



WORKING PAPER

# Mortgage Financing for Small Multifamily Rental Properties: What is the Problem?

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## Mortgage Financing for Small Multifamily Rental Properties: What is the Problem?

By Mark A. Willis<sup>1</sup> and Sean Capperis<sup>2</sup>

Small multifamily properties—buildings with between 5 and 49 rental units—account for about one third of the nation’s rental units.<sup>3</sup> Their loss would seriously undermine the nation’s stock of housing, especially in light of the growing demand for rental housing. Since 2005 the percent of households who rent has increased from 31 percent to 37 percent.<sup>4</sup> Adding to the growing importance of rental housing is its role as a source of housing for lower income households with the median income of renter households roughly half that for homeowners.<sup>5</sup>

This study examines the effect of mortgage financing on the long-term viability of the small multifamily rental stock in both Chicago and New York City. It grew out of concerns that the combination of the recent financial crisis and the Great Recession was causing fundamental changes in the financing market that would limit the availability of funding for the construction, acquisition, refinancing, and capital improvements of small multifamily properties. In Chicago local leaders reported a dramatic fall at that time in the availability of mortgage loans for small multifamily rental properties, especially on that city’s South Side as bank lending fell as a number of community banks failed and regulators limited lending by others through formal cease and desist orders, consent orders, and closer supervision. The loss of these particular sources of capital stirred concern among property owners and real estate brokers of a permanent degradation of the ability of smaller sized multifamily rental properties to obtain the financing necessary to keep them from deteriorating and ultimately from being abandoned.

As mortgage lending by banks fell in Chicago, there came a point in time when the largest lender to small multifamily properties in the Chicago Six County Area was the Community Investment Corporation (CIC), a non-profit community development financial institution (CDFI).<sup>6</sup> CIC, and its counterpart in New York City, the Community Preservation Corporation (CPC) have traditionally been niche players that specialize in lending in underserved neighborhoods to owners of affordable rental stock using lines of credit from financial institutions and working with state and local government programs to enhance the ability of these owners to access capital.<sup>7</sup> During this period lending to CDFI’s themselves came under greater scrutiny, potentially jeopardizing the ability of CIC and CPC to provide liquidity to the small multifamily mortgage market. CIC managed to renew its funding without a break, but, for a period of

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<sup>1</sup> Senior Policy Fellow, NYU Furman Center

<sup>2</sup> The analysis for this paper was completed when he was Data Manager at the NYU Furman Center. He is now Director of Strategic Planning at the New York City Department of Housing Preservation and Development. The views expressed in the article are not necessarily those of the Department of Housing Preservation and Development or the City of New York.

<sup>3</sup> [“America’s Rental Housing: Expanding Options for Diverse and Growing Demand”](#), Joint Center for Housing Studies (2015), 41

<sup>4</sup> [“America’s Rental Housing: Expanding Options for Diverse and Growing Demand”](#), Joint Center for Housing Studies (2015), 1

<sup>5</sup> American Community Survey, (2010-2014) 5-year estimate

<sup>6</sup> Woodstock Institute calculation of 2010 of Home Mortgage Disclosure Act (HMDA) Data, reported by: Community Investment Corporation

<sup>7</sup> CDFIs are mission-driven financial institutions that take a market-based approach to supporting economically disadvantaged communities. Since 1984 CIC has provided more than \$1.2 billion to acquire, rehab and preserve 55,000 units of affordable housing for more than 130,000 metro Chicago residents. Since 1974 CPC has used \$9.1 billion in public and private investments to finance more than 164,600 affordable housing units.

time, CPC lost access and was unable to make new loans.<sup>8</sup> In the end, both institutions saw one major bank drop out as a funder as it was unable in this new regulatory environment to get comfortable with the terms of the lines.

Concern that owners of small multifamily rental buildings are less able than owners of larger buildings to access capital is not new. Previous studies have noted, often with concern, that small multifamily buildings were less likely to have a mortgage than buildings with a larger number of units.<sup>9</sup> For example, the Residential Finance Survey of 1991 found that nationally 70.1 percent of the properties with 5-49 units had a mortgage compared to 87.7 percent for those with 50 or more units.<sup>10</sup> The existence of these mortgage “gaps,” i.e. the lower percentages of properties with mortgages, has over the years sparked worries that they reflect a greater difficulty in accessing capital.<sup>11</sup> Less access to capital it has been feared would make it harder to renovate, upgrade, or construct these properties, limiting the ability of the owners of these properties to compete with those of larger buildings, and ultimately jeopardizing the long-term viability of these small multifamily rental properties. Despite this concern, however, the stock of these renter-occupied buildings has grown by almost a quarter since 1990 (see Table 1).<sup>12</sup>

Table 1: Growth in U.S. Housing Units in Small Multifamily Buildings

Units in Building	1990	2010-2014	Percent Increase
<b>5-9 Units</b>	4,946,639	6,341,597	28.2%
<b>10-19 Units</b>	4,906,383	5,950,183	21.3%
<b>20-49 Units</b>	3,901,980	4,732,441	21.3%
<b>Total</b>	13,755,002	17,024,221	23.8%

Sources: U.S. Census (1990), American Community Survey (2010-2014), NYU Furman Center

This study documents the existence of a mortgage gap in both Chicago/Cook County and New York City between large and smaller properties.<sup>13</sup> It examines the relationship between the size of the mortgage gap and the condition of the stock, and looks for how the financial crisis and Great Recession affected and continues to affect the rate of origination of new mortgages for multifamily buildings of different sizes in the two geographies. It takes advantage of local and national data sets as well as interviews in both cities with stakeholders and observers ranging from the owners of small multifamily rental

<sup>8</sup> Hit hardest were CPC’s loans to build for-sale workforce housing as potential buyers were increasingly unable to obtain a home mortgage. However, CPC’s core business of lending to affordable rental properties in New York City continued to perform well.

<sup>9</sup> Apgar and Narasimhan, “[Enhancing Access to Capital for Smaller Unsubsidized Multifamily Rental Properties](#)”, Joint Center for Housing Studies (2007), 8

<sup>10</sup> American Community Survey, [Residential Finance Survey](#) (2001), Figure 1, IV-1

<sup>11</sup> For a contrary view see Reiss, David, “Landlords of last resort: should the government subsidize the mortgages of privately-owned, small multifamily buildings?” *Western New England Law Review* 32 (2010)

<sup>12</sup> For a discussion of how different government surveys deal with the size of buildings versus those of properties, see “[America’s Rental Housing: Meeting Challenges. Building on Opportunities](#)” Joint Center for Housing Studies (2011), p. 22.

<sup>13</sup> While we had intended to compare the two cities of New York and Chicago, data limitations often meant we could only look at Cook County as a whole. Chicago accounts for approximately half the population in Cook County.

properties, their bankers, realtors, and mortgage brokers, to community leaders and government officials.

Data specific to mortgages and the small multifamily rental stock in Cook County came from the Institute for Housing Studies at DePaul University which provided local mortgage filing and assessor data. For New York City, we were able to combine building-level administrative data from the City Register (mortgages) and the Departments of Buildings, Finance, and Housing Preservation and Development in conjunction with U.S. Census-based neighborhood characteristics to develop a unique and rich database to examine the relationship between the existence of a mortgage and such indicators of long-term viability of the stock as the condition of the buildings, the rate at which the buildings are bought and sold, and the rate of new additions to the housing stock (see Appendix I for a full description of data sources).

Our findings raise doubts about whether the mortgage gap indicates a shortage of capital for small multifamily rental properties and suggest the opposite may be true: smaller multifamily rental properties, despite the mortgage gap, may be in better condition generally and, perhaps more unexpected, properties that have mortgages are generally in worse condition than those without mortgages, regardless of size. Moreover, we surfaced a number of possible reasons that can account for the mortgage gaps, not all of which are consistent with their being a shortage of capital that affects the long-term viability of the smaller-sized buildings.

As for the impact of the financial crisis and Great Recession, it now appears that the initial reduction in the availability of mortgages was following a “normal” credit cycle (albeit one that may have been more extreme than usual) with availability now returning to pre-recession levels. Although this report raises questions about the need for a broad-based government intervention in the mortgage market for small multifamily rental properties, it does not address the problems faced in preserving building where the rents are too low or variable to allow for market-rate debt financing. For the preservation of these buildings, regardless of their size, government subsidies are needed. Moreover, these findings do not bear on efforts to ensure that the owners of these buildings have the same access that owners of larger buildings have to the range of products made available through Fannie Mae, Freddie Mac, and FHA.

### ***The Small Multifamily Rental Stock in New York City and Chicago/Cook County***

Small multifamily buildings are an important source of rental housing, and rental housing serves a lower income population in both Chicago and New York City as it does nationwide. The median household income for renters in Cook County, which includes Chicago, is less than half that for owners: \$33,410 vs. \$75,027. A similar ratio exists in New York City where renters have a median household income of \$41,210 versus \$86,359 for homeowners.<sup>14</sup> Rental units in small multifamily buildings (5-49 units) account for 34.8 percent of the total compared to a slightly higher 38.4 percent in New York City.<sup>15</sup> However, as a share of the total number of rental units, multifamily buildings account for a much larger percent in New York City than in Cook County (73.5% versus 53%) where 1-4 family buildings play a much larger role (46.2% versus 26.4%). See Table 2.

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<sup>14</sup> American Community Survey, 1-year Estimates, occupied housing units in 2014 dollars

<sup>15</sup> American Community Survey, 2013

Table 2: Distribution of Rental Units by Building Size, 2014

	<b>Building Size</b>	<b>Rental Units</b>	<b>Share of Units</b>
<b>Cook County</b>	<b>1-4 Units</b>	392,220	46.2%
	<b>5-49 Units</b>	294,954	34.8%
	<b>50+ Units</b>	158,118	18.6%
	<b>Total</b>	845,292	100.0%
<b>New York City</b>	<b>1-4 Units</b>	571,675	26.4%
	<b>5-49 Units</b>	831,429	38.4%
	<b>50+ Units</b>	759,701	35.1%
	<b>Total</b>	2,162,805	100.0%

Sources: American Community Survey (2014), NYU Furman Center

While all properties with 5-49 units are often treated as a single group to contrast them with larger properties of 50+ units, the economics and complexity of managing a 5 unit building versus a 49 unit building are significantly different, and those differences can be greater than those between a 20 unit building and a 50+ building.<sup>16</sup> The smaller the building the more likely it is owned by an individual investor rather than by such legal entities as limited partnerships (LLPs) or limited corporations (LLCs) which are well-suited for raising larger amounts of capital from multiple sources. For example, for properties with 5-24 units, individual investors outnumber LLPs and LLCs by more than two to one according to a recent national survey.<sup>17,18</sup> The ratio reverses for 25-49 unit properties with the rate of ownership by individual investors less than half that for LLPs and LLCs. The difference widens to less than one out of eight for even larger properties. Anecdotal evidence suggests that many of the owners of these smaller properties are so-called mom and pop owners who generally own only one building or just a few which they manage on their own and do not use professional property managers.<sup>19</sup>

For the rest of the paper our unique data bases allow us to look separately at each of these four different sizes of small multifamily rental buildings: buildings with 5-9 units (“very small”), those with 10-19 units (“medium small”), those with 20-49 units (“medium large”), and those with 50+ units (“large”).

<sup>16</sup> Abt Associates, [“Examination of Alternative FHA Mortgage Insurance Programs for Financing Single-Family Rental and Small Multifamily Rental Properties”](#), *U.S. Department of Housing and Urban Development* (2015), 4, p 102 “Although the line of demarcation is not entirely clear, the lenders we interviewed suggested a division exists between properties of about 5 to 20 units and those with 21 to 49 units.” Also see p.4 of Abt/Herbert where the authors describe the decision to look separately at 5-19 and 20-49 unit properties.

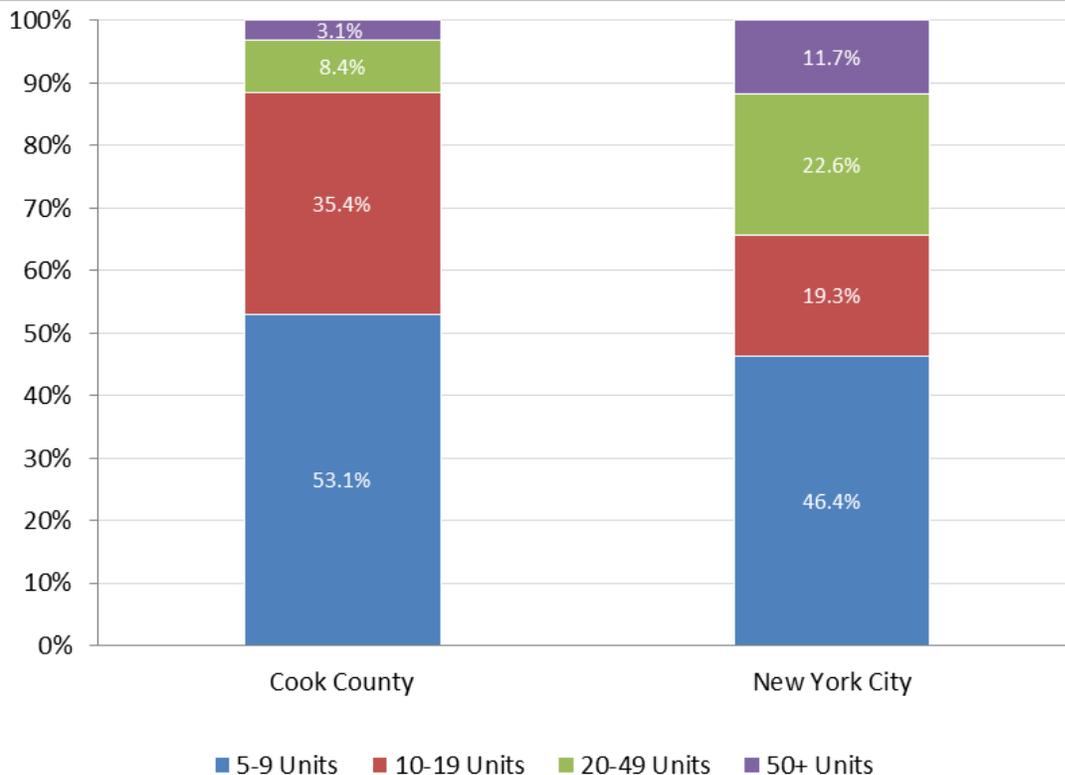
<sup>17</sup> Abt Associates, [“Examination of Alternative FHA Mortgage Insurance Programs for Financing Single-Family Rental and Small Multifamily Rental Properties”](#), *U.S. Department of Housing and Urban Development* (2015), xxvi, “Small multifamily properties are much more likely than large multifamily properties to be owned by an individual investor and less likely to be owned by a legal structure such as an LLC or limited liability partnership.”; 2012 Rental Housing Finance Survey, individual investors as a percent of the ownership entity is 53.0% for 5-24 unit properties (Table 2b, p 45), 22.4% for 25-49 unit properties (Table 2c, p 63), and 7.3% for 50+ unit properties (Table 2d, p 81).

<sup>18</sup> It will be interesting to see if the recent growth of scattered-site ownership in the single-family space leads to increases in a lowering of the share of the small multifamily stock owned by individual investors.

<sup>19</sup> Owners of smaller buildings are less likely to hire professional management: data from RHFS 2012 show property management responsibility handled by the owner or an unpaid agent at 64.8% for properties with 5-24 units, 27.6% for properties with 25-49 units, and 8.5% for 50+ units, Table 3, p. 92.

As Figure 1 shows, the vast majority of rental buildings with five or more units are those with 5-49 units. These properties account for 88.3 percent of all multifamily rental buildings in New York City and as many as 96.9 percent of the parcels in Cook County.<sup>20</sup> Of these, some half are the very small 5-9 unit properties with their share being 46.4 percent and 53.1 percent respectively in both cities. Cook County has a higher percent of 10-19 unit buildings but much lower percentages for 20-49 and 50+ unit buildings.

Figure 1: Distribution of Multifamily Rental Buildings by Size



Sources: New York City Department of Finance, Cook County Assessor's Office, NYU Furman Center

*Note: Data for Cook County probably understates the share of smaller buildings. See appendix for more information.*

Small multifamily properties have long been a significant part of the multifamily housing stock, generally growing in line with the overall stock. To see this, we divided the current stock into four vintages. For Cook County the four categories we used are: those built in the last 50 years, those built 51-75 years ago, those built 76-100 years ago and those built over 100 years ago. For New York City, we used similar time segments that are tied to particular regulatory events: the most recent being those built since the

<sup>20</sup> Because the distribution for Cook County data reflects the number of parcels of land that have buildings of that size on them and because some buildings span more than one parcel, it seems likely that the larger the building the more likely it spans more than one parcel, hence the likelihood that the distribution shown for Chicago in the table over weights the share of larger buildings. As for New York City, the data reflects the number of buildings, and we were able to remove public housing units which would otherwise bias the data toward a higher proportion of larger buildings.

rent stabilization laws came into effect in 1974;<sup>21</sup> those covered by rent stabilization and built after the Second World War, i.e., built during the years 1947-1973; those built earlier starting in 1901 after the enactment of a revised housing code that resulted in what are called New Law Tenements; and those built earlier and subject to a 1879 housing code that resulted in what are called Old Law Tenements (only a small number of buildings predate 1879 and so we have omitted them from our analysis).

Buildings of all sizes were built during all of these periods in both cities with no major shift away from smaller buildings. For Cook County, the distribution across building sizes for those built in the last 50 years looks much like the overall distribution with the 10-19 unit share being a little higher (40.4% versus 35.4%) and 20-49 being lower (4.5% versus 8.4%) as the overall average for this building size reflects its much higher share in just the 76-100 year old period (see Table 3). For New York City, the post 1974 production has a higher proportion of 50+ unit buildings and a lower share of those with 10-19 units and 20-49 units than in the stock overall (see Table 4), but the share of buildings with 5-9 units dating from that period almost exactly matches the share of this building size in the overall stock (46.2% versus 46.4%) (see Table 4).

Table 3: Cook County Distribution of Building Size across Vintages, 2013

	<b>Over 100 years old</b>	<b>76-100 years old</b>	<b>51-75 years old</b>	<b>50 years old or less</b>	<b>Total</b>
<b>5-9 Units</b>	78.3%	41.8%	47.1%	51.4%	53.1%
<b>10-19 Units</b>	18.2%	37.6%	44.1%	40.4%	35.4%
<b>20-49 Units</b>	3.1%	16.6%	5.8%	4.5%	8.4%
<b>50+ Units</b>	0.4%	4.0%	2.9%	3.8%	3.1%
<b>Total</b>	100.0%	100.0%	100.0%	100.0%	100.0%

Sources: Cook County Assessor's Office, Institute for Housing Studies at DePaul University, NYU Furman Center

Table 4: New York City Distribution of Building Size across Vintages, 2014

	<b>Old Law Tenement (1879-1901)</b>	<b>New Law Tenement (1902-1946)</b>	<b>Rent Stabilization 1947-1973</b>	<b>Post 1974</b>	<b>Total</b>
<b>5-9 Units</b>	39.2%	49.0%	14.6%	46.2%	46.4%
<b>10-19 Units</b>	37.8%	18.1%	7.7%	14.6%	19.3%
<b>20-49 Units</b>	21.2%	23.8%	17.5%	14.8%	22.6%
<b>50+ Units</b>	1.9%	9.0%	60.1%	24.4%	11.7%
<b>Total</b>	100.0%	100.0%	100.0%	100.0%	100.0%

Sources: New York City Department of Finance, NYU Furman Center

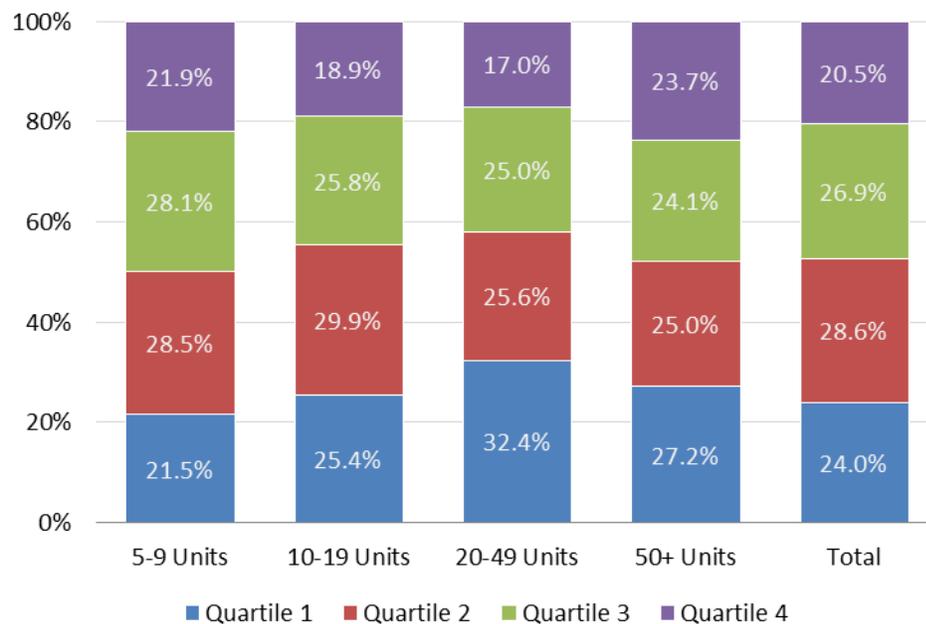
<sup>21</sup> Buildings built after 1974 are not automatically subject to rent stabilization but they often become subject to that law as a result of participating in a city property tax exemption or abatement program. Buildings with 5 or fewer units are exempt from rent stabilization.

Buildings of different sizes are also fairly evenly spread across neighborhoods facing different economic circumstances and are not concentrated in neighborhoods where rents are particularly high or low. To see this, we used the median household income of the neighborhood in which a building is located to classify them by income quartiles, with those in the quarter of census tracts with the lowest median incomes in the first quartile and those with the highest in the fourth quartile.

Figures 2 and 3 show that in both cities the various sizes of small multifamily properties are spread fairly evenly across neighborhoods with different incomes (and presumably different rent levels).

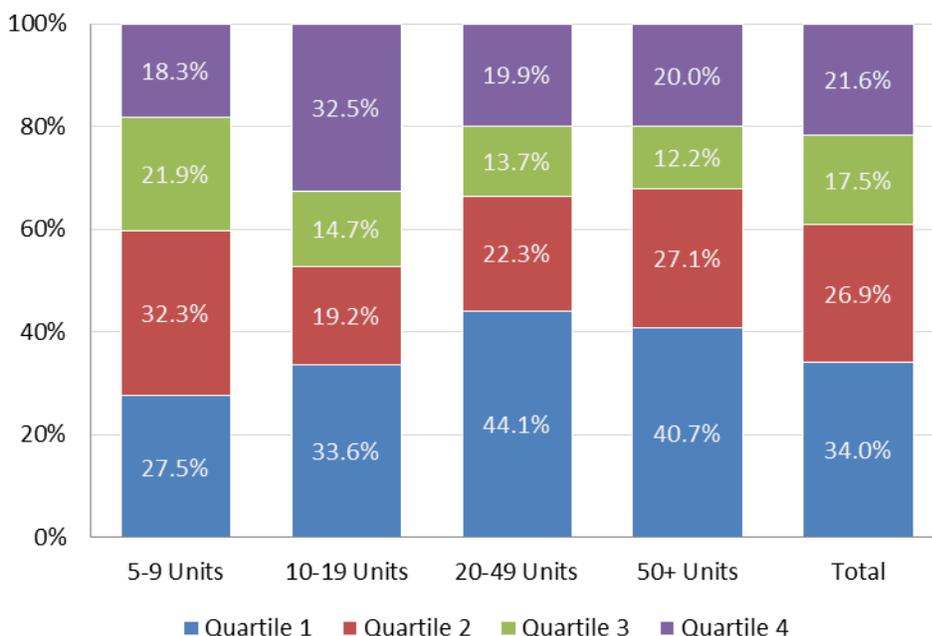
Interestingly, 20-49 unit properties in both cities are noticeably concentrated in census tracts in the first or lowest income quartile (32.4% versus 24.0% for Cook County and 44.1% versus 34.0% for New York City), but so are 50+ properties in Cook County (27.2% compared to the overall average of 24.0%) and in New York City (40.7% compared to the overall average of 34.0%) despite the fact that the New York City data do not include any public housing. In Cook County, the 5-9 unit buildings are somewhat more prevalent in neighborhoods in the 3<sup>rd</sup> and 4<sup>th</sup> quartiles while in New York City they are somewhat more prevalent in those in the 2<sup>nd</sup> and 3<sup>rd</sup> quartiles.

Figure 2: Cook County Distribution of Building Size across Census Tract Income Quartiles (Quartile 1 is the lowest income quartile and 4 is the highest), 2013



Sources: Cook County Assessor's Office (2013), American Community Survey (2008-2012), Institute for Housing Studies at DePaul University, NYU Furman Center

Figure 3: New York City Distribution of Building Sizes across Census Tract Income Quartiles (2008-14)



Sources: New York City Department of Finance (2014), American Community Survey (2008-2012), NYU Furman Center (see Appendix I for more detail).

***The Mortgage Gap in both Cities Predates the Mortgage Crisis/Recession: Smaller Multifamily Rental Properties are Less Likely to have a Mortgage***

As the first step in our research of the role of mortgages in affecting capital access, we looked to see if smaller multifamily rental properties in the two cities were in fact less likely to have a mortgage than were larger multifamily rental properties. As it turned out, the same relationship between property size and likelihood of having a mortgage existed in Cook County and New York City as in the nation as a whole. Smaller size properties are less likely to have a mortgage and this relationship holds even after controlling for vintage of the properties and for the income quartile of the census tracts.

To conduct this analysis, we were able to match at the building level information on building size and type in both cities with data on the existence of a mortgage from the registry of deeds (see Appendix I for details). For Cook County, without information on mortgages that were originated prior to 2005 and still in place, we simply looked at all properties in each size category that had a mortgage origination any time between 2005 and 2013.<sup>22</sup> For Cook County the percentage of properties where a mortgage had been originated any time during this period was 47.1 percent for the properties with 5-9 units, 55.5 percent for those with 10-19 units, 71.5 percent for those with 20-49 units, and 74.7 percent for those with 50+ units. See Table 5.

<sup>22</sup> In Cook County the deeds data is based on “parcel” system which can mean that the mortgage for a property can be recorded on multiple parcels if the building itself spans more than one parcel. As long as the prevalence of such cases of properties spanning multiple parcels is consistent across properties with and without mortgages (that is the numerator and denominator will be equally affected), then the percentage of parcels that have ever received a mortgage over this period should be an unbiased indicator of the percentage of buildings.

Table 5: Percent of Properties with a Mortgage by Building Size, Cook County, 2005-2013

<b>Building Size</b>	<b>Percent With Mortgage</b>
<b>5-9 Units</b>	47.1%
<b>10-19 Units</b>	55.5%
<b>20-49 Units</b>	71.5%
<b>50+ Units</b>	74.7%

Sources: Cook County Recorder of Deeds, Property Insight, Cook County Assessor's Office, Institute for Housing Studies at DePaul University

In New York City we were able to combine information on new mortgage originations from 2004 on with information regarding other mortgage related activity to estimate the number of properties with current mortgages. Using this process we found that in 2014 52.8 percent of the properties with 5-9 units had mortgages, 62.2 percent of those with 10-19 units had mortgages, 71.6 percent of those with 20-49 units had mortgages, and 81.2 percent of those with 50+ units had mortgages (see Table 6).<sup>23</sup> (With the data on annual mortgage originations in both geographies, we were also able to compare the rate at which mortgages were originated for each of the different building sizes and found a similar relationship: the smaller the building size category the lower the rate at which mortgages were originated per 1000 buildings.)

Table 6: Percent of Properties with Active Mortgages by Building Size, 2014, New York City

<b>Building Size</b>	<b>Percent With Mortgage</b>
<b>5-9 Units</b>	52.8%
<b>10-19 Units</b>	62.1%
<b>20-49 Units</b>	71.6%
<b>5-49 Units</b>	59.6%
<b>50+ Units</b>	81.2%

Sources: New York City Department of Finance, ACRIS, NYU Furman Center

We also tested whether the relative rankings of mortgage share held up when controlling for the age distribution of the properties and the income quartile. Tables 7 through 10 show that in every age group and across all neighborhood income quartiles the ranking holds, except for an essential tie for 5-9 unit buildings in the 3<sup>rd</sup> and 4<sup>th</sup> quartiles (76.9% and 76.8% respectively). Looking first at vintages in Cook County, the small multifamily rental properties least likely to have a mortgage appears to be 5-9 unit buildings built in the last fifty years (40.2%) and those most likely are 50+ units built 51-75 years ago (78.8%) with a similar percentage for those built 76-100 years ago. Looking at the breakdown by income quartile, the lowest percent was for 5-9 unit buildings in the third quartile (44.2%) and the highest for 50+ in the highest/fourth quartile (77.0%).

<sup>23</sup> To ascertain if a building had a mortgage that had been originated prior to 2004, we looked for other indicia in the deeds data that might indicate the existence of a mortgage (see Appendix I on data and methods). While this process may not have allowed us to identify all the properties that had mortgages in 2014 (and so may have resulted in an underestimate of the percentages), we have no reason to believe that the mortgages we were unable to identify were other than randomly distributed across building size and so would not change the ranking.

For New York City, the vintage analysis found that the lowest percent of small multifamily rental properties with mortgages was for 5-9 unit properties build from 1947-1973 (47.5%) and the highest percentage was for 50+ buildings built during the same period (84.2%). When looking at quartiles the lowest percent is for 5-9 unit properties in the third quartile (47.8%) and the highest is for 50+ unit properties in the second quartile (84.5%).

While it may not be surprising to find the rankings hold whether controlling for vintage or income quartile, it did come as a surprise that the highest or next highest percent of properties with mortgages were in the lowest quartile for all property sizes in both localities. One might have expected the opposite given that properties in census tracts with lower median incomes tend to have lower rents and so might find it harder to demonstrate an ability to carry debt service. Perhaps, though, the data reflects a greater demand by these owners for mortgage financing and/or the ability to participate in a government program that includes mortgage financing.

Table 7: Percent of Parcels with Mortgages in Cook County by Vintage and Size, 2005-2013

	Over 100 years old	76-100 years old	51-75 years old	50 years old or less	Overall %
<b>5-9 Units</b>	52.6%	51.3%	45.0%	40.2%	47.1%
<b>10-19 Units</b>	59.7%	60.9%	45.2%	52.7%	55.5%
<b>20-49 Units</b>	68.5%	73.6%	68.2%	66.5%	71.5%
<b>50+ Units</b>	68.2%	78.2%	78.8%	70.8%	74.7%
<b>Overall % for the vintage</b>	54.5%	59.7%	47.4%	47.6%	53.0%

Sources: Cook County Recorder of Deeds, Property Insight, Cook County Assessor's Office, Institute for Housing Studies at DePaul University

Table 8: Percent of Properties with Mortgages by Vintage and Size, New York City, 2014

	Old Law Tenement (1879-1901)	New Law Tenement (1902-1946)	Rent Stabilization 1947-1973	Post 1974	Overall
<b>5-9 Units</b>	54.8%	51.3%	47.5%	67.4%	52.8%
<b>10-19 Units</b>	59.0%	61.7%	62.7%	77.4%	62.2%
<b>20-49 Units</b>	66.1%	71.4%	76.6%	80.0%	71.6%
<b>50+ Units</b>	76.1%	81.5%	84.2%	76.6%	81.2%
<b>Overall</b>	59.2%	60.7%	75.8%	73.0%	62.2%

Sources: New York City Department of Finance, ACRIS, NYU Furman Center

Table 9: Percent of Properties with Mortgages by Census Tract Income Quartile and Size, Cook County 2005-2013

	Quartile 1 (Lowest)	Quartile 2	Quartile 3	Quartile 4 (Highest)	Overall
<b>5-9 Units</b>	51.2%	45.7%	44.2%	48.8%	47.1%
<b>10-19 Units</b>	59.0%	53.3%	52.5%	58.4%	55.5%
<b>20-49 Units</b>	76.9%	70.6%	67.6%	68.4%	71.5%
<b>50+ Units</b>	76.8%	72.2%	72.4%	77.0%	74.7%
<b>Overall</b>	58.0%	51.1%	49.6%	54.3%	53.0%

Sources: Cook County Recorder of Deeds, Property Insight, Cook County Assessor's Office, American Community Survey (2008-2012), Institute for Housing Studies at DePaul University, NYU Furman Center

Table 10: Percent of Properties with Active Mortgages, By Census Tract Income Quartile and Size, New York City, 2014

	Quartile 1	Quartile 2	Quartile 3	Quartile 4	Overall
<b>5-9 Units</b>	58.7%	52.4%	47.8%	50.7%	52.8%
<b>10-19 Units</b>	64.0%	66.7%	61.9%	57.5%	62.1%
<b>20-49 Units</b>	74.1%	72.6%	67.6%	67.5%	71.6%
<b>50+ Units</b>	83.2%	84.5%	80.2%	72.8%	81.2%
<b>Overall</b>	67.7%	62.0%	56.2%	58.5%	62.2%

Sources: New York City Department of Finance, ACRIS, American Community Survey (2008-2012), NYU Furman Center

To further test the relationship between property size and likelihood of a mortgage in New York City, we ran a linear probability regression that controlled for the property size, vintage, census tract income quartile, and a number of other parameters (see Regression Appendix II, Table A1 for the complete regression). Table 11 shows the coefficients on the property size dummy variables. These coefficients reflect the differences in probabilities of having a mortgage compared to the 50+ buildings (All of the coefficients are significant at  $p < 1\%$  level). The regression coefficients evidence the same relationship: the smaller the size of the building, the less likely it is to have a mortgage. A 5-9 unit building is 22.5 percentage points less likely to have a mortgage than a 50+ unit building, a 10-19 unit building is 14.3 percentage points less likely, and a 20-49 unit building is 5.8 percentage points less likely.

Table 11: New York City, Differences (in Percentage Points) in the Probability of Having a Mortgage Compared to a 50+ Unit Building

Building Size	Percentage Point Difference
<b>5-9 Units</b>	-22.5
<b>10-19 Units</b>	-14.3
<b>20-49 units</b>	-5.8

Source: See Regression Coefficients, Appendix II, Table A1

We even tested to see if these relationships persisted before, during, and after the Great Recession and found no change in the relative ranking. In all of these periods, multifamily rental properties in the smallest size category were least likely to have a mortgage and those in the largest, the most likely. These mortgage gaps existed before the recession and still exist now although as we see later in the paper a little larger gap for 5-9 unit buildings opened up during the recession and has not closed.

### ***Testing for Impact of the Mortgage Gap on Long-term Sustainability***

While we do not have any direct measure of any differences that the mortgage gap signifies with regard to a relative access to capital, we can look for indicators that the long-term sustainability of the stock is being undermined. Factors we examine are: decreases in the absolute size stock of small multifamily rental properties over time, a particularly high rate of demolition of those properties, or noticeably worse condition of the stock. As the following shows, none of these possible indicia point to a problem with access to capital that has affected long term sustainability. The absolute size of the stock of small multifamily rental properties does not appear to be diminishing over time and in fact the stock of rental units increased from 2000 to 2010-14 in 5-9, 10-19, and 20-49 unit buildings (see Table 12).<sup>24</sup> As for the condition of the stock, we found the opposite in NYC where we have the data to see that smaller multifamily rental buildings are less likely to have housing code violations than larger buildings.

Table 12: Percent Increase in Rental Units by Building Size, 2010-2014

	<b>U.S.</b>	<b>Cook County</b>	<b>Chicago</b>	<b>New York City</b>
<b>5-9 Units</b>	7.4%	7.7%	12.0%	1.1%
<b>10-19 Units</b>	8.0%	14.6%	15.5%	5.9%
<b>20-49 Units</b>	5.2%	8.5%	10.2%	9.7%
<b>50+ Units</b>	7.5%	5.4%	7.6%	4.4%
<b>Total</b>	7.1%	8.0%	10.2%	5.7%

Source: American Community Survey (2010, 2014)

Even over the longer run there is no evidence that the share of the stock that consists of small multifamily rental properties has diminished. If small multifamily rental properties were relatively starved for capital then we might expect to see a significant decrease in their share over time as the existing stock is abandoned, demolished, and not replaced. Of course other reasons as well could drive a decrease in their share such as a simple increased preference for larger rental buildings—perhaps because they can offer more amenities and common facilities such as an exercise area or community space. Regardless, we failed to find any appreciable changes in the size composition of the stock.

For Chicago, for example, of the buildings built in the last 50 years, 5-9 unit buildings account for 51.4 percent of that stock, a percent that exceeds its share of those dating back to the prior period and is close to the overall average of 53.1 percent for this building size across all vintages (see Table 3 above). As noted earlier in this paper, the share of the existing 10-19 unit buildings built in the most recent period also exceeds its overall average across all vintages. The share of 20-49 unit buildings built in the last fifty years does show a decline from the previous period as the share of 50+ units grew and the share of 20-49 unit buildings has declined in more recent vintages compared to the overall average

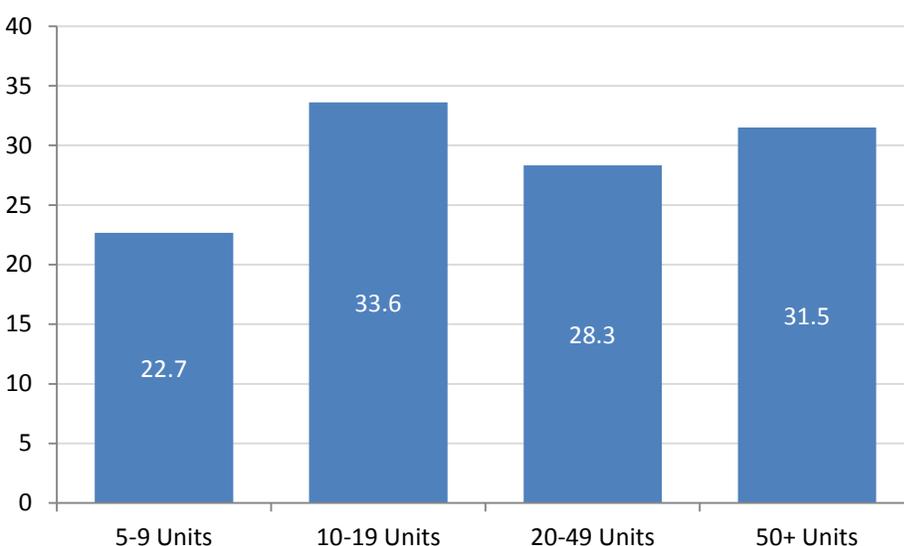
<sup>24</sup> Part of the increase in Chicago may be attributable to a change in tenure as condo units may have been converted to rental units during this period. Nevertheless, in all cases, the increase in the number of rental units exceeded the decrease in owner-occupied units for each of these building sizes.

across vintages which includes the period 76-100 years ago in which this building size particularly dominates.

A look at the present composition of New York City's housing stock reveals a similar mixed pattern with no clear pattern of a declining share of smaller properties over the long run. The share of buildings with 5-9 units built since 1973 essentially matches its overall share across all vintages of 46.4 percent (see Table 4 above). The recent share of buildings with 10-19 units is below the long term average but is up from the previous vintage. As with Cook County, buildings with 20-49 are underrepresented in the most recent vintage with the share of 50+ having grown significantly since the Second World War.

For New York City we also have data on demolitions which could provide a window on any differences across building sizes in the rate of abandonment. As Figure 4 shows, the demolition rate for smaller properties is not notably elevated compared to that for larger properties. In fact, the demolition rate is lowest for 5-9 unit buildings and highest for 10-19 unit buildings. If there is a problem with capital access for small multifamily rental properties, it is not leading to a higher rate of demolition.

Figure 4: Annual Average Demolition Permit Rate per 10,000 Properties, New York City, 2004-2014



Sources: New York City Department of Buildings, New York City Department of Finance, NYU Furman Center

Perhaps the most important test for whether mortgage gaps are having a negative effect on the long-term viability is to compare the condition of smaller buildings with that of larger ones. For this, we can look at data from the American Housing Survey (AHS) which rates building conditions as adequate, moderately inadequate, and severely inadequate. No clear trend across building size emerges with regard to building condition. As Table 13 shows, most of the small and large multifamily properties are in adequate condition in both metro areas: 86.3 percent overall for the New York City metro, with 85.4 percent for small multifamily and 87.5 percent for the large multifamily area (50+ unit buildings are 1.6 percentage points less likely than 5-49 unit buildings to be severely inadequate and 0.5 percentage points less likely to be moderately inadequate). For the Chicago metro area, the overall percent is 89.0 percent with 87.7 percent of the smaller and 92.0 percent of the larger deemed adequate (50+ unit

buildings are slightly more likely to be severely inadequate (3.6% versus 3.3%), but 4.6 percentage points less likely to be moderately inadequate.<sup>25</sup>

Table 13: Adequacy of Rental Housing by Building Size, 2013

Metro Area	Building Size	Adequacy of Housing		
		Adequate	Moderately Inadequate	Severely Inadequate
New York Metro	5-49 Units	85.4%	6.7%	8.0%
	50+ Units	87.5%	6.2%	6.4%
	<b>Total 5+ Units</b>	86.3%	6.5%	7.3%
Chicago Metro	5-49 Units	87.7%	9.0%	3.3%
	50+ Units	92.0%	4.4%	3.6%
	<b>Total 5+ Units</b>	89.0%	7.6%	3.4%

Sources: American Housing Survey, NYU Furman Center

For an even more nuanced look at the relationship between building size and building condition, we were able to create a unique database for New York City that matched information on the condition of a building with the building's size, age, and the relative income of its census tract as measured by the quartile of its median household income. To develop a proxy for condition we start with administrative data on the number of housing code violations placed on a building in each year.<sup>26</sup> The annual data on violations encompasses the period from 2004-2014.

In terms of raw numbers, the average number of violations per unit is lowest for the buildings with 50+ units, but amongst the smaller sized buildings there is no pattern (see Table 14). However, the average number of violations per unit can be misleading since a single violation might reflect conditions in an individual apartment or a problem that affects multiple tenants or the building as a whole. Unfortunately, we cannot normalize for this statistical artifact.

Another approach that avoids this problem is to look simply at whether a building has any violation at all. While this approach avoids the problem of building-wide violations, it cannot account for the intensity of the violations. It does, however, provide an indication of relative condition across buildings and presents a different picture with large differences across building sizes. This measure, albeit imperfect, raises the possibility that smaller buildings are actually in better condition—that is, less likely to have been issued any violation in that year. 80 percent of the 5-9 unit buildings have no violation compared to 39.0 percent for buildings with 50+ units (see Figure 5). We also performed the same analysis looking just at violations that pose an immediate threat to a tenant's health and safety (called "serious" or "C" class violations), and found no uniform pattern by size. The 5-9 unit buildings had the

<sup>25</sup> The sample size is too small to produce reliable percentages separately for the 5-9, 10-19, and 20-49 unit buildings. The American Housing Survey does not have enough observations to distinguish Cook County and New York City from their respective metropolitan areas.

<sup>26</sup> See appendix for more detail on housing code data. It should also be noted that in NYC, housing code inspectors generally go out only upon a complaint and inspections are generally not made proactively by the city.

highest average rate of these C violations while 10-19 unit buildings which also fall in the small building category had the lowest.

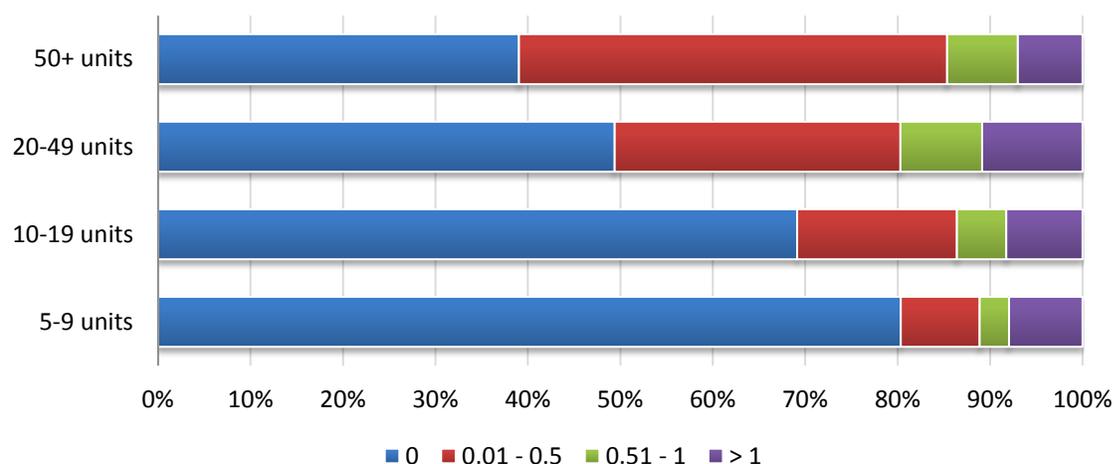
Figure 5 also provides more nuance on the intensity of violations with information on whether the building had no violations in a year and if they had at least one violation, whether the average number of violations per unit ranged up to 0.2, was more than 0.2 up to 0.5, was more than 0.5 up to 1.0 per unit, or had more than one per unit. 20-49 unit buildings are most likely to have more than 0.5 violations per unit, but otherwise no particularly pattern by building size seems to emerge.

Table 14: Average Housing Code Violations per Unit (Property-weighted), 2004-2014, New York City

	5-9 Units	10-19 Units	20-49 Units	50+ Units
<b>All Violations</b>	0.354	0.322	0.405	0.277
<b>Serious Violations</b>	0.089	0.075	0.087	0.054

Sources: New York City Department of Housing Preservation and Development, New York City Department of Finance, NYU Furman Center

Figure 5: Distribution of Housing Code Violations per Unit at the Property Level and by Property Type, 2004-2014, New York City



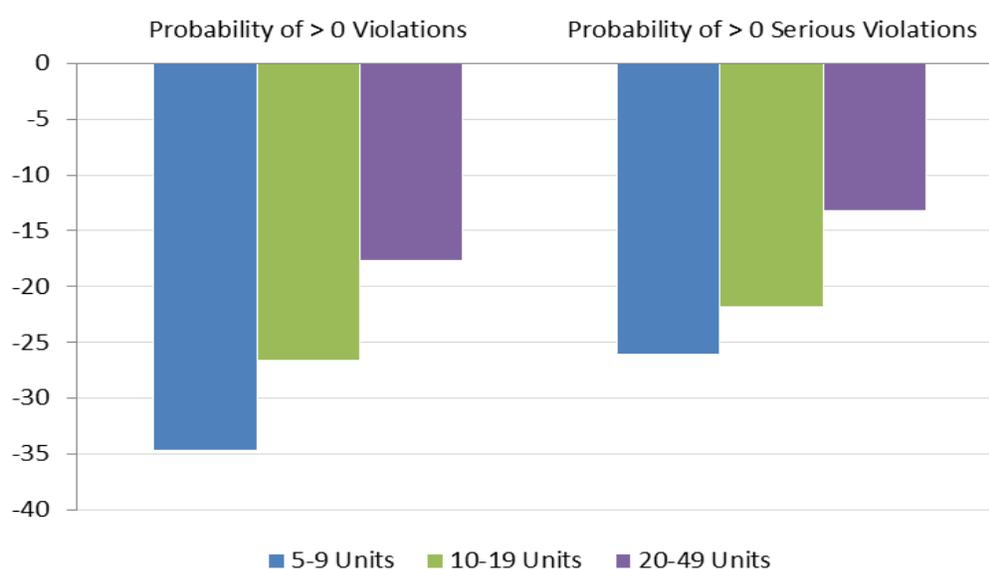
Sources: New York City Department of Housing Preservation and Development, New York City Department of Finance, NYU Furman Center

To test the robustness of this finding that smaller multifamily rental buildings are not necessarily in worse condition, we ran four regressions controlling for building size, census tract income quartile, and age of the building as independent variables (see Appendices I and II for more information on the variables). Because we already know that smaller buildings are less likely to have a mortgage and because we are testing to see if the lack of mortgages is correlated with building condition, we also included as an explanatory variable a dummy variable to indicate if the building does or does not have a mortgage. For the measure of condition we varied our summary measure of violations in a building: in one case using average violations per unit and in the other using a dummy variable to signify if the

building any violation at all. For each of these two measures, we also used looked at both total housing code violations and only the more serious C violations.

For buildings without mortgages we find that the smaller multifamily rental properties without mortgages generally appear to be in better condition (i.e., the coefficients are negative) compared to 50+ unit buildings without mortgages, which are the base case (see regressions results in Appendix II, Table A2). Focusing on version 3, for which we can interpret the coefficients as percentage rates give that the dependent variable is a dummy variable indicating the existence of any violation on a building, we can see that 5-9 unit buildings are 34.7 percentage points less likely to have a violation than are 50+ unit buildings, 10-19 unit buildings 26.6 percentage points less likely, and 20-49 unit buildings 17.7 percentage points less likely (see Figure 6). These findings are consistent with what we observed earlier in Figure 5.

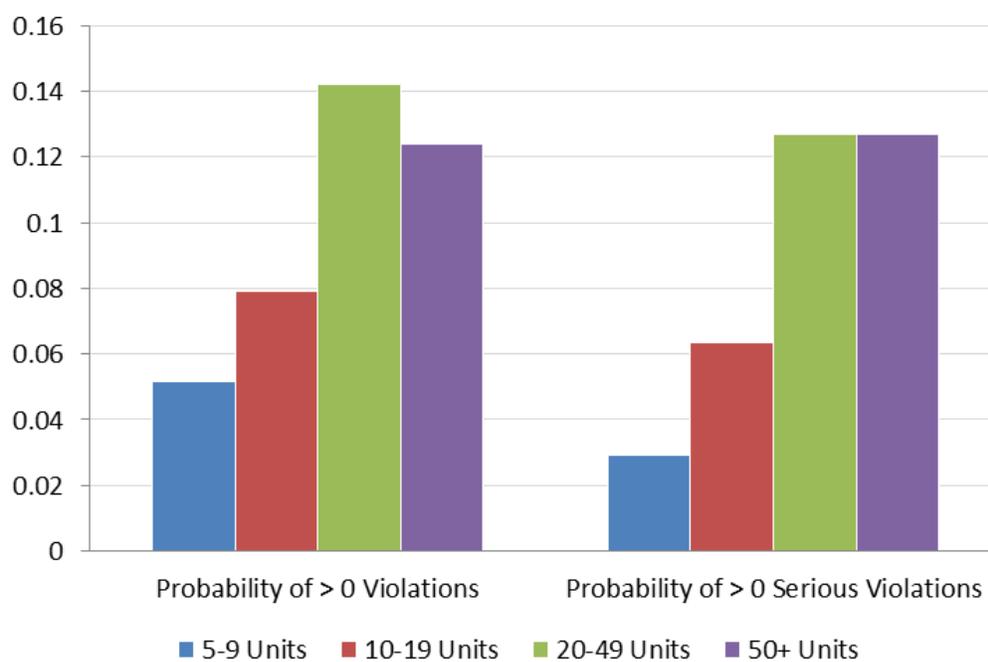
Figure 6: New York City, Differences (in Percentage Points) in the Probability of Having a Housing Code Violation without a Mortgage Compared to a 50+ Unit Building



Source: See Appendix II, Table A2, regression versions 3 and 4. All coefficients are significant at  $p < 1\%$  level

A particularly striking finding from running these regressions is that properties with mortgages were more likely to have a violation than those without a mortgage. Focusing again on the coefficients where the dependent variable is a dummy variable for the existence of any violation in the building, 20-49 units buildings are 14.2 percentage points and 50+ unit buildings are 12.4 percentage points more likely to have a violation if they have a mortgage than if they do not (see Figure 7). The smaller multifamily rental buildings are not only less likely to have a violation but the presence of a mortgage is relatively less harmful for the very small and medium small buildings than it is for these two larger-sized categories. Having a mortgage adds only 5.2 percentage points to the likelihood of having a violation for buildings with 5-9 units (12.4% – 7.2%), and 7.9 percentage points for buildings with 10-19 units (12.4% - 4.5%). All of the coefficients are significantly different from zero at the 1 percent level.

Figure 7: Net Effect of Mortgage on Violation Measures Relative to 50+ Unit Buildings without Mortgages, New York City, 2004-2014



Source: See Appendix II, Table A2, regression version 3 and 4 (the calculation of the net effect is shown in the box at the bottom of the Table A2).

While there is a possible logic for this finding (buildings with mortgage payments will leave the owner with less cash to use for maintenance or upgrades—a point that was identified in interviews with owners), it further calls into question whether the mortgage gaps are indicating a problem which is undermining the long term viability/sustainability of the stock of small multifamily rental properties or a sign of greater economic viability. As we discuss in the next session, the mortgage gap may have little or nothing to do with problems accessing capital but could simply be reflecting the preferences of small owners for how to fund their operations/business.

### ***Why the Lower Share of Smaller Multifamily Rental Buildings with Mortgages may not be Indicative of Poorer Access to Capital***

The lack of correlation between the size of the mortgage gap and indicators of long-term viability of the smaller multifamily rental stock calls into question whether the mortgage gaps reflect lower access to capital or have other causes. This section explores the evidence for three possible explanations for the lower take-up of mortgage financing by the owners of smaller sized properties: mortgage financing is less available; debt financing is less needed; and/or owners of these properties are more averse to burdening their properties with debt. While the available evidence is only suggestive, it is enough to draw into question the existence of a relative capital access problem for small multifamily rental properties and provides an explanation of why the mortgage gap has not led to properties being in poorer condition.

The logic behind the thinking that owners of small multifamily rental buildings find mortgage money less available focuses on the costs of making mortgages. The usual story is that banks find lending to these smaller properties less profitable and so banks are not incented to make these loans except to existing customers, thus limiting the amount of loans that will be made. At the core of this argument is the belief that these loans are no less costly to source, underwrite, and close and yet are smaller in size so that a bank would have to charge higher fees and interest rates to achieve the same profitability as is possible with larger loans.<sup>27</sup> Banks that we talked to and that are in the business of lending to smaller multifamily rental properties, however, told a different story. They indicated that this lending can and does meet their institutions internal profitability hurdles and fees and rates are not necessarily higher.

It is true that lending to small multifamily rental properties is not a business for every bank. Based on our interviews, it is a business that requires specialized expertise and knowledge of the local real estate market. In underwriting the loan, it is necessary to be able to assess the ability of the owner to manage the property and the ability of the property to generate sufficient net revenue (rental income minus operating costs) to make both regular debt payments and be able to set aside reserves for periodic major repairs and system upgrades. It also requires an appraisal of the property to determine whether its sale would offer an alternative means to repay the debt if cash flow becomes insufficient.

Many community banks (and historically savings and thrift banks in particular) have been known for specializing in this business. Even some large commercial banks have also figured out how to do this business profitably by standardizing documents to control the costs of processing and underwriting these loans and developing sufficient critical mass at the local level to be able to model local rental markets and so be able to assess rent and vacancy projections based on direct experience.<sup>28</sup> The bankers we interviewed saw this market as being quite competitive. So we should not be surprised that a recent study by Abt Associates for HUD was unable to find to find that owners of smaller buildings paid a higher interest rate on their mortgages.<sup>29</sup> We found that some banks do charge somewhat higher fees and interest rates but were apparently able to do so by offering superior service such as a shorter time from loan application to closing.<sup>30</sup>

As to the argument that loans to these properties are at higher risk of default, the evidence does not support the idea that these loans are necessarily riskier than for larger size buildings. It is true that the cash flow for buildings with fewer units is more vulnerable to even one vacancy, but, according to another Abt study, historical loan losses on loans to small multifamily properties were no higher than those on larger properties.<sup>31</sup>

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<sup>27</sup> It is also argued that owners of small properties may have poorer financial and management records, thus driving up the costs of underwriting and perhaps even discouraging the owners to apply for a mortgage in the first place.

<sup>28</sup> [Chase Commercial Mortgage Lending](#)

<sup>29</sup> Abt Associates, "[Examination of Alternative FHA Mortgage Insurance Programs for Financing Single-Family Rental and Small Multifamily Rental Properties](#)", *U.S. Department of Housing and Urban Development* (2015), 4, p. xxv "Unlike previous studies, our analysis does not find differences in interest rates between small and large multifamily loans originated from 2005 to 2012, although the sample of loans available was small."

<sup>30</sup> While it

<sup>31</sup> Schneider, D and Follain, J, "A New Initiative in the Federal Housing Administration's Office of Multifamily Housing Programs: An Assessment of Small Projects Processing." *Cityscape: A Journal of Policy Development and Research*, Volume 4, Number 1, p. 49: "The majority of lenders surveyed reported that small projects were comparable to larger multifamily properties in historical loan performance."

We also looked to see if the mortgage gap was larger for smaller buildings in low income neighborhoods than in higher income neighborhoods, the thought being that vacancies were more likely to be a problem where net operating income was low because of low rents and where vacancies might be more likely to arise. Again, we did not find that the size of the mortgage gap was any higher in census tracts with median incomes in the lowest quartile. For Cook County the difference in the percent of buildings with mortgages between those with 5-9 units and 50+ was 25.6 percentage points (76.9% - 51.2%) for buildings located in census tracts falling into the lowest income quartile, a spread not much different from the overall spread of 27.6 percentage points for all census tracts (74.7% - 47.1%). For New York City the same measure of the mortgage gap shows 9 percentage points in census tracts in the lowest income quartile (67.7% - 58.7%) and a 9.4 percentage point average difference overall (62.2% - 52.8%). In addition, we found no clear difference in the prevalence of small multifamily rental properties in lower income neighborhoods compared to higher income neighborhoods. Figure 2 above showed that in Cook County, 20-49 unit buildings to be slightly more prevalent in the lowest income quartile census tracts and 5-9 unit buildings slightly less prevalent. Figure 3 above illustrated a similar pattern in New York City with a disproportionately higher share of 50+ in the lowest income neighborhoods even though the numbers exclude public housing.

Another possible explanation for the lower take up of mortgages by owners of smaller multifamily properties might be that small multifamily properties are simply smaller and so require less cash for acquisition or to fund major repairs (two common reasons for taking out a mortgage), making it easier for owners to self-finance. From our interviews, we learned that some of the owners of these properties do maintenance work themselves (sweat equity), saving on labor costs. Owners with other assets, such as a primary residence, borrow against that equity. And owners with multiple small properties have found ways to access private investors, family offices, and investment funds. Two examples are Pangea Properties in Chicago and Prana Investments.<sup>32</sup>

The third possible explanation for the mortgage gaps is that a higher proportion of owners of small multifamily rental properties have an aversion to mortgage debt.<sup>33</sup> As we outlined earlier, smaller multifamily rental properties are more likely to be owned by individual investors, many of whom appear to be of the “mom and pop” variety who own just one or a couple of properties and may even occupy one of their units. Based on the interviews and circumstantial evidence that can be gleaned from available data, many of these owners are reluctant to rely on borrowed money. They tend to pay down rather than refinance their mortgages.<sup>34</sup> Since these owners often have only modest expectations for

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<sup>32</sup> [Pangea Properties](#) and [Prana Investments](#)

<sup>33</sup> Mortgages on smaller multifamily rental properties appear to have shorter maturities than those on larger properties. It is not clear, however, to what degree this reflects an absence of well-priced, long-term small loans or simply a preference for the lower interest rates offered by adjustable rate products (the existence of this latter preference surfaced in some of our interviews). One of the options discussed in the policy section of the paper is to ensure that owners of these smaller properties have access for longer-term mortgages through programs offered by the Federal Housing Administration, Fannie Mae, and Freddie Mac. For data on loan maturities see U.S. Department of Housing and Urban Development, [U.S. Residential Housing Finance 2012](#), table 3, p 93, where the median term of first mortgage is 15 years for properties with 5-24 units, 22 years for 25-49, and 20 for 50+

<sup>34</sup> American Community Survey, “Residential Finance Survey: 2001”, the ratio of refinances to mortgages made or assumed at time property acquired is 25.7% for properties with 5-49 units (Table 6-3, p. 171) versus 42.6 % for 50+ units (Table 7-2, p. 197). The lower rate of refinancing is particularly noteworthy since mortgages on small multifamily rental buildings tend to have shorter maturities than those on larger building. See U.S. Department of Housing and Urban Development, [“U.S. Residential Housing Finance 2012”](#), table 3, p. 93, where the median term of first mortgage is 15 years for properties with 5-24 units, 22 years for 25-49, and 20 for 50+. If both sets of

expanding their real estate holding, they see no advantage in being levered. They view debt as making their properties more vulnerable to default during hard times when only one or a few vacancies can undermine any positive cash flow. What we heard during our interviews was that these owners want to preserve their properties indefinitely as an annuity for themselves and a legacy to their children. For the mom and pop owners of these small properties, re-leveraging the property may not be worth the increased risk of default, especially given the interest in the long term income-generating potential and an asset to pass on to their children.

While it is hard to sort out exactly what factors account for the mortgage gap that exists for small multifamily rental properties, it appears that at least part of the reason is the availability of alternative funding options and owner preferences to minimize debt. This finding is consistent with our inability to find that these buildings are suffering from a relative lack of capital compared to what is available for larger rental properties.

### ***Were Small Multifamily Rental Buildings Disproportionately Disadvantaged by the Financial Crisis and Great Recession?***

One concern that motivated this study was the fear that the combination of the financial crisis and Great Recession might have permanently disadvantaged the sustainability of small multifamily rental buildings. The logic went that the bank closings and the tightening of bank regulations had permanently lowered the ability of owners of small multifamily rental properties to obtain mortgages, thus weakening the long-term sustainability and viability of that stock. Chicago in particular witnessed the closing of a number of community banks that were known to lend to properties of this size as well as the issuance by bank regulators of cease and desist orders that restricted the ability of the surviving banks to extend any more real estate loans. Also happening at the same time in both cities, banks under pressure from regulators and suffering large loan losses on their current portfolios, began to reassess their lines of credit to CDFIs in response to heightened regulatory oversight and a general tightening of underwriting standards.

During this period, bank lending did fall across the country and mortgage lending was no exception. Mortgage originations fell in both cities and for all sizes of small multifamily rental properties. While the decline in lending in the New York mortgage market was similar in order of magnitude to that in Chicago for each building size, the mortgage market recovered faster in New York. However, in neither city does it appear that the recession-induced dip signaled a permanent change in the availability of mortgages overall or for any of the different building sizes. At this point in time, the pace of mortgage originations seem to be well on its way to a full recovery for all property sizes. With our more detailed data for New York City we can even see that by 2014 lending levels from the commercial and savings banks were pretty much back to pre-recession levels as was sales activity across for all building sizes.

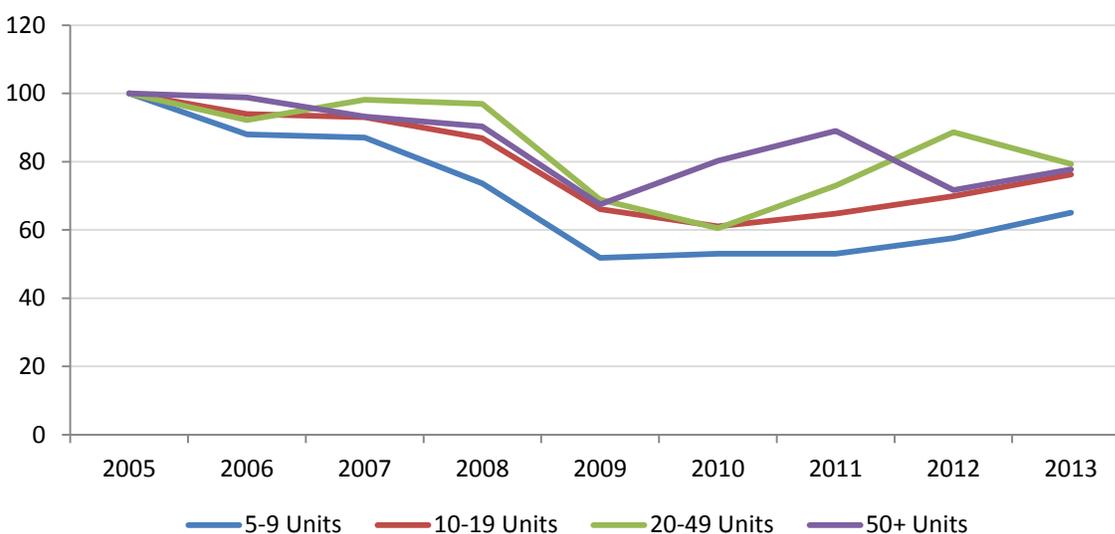
The decline in mortgage origination rate in Cook County had its origins at least as far back as 2005. See Figure 8. The decline bottomed out in 2009-2010 but had still not quite regained prerecession levels for any of the building sizes by 2013. However, more recent anecdotes and extrapolating of the trends that

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owners were equally likely to refinance, then we would expect owners of the smaller buildings to refinance at a higher rate given the shorter maturities of their mortgages

were already well underway suggest that lending is essentially now back to its pre-recession levels.<sup>35</sup> By 2013 the recovery of mortgage origination rates was furthest along in the census tracts in the highest median income quartile and lagging the most in census tracts in the lowest income quartile where our interviews had highlighted how the recession had been most severe in increasing vacancy rates and lowering property values.

Figure 8: Index of Cook County Mortgage Origination Rates by Building Size (Index = 100 in 2005)

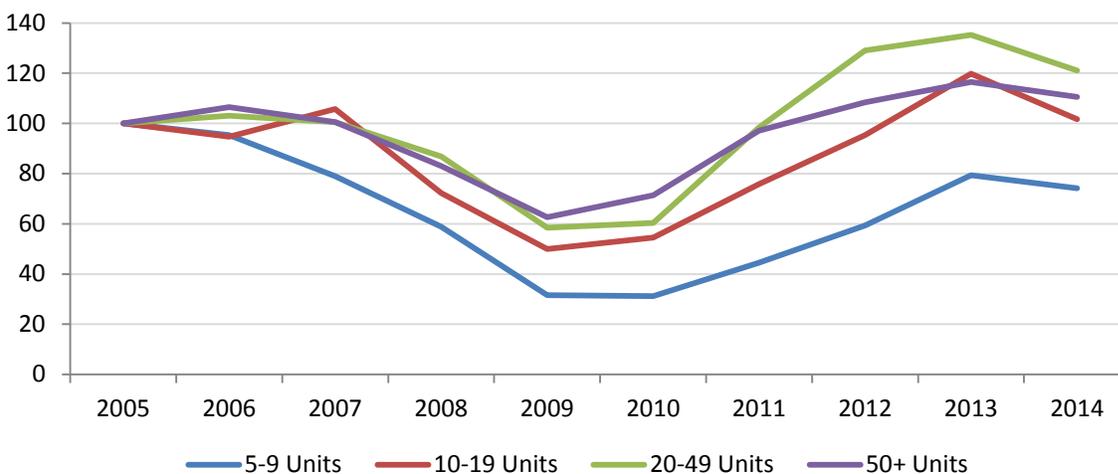


Source: Cook County Recorder of Deeds, Property Insight, Cook County Assessor's Office, Institute for Housing Studies at DePaul University

The mortgage origination rates in New York City also experienced dips roughly comparable to those in Cook County for all building sizes, except for 5-9 unit buildings, which suffered a much larger percentage decrease in New York City (see Figure 9). The recovery, however, was much faster in New York City with all but 5-9 unit buildings back to levels at or above their pre-recession levels. The pattern was similar regardless of neighborhood income (see Figure 10).

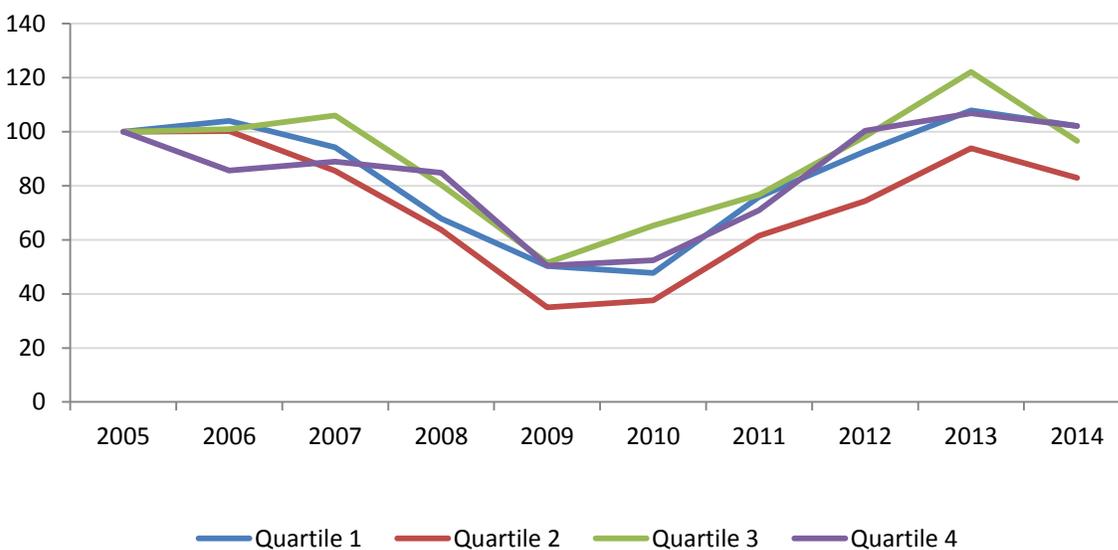
<sup>35</sup> Additional support that the loan volume for loans to small multifamily rental properties has recovered in Chicago comes from Home Mortgage Disclosure Act data on small multifamily mortgage loans (those between \$1 and \$3 million) show that volume had returned to prerecession levels by 2013. Institute for Housing Studies at DePaul University, "[Understanding Neighborhood Multifamily Lending Trends in the Wake of the Housing Crisis](#)," *State of Rental Housing In Cook County*. November 9, 2014.

Figure 9: Index of New York City Mortgage Origination Rates by Building Size (Index = 100 in 2005)



Sources: New York City Department of Finance, ACRIS, NYU Furman Center

Figure 10: Index of New York City Mortgage Origination by Neighborhood Income Quartile (Quartile 1 is the lowest income quartile and 4 is the highest) (Index = 100 in 2005)



Sources: New York City Department of Finance, ACRIS, American Community Survey (2008-2012), NYU Furman Center

For New York City we were also able to assess the rebound in mortgage originations by type of bank to see if there had been a fundamental shift in the availability of mortgage money from these institutions. To do this analysis, we determined which type of bank originated the mortgage by relying on the name of the mortgagee in the deeds records. For those banks which had merged, been acquired, or simply closed with their assets and or liabilities transferred to other financial institutions, we categorized them by the type of bank that acquired the assets. (See appendix I for a more detailed description of the process followed.) What we found for New York City is that both the commercial and savings bank sectors, the two largest sources of mortgages for multifamily rental properties, are again originating

loans at essentially the same rate they were before the recession with no obvious evidence that the recession caused a permanent shift in the complexion of the market (see Figure 11.)

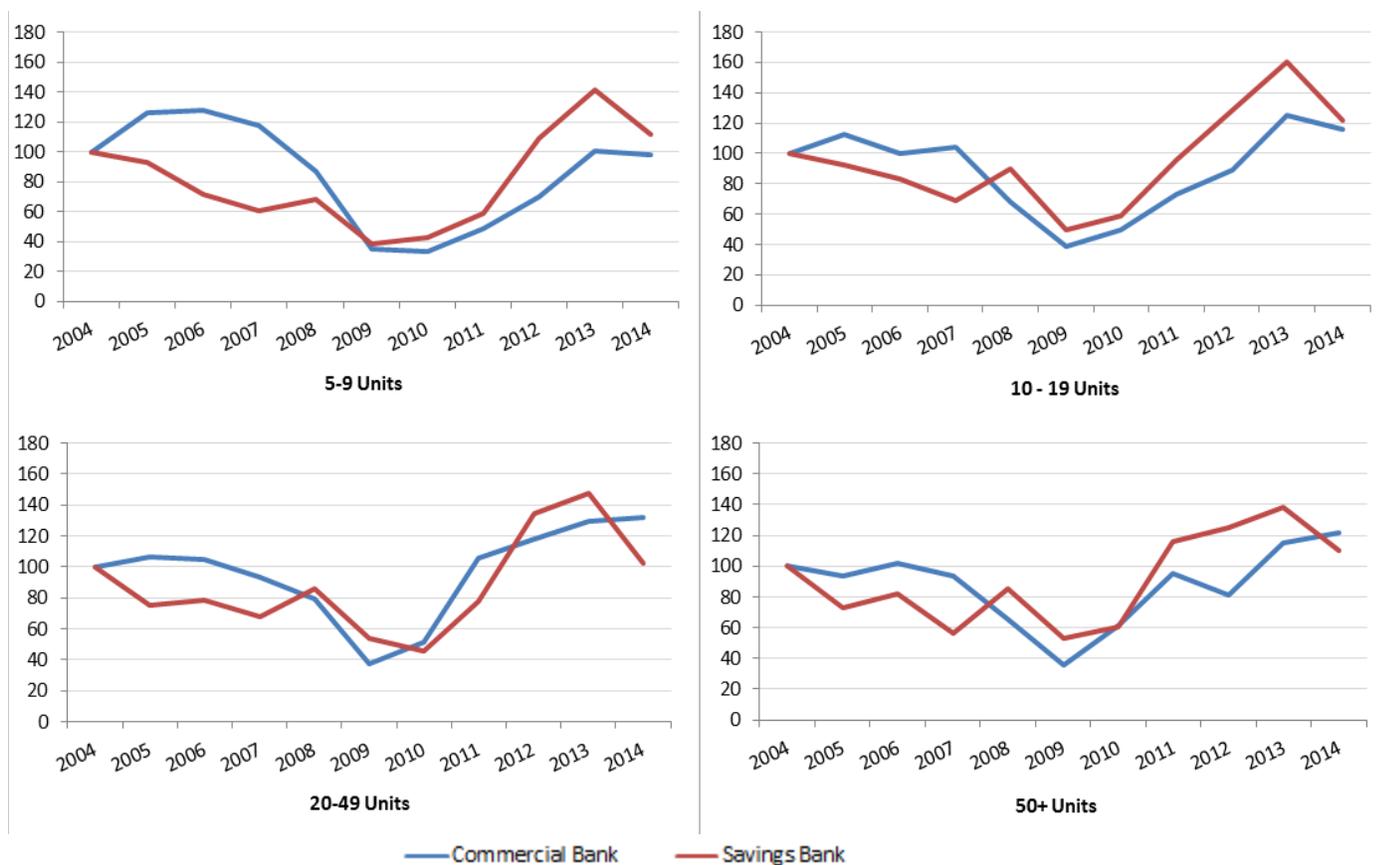
Figure 11: Index of Mortgage Originations per 1000 Multifamily Rental Properties by Commercial and Savings Banks, New York City, 2004-2014 (2004=100)



Sources: New York City Department of Finance, ACRIIS, Federal Deposit Insurance Corporation, American Community Survey (2008-2012), NYU Furman Center

We also looked to see if the pattern differed for buildings of different sizes and for neighborhoods at different income levels. In all cases we found a similar pattern of recovery in bank lending across all building sizes. See Figure 12.

Figure 12: Index of Mortgage Originations per 1,000 Multifamily Rental Properties by Commercial and Savings Banks by Building Size, New York City (Index = 100 in 2004)



Sources: New York City Department of Finance, ACRIIS, Federal Deposit Insurance Corporation, American Community Survey (2008-2012), NYU Furman Center

Given the concern that the financial crisis and recession might have had a disproportionately and potentially permanent negative impact on the viability of the stock of small, multifamily rental properties, it is important to recall our earlier finding that the number of units in these buildings actually rose from 2010 to 2014 (see Table 12 above). For 5-9 unit buildings the increase in units was 12.0 percent in Chicago and 1.1 percent in New York City; for 10-19 unit buildings, it was 15.5 and 5.9 percent respectively, and for 20-49 unit buildings, 10.2 and 9.7 percent respectively.

For NYC we were also able to look to see if the market for buying and selling smaller multifamily rental properties was impacted more than it was for larger properties. A relative drop in sales for smaller multifamily rental properties could be a sign of a relative decline in the ability of the owners to access capital. Our findings are in this sense reassuring since we found that the sales rate for each of the building sizes is pretty much back to pre-recession levels (see Figure 13). Not surprisingly, we did find that, during the recession, there was an increase in the share of sales for which we could not find a mortgage and so presumably were all cash (see Table 15). More recently, the share of sales financed at least in part with a mortgage has now moved back up but still remained somewhat depressed for buildings with 5-9 units and 10-19 units.

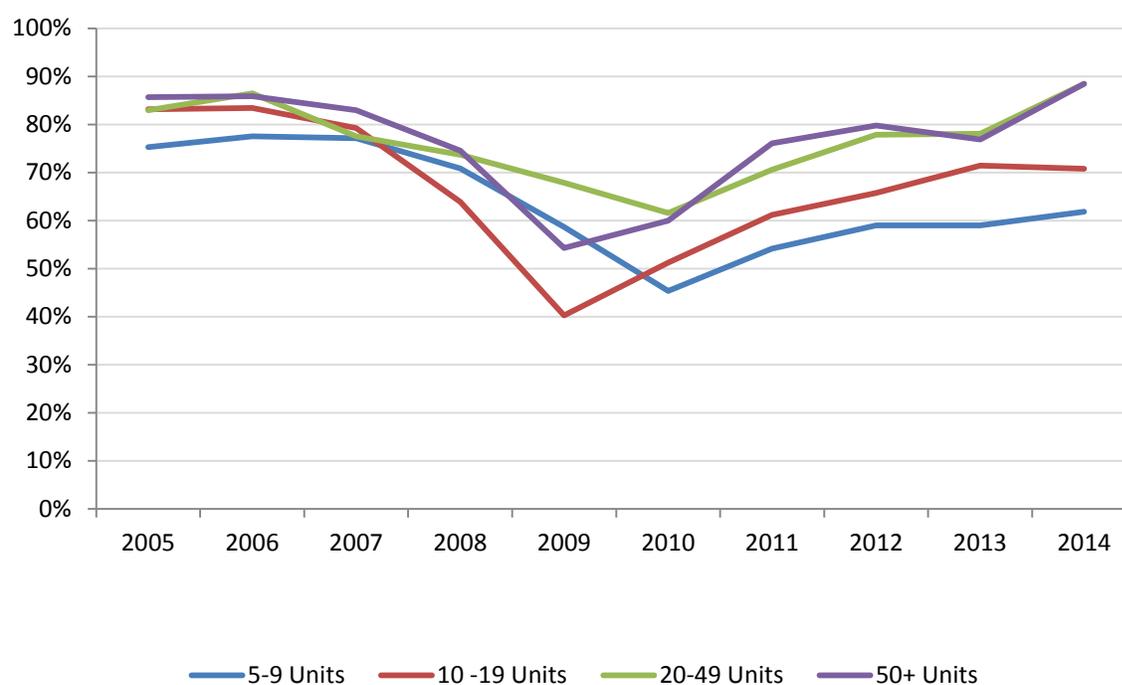
Table 15: Percent of Sales Associated With a Mortgage by Size, New York City

	5-9 Units	10-19 Units	20-49 Units	50+ Units
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<b>2005</b>	75.3%	83.2%	83.0%	85.7%
<b>2006</b>	77.6%	83.5%	86.5%	85.9%
<b>2007</b>	77.2%	79.3%	77.6%	83.0%
<b>2008</b>	70.9%	63.9%	73.7%	74.6%
<b>2009</b>	58.7%	40.3%	67.9%	54.3%
<b>2010</b>	45.4%	51.3%	61.6%	60.0%
<b>2011</b>	54.2%	61.2%	70.6%	76.1%
<b>2012</b>	59.0%	65.8%	77.9%	79.8%
<b>2013</b>	59.0%	71.5%	78.1%	76.9%
<b>2014</b>	61.9%	70.8%	88.5%	88.5%

Sources: New York City Department of Finance, ACRIS, NYU Furman Center

Figure 13: Percent of Sales Associated with a Mortgage by Size, New York City

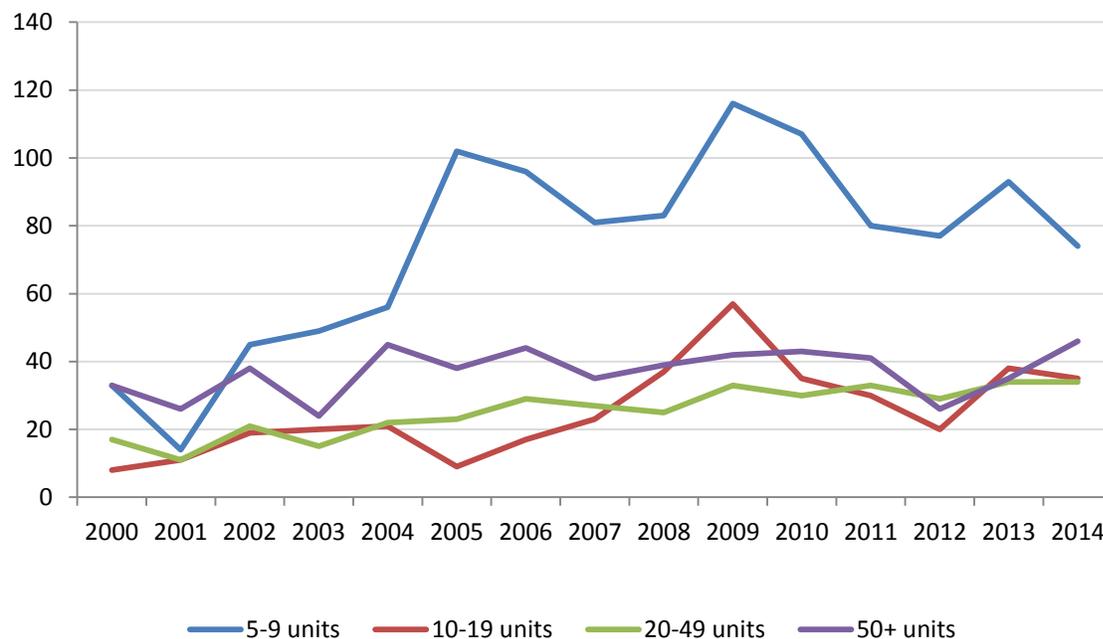


Sources: New York City Department of Finance, ACRIS, NYU Furman Center

Another measure of possible long term impact would be to see a fall in construction completions as measured by the issuance of certificates of completion. Again, the data shows a somewhat surprising steady or increasing number of certificates of occupancy issued for multifamily buildings of all sizes throughout the recession and post-recession periods (see Figure 14). The fact that certificates of occupancy did not fall immediately with the onset of the recession is not surprising since they are issued upon the completion of buildings which presumably had started earlier. However, certificates of occupancy do not seem to have dipped even 2-3 years later, perhaps because some developers slowed the speed of construction so as to stretch out completion times. Interestingly, the largest number of buildings issued a certificate of occupancy in every size category was the highest or next highest in

census tracts with median incomes in the lowest quartile.<sup>36</sup> While construction held up, demolitions fell to similarly low levels for all building sizes (see Figure 15).

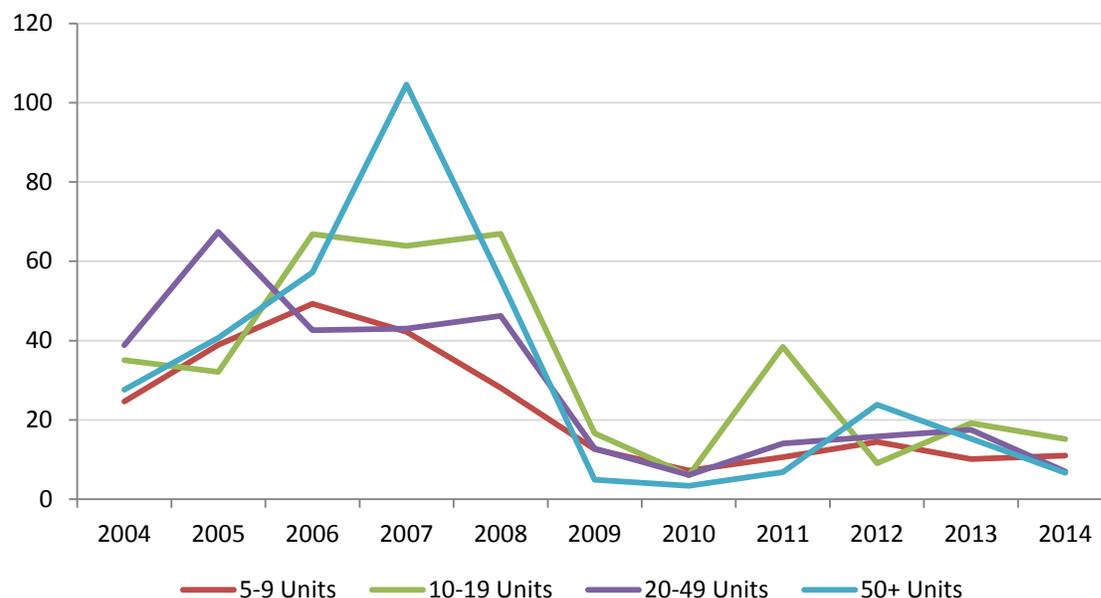
Figure 14: New Certificates of Occupancy Issued for Multifamily Rental Properties by Size, New York City



Sources: New York City Department of Buildings, New York City Department of City Planning, New York City Department of Finance, NYU Furman Center

Figure 15: Annual Demolition Rate by Property Size

<sup>36</sup> The reason for this may in part be the continued production under New York City's affordable housing programs. While we were able to remove public housing units from our database, we could not separate out units built under these programs. To the extent such units are located in low income neighborhoods, they could account at least in part for the higher rate of production there



Sources: New York City Department of Buildings, New York City Department of Finance, NYU Furman Center

To see how the financial crisis and Great Recession affected the relative share of properties with mortgages for buildings of different sizes, we included time periods in our regressions to distinguish between the pre-recession period (2004-2007), the recession (2008-2010), and post-recession (2011-2014).

As for the likelihood of having a mortgage, only buildings with 5-9 units saw an incremental decrease in the share of properties with a mortgage compared to that for 50+ unit buildings (other building sizes showed no significant change). This widening of the gap amounted to 2.1 percentage points during the recession years (2008-10) and grew further to 3.9 percentage points post-recession (2011-14). See regression in Appendix II, Table A1. This finding was not unexpected given the larger decline during the recession in the rate of mortgage originations and the slower recovery for this building category.

The coefficient measuring impact on the condition of 50+ unit buildings during the recession and post-recession periods varies across the four regression variations with, if anything, perhaps a slight suggestion of an improvement in condition during both periods or at least a decline in violations issued either because of fewer complaints or a reduction in the number of inspections. The relative impact on the other building sizes also showed mixed results with both negative and positive coefficients, some significant, some not, suggesting that the recession and post-recession periods had limited impact on the condition overall across the different building size classes (see regressions in Appendix II, Table A2). Looking just at the regression with the outcome of a dummy variable indicating the presence of at least one housing code violation (version 3), we find that the smaller the building size the greater the negative impact of the recession on the condition of the stock (i.e., a relative decrease in violations and hence a relative improvement in condition) compared to the impact on buildings with 50+ units (all coefficients are significant from zero at the 99% level). With the coefficients being percentage points, the results indicate that during the recession buildings with 5-9 and 10-19 units were an additional 1.4 and 1.8 percentage points less likely than 50+ buildings to have any violation, respectively. 20-49 unit buildings

were 1.5 percentage points more likely to have a violation than 50+ buildings, although 20-49 unit buildings were still less likely to have violations during the recession than before. Only for 10-19 unit buildings did the differential persist post-recession and be significant at the 99 percent level.<sup>37</sup>

### ***Policy Observations***

Our examination of multifamily properties in Chicago and New York City calls into question the idea that the long term viability of small multifamily rental properties is suffering from a capital shortage. While small multifamily rental properties are less likely to have a mortgage, it does not seem to follow that owners of this stock are finding it harder than are owners of larger properties to access the capital they need to maintain and sustain their buildings. Rather than find this segment of the rental marketplace in decline or in poorer condition than its larger counterparts, we find that it continues to grow and to be in pretty much the same condition as that of larger buildings. Our examination of housing code violation data for New York City even suggests that smaller multifamily rental buildings may be in somewhat better than their larger counterparts.

While the overall picture is not consistent with there being a relative shortage of capital for owners of small multifamily rental properties compared to those of larger buildings, these findings are not dispositive as to a possible role for such government housing financing programs as FHA, Fannie Mae, and Freddie Mac.<sup>38</sup> These programs can be particularly useful for serving multifamily properties of all sizes in geographies that have been historically underserved with the additional advantage of offering longer term debt. They also have been able to provide important procyclical support to mortgage markets.

Renewed focus on ensuring that owners of small multifamily rental properties have access to the benefits made possible by these three institutions has resulted in new initiatives to strengthen the secondary market for small balance loans, making it possible for CDFIs, mortgage companies, and banks more generally to originate and sell mortgages with longer maturities.<sup>39</sup> As with the multifamily mortgage market as a whole, caution should be taken to avoid displacing private funding markets that are working well (e.g., banks are originating loans these loans for their own balance sheets). Otherwise, the lower interest rates made possible by attracting investors by means of an implicit or explicit government guarantee may only serve to push up the price buyers of these properties are willing and able to pay, without benefiting renters except perhaps in the very long run.

For those properties that need repairs but lack sufficient income to be able to cover debt service, grants or low-cost loans from the government can be critical. And it is here that CDFIs can, in particular, be an important partner for government in reaching out to the owners of these buildings and helping them

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<sup>37</sup> The impact of the recession also depended on the income quartile of the census tract with buildings in the lower income tracts showing somewhat higher rates of having any violation.

<sup>38</sup> Ingrid Gould Ellen and Mark A. Willis. "[Improving U.S. Housing Finance through Reform of Fannie Mae and Freddie Mac: Assessing the Options.](#)" White Papers, NYU Furman Center, 2010

<sup>39</sup> These initiatives include Fannie Mae's Small Loan Program, Freddie Mac's Small Balance Loan initiative, and FHA Section 542 Small Building Risk Sharing Program. The development of these programs by Fannie and Freddie is in part a response to their regulators inclusion of a sub-goal for small multifamily lending as part of their overall Affordable Housing Goals

navigate the intricacies of government programs. CDFIs also can play a particularly important role during economic downturns when the buildings least able to ride out the downturn are in need of major repairs to avoid becoming a blight on the surrounding community. This is clearly the role that CIC in Chicago played during the Great Recession which caused rents and collateral values to fall.<sup>40</sup> The ability of CDFIs to use their specialized expertise to work with the owners of small multifamily rental properties makes it especially important that government continue to provide support for the CDFI industry throughout the economic cycle and that regulators work with banks to ensure that CDFIs have the funding they need particularly at times when the private sector is pulling back.

### ***Conclusion***

This study combined interviews and administrative data for New York City and Chicago to examine the premise that the owners of small multifamily rental buildings have more trouble accessing capital than do owners of larger buildings, raising concerns about the long-term sustainability of this important component of the country's housing stock. Adding to these concerns, the recent financial crisis and Great Recession triggered a large fall in mortgage originations, particularly lower income neighborhoods of Chicago, causing some to worry of a permanent reduction in the availability of capital.

Our study did confirm that Chicago and New York City look much like the nation does with smaller multifamily rental buildings being less likely to have a mortgage than larger ones. However, our research raises doubts that these mortgage "gaps" indicate a problem with the long-term sustainability of this stock. Our interviews and data suggest that many of those who own these smaller properties have less need for mortgage debt and less desire to burden their rental properties with mortgage debt. Moreover, they appear able to meet their capital needs from their own resources, including borrowing against other assets they may have such as a primary residence.

If the smaller share of mortgages were indicative of a problem with access to capital, then we might expect smaller multifamily rental properties to be in worse condition and to be falling in numbers over time. Neither seems to be the case. In fact, using more detailed information on housing code violations for New York City, we found evidence that the smaller sized buildings may be in better condition than larger ones. Similarly, sales, building completions, and demolition data also show continued vitality and growth of the small multifamily rental stock. This is not to say accessing capital will be difficult when economic downturns leave buildings with insufficient net income due to low rents and high vacancy rates or with low or falling collateral values.

While the evidence does not support the premise that smaller multifamily rental stock is being handicapped by a relative disadvantage in accessing capital, government can play a role by providing subsidies for properties with inadequate or variable net operating income to be able to make regular debt service payments. Even for those properties with sufficient cash flow to borrow, government can ensure that they have the same access that larger properties have to the longer term, fixed rate products offered by Fannie Mae and Freddie Mae who also have been more reliable lenders through

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<sup>40</sup> Shilling, J.D., "The Multifamily Housing Market and Value-at-Risk Implications for Multifamily Lending", Working Paper, Chicago: DePaul University, Institute for Housing Studies, (2010), p 2. The extent to which falling rents jeopardized the rental stock in Chicago was documented "Disinvestment is occurring as rents and property values are declining. Net rental revenues are currently at or below total operating costs for about 74,000 rental units in the city of Chicago."

economic downturns when private capital is likely to be withdrawn as we saw during the last recession. Lastly, government agencies and bank regulators should continue to work to ensure that CDFIs such as CIC and CPC can continue to fill important market niches throughout economic/real estate cycles.

## Appendix I, Data Sources and Methods

Data analysis in this project primarily relies on multiple parcel-level administrative data sets from the City of New York and Cook County, Illinois, and secondarily on survey data from the U.S. Census Bureau’s American Community Survey. This chapter describes data sources and measure creation in greater detail than the narrative section of the report.

- **New York City Administrative Data**
- **Properties (Study Population)**

We draw our property-level data from tax roll files obtained from the New York City Department of Finance from 2000 through 2014.<sup>41</sup> These files include a complete listing of all parcels in New York City along with several fields describing their physical characteristics, including size (residential units), year built, and building class (use type). Each parcel has a unique parcel identifier (borough, block, and lot, also known as BBL), which allows us to join these characteristics to many of the administrative data sets described below.<sup>42</sup> We restrict our multifamily rental property population to parcels marked as primarily residential properties that are not cooperative or condominium properties within building classes B, C, and D that have at least five residential units.<sup>43</sup> We also exclude all public housing by joining our data to a list of properties owned by the New York City Housing Authority; thus our population generally includes privately owned rental properties. In any year between 2000 and 2014, our multifamily rental population includes just over 50,000 properties containing over 1.2-1.3 million residential units. For purposes of comparison in some analyses, we also set up a population of privately owned two- to four-unit residential rental properties, although the owner may occupy at least one of the units in those properties.

We classify each property by size and age for many analyses. We base the following size categories on the property’s number of residential units: 5-9, 10-19, 20-49, and 50 or more units. We generally define properties with 5 to 49 units as “small” multifamily properties and properties with 50 or more units as “large” multifamily properties. We occasionally present results for the small multifamily (5-49 unit) subpopulation as a whole. We determine age categories based on the property’s year built (when available), and align category breakpoints with major city housing policy changes. The categories are pre-1879, 1879-1901 (starting with the “old” Tenement House Act of 1879), 1902-1946 (after the start of the “new” Tenement House Act of 1901), 1947-1973 (when many new units were required to be rent stabilized), and post-1973 (when new unregulated units are not required to be rent stabilized if they do not take advantage of any city subsidy programs including those that offer property tax relief).

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<sup>41</sup> [Archival tax roll files](#) from fiscal year 2009

<sup>42</sup> New York City’s full parcel identifier also includes easements. We do not include easements in our study population, so borough, block, and lot are sufficient to uniquely identify all properties in the city

<sup>43</sup> We do not include rental properties within condominiums, also known as “con-rentals.”

As in the Cook County analysis, we also classify each property by its median neighborhood income; please see Neighborhood (Tract) Income Quartiles section for more detail.

- **Mortgages**

Administrative data on mortgages originated in New York City come primarily from the City of New York’s Automated City Register Information System (ACRIS). Property owners and mortgage servicers file deeds, mortgage origination, mortgage satisfaction, other mortgage-related documents, as well as other documents involving real property liens and ownership with the New York City Register’s office, which also enters a copy of the document into the ACRIS database. When recording the document, the register extracts metadata describing several attributes of the document, including a unique identifier, document type, execution date, names of the borrower and servicer, and parcel identifiers of applicable parcels.<sup>44</sup> When a document makes explicit reference to another document—for example, a mortgage satisfaction referring to the mortgage origination documents—metadata also include the unique identifier of the document it is referring to (the document’s *cross reference*). The NYU Furman Center has obtained files with these metadata through a special arrangement with the New York City Department of Finance, and has replicated the department’s database of document metadata.

Our set of mortgage-related documents generally covers most multifamily rental properties in New York City for 2004 through 2014. The first calendar year for which our ACRIS files are complete is 2004, so we generally drop any ACRIS documents with an execution date prior to the start of 2004. We also drop documents that have a missing or invalid execution date (beyond 2014, for example). The borough of Staten Island does not record its land records in ACRIS and so its mortgage-related documents are not represented in our ACRIS data. However, Staten Island had a tiny share (0.9%) of New York City’s multifamily rental buildings (with at least five units) in 2014, so excluding mortgages in Staten Island is unlikely to bias our results.

- **Mortgage Originations Method**

When forming our sample of mortgage originations, we keep both “mortgage” and “mortgage and consolidation” document types, as they signal originations. We also restrict mortgage origination documents to properties that appear in our set of multifamily rental properties.

- **Active Mortgages Method**

We present analyses that indicate when a property has a mortgage at a particular time. Unlike originations, which indicate only the beginning of a mortgage, this measures mortgages that have been originated but not yet satisfied; more intuitively, the borrower’s mortgage loan has not yet matured. We present this measure annually by measuring the presence of a mortgage as of December 31 of that year. Our general algorithm to identify whether a property has an active mortgage relies on identifying four different cases of mortgages: mortgages that were originated during the study period but not yet

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<sup>44</sup> For mortgage documents, we treat the listed property as securing the mortgage. For deeds, the listed properties are those that are being transferred

satisfied; mortgage originations during the study period that have been subsequently satisfied; mortgages from before our study period that were satisfied during the study period; and originations from before the study period that were unsatisfied as of the end of our study period. We exclude any mortgages where the time between origination and satisfaction was less than one year.

Identifying unsatisfied mortgages originated prior to 2004 (the latter case) requires observing document types that are associated with mortgages, but are not originations or satisfactions themselves. When these documents appear on a property that has no other evidence of having a mortgage (that is, the absence of a mortgage origination or satisfaction), we treat those properties as being mortgaged during our entire study period. Over the course of a mortgage, many types of documents related to that mortgage may appear in that property's ACRIS records (for example, a mortgage assignment transfers the loan from one lender to another). We believe the presence of these types of records will tell us if a mortgage is active. By tracing the documents that cross-reference mortgage originations, we found that seventeen types of documents either refer directly to mortgages, or refer to documents that themselves refer to mortgages. These types include additional mortgage tax, agreement, assignment of leases and rents, assignment of mortgage, assumption of mortgage, certificate of reduction, correction mortgage, declaration of modification of mortgage, mortgage spreader agreement, partial release of mortgage, partial satisfaction, subordination of mortgage, sundry mortgage, and termination of assignment of leases and rents. We also use notices of foreclosure (found from their own data set; see below for more information) as evidence of a mortgage. Employing this method significantly increases our estimate of the share of properties with a mortgage, especially in earlier years.

- **Mortgages, Property Sales, and Loan-to-Value Ratios**

We estimate loan-to-value ratios and the share of sales that are associated with mortgage financing by joining mortgage originations with property sales by property identifier (see below for information on property sales data). In both cases, we consider a sale to be associated with a mortgage origination if the execution date of the mortgage occurs no more than 30 days before or 180 days after a sales transaction on the same property.<sup>45</sup> The wide time buffer accounts for any recording delays that can occur with either the property sale or the mortgage origination document. When calculating the loan-to-value ratio, we consider only arm's length sales involving only a single property, because prices listed on other sales might not be a good indicator of property value. For the loan-to-value ratio, we also only consider mortgages securing a single property, because we cannot allocate a loan's principal across multiple properties. However, when calculating the share of sales associated with a mortgage, we include non-arm's length transfers as well as mortgages securing one or more properties.

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<sup>45</sup> This time buffer is wider than the one used for Cook County as described later in the document. There, mortgages and sales are associated when the mortgage is filed no later than 60 days after the date of sale. When this narrower band is applied in the New York City loan to value analysis, sales earlier in our study period are noticeably less likely to be associated with mortgages as compared to sales occurring later in our study period. This appears to be due to lags in execution dates of mortgages in those years. Increasing the time limit for sales to be associated with mortgages to 180 days appeared to solve this issue with earlier sales without significantly affecting later sales

- **Lender Type**

Our analyses of mortgage lending in New York City provide tabulations by lender type; specifically, commercial and savings banks.

We use several sources of data to assist in lender type assignments for financial institutions. The Federal Deposit Insurance Corporation (FDIC) issues an institution list that associates charter class with financial institution names; we collected data from their list issued in December 2013.<sup>46</sup> The National Credit Union Administration (NCUA) releases quarterly call report data for the institutions it supervises, and we used its list dated December 2013.<sup>47</sup> We treat lender type and asset amounts as generally representing the status of institutions in 2013.

We cleaned and standardized lender names in our ACRIS database of mortgage in order to merge data associated with their lenders. First, in all four data sets, we cleaned the lender names of several standard terms, acronyms, and abbreviations we deemed unnecessary to make a match. These cleaned terms include but are not limited to “NA”, “LLC,” “Inc,” “Co,” and “LP.” We then used the SPEDIS() function in the SAS statistical package to find a measure of distance (or more generally, difference) between the lender’s name and a standardized form of the name; we deemed distances of 20 or less to be reasonable matches with the standardized name, and assigned that name in those instances. Finally, we made manual corrections when this process failed to adequately standardize names of some lenders originating a significant number of loans. For lenders that have merged with or been acquired by other institutions, based on our general knowledge, we manually attributed the loan to the surviving institution as of 2013 (for example, loans made by Washington Mutual are attributed to J.P. Morgan Chase). For each financial institution data set, we merged them to lenders based on their standardized name (and for HMDA, standardized name as well as state, as there are multiple institutions across states that use the same name).

We determine lender type through two means: (1) name searches and (2) as indicated by lender data sets. We deem institutions to be savings banks if the lender name contains “savings bank” or “thrift,” or if the FDIC institution list identifies the institution as a savings bank or savings association. We consider institutions to be credit unions when they match institutions listed in the NCUA’s list. We classify institutions as commercial banks when the FDIC institution list identifies them as such. Failing these methods, we also manually classified the lender type using general knowledge for some institutions without a match in the FDIC or NCUA data. We identify mortgage companies, government agencies, and community development financial institutions using a list of names displayed in the addendum below. We define a category of “other” lenders, which includes the government-sponsored enterprises Fannie Mae and Freddie Mac, the investment banks Lehman Brothers Holdings and Morgan Stanley, the Prudential Insurance Company, MERS, and another private investor.

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<sup>46</sup> [FDIC Institution List](#)

<sup>47</sup> [NCUA Quarterly Call Report Data](#)

The categorization scheme above applies only to loans associated with a single lender. We do not classify lender type for loans with multiple lenders, because not all lenders may be of the same category. Finally, for all other loans, we consider their lender type to be unknown.

- **Property Sales**

We obtain data on property sales from two sources: the primary source is a file of property sales obtained through a special arrangement with the New York City Department of Finance (DOF), and the secondary source is deed filings from ACRIS. The sales file from DOF captures all property ownership transactions that result in the parties filing a real property transfer tax return, which we believe covers most sales occurring in the city. To correct for any discontinuities in sales data from DOF, we supplement those records with ACRIS deed filings. Both files include a unique sale identifier, the execution date, price, buyer and seller names, and the parcel identifiers of properties involved in the transaction. The DOF file also includes fields indicating the significance of the sale, i.e., whether the sale was made at arm's length. Our sales sample includes transactions with a non-trivial price (at least \$10,000) occurring since 2002, and further limits them to properties consistently in our multifamily rental population from 2001 to 2014. In a sample of arm's length sales, we further exclude properties with inconsistent unit counts or that DOF considers insignificant.

- **Housing Code Violations**

Our analyses of building condition in New York City use data on violations of New York City's Housing Maintenance Code. We receive a file of violation records through a special arrangement from the New York City Department of Housing Preservation and Development (HPD), which enforces the housing maintenance code for privately owned property in the city. Each record represents a complaint that the department has deemed a violation, and each record includes the date that the notice of violation was issued as well as the violation's hazard class. Violations can be recorded on routine inspections or in response to a complaint from a tenant.

We typically split housing code violations into two separate measures based on hazard class. *Serious housing code violations* include only those marked as class C, which represents an immediate threat to a tenant's health and safety, such as lack of heat or hot water, or presence of lead paint. *Total housing code violations* include all violations, including those deemed non-hazardous. Our analyses consider violations issued from 2004 through 2014. In 2003, New York City implemented its 3-1-1 service request system, which made it easier for tenants to report potential hazards to HPD. As a result, violation levels may be systematically lower before the introduction of 3-1-1, and are thus not comparable to levels after its implementation. To be consistent with the geographic limitations of ACRIS noted above, our analyses of housing code violations also exclude violations issued to properties in Staten Island.

We present several summary measures of housing code violation rates, and they can be generally grouped by whether they are unit or building weighted. Our primary unit-weighted measure is an overall violation rate per 1,000 total units. We also calculate a violation per unit ratio at the property level. While the unit-weighted measure gives a general sense of the incidence of code violations relative to

the entire rental stock (measured in housing units), a property-weighted measure provides a better indicator of the presence and intensity of violations within a building that might not otherwise be apparent.

- **Certificates of Occupancy**

Units issued new certificates of occupancy are a measure of new residential development. We obtain these data through special arrangement from the New York City Department of City Planning, which receives these data from the New York City Department of Buildings. The Department of Buildings issues new certificates of occupancy to new buildings as well as those that have undergone substantial renovation. As with other data sets, we merge this to our population of multifamily rental properties by using their property identifier.

- **Demolition Permits**

We obtain data on properties issued demolition permits from the New York City Department of Buildings.<sup>48</sup> Because not all properties that receive a demolition permit are actually demolished (although we expect that most are demolished), we typically interpret this indicator as intent to demolish a property. We merge this data set to our population of multifamily rental properties using their property identifier.

- **Notices of Foreclosure**

Notices of foreclosure signal that a property is involved in a foreclosure proceeding. We obtain data on notices of foreclosure—technically, *lis pendens* filings—from the Public Data Corporation for all properties in New York City. All measures of foreclosure in this report refer only to mortgage-related foreclosures, which we identify using a fuzzy matching procedure on plaintiff name as well as any pertinent text comments listed on the *lis pendens* filing. We merge this data set to our population of multifamily rental properties using their property identifier.

- **Cook County, Illinois Administrative Data**

This report includes analyses of administrative data on mortgages and properties on multifamily rental properties in Cook County, Illinois, which the Institute for Housing Studies at DePaul University (IHS) provided. When possible, the definitions and methods used for Cook County data generally match those used for New York City; any methodological differences are noted below.

- **Parcel Data**

The universe of properties for Cook County is based on a listing of parcels from the Cook County Assessor, which represents parcels as of the end of the 2012 tax year (calendar year 2013). This data set

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<sup>48</sup> [Demolition Permit Data](#) (from 2004)

contains a unique identifier (PIN), Census tract in 2010, property type (e.g., multifamily rental), number of residential units in the property, and year built. Year built is presented in four building age categories: up to 50, 51-75, 76-100, and more than 100 years old. To mitigate inconsistent assessor data for properties with more than six residential units, IHS has verified and corrected residential unit counts for some properties. Unlike New York City's tax roll data, where generally each parcel corresponds to a single building, in the Cook County Assessor data, multiple parcels may cover a single building. As a result, any rates involving parcels as a denominator should be interpreted with some caution.

- **Mortgage and Deed Data**

IHS obtains data on mortgage originations, mortgage lien releases, and property deed filings from Property Insight, which creates metadata for documents filed with the Cook County Recorder of Deeds. Each document has a unique property identifier (PIN), which IHS uses to merge the age, size, and tract ID of the parcel or parcels associated with the mortgage document. Mortgage originations include the principal amount, and deeds include an estimated sale price backed out from the amount of real estate transfer tax paid. All documents include both filing and execution dates. Some documents may be subject to substantial filing delays. Documents filed between nine and 22 weeks after the execution date are reported in the quarter following the execution date; documents recorded more than 22 weeks after the execution date are excluded. Mortgage and deed data are available for Cook County from 2005 through 2013.

Because many buildings are represented by multiple parcels (and therefore PINs), many mortgage documents refer to multiple PINs, which are generally adjacent and share the same characteristics. When the number of mortgages is presented alone (not as a rate), each document is counted only once, and property characteristics (like size or age) are associated from a single PIN. When the number of mortgages is presented as a rate (per 1,000 parcels), the numerator is the number of parcels associated with a mortgage, and the denominator is the total number of parcels.

IHS has determined that lien release data are somewhat incomplete, and therefore they should not be interpreted as an exhaustive picture of released mortgages. Partial releases are excluded; in some cases, these partial releases may release entire PINs from a multi-PIN mortgage, but in other cases, they may release only certain mortgage terms and preserve the mortgage lien on all its associated PINs. Only full lien releases are counted in analyses of the percentage of parcels with evidence of a mortgage. Even some full releases may not be filed with the assessor, particularly when a mortgaged property is sold to a new owner and the mortgage is satisfied, or at the conclusion of a foreclosure process.

- **Loan to Value Ratio Calculation**

The loan to value method for Cook County is similar to that used to New York City, with a few exceptions. Sales are matched to mortgages on the same property (using PIN) when new originations are executed no more than 30 days before or 60 days after the date of sale. This criterion differs from that used in the New York City analysis; see note 2 for more information. In cases when multiple

mortgage originations are associated with a single sale, only the mortgage with the largest recorded principal amount is kept, whereas in New York City, all mortgages are retained.

- **Survey Data**
- **American Community Survey**

We use the U.S. Census Bureau’s American Community Survey (ACS) to obtain demographic and economic characteristics of renters. More specifically, we use Public Use Microdata Sample (PUMS) files, which are anonymized samples of actual responses to the ACS and permit users to create tabulations that are not available in published tables (in particular, the ACS cross-tabulates few variables for rental units by building size, a major feature of interest in our analyses). To balance statistical, geographic, and temporal accuracy, we use files that combine responses for separate three-year periods: 2005-2007, 2008-2010, and 2011-2013.

Each set of PUMS data consist of two separate files—one with person-level data and one with housing unit-level data—with little overlap between the topics each file covers. Race and ethnicity appears on both the person and housing unit files, but in the latter, race and ethnicity are coded as the race and ethnicity of the householder. Because the characteristics of people in a household may be different than those of the householder, to more accurately portray race and ethnicity, we instead use those characteristics for all individuals on the person file, and then merge any applicable housing unit characteristics to person-level records. All other ACS topics used in our analyses, including income and rent, appear on the housing unit files. Unless otherwise specified, all incomes are household-level, and all rent is “gross” and therefore includes any additional utility costs not specified on a lease.

ACS PUMS geographically identifies each record by a state and public use microdata area (PUMA), which describes an area smaller than a state, and generally covers more than 100,000 people. ACS PUMS does not include an indicator for county or “place,” the Census Bureau’s geographic category that generally identifies large cities, so we instead select respondents whose PUMAs generally fall inside the borders of New York City and Cook County, Illinois. We create geographic crosswalks that show which PUMAs fall within New York City and Cook County from the Missouri Census Data Center’s MABLE/Geocorr applications for 2000 and 2012, depending on the vintage of PUMA used in the PUMS files.<sup>49</sup>

- **Neighborhood (Tract) Income Quartiles**

For analyses in both New York City and Cook County, Illinois, we classify properties by their neighborhood median income. Using the Neighborhood Historic Geographic Information System (NHGIS), we obtained the median household income for tracts from the American Community Survey (ACS) 2008-2012 summary file for both New York City and Cook County. We classified each tract’s median household income into quartiles separately within New York City and Cook County.

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<sup>49</sup> [Missouri Census Data Center](#)

## Appendix II, Regression Analyses

We estimate three basic ordinary least squares regression models as described below. Each regression analysis is based on a property-year level data set. We drop observations meeting any of the following criteria for poor data quality: missing or 0 values for market value, floor area, land area, number of residential units, number of stories, and tract median household income; and properties with a year built prior to 1600 or that is missing. We also drop property-year observations with outliers in number of violations per unit ( $> 2$ ) in a year, number of residential units, floor area, floor area per residential unit, and market value per square foot of floor area. After applying these criteria, we drop 37,204 (6.6%) of 561,603 property-year observations, leaving us with 524,399 observations used in the regression analyses presented in this report.

### Presence of Mortgage and Physical/Neighborhood Characteristics Appendix II, Table A1)

The following model measures the association between presence of a mortgage on a property in a particular year and its physical and neighborhood characteristics.

$$mortgage_{itb} = \alpha + \gamma X_{it} + \theta borough_b + \rho year_t + \beta_1 size_{it} + \beta_2 vintage_{it} + \beta_3 tincome_{it} + \beta_4 size_{it} * period_{it} + \beta_5 vintage_{it} * period_{it} + \beta_6 tincome_{it} * period_{it} + \varepsilon_{it}$$

In this model,  $mortgage_{itb}$ , the presence of a mortgage on property  $i$  in year  $t$  and borough  $b$ , is the outcome of interest.  $X_{it}$  is a vector of property characteristics that may be correlated with presence of a mortgage. Characteristics include log of average floor area (square feet) per residential unit; log of fair market value per square foot of floor area, as lower valued properties may have more violations; dummy variables indicating the presence of a rent regulated and subsidized housing units, as the lower rents may be associated with more violations; a dummy variable indicating presence of a commercial unit; and a dummy variable for elevator buildings, which may proxy for either higher quality building amenities or higher operating costs; and number of stories in the property. To broadly control for spatial effects and secular trends, we include fixed effects for the four boroughs included in the analysis as  $borough_b$  (we specify as a series of dummy variables; Manhattan is the omitted category) and years as  $year_t$  (where 2004 is the omitted category).

Our particular variables of interest include  $size_{it}$ , a series of dummy variables for the unit size categories 5-9, 10-19, 20-49, and 50+ units (omitted category);  $vintage_{it}$ , a series of dummy variables indicating that a property was built pre-1902, 1902-1946, 1947-1973, or post-1973 (omitted category); and  $tincome_{it}$ , a series of dummy variables indicating the median household income quartile to which the property's Census tract belonged in 2008-2012 (the highest, or fourth, quartile is the omitted category). To allow the effects of  $size_{it}$ ,  $vintage_{it}$ , and  $tincome_{it}$  to vary over time, we interact them with  $period_{it}$ , a series of

dummy variables representing time periods before (2004-2007), during (2008-2010), and after (2011-2014) the real estate bust; the pre-bust category is omitted. We estimate values for the parameters  $\alpha$ ,  $\beta_1$ - $\beta_6$ ,  $\gamma$ ,  $\theta$ , and  $\rho$ , and  $\varepsilon_{it}$  is an error term.

For example, the coefficient on  $size_{it}$  for five- to nine-unit buildings should be interpreted as the percentage point difference in probability of having a mortgage relative to an otherwise similar building with 50 or more units built after 1973 in a high-income tract in the same borough and in the same year.

### Code Violations, Presence of Mortgage, and Size (Appendix II, Table A2)

The following model measures the association between measures of housing code violations and the presence of a mortgage, which is interacted with building size and time.

$$\begin{aligned} violation_{itb} = & \alpha + \gamma X_{it} + \phi A_{it} + \delta foreclosure_{it} + \theta borough_b + \rho period_t + \beta_1 mortgage_{it} \\ & + \beta_2 size_{it} + \beta_3 tincome_{it} + \beta_4 mortgage_{it} * size_{it} + \beta_5 size_{it} * period_t \\ & + \beta_6 tincome_{it} * period_t + \varepsilon_{it} \end{aligned}$$

Again, this specification is similar to the one above with the following exceptions. First, we specify building age as a vector  $A_{it}$  of two continuous variables, age and age squared, rather than using a series of dummy variables. Also, we include a dummy variable  $mortgage_{it}$  (used in the first model). We replace dummy variables for years with dummy variables  $period_t$ . We estimate values for the parameters  $\alpha$ ,  $\beta_1$ - $\beta_6$ ,  $\gamma$ ,  $\delta$ ,  $\theta$ ,  $\phi$ , and  $\rho$ , and  $\varepsilon_{it}$  is an error term.

For example, when the outcome variable is the presence of a serious housing code violation, the coefficient on  $mortgage_{it} * size_{it}$  for five- to nine-unit buildings should be interpreted as the percentage point difference in probability of having a serious code violation relative to an otherwise similar 50+ unit building without a mortgage in a high-income tract in the same borough and in the pre-recession period.

**Table A1**  
**Regression, Factors Associated With the Existence of a Mortgage**

	Active mortgage
5-9 units	-0.225*** (0.00473)
10-19 units	-0.143*** (0.00482)
20-49 units	0.0583*** (0.00444)
Pre-1902	-0.124*** (0.00608)
1902-1946	-0.122*** (0.00501)
1947-1973	0.0576*** (0.00723)
Q1 tract income	0.0400*** (0.00333)
Q2 tract income	0.0564*** (0.00344)
Q3 tract income	0.0164*** (0.00366)
5-9 units*recession	0.0212*** (0.00597)
5-9 units*post-recession	0.0388*** (0.00551)
10-19 units*recession	-0.00680 (0.00664)
10-19 units*post-recession	-0.00955 (0.00614)
20-49 units*recession	-0.00442 (0.00642)
20-49 units*post-recession	-0.00651 (0.00592)
Pre-1902*recession	-0.0190** (0.00862)
Pre-1902*post-recession	0.00801 (0.00801)
1902-1946*recession	0.0247*** (0.00694)
1902-1946*post-recession	-0.00616

	(0.00646)
1947-1973*recession	-0.0261**
	(0.0107)
1947-1973*post-recession	-0.0114
	(0.00988)
Q1 tract income*recession	0.0198***
	(0.00473)
Q1 tract income*post-recession	0.0443***
	(0.00438)
Q2 tract income*recession	0.0125**
	(0.00496)
Q2 tract income*post-recession	0.0195***
	(0.00460)
Q3 tract income*recession	0.00504
	(0.00541)
Q3 tract income*post-recession	0.00675
	(0.00500)
Recession	0.0490***
	(0.00861)
Post-recession	0.0394***
	(0.00801)
Constant	0.455***
	(0.0182)
Observations	524,399
R-squared	0.049

Standard errors in parentheses

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

All specifications include controls for log of floor area per unit, log of market value per square foot of floor area, number of stories, and dummy variables for rent regulation status, subsidy status, presence of elevator, borough, and year.

**Table A2**

**Regressions, Factors Associated With the Existence of Building Code Violations Including Existence of a Mortgage**

(1) (2) (3) (4)

VARIABLES	Violations per unit	Serious violations per unit	> 0 violations in property	> 0 serious violations in property
<b>Active mortgage</b>	0.0760*** (0.00323)	0.0141*** (0.000947)	0.124*** (0.00400)	0.127*** (0.00343)
<b>5-9 units</b>	-0.0591*** (0.00399)	-0.00745*** (0.00117)	-0.347*** (0.00495)	-0.261*** (0.00425)
<b>10-19 units</b>	-0.0404*** (0.00415)	-0.00686*** (0.00122)	-0.266*** (0.00514)	-0.218*** (0.00441)
<b>20-49 units</b>	-0.0233*** (0.00402)	-0.00490*** (0.00118)	-0.177*** (0.00498)	-0.132*** (0.00427)
<b>Q1 tract income</b>	0.0771*** (0.00227)	0.0187*** (0.000667)	0.0675*** (0.00282)	0.0782*** (0.00242)
<b>Q2 tract income</b>	0.0545*** (0.00235)	0.0130*** (0.000689)	0.0462*** (0.00291)	0.0629*** (0.00250)
<b>Q3 tract income</b>	0.0104*** (0.00252)	0.00397*** (0.000739)	-0.00546* (0.00312)	0.0235*** (0.00268)
<b>Active mtge.*5-9 units</b>	-0.0380*** (0.00350)	-0.00481*** (0.00103)	-0.0722*** (0.00434)	-0.0978*** (0.00372)
<b>Active mtge.*10-19 units</b>	-0.0174*** (0.00384)	1.60e-05 (0.00113)	-0.0448*** (0.00476)	-0.0636*** (0.00408)
<b>Active mtge.*20-49 units</b>	0.0264*** (0.00382)	0.00872*** (0.00112)	0.0180*** (0.00474)	-0.00140 (0.00407)
<b>5-9 units*recession</b>	8.26e-05 (0.00386)	-0.00147 (0.00113)	-0.0138*** (0.00479)	0.00245 (0.00411)
<b>5-9 units*post-recession</b>	0.0185*** (0.00357)	0.000321 (0.00105)	-0.00415 (0.00442)	-0.0152*** (0.00380)
<b>10-19 units*recession</b>	0.000450 (0.00433)	-0.000189 (0.00127)	-0.0179*** (0.00537)	0.00854* (0.00461)
<b>10-19 units*post-recession</b>	0.0141*** (0.00402)	0.00302** (0.00118)	-0.0151*** (0.00497)	-0.00296 (0.00427)
<b>20-49 units*recession</b>	0.00339 (0.00423)	0.000125 (0.00124)	0.0145*** (0.00524)	0.0121*** (0.00449)
<b>20-49 units*post-recession</b>	0.00338 (0.00391)	0.00175 (0.00115)	0.00401 (0.00484)	-0.00171 (0.00416)
<b>Recession</b>	-0.00683* (0.00411)	0.000867 (0.00121)	-0.0465*** (0.00510)	-0.00449 (0.00437)
<b>Post-recession</b>	-0.0183*** (0.00383)	0.000803 (0.00112)	-0.0518*** (0.00474)	0.0152*** (0.00407)
<b>Constant</b>	-0.233*** (0.0126)	-0.0630*** (0.00370)	0.228*** (0.0156)	-0.0625*** (0.0134)
<b>Observations</b>	524,399	524,399	524,399	524,399
<b>R-squared</b>	0.094	0.058	0.214	0.193

Standard errors in parentheses

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

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All specifications include main effects for property size in units, neighborhood income quartile, recession/post-recession, and controls for log of floor area per unit, log of market value per square foot of floor area, age, age squared, number of stories, and dummy variables for rent regulation status, subsidy status, presence of elevator, foreclosure starts (in the past year, past three years, and past six years), and borough.

#### Calculating Net Effect of Mortgage on Violations for Each Property Size

Outcome measure	Violations per unit	Serious violations per unit	Probability of > 0 violations in property	Probability of > 0 serious violations in property
Active mortgage	0.076	0.0141	0.124	0.127
Active mtge.*5-9 units	-0.038	-0.00481	-0.0722	-0.0978
Active mtge.*10-19 units	-0.0174	0	-0.0448	-0.0636
Active mtge.*20-49 units	0.0264	0.00872	0.018	0
Net effect: mortgage, 5-9 units	0.038	0.00929	0.0518	0.0292
Net effect: mortgage, 10-19 units	0.0586	0.0141	0.0792	0.0634
Net effect: mortgage, 20-49 units	0.1024	0.02282	0.142	0.127
Net effect: mortgage, 50+ units	0.076	0.0141	0.124	0.127

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