for our inference regarding the statistical significance of the assessment ratio in model (6) of Table 1.¹⁵³ Specifically, we computed the magnitude of confounding that would be required to invalidate our inference that the assessment ratio is statistically significant at the 5 percent level. Figure 8 depicts the results of this sensitivity analysis. Inference would be invalidated if there were a confounder with any combination of partial correlations in the region above the curve. For any

¹⁵¹ Sensitivity analysis appears to have originated with Cornfield et al.'s (1959) study of lung cancer and smoking, while important papers by Rosenbaum and Rubin (1983) and Rosenbaum (1995) established the statistical foundations of sensitivity analysis within a modern causal inference framework. For a review, see Imbens and Rubin (2015) chapter 22.

¹⁵² Frank, Kenneth. 2000. "Impact of a Confounding Variable on the Inference of a Regression Coefficient." *Sociological Methods and Research*, 29(2), 147-194. Kenneth A. Frank & Ran Xu, 2017. "KONFOUND: Stata module to quantify robustness of causal inferences," *Statistical Software Components S458298*, Boston College Department of Economics, revised 13 Apr 2017.

¹⁵³ Results for other models were similar.

combination of partial correlations below the blue curve, confounding would not be sufficient to alter our inference that the assessment ratio is significant at the 5 percent level.

The sensitivity analysis depicted in Figure 8 reveals the values of component correlations for a confounder that would invalidate our inference. The sensitivity analysis does not, however, provide any information about whether such a confounder is likely to exist. Nor does the sensitivity analysis establish whether the magnitude of component correlations required to invalidate inference is large or small from a substantive perspective. To address such questions, it is normal to compare the results of the sensitivity analysis with the actual component correlations from the covariates included in the analysis. In other words, we can omit one of the actual covariates and ask whether it would have been powerful enough to invalidate the inference had it been an omitted confounder.

Figure 8 shows the values of component correlations from three of the covariates in model (6) of Table 1. The first is log sale price, which is the most important observable covariate in the model. The second is the most powerful of the year fixed effects, which in this case is for 2013. The third is the most powerful of the neighborhood fixed effects, which is for neighborhood 37, Davison. None of these covariates would have been sufficient to alter our inference had they been omitted confounders. That is, even a confounder as powerful as sale price, the most powerful covariate in our model, would not have invalidated our inference. In other words, our inference is robust to a confounder at least as powerful as sale price. While we cannot, in principle, know whether such a confounder exists, we consider the results of the sensitivity analysis reassuring.

Values of Component Correlations Necessary to Invalidate Inference

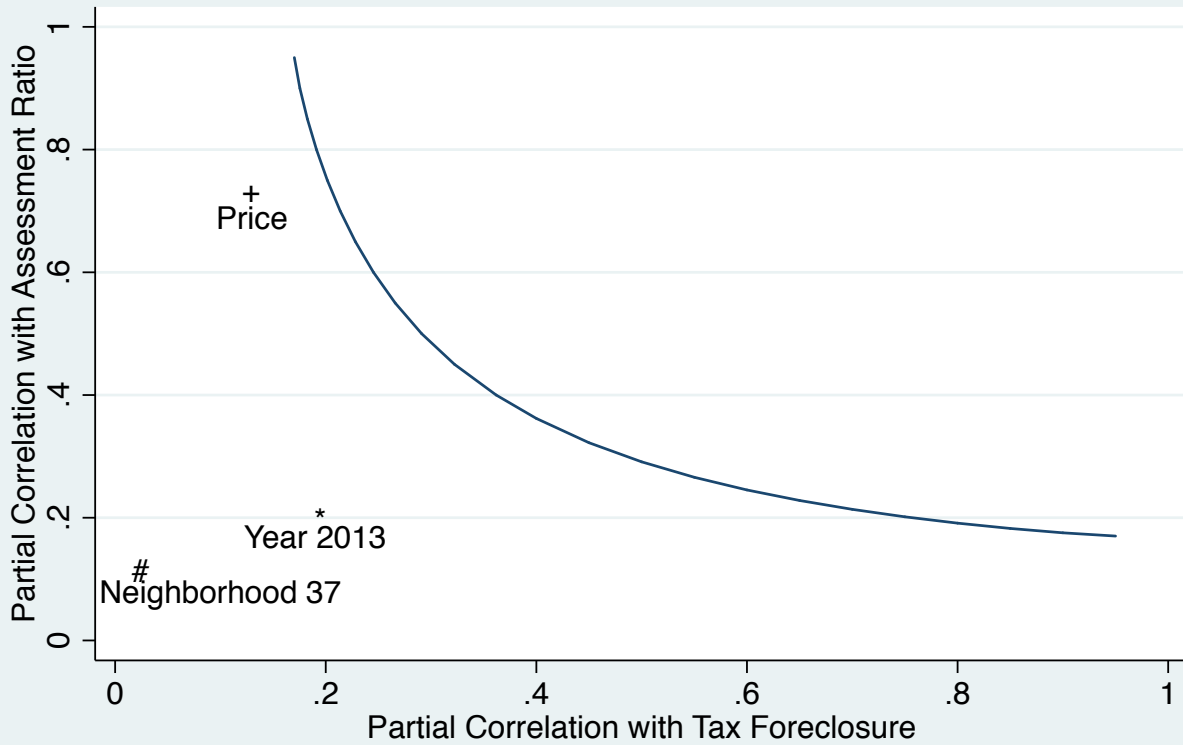


Figure 8: Sensitivity Analysis

Notes: The blue curve demarcates the region beyond which inference regarding significance of the assessment ratio in model (6) of Table 1 would be invalidated. Symbols +, *, and # show the actual partial correlations for sale price, the year 2013 indicator, and the neighborhood 37 (Davison) indicator, respectively.

Under the assumption that the relationship we have estimated in causal, we next present a counterfactual simulation to gauge the number of tax foreclosures in our data that resulted from unconstitutional assessments. Using the coefficients from model (7) of Table 1, we estimate what the foreclosure rate would have been if all properties had been assessed at 50 percent of their market value (purchase price) as required by law. To do so, we apply the coefficients to the actual values of the other variables for all observations, but replacing the assessment ratio with a value of 50 percent in every case. Using this method, we estimate that the foreclosure rate would have been 23.8 percent in our sample, compared with the actual foreclosure rate of 26.2 percent. The difference of 2.5 percentage points is equivalent to a roughly 9.5 percent decrease in the number of tax foreclosures. Put differently, we estimate that approximately 10 percent of all tax foreclosures were caused by unconstitutional assessments.

The aggregate numbers of foreclosures for the whole sample mask the reality that tax foreclosures are concentrated among low priced homes. Table 3 shows the estimated change in foreclosures in each price quintile according to our simulation. In actuality, 44 percent of the properties in the bottom price quintile—those that sold for less than \$9,000—experienced a tax

foreclosure. However, our simulation suggests that only 33 percent would have experienced a tax foreclosure if assessments had been levied at the legally mandated bound of 50 percent of market value. In other words, roughly one-quarter of all tax foreclosures in the bottom quintile were due to excessive assessments. Properties in the other four price quintiles saw relatively small differences under our simulation, with some experiencing small increases and others small decreases in the probability of foreclosure.

Table 3: Simulation of Tax Foreclosure with Constitutional Assessments

| | | Predicted Foreclosure Rate with Constitutional Assessments | Actual Tax Foreclosure Rate |
|-----------------------|--------------------------------|---|--|
| Price Quintile | Range of Sale Price | | |
| 1 | < \$9,000 | 32.8% | 44.2% |
| 2 | \$9,000 to \$20,000 | 21.5% | 20.9% |
| 3 | \$20,000 to \$40,000 | 18.7% | 20.9% |
| 4 | \$40,000 to \$80,000 | 22.6% | 18.9% |
| 5 | > \$80,000 | 23.0% | 26.3% |
| Overall | | 23.8% | 26.2% |

Extrapolating from our sample to the population of property in Detroit requires strong assumptions and should be approached with caution. We have studied only residential properties with structures that were purchased by non-investors, and so we cannot speak to the many foreclosures affecting vacant lots, commercial properties, or investor-owned properties. In addition, we have only examined the first few years after a sale. The cumulative effect of excessive assessments on tax foreclosures can only be higher in the long run than in the short run.

VI. Conclusion

Tax foreclosures swept through Detroit from 2011 to 2015. Fully one quarter of all properties in the city were subject to a tax foreclosure during this brief period. At the same time, the City was systematically assessing property beyond the constitutional limit of 50 percent of market value, and the over-assessments were concentrated among the lowest priced properties. The average property in the bottom price quintile (under \$9,000) was assessed nearly 5 times its actual sale price. Based on a battery statistical analyses controlling for price and locational factors, we estimate that 10 percent of all tax foreclosures in our sample were caused by unconstitutionally high assessments. Moreover, we estimate that 25 percent of all tax foreclosures in the bottom quintile were due to unconstitutional assessments. If these results generalize outside our sample, they imply that thousands of Detroit home owners—mostly African-Americans—have lost their property due to unconstitutional taxation and subsequent foreclosure by Wayne County. While our findings pertain specifically to Detroit, more scholarship is needed to determine whether the cycle of over-assessment and foreclosure afflicts other cities as well.