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Affordable Regulation: New York City Rent Stabilization as Housing Affordability Policy

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Abstract

The growing housing affordability crisis is at the center of conversations about U.S. inequality. This paper reconsiders the role of rent stabilization as one important affordability tool. We investigate who is most likely to benefit from rent stabilization, how much non-stabilized renters would save if their units were stabilized, and the extent to which stabilization would reduce rent burden among households. Using New York City Housing Vacancy Survey data and employing logistic and hedonic regression techniques, we show that Hispanic and foreign-born householders are more likely to live in rent-stabilized units and find evidence of both rent savings and rent burden reduction when comparing stabilized tenants with their non-stabilized counterparts. We argue that expanded rent stabilization could be paired with policies that stimulate new construction to simultaneously curb rent inflation, protect current populations from displacement, and increase housing supply.

Keywords

rent stabilization, housing affordability, rent burden, Heckman selection model, hedonic modeling

INTRODUCTION

Rising rents, stagnant wages, and anemic housing production have led to generation-high rent burden rates. Nearly 47 percent of renters across the country spend more than 30 percent of their household's total income on rent (Harvard Joint Center for Housing Studies 2020). As the crisis worsens and broad relief for renters is slow to materialize, many state and local governments are now considering whether to implement some variation of soft, second-generation rent regulations that limit rent increases (rent stabilization), as opposed to older, first-generation ones that mandate hard rent ceilings (rent control) (Dougherty and Ferré-Sadurní 2019; Logan 2019; Zaveri 2019).[1]

Although rent regulations have been dismissed in some policy circles as costly and ineffective (Early 2000; Glaeser and Luttmer 2003), they have long been framed as affordability policies (Hackett et al. 2019; Stein 2018) and viewed by renters as popular forms of public intervention (Diamond, McQuade, and Qian 2019; Newman and Wyly 2006:47). Based on our empirical analysis of rent savings and burden reduction for stabilized renters in New York City during the 1990s and 2000s, we argue that rent stabilization should be expanded and paired with policies

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that increase housing supply to provide a more robust response to the current housing affordability crisis. This research is especially important as the crisis expands and middle-income households become vulnerable populations that need protection against rent inflation (Woldoff, Morrison, and Glass 2014). As politicians consider implementing new rent regulations to address growing affordability concerns, we provide evidence that rent stabilization reduces rents and promotes affordability in tight housing markets.

Three research questions frame our work. First, who is most likely to benefit from rent stabilization? If higher-income and more privileged renters predominately occupy rent-stabilized units, that could undermine the ostensive equity objectives of such measures. While we view this critique as a red herring often used to suggest that rent regulation is a "bad" policy, we think it is sociologically important to know if policies thought to alleviate inequality could unintentionally exacerbate it. Second, how much rent, if any at all, do stabilization measures save tenants initially and over time? While it might be obvious that stabilized renters would save on rent compared to their non-stabilized counterparts, previous research suggests that stabilized tenants may pay a premium to gain access to stabilized units that will save them rent in the long run (Basu and Emerson 2000; Nagy 1997). Finally, does stabilization reduce the share of rent-burdened households—that is, those spending more than 30 percent of their household income on housing costs? In light of our findings that rent stabilization can save tenants money and reduce rent-to-income ratios, we argue that it is an important policy tool that officials can leverage to address the ongoing affordability crisis.

New York City has a long history of rent stabilization that covers much of the city's housing stock. As an expensive, unaffordable, and stratified housing market, it is an ideal case for testing whether rent stabilization reduces rents and increases affordability. We use the two most recent, longitudinal housing unit samples from the New York City Housing and Vacancy Survey (NYCHVS) and hedonic price models to test the extent to which rent stabilization saved renters money and promoted affordability during the 1990s and 2000s. We found evidence of substantial rent savings and a moderate reduction of rent burden for stabilized tenants compared to their non-regulated counterparts in both decades, particularly once we controlled for selection bias conditional on length of tenant duration.

Critics who argue for removing such regulations often do not acknowledge that this is an unlikely social and political reality in expensive and dense housing markets. For instance, while New York City has never deemed its regulations permanent, "temporary" regulations have been in continuous effect for decades (Keating 1998:168). There are simply too many tenants who would be negatively impacted from the end of stabilization measures for them to be repealed. Indeed, New York State officials strengthened rent stabilization laws in the summer of 2019 by eliminating several rent raising mechanisms and closing landlord loopholes to address skyrocketing rents and high levels of unaffordability (Sharon and Haag 2019). For tenants in desperate need of rent relief, complete deregulation could have disastrous effects that would only be compounded by gentrification and the increasing affordability crisis. Instead, we argue that rent stabilization can save renters money now and be paired with other supply-inducing policies that would simultaneously protect current tenants while creating new units over time.

THE EFFECTS OF RENT REGULATION ON HOUSING AFFORDABILITY

Who Benefits from Rent Regulation?

Although homeownership provides significant benefits (e.g., homeowning is generally less expensive than renting (*ATTOM* 2021; Schwartz 2021) and generates equity and intergenerational wealth (Pfeffer and Waitkus

2021)—albeit along racial lines),[2] most New Yorkers are renters and therefore do not have access to these benefits. As high construction costs (Schwartz 2019) and zoning regulations (Glaeser, Gyourko, and Saks 2005) have constricted supply and recent home price inflation has pushed displaced homeowners into the rental market (Joint Center for Housing Studies 2021; McCullough 2022), rent regulation can be understood to play an even more crucial role for New Yorkers feeling the squeeze of the affordability crisis.

In theory, rent regulations save tenants money by either limiting rent increases or placing a ceiling on the rent landlords can charge. In effect, this grants renters greater access to affordable housing in expensive markets and encourages socioeconomic and ethno-racial integration while also potentially limiting supply and increasing rents in the uncontrolled sector. Some studies have found that disadvantaged (e.g., older, minority, and lower-income) households predominately occupy regulated units (Early 2000; Gyourko and Linneman 1989; Olsen 1972). In New York City, for example, Hispanic and foreign-born-headed households are over-represented in the stabilized sector (Rosenbaum and Friedman 2007; Schill, Friedman, and Rosenbaum 1998). Yet, research findings vary as to who benefits more from living in rent-stabilized units. Theoretically, stabilized households with higher incomes accrue more benefits because their rents would be much higher in the non-stabilized sector; likewise, longer-tenured renters benefit more because they accumulate savings for longer. Although there is evidence that disadvantaged households receive larger benefits from rent stabilization (Diamond et al. 2019; Olsen 1972), others still contend that high-income, often non-Hispanic White renters actually benefit more (Gyourko and Linneman 1989; Sims 2007).

Conventional wisdom has taken these findings to mean that rent stabilization primarily benefits "the lower middle class rather than the very poor" (Freeman and Braconi 2004:45). As a result, many have concluded that such regulations have done "a poor job of providing equal benefits to similarly situated families" and are "poorly focused redistribution device[s]" (Ault and Saba 1990:73; Early 2000; Olsen 1972:1096; Pollakowski 2003). However, few housing affordability policies extend benefits to every qualifying household and rent stabilization surely covers more households than many other policies. Focusing only on rent stabilization's distribution of benefits in this way constructs an inaccurate standard for assessing their efficacy.

The Effects of Rent Regulation on Cost Savings and Rent Burdens

Housing economists maintain that policies constraining supply will increase rents and reduce housing affordability. For example, Glaeser and colleagues (2005) argue that relaxing zoning measures and land use controls reduce construction costs, increase housing supply, and curb affordability problems. However, most rent stabilization measures have exceptions for new housing construction. Furthermore, Gilderbloom and Ye (2007) found evidence that rent regulations in New Jersey incentivize landlords to subdivide larger rental units, which therefore increases supply. Instead of impacting supply by limiting new construction, rent regulations more likely reduce supply by encouraging landlords to convert their units to condominiums, thereby removing them from the rental market (Autor, Palmer, and Pathak 2014; Diamond et al. 2019; Sims 2007).

Other research attempts to understand the effect of rent stabilization on tenants across stabilized and non-stabilized markets. Although there is some evidence that rent stabilization saves regulated renters money by depressing rents below market rates (Gyourko and Linneman 1989; Nagy 1997), Early (2000) controls for rent stabilization's effect on the non-stabilized sector and finds stabilized tenants would have experienced more savings had there been no regulation in the first place. Nevertheless, recent studies provide mixed evidence concerning the

impact of rent regulations on rents in the unregulated sector.[3] Sims (2007) found evidence that rent regulations depressed rents of nearby unregulated units. Yet, both Autor et al. (2014) and Diamond et al. (2019) found that rent regulations drove long-term rent increases in the unregulated sector. In short, there is mixed evidence suggesting that rent regulations could drive up rents for those in the market-rate units while also generating substantial savings for stabilized tenants.

Finally, many researchers are also concerned with the societal effect of rent regulations, even if individual savings might be substantial. If savings are proportionally larger for higher-income households, rent regulations would serve to increase overall inequality, not reduce it. While this might be true in some cases, by design rent stabilization measures generally have wider coverage than other housing affordability policies or programs and should be evaluated in this context.

RENT REGULATION IN NEW YORK CITY

In their most basic form, rent regulations restrict owners from evicting tenants, enforce building code regulations, and establish limits on how much rent owners can charge their tenants (La Mort 2016). "First-generation" rent controls usually imply a hard "freeze on nominal rents" (Arnott 1995:100) and were first implemented nationwide in the United States after World War I in response to a national housing shortage and re-emerged during World War II to combat hyper-inflation. But they were largely phased out except in New York. Since then, state and local governments have generally adopted "second-generation" measures that allow landlords a "fair" or "reasonable" return on their investment by permitting automatic rent increases benchmarked to inflation, contain provisions to pass some share of renovation costs on to tenants, and generally include exceptions for new construction (Arnott 1995:102). Since only about 2 percent of New York City's regulated housing stock is covered by first-generation rent controls, this paper focuses on units covered by the second-generation rent stabilization policy (Lee 2009). Although the literature often uses the term "rent control" in reference to second-generation regulations, it can be confusing in New York City because both first- and second-generation provisions still exists. For clarity, we use the term "rent stabilization" to refer to second-generation measures and only use the term "rent control" to reference first-generation provisions.

The number of regulated units has dramatically fluctuated over the years. In 1947, New York City had approximately 2.5 million rent-controlled units, but system reform and high-rent/high-income deregulation legislation reduced that number to 1.8 million by 1967 (Collins 2020; La Mort 2016). Between 1969 and 1974, deteriorating conditions, rising rents, and shifting power dynamics between tenants and the real estate industry resulted in a series of legislation that regulated, de-regulated, and then re-regulated units (Collins 2020). The legislative back-and-forth culminated in the Emergency Tenant Protection Act (ETPA) of 1974 that was unanimously adopted by the City Council (La Mort 2016). Essentially a compromise, it effectively repealed vacancy decontrol, which allowed for units to be removed from the stabilized sector when the rent exceeded a specific threshold and the unit became vacant. It also instituted vacancy bonus allotments that allow landlords to raise the rent a specific percentage upon vacancy. The ETPA re-stabilized all units decontrolled between 1971 and 1974 and became the foundation for modern rent stabilization measures in New York State.

Key legislative changes around various rent increasing mechanisms continued. Between 1974 and 1997, vacancy bonuses ranged from 0 to 15 percent, but were determined each year by the Rent Guidelines Board (RGB) (New York City Rent Guidelines Board 2020). If a recently vacated unit in 1991 was renting for $1,000 and subject to a five percent vacancy bonus, an

incoming tenant would pay $1,050 ($1,000 + ($1,000*0.05)). The passage of the Rent Regulation Reform Act of 1997 standardized vacancy bonus increases, allowing landlords a 20 percent increase for two-year leases or 20 percent minus the difference in the statutory allowable increases between one- and two-year leases for one-year leases.[4] In 2003, vacancy decontrol was re-instituted, and landlords could remove a unit if it had reached the $2,000 threshold when it became vacant. Subsequent rent stabilization legislation increased this threshold to $2,700 and pegged threshold increases to the one-year statutory increases determined by the RGB each year.

In the summer of 2019, progressive housing advocates won a major victory and New York State lawmakers passed the Housing Stability and Tenant Protection Act that dramatically strengthened rent stabilization laws by ending vacancy decontrol, high-rent/high-income decontrol, and the vacancy bonus; capping rent hikes associated with building-wide renovations; and preventing landlords from claiming more than one "owner use" residency to deregulate apartments (Sharon and Haag 2019). Housing advocates framed these changes as critical to efforts to preserve the rapidly disappearing regulated housing stock that experienced dramatic losses during the 1990s and 2000s due to lax enforcement, loopholes, and landlord incentives to deregulate. Some estimate as many as 147,000 units were deregulated between 1994 and 2017 (Mironova 2019). Given that the long-term effects of rent regulation are less known, it is vital that we understand exactly if and for whom these policies are beneficial.

SOCIO-ECONOMIC CONTEXT FROM 1990 TO 2010

New York City saw periods of both expansion and recession during the 1990s and 2000s. The 1987 stock market crash led to an eight-month recession from July 1990 to March 1991, but New York City's economy rebounded between 1996 and 2000. Following the 2001–2002 recession after 9-11, the city's economy continued to expand until the Great Recession of 2007–2009. The expansion during the 1990s was mostly concentrated in the top-one percent who claimed nearly two-thirds of all income growth while the "inflation-adjusted median incomes of Blacks, Latinos, and Asians stagnated or declined" (Parrott 2019:8). Much of the private sector wage growth during this time was concentrated in the financial sector and—because of ethno-racial occupational segregation—income gains were also concentrated along ethno-racial lines. Median family income declined by 8 percent, from $66,938 in 1990 to $61,616 in 2000, stagnating for non-Hispanic Whites (0.7 percent) and Hispanics (0.3 percent) and decreasing for Blacks (-5.6 percent) as well as Asians (-9.9 percent) (Parrott 2019). Inequality during the 2000s followed a similar story. Despite recessions from 2001 to 2002 and 2007 to 2009, New York City added nearly 1 million jobs between 2000 and 2014, most of which were either "high-wage managerial jobs, middle-wage teaching professions, and low-wage service occupations" (Parrott 2019:11). Since over half of these job gains were concentrated in low-wage service occupations that were disproportionately occupied by foreign-born, non-White workers, most of the income gains went to native non-Hispanic White and Asian workers. Median family incomes for Hispanics and Blacks decreased by 1.3 and 3.5 percent, respectively, and increased by 1 percent for Asians and by 5.2 percent for non-Hispanic Whites between 2000 and 2010 (Parrott 2019).

Although rents tend to follow the expansions and contractions of the larger economy (Arnott 1987), this was not the case in New York City during the 1990s and 2000s, when rents steadily increased despite periods of economic fluctuations. Between 2002 and 2005, median rents rose by 8 percent (NYU Furman Center 2006). Housing affordability declined—renters earning between $20,000 and $40,000 spent, on average, 33 percent

of their income on housing costs in 2000; that proportion rose to 44 percent by 2012 (Stringer 2014). In other words, stagnant wages and intensified gentrification during the 2000s likely drove higher rent savings and rent burden reductions in the 2000s compared to the 1990s. Weakened rent laws and landlord-oriented changes led to a dramatic reduction in stabilized units, which likely further squeezed renters in an already tight housing market during a period when other types of federally regulated or assisted rental units were removed (DeFilippis and Wyly 2008; Wyly and DeFilippis 2010). Between 1994 and 2017, an estimated 290,958 rent-stabilized units were removed from rent regulation status, largely as a result of vacancy deregulation, conversion to condos or co-ops, and the expiration of tax incentives (Mironova 2019). We suspect that these factors likely contributed to lower tenant retention rates as deregulation picked up during the 2000s.

As the housing affordability crisis continues and the share of affordable housing shrinks, low-income renters will likely pay more because landlords hedge their risks by overcharging tenants in low-income neighborhoods (Desmond and Wilmers 2019). Gaining access to quality rental units has become even more difficult for minority and immigrant households. These households have long struggled with access to quality rental housing in New York (Rosenbaum 1996; Rosenbaum and Friedman 2007) and the threat of eviction looms heavy (Desmond 2018). In response, sociologists have highlighted the "commodity nature of housing" (Pattillo 2013:513), called for the decommodification of housing (Madden and Marcuse 2016), and argued for the establishment of a social housing development authority (Baiocchi et al. 2020).

In this paper, we contribute to the sociological literature on housing inequality by investigating who is most likely to benefit from rent stabilization, how much rent those tenants might save, and the degree to which such provisions reduce rent burdens and make housing more affordable.

RESEARCH DESIGN: DATA AND ANALYTICAL STRATEGY

Data and Sample

We use data from the New York City Housing and Vacancy Survey (NYCHVS), a longitudinal survey conducted every three years by the U.S. Census Bureau and sponsored by the New York City Department of Housing Preservation and Development in compliance with New York State rent regulation law (U.S. Census Bureau 2020). The panel structure of the NYCHVS allows us to observe the same housing unit within each decade; however, since a new sample is drawn with each decennial census, we cannot follow the same household across decades. Unfortunately, more recent data has not been made longitudinal due to confidentiality concerns.

We construct two samples—one for each decade—by linking 1991, 1993, and 1996[5] survey waves (hereafter the 1990s) and 2002, 2005, and 2008 survey waves (hereafter the 2000s). Since a new weighting methodology to derive population counts was introduced in 1999 that prevents direct comparability, and to maintain an equal number of survey waves per decade, we drop 1999 from our analysis (U.S. Census Bureau 1999). Each sample year is supplemented with units that have been recently converted to residential uses, *In Rem* units, and new certificates of occupancy, and consists of approximately 18,000 housing units. Although the NYCHVS is mainly designed to collect information on the city's housing stock, it also includes substantial information on householders' sociodemographic characteristics.

The NYCHVS follows housing units over time, not the householder. If a householder moves between surveys, the next survey will interview a new householder in that same unit. Thus, householders move in and out of the sample, but units remain. Since our study takes households as the unit of analysis, we employ a common strategy to identify the same household in a unit by cross-referencing their move-in-date (Freeman and Braconi 2004; Nagy 1997). Following Nagy (1997),

we limit our sample to "remaining-new tenants" who moved into a unit in the first year of the survey (1990/1991 or 2001/2002) and remained until the last survey year within each decade (1996 or 2008) for two reasons: (1) so that we are fairly comparing rent savings over time, and (2) because vacancy bonuses create unfair comparisons by upwardly adjusting rents of stabilized units as renters move in and out of units. Conversely, we refer to "leaving-new tenants" as those who moved in during the initial year but left before the study period ended. We verify that each tenant is the same by comparing their move-in date in the two subsequent surveys, using a two-year cushion in later surveys since renters may misreport the exact year they moved in. We dropped units with top-coded rent values from our analyses.

Restricting our sample to the same remaining-new tenants within each decade is fundamental to our study's ability to evaluate the long-term implications of rent stabilization as a housing affordability tool. Nevertheless, this leads to small sample sizes, particularly in the 2000s. Although non-significant results should be interpreted with caution, the use of sampling weights and the confirmation of our results using propensity score matching techniques that have a larger sample size (1990 models: N = 1,000; 2000 models: N = 855) give us confidence in our results.

Logistic Models

To answer our first research question about who benefits from rent stabilization, we test whether there are observable household, unit, or neighborhood characteristics that may differentiate stabilized from non-stabilized tenants. We perform nested logistic regressions where the dependent variable takes the value of one if the apartment is stabilized (zero if not stabilized) and add nested sets of controls for householder, household, unit, and neighborhood characteristics. We first estimate stabilization controlling for householder characteristics—sex, race/ethnicity, nativity status, educational attainment, and age. Second, we include controls related to household characteristics—information on the reasons for moving in, the natural log of per capita household income, a binary measure of overcrowding, and continuous measure of the move-in year. Next, we control for unit characteristics—the natural log of monthly contract rent, number of rooms in the unit, the presence of vermin, a number of controls for the visible signs of building and unit deterioration, the number of units in the building, and year the building was built. The final, full model controls for respondent rating of neighborhood residential structures and borough location following prior research (Moon and Stotsky 1993; Nagy 1997) to address variation in neighborhood context.[6] Each model also has controls for survey year.

Hedonic Price Models and Counterfactual Estimation

To answer our research questions about rent savings and burden reduction, we compare the rents of remaining-new stabilized tenants with those of their remaining-new non-stabilized counterparts. Hedonic price models are often used to predict the price of a good based on its characteristics; following Nagy (1997) we use them to estimate rents for remaining-new stabilized renters and then use those estimates to predict the rent of a particular unit if it were in the other sector (non-stabilized). Our models follow a basic Ordinary Least Squares (OLS) log-level equation:

$$LnP_i = \beta' W_i + \xi_i \quad (1)$$

where P_i is the natural logarithm of monthly gross rent adjusted to 2019 dollars using the Consumer Price Index (CPI),[7] W_i is a vector of controls for unit and neighborhood conditions that are similar to those included in the full model of the nested logistic estimation mentioned above, and ξ_i is the error term. Since there was a dramatic loss of rent-stabilized units during the 1990s and early 2000s due to weakened rent regulation laws (Wyly and DeFilippis 2010) and increased

conversions and vacancy decontrol (New York City Rent Guidelines Board 2003), our sample size is significantly reduced.

From Equation 1 above, we can calculate the expected rent for a unit occupied by remaining-new non-stabilized tenant, assuming the returns to their apartment characteristics were the same as those of renters in the stabilized sector. Following Nagy (1997), the predicted rent in non-log transformed dollars for a non-stabilized unit subjected to stabilization would be given by:

$$\hat{P}_j = \exp\left(\hat{\beta}' W_j + 0.5\hat{\sigma}^2\right) \quad (2)$$

where $\hat{P}_j$ is the predicted median rent in 2019 inflation-adjusted dollars for apartment j in the non-stabilized sector with characteristics W_j if the unit were subject to stabilization and $\hat{\sigma}^2$ is the estimated variance of the error term in the hedonic price model for the remaining-new stabilized renters.

To obtain the rent differential between stabilized and non-stabilized tenants, we subtract the predicted price from Equation 2 from the actual price paid by remaining-new non-stabilized tenants, expressed as:

$$\text{Rent difference} = \hat{P}_j - P_j \quad (3)$$

Permanent Rent

Our estimates of rent savings could be biased by the fact that rents for some apartments increased faster than others over the study period. For instance, although rent stabilization establishes a ceiling on legal rent increases, landlords were allowed during the study period (1991 to 2008) to charge less and then raise the rent to the legal allowable limit when the tenant renewed their lease. Doing so allowed landlords to rent a unit at market rates below the legal allowable threshold, but then increase rents when the market picks up again. This is called "preferential rent" and was a strategy used by some landlords to push out their tenants by increasing rents very quickly (Mironova 2019).

Alternatively, landlords could legally increase rents beyond the approved RGB increases by passing individual apartment or building-wide improvement costs to renters in the form of additional monthly rent. To account for these sources of differential rates of rent increase and to control for forward-looking tenants who consider future savings when considering current rent prices, we calculate a *permanent rent*, which is "defined as a constant monthly payment such that the present value of these payments equals the present value of rent actually paid" (Nagy 1997:70). The permanent rent calculation effectively harmonizes monthly rental payments by calculating a constant monthly rent payment that is equal to the entire amount of rent a tenant paid for the duration of their tenure over the entire study period. Following Nagy (1997), we calculate permanent rent estimates at discount rates of 5 percent and 10 percent per month over 60 months in the 1990s models and 72 months in the 2000s models. Discount rates are often used in discounted cash flow analysis to estimate the current value of future savings. Calculations are reported in Appendix A.

Selection Bias and the Heckman Correction

Finally, selection bias might also substantially affect our estimates. We are specifically concerned that stabilized renters who remain in the same unit for longer periods might be systematically different from stabilized tenants who leave. Nagy (1997) acknowledges but does not correct for this form of selection bias. Other researchers have also noted the incentive stabilized tenants have to remain because they are more likely to "think twice before moving, cognizant of the scarcity of other available units with mechanisms for keeping rent affordable" (Freeman and Braconi 2004:45; Glaeser and Luttmer 2003). Selection bias conditioned on tenure duration can affect our estimates in one of three ways. First, it can censor the outcome variable because stabilized tenants who leave before

the end of the study period are not included in our sample. This is a particular problem when considering permanent rent (Nagy 1997). Rental prices are determined by concomitant supply and demand forces, and we can only observe permanent rent for a subgroup of renters who stayed in the same unit for the entirety of the study period. Since renters with longer tenures are potentially not a random sample of renters, we are left with a potentially non-representative sample of rental prices over time.

Second, selection bias can also systematically impact rental prices through vacancy bonuses in that remaining-new stabilized renters are willing to pay more at the start of the period in anticipation of saving money in the long run because vacancy bonuses allow landlords to raise the rents each time a unit becomes vacant. However, depending on the previous rent and prices in the uncontrolled sector, vacancy bonuses could make it so stabilized rents approximate or even exceed market value when renters first move into a stabilized unit (Glaeser and Luttmer 2003; Nagy 1997). This can have important implications for inequality since there are no eligibility requirements to live in rent-stabilized units (Keating 1998). Finally, landlords of stabilized tenants themselves might differ. Anticipating longer tenant duration, landlords might choose higher-income or more stable tenants (Glaeser 2003). Alternatively, because landlords have an "obvious incentive to increase rents to reach the luxury [high-rent/high-income] decontrol cap," they might either pay tenants to leave or harass them until they do in order to take vacancy bonuses that increase the unit's legal rent (Diamond et al. 2019; Newman and Wyly 2006:47).

To address these potential issues, we specify a Heckman selection model that uses a maximum likelihood probit model to first estimate the probability stabilized renters who stayed in their apartments for the duration of the study period (1991–1996 and 2002–2008) as compared to stabilized renters who left (Heckman 1979). The procedure then incorporates that probability (called the Inverse Mill's ratio) into a second stage hedonic model similar to the ones described above to produce estimates adjusted for potential selection bias on duration. Detailed calculations are reported in Appendix B.

RESULTS

Descriptive Statistics

Figure 1 reports 2019 inflation-adjusted median gross rents for all occupied units in New York City by borough and stabilization status using NYCHVS data for each survey from 1991 to 1996 and 2002 to 2008. Inflation-adjusted median gross rents grew over the entire study period for both stabilized and non-stabilized tenants in each borough and for New York City overall. Over the study period, city median rents grew by $340 ($1,593–$1,253) for non-stabilized tenants and by $206 ($1,203–$997) for stabilized tenants. The growth in median rent differences by stabilization type in Manhattan was by far the largest, doubling from $826 ($1,979–$1,153) to $1,689 ($2,997–$1,308) between 1991 and 2008. Non-stabilized rent growth in Manhattan over the study period outpaced that of stabilized rent growth by nearly a factor of eight: non-stabilized rents grew by $1,018 ($2,997–$1,979), whereas stabilized rents only grew by $115 ($1,308–$1,153). However, since rent growth of stabilized units in Manhattan largely mirrors that of other boroughs, we take this as partial evidence of the success of stabilization in keeping rent growth of stabilized units on par with that of other boroughs. We do not think the steep increase in Manhattan rents will drive our results because we control for borough residence in our models, we use sampling weights, and the distribution of observations across boroughs for stabilized units is similar across years in our sample.

Table 1 reports the descriptive statistics for stabilized and non-stabilized tenants for both a pooled sample and the first survey year of each decade (1991 and 2002) by tenure type (remaining-new tenants and leaving-new

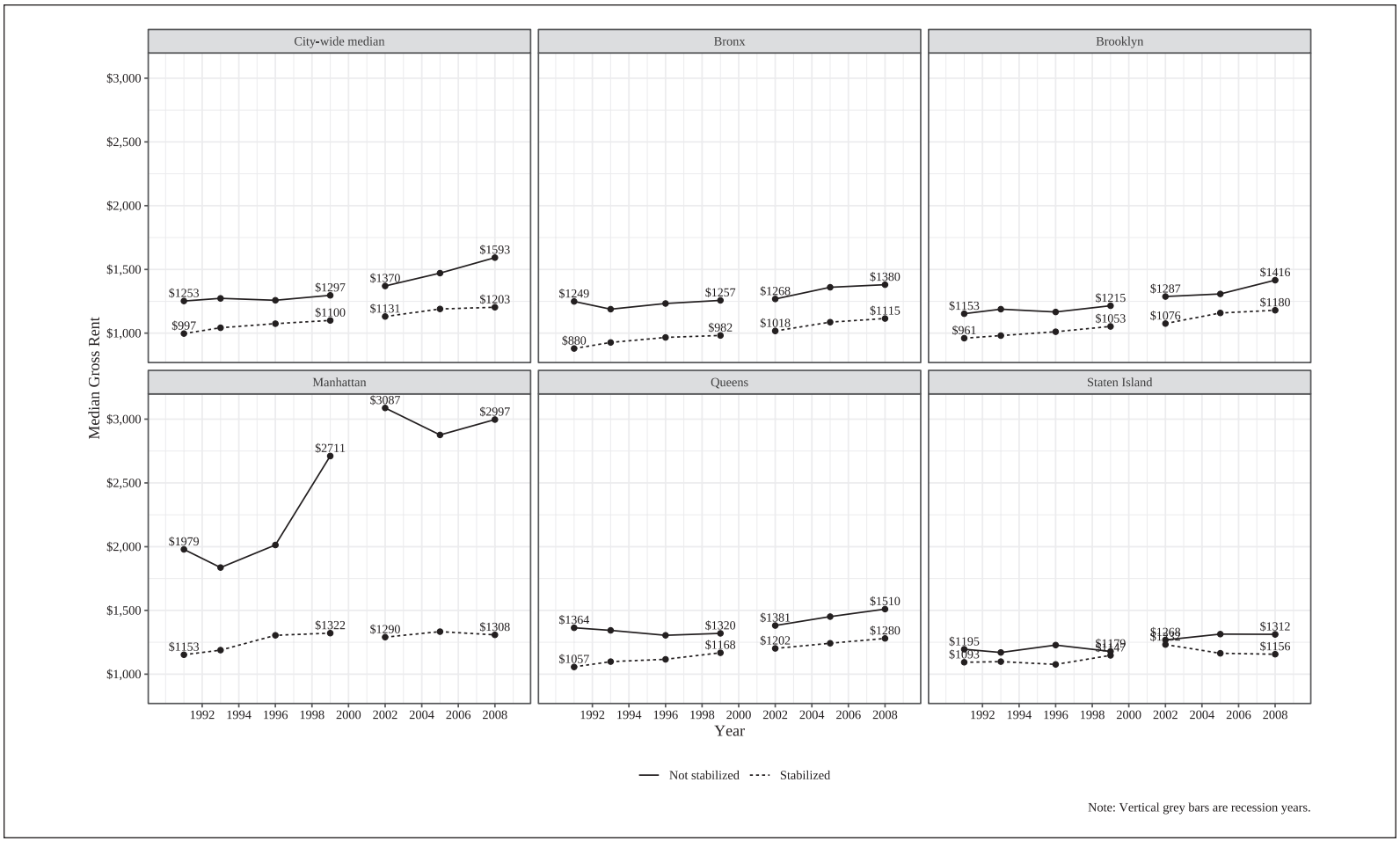

Figure 1. Median gross rent by borough and stabilized status ($2019), 1991–1996 and 2002–2008.

Table 1. Descriptive Statistics for Stabilized and Non-Stabilized Tenants by Tenure.

	Pooled sample (1991–1996)		Tenant characteristics who entered in 1991			
	All renters		Remaining new tenants[a]		Leaving new tenants[b]	
Variables	Non-stabilized	Stabilized	Non-stabilized	Stabilized	Non-stabilized	Stabilized
Race/Ethnicity						
Non-Hispanic White householder	46%	45%	**49%**	**45%**	43%	45%
Non-Hispanic Black householder	23%	19%	**20%**	**14%**	20%	14%
Hispanic householder	21%	28%	**22%**	**27%**	22%	27%
Non-Hispanic Asian householder	8%	6%	**6%**	**9%**	10%	9%
Female householder	47%	53%	**45%**	**40%**	43%	48%
Foreign born householder	41%	44%	**45%**	**55%**	41%	45%
Overcrowded households	18%	27%	**16%**	**31%**	23%	39%
Average age of householder	42	45	**35**	**35**	35	35
Share of rent burdened households[c]	54%	54%	**59%**	**66%**	64%	65%
Median household per capita income[d]	$21,660	$20,651	**$28,943**	**$24,013**	$23,372	$24,013
Average household per capita income[d]	$31,611	$34,082	**$36,510**	**$36,322**	$33,711	$35,540
Median monthly rent[d]	$1,260	$1,041	**$1,441**	**$1,243**	$1,441	$1,249
Average monthly rent[d]	$1,348	$1,148	**$1,573**	**$1,407**	$1,563	$1,414
Total observations[e]	7,338	14,073	**149**	**247**	504	541
	Pooled Sample (2002–2008)		Tenant characteristics who entered in 2002			
	All renters		Remaining new tenants[a]		Leaving new tenants[b]	
	Non-stabilized	Stabilized	Non-stabilized	Stabilized	Non-stabilized	Stabilized
Race/Ethnicity						
Non-Hispanic White householder	45%	37%	**43%**	**40%**	47%	40%
Non-Hispanic Black householder	21%	22%	**13%**	**16%**	19%	16%
Hispanic householder	21%	32%	**28%**	**37%**	19%	37%
Non-Hispanic Asian householder	12%	8%	**15%**	**7%**	14%	7%
Female householder	48%	55%	**45%**	**47%**	46%	47%
Foreign born householder	48%	52%	**46%**	**59%**	49%	50%
Overcrowded households	18%	28%	**18%**	**33%**	23%	36%
Average age of householder	42	46	**38**	**38**	35	34
Share of rent burdened households[c]	52%	52%	**59%**	**50%**	50%	52%
Median household per capita income[d]	$26,280	$22,287	**$21,728**	**$21,743**	$31,890	$31,914
Average household per capita income[d]	$45,803	$38,793	**$32,983**	**$39,067**	$50,841	$45,099
Median monthly rent[d]	$1,479	$1,176	**$1,594**	**$1,268**	$1,522	$1,341
Average monthly rent[d]	$1,735	$1,261	**$1,701**	**$1,363**	$1,918	$1,498
Total observations[e]	7,940	13,633	**99**	**168**	531	555

Note. Column percentages sum within columns, but not all variables are reported (e.g., share of native-born households is not reported).

[a]Tenants who entered unit in first survey year (1991 or 2002) and remained until end of the respective study period (1996 or 2008).

[b]Tenants who entered unit in first survey year (1991 or 2002) but left before the end of the respective study period (1996 or 2008).

[c]Percent households paying 30% or more of their household income in rent.

[d]Inflation adjusted to 2019 dollars.

[e]Total observations reports raw, un-weighted totals, but column percentages are weighted.

tenants). We concentrate on remaining-new tenants (bold columns) since they are the focus of our analysis. The central finding is the shift over time in ethno-racial composition among remaining-new tenants: the share of stabilized households headed by non-Hispanic Whites shrank (45 percent to 40 percent), whereas those headed by Hispanics grew (27 percent to 37 percent). In both decades, a larger share of remaining, stabilized householders were foreign-born, lived in overcrowded conditions, and paid lower rents. Although remaining stabilized tenants reported slightly lower median and average per capita income in 1991 than remaining non-stabilized tenants, they reported substantially higher average per capita income in 2002, suggesting *some* higher-income tenants benefited from rent stabilization protections during the 2000s. Stabilized and non-stabilized tenants reported the same average householder age for each decade, but householders were on average younger during the 1990s than the 2000s and much younger than the overall pooled sample. Based on our own calculations, we found that among all new tenants, a higher share of stabilized than non-stabilized tenants remained in their units at the end of the study period in each decade: 31 and 23 percent as compared to 23 and 16 percent, respectively. While some degree of tenant turnover is natural, weakened enforcement of rent laws and increased deregulation of units is one likely source of higher rates of tenant turnover among stabilized, remaining tenants during the 2000s as compared to the 1990s.

Research Question 1: Who Is Most Likely to Benefit from Rent Stabilization?

Table 2 reports results from nested logistic regression models predicting the probability of renting a stabilized apartment using pooled samples from the 1990s and 2000s.[8] For parsimony, we only report estimates of socioeconomic predictors most commonly highlighted in the literature: householder sex, race and ethnicity, nativity, educational attainment, and per capita household income. For each decade, Model 1 includes only characteristics of the householder, while Models 2 through 4 introduce controls for household, unit, and neighborhood characteristics, respectively. A nested approach shows very clearly how predictor significance changes as we add additional household, unit, and neighborhood controls, with Model 4 reporting the best model fit in each decade according to log pseudolikelihood, AIC, and BIC measures.

One major finding from these models is that Hispanic-headed households have a statistically significant higher likelihood of occupying stabilized units compared to their non-Hispanic White counterparts in both decades, all else being equal. This is not surprising based on Table 1 that shows an increase in the share of Hispanic-headed households living in regulated units; furthermore, the Bronx, which is predominately Hispanic, has the highest percentage of stabilized units as a share of all units in the five boroughs (NYU Furman Center 2014). Interestingly, non-Hispanic-Black-headed households were less likely to live in stabilized units in both decades after controlling for unit and neighborhood characteristics, but this reduced likelihood was only statistically significant in the 2000s. One potential explanation for this finding is that non-Hispanic Black households are more likely than other groups to live in highly segregated neighborhoods and to "live in locally or federally assisted housing" (Rosenbaum and Friedman 2007:197). The change in statistical significance over time could be due to the combination of a number of factors, notably: (1) intensifying gentrification, (2) the passage of new vacancy decontrol measures in the late 1990s that eroded the stabilized units in predominately non-Hispanic Black neighborhoods, and (3) an increase in the share of more affluent foreign-born, non-Hispanic Black households in the 2000s who are more likely to pursue homeownership and not live in native Black neighborhoods (Kasinitz et al. 2009). Foreign-born householders were statistically more likely to live in stabilized apartments during the 1990s but not during the 2000s. Household per capita income is

Table 2. Odds Ratios for Logistic Regression Results Predicting Probability of Living in a Stabilized Unit.

	Pooled sample (1991–1996)				Pooled sample (2002–2008)			
Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Householder characteristics								
Female	1.315***	1.184***	1.006	0.987	1.285***	1.150***	1.063	1.060
	(0.05)	(0.04)	(0.05)	(0.05)	(0.05)	(0.04)	(0.06)	(0.06)
Race/Ethnicity								
Non-Hispanic Black	1.164**	1.108*	0.920	0.876	1.267***	1.189***	0.786***	0.709***
	(0.06)	(0.05)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.05)
Hispanic	1.863***	1.711***	1.405***	1.391***	1.911***	1.723***	1.350***	1.290***
	(0.09)	(0.08)	(0.10)	(0.10)	(0.09)	(0.09)	(0.10)	(0.10)
Non-Hispanic Asian	0.871	0.814**	0.881	0.867	0.903	0.807**	0.873	0.835
	(0.06)	(0.06)	(0.11)	(0.10)	(0.06)	(0.05)	(0.08)	(0.08)
Other	1.008	0.969	0.809	0.834	1.246	1.286	0.699	0.690
	(0.20)	(0.19)	(0.23)	(0.25)	(0.25)	(0.27)	(0.19)	(0.19)
Foreign-born	1.150***	1.190***	1.209***	1.226***	1.058	1.052	1.081	1.018
	(0.04)	(0.05)	(0.07)	(0.07)	(0.04)	(0.04)	(0.06)	(0.06)
College graduate	1.685***	2.071***	1.100	1.028	1.177***	1.518***	1.057	1.085
	(0.07)	(0.10)	(0.08)	(0.07)	(0.05)	(0.07)	(0.07)	(0.07)
Age	X	X	X	X	X	X	X	X
Survey year	X	X	X	X	X	X	X	X
Household characteristics[a]		X	X	X		X	X	X
Natural log of per capita income ($2019)		0.786***	0.948	0.952		0.739***	0.928*	0.943
		(0.02)	(0.03)	(0.03)		(0.02)	(0.03)	(0.03)
Unit characteristics[b]			X	X			X	X
Neighborhood characteristics[c]				X				X
Constant	0.600***	5.361e+42***	1.461e+31***	1.743e+29***	0.519***	4.017e+53***	5.613e+37***	2.019e+39***
	(0.04)	(3.98e+43)	(1.29e+32)	(1.56e+30)	(0.04)	(2.71e+54)	(4.59e+38)	(1.70e+40)
Log pseudolikelihood	−1,849,287	−1,762,974	−957,695	−945,436	−1,926,419	−1,801,435	−1,033,968	−1,026,031
Pseudo R^2	.027	.072	.496	.502	.032	.095	.481	.485
Akaike's Information Criteria	3,698,597	3,525,987	1,915,459	1,890,956	3,852,860	3,602,908	2,068,004	2,052,145
Bayesian Information Criteria	3,698,681	3,526,133	1,915,728	1,891,279	3,852,944	3,603,053	2,068,264	2,052,458
Observations	16,014	16,014	16,014	16,014	15,340	15,340	15,340	15,340

Note. Standard errors in parentheses.

[a]Household characteristics: natural log of per capita household income ($2019), number of people per rooms, reason for moving in, and year moved in.

[b]Unit characteristics: natural log of monthly rent ($2019), number of rooms, presence of mice or rats, cracks in holes in interior walls, holes in floors, building dilapidated, building deteriorating, boarded up, number of units in building, and year built.

[c]Neighborhood characteristics: neighborhood rating and borough.

*$p < .05$. **$p < .01$. ***$p < .001$.

Table 3. Selected Results from the Estimated Counterfactual Hedonic Price Models.

Model	Monthly mean rent difference	Observed vs. counterfactual percent of rent burdened tenants		
		Observed	Counterfactual	Difference
1991	–$51.32	46%	48%	1%
1996	–$7.25	45%	44%	−1%
Permanent rent (5% discount rate)	–$73.93	45%	45%	0%
Permanent rent (10% discount rate)	–$71.11	45%	48%	3%
Permanent rent (Heckman—5% discount rate)[a, b]	–$307.16	45%	39%	−6%
Permanent rent (Heckman—10% discount rate)[a, b]	–$306.91	45%	39%	−6%
Observations[c]	99		71	
2002	–$178.69	63%	61%	−2%
2008	–$387.38	56%	48%	−8%
Permanent rent (5% discount rate)	–$272.31	61%	59%	−2%
Permanent rent (10% discount rate)	–$240.77	63%	59%	−4%
Permanent rent (Heckman—5% discount rate)[a, d]	–$543.57	61%	51%	−10%
Permanent rent (Heckman—10% discount rate)[a, d]	–$516.83	63%	51%	−12%
Observations[c]	52		49	

Note. Negative estimates indicate non-stabilized tenants would have paid less under rent regulation. All monetary values inflation adjusted to 2019 dollars.

[a]Variables included in probit selection model: householder race/ethnicity, householder native-born status, householder sex, householder age, a binary measure of overcrowding, a categorical variable capturing the reason for moving in, number of rooms, the presence of vermin, a number of controls for the visible signs of building and unit deterioration, the number of units in the building, the year the building was built, a control for respondent rating of neighborhood residential structures, and borough location.

[b]Heckman selection model was significant at $p < .01$.

[c]Dropped observations due to missing data on household incomes account for difference in number of observations between rent difference and rent burden reduction estimates.

[d]Heckman selection model was significant at $p < .1$.

negative and statistically significant in both decades, meaning lower-income households were more likely to live in stabilized units, but this effect disappears once we control for unit and neighborhood characteristics. In either decade, both college-educated and female-headed households were more likely than their non-college educated and male counterparts to live in stabilized units until we controlled for unit characteristics. We take this to mean that non-college-aged and male-headed households were more likely to live in lower-quality housing. In answer to our first research question, even after controlling for household income, we find evidence suggesting that rent stabilization benefited some underprivileged groups, specifically foreign-born and Hispanic-headed households.

Research Question 2: How Much Rent, If Any at All, Does Rent Stabilization Save Tenants?

Table 3 reports results from our counterfactual estimations from Equation 3 by comparing rents of new stabilized tenants with the hypothetical rents of their non-stabilized counterparts had they been stabilized. The first column, "Monthly mean rent difference,"

reports the average monthly difference between observed rents of non-stabilized tenants and the rents they would have paid had their units been stabilized. Negative estimates indicate that non-stabilized tenants would have paid less under rent stabilization. While prior research (Basu and Emerson 2000; Nagy 1997) found that stabilized tenants during the 1980s paid higher rents than their counterparts in the initial year of their lease in order to secure lower future rents, our results indicate non-stabilized tenants would have paid less rent if their units had been stabilized. In 1991, non-stabilized tenants on average were predicted to save $51 per month, whereas predicted savings in 2002 was $179 per month. In other words, vacancy bonuses did not equalize rents in both sectors and stabilized tenants did not pay a premium to live in their units. Although rent savings shrank in the 1990s ($51 per month in 1991 to $7 per month in 1996), it more than doubled during the 2000s ($179 per month in 2002 to $387 in 2008). In other words, the average non-stabilized tenant would have saved money had their unit been stabilized during the 1990s and saved even more during the 2000s.

To account for different rates of rent increases and future rent consideration that could bias our estimates, we consider permanent rent models that assume discount rates of 5 and 10 percent per year. We find that during the 1990s, non-stabilized tenants would have paid less rent—between $71 and $74 per month—had their units been stabilized. During the 2000s, these savings were three times as large, between $240 and $272 per month. Put into perspective, non-stabilized tenants would have saved as much as $4,440 ($74*60 months) between 1991 and 1996 and $19,584 ($272*72 months) between 2002 and 2008. By accounting for differential rent increases, we find substantial rents savings over the study period in each decade *and* an increase in rent savings between decades.

A final set of models accounts for selection bias due to the duration of tenure. We find similar trends but of even larger magnitude. Had their units been stabilized, we estimate that non-stabilized tenants would have saved an average of $307 per month during the 1990s and as much as $543 per month during the 2000s, depending on model specification.[9] Under our most conservative permanent rent estimates corrected for selection bias, non-stabilized tenants would have saved in total about $18,420 ($307*60 months) between 1991 and 1996 and $37,224 ($517*72 months) between 2002 and 2008. The answer to our second research question is that rent stabilization would have saved tenants substantial rent over each decade and that savings would have been significantly higher during the 2000s.

Given concerns about interpreting results based on small samples, we investigated the robustness of our results using an Augmented Inverse-Probability Weighted (AIPW) approach.[10] This approach accounts for selection into rent stabilized status conditional on duration; however, unlike the Heckman models, it does not account for selection out of sample—that households who moved out might be different from those that did not. AIPW findings are reported in Appendix C and corroborate our primary Heckman selection results. Compared to their non-stabilized counterparts, stabilized households spend between $117 to $263 less in permanent rent during the 1990s and 2000s and households saw between a 5 and 11 percentage point lower chance of being rent burdened.[11] That these findings are substantially similar instills yet more confidence in our primary findings. Ultimately, the Heckman selection results remain our primary findings because we think that they better account for differences between households that remained and those who moved out.

Research Question 3: Does Rent Stabilization Reduce Overall Rent Burdens?

The last three columns of Table 3 report the percentage-point "Difference" between the share of non-stabilized tenants we "Observed" to be rent burdened and the share of tenants

who would have been rent burdened ("Counterfactual") had they been paying the aforementioned hypothetical rents in the stabilized sector. For instance, in 2002, 63 percent of observed non-stabilized remaining tenants were rent burdened, but 61 percent of them would have been rent burdened if their units had instead been stabilized, resulting in a two-percentage point difference. Again, negative estimates in the "Difference" column signify a reduction in the share of rent-burdened tenants had their rents been stabilized.

In both decades, the greatest reduction in the share of rent burdened tenants comes when we account for selection bias. We find that about 6 percent of stabilized tenants during the 1990s would move from being rent burdened to not rent burdened if their units were stabilized, and as many as 12 percent during the 2000s. While all models in the 2000s predict a reduction in the share of rent burdened households had non-stabilized tenants been stabilized, the 1990s predictions are less uniform. Although Table 1 reported lower rates of rent burden among remaining-new tenants between decades, the weaker comparative reduction in rent burden we see in Table 3 among our non-stabilized counterfactual households may stem from the fact that some households may have seen higher rents in a similar stabilized unit given the quality of their non-stabilized unit (beyond what we can observe in our data—e.g., amenities like in-unit laundry, gym). Nevertheless, our rent burden reduction findings follow similar trends as our estimated rent differentials: significant rent savings once we account for different sources of estimate bias and significantly higher savings and rent reduction in the 2000s.

Therefore, in response to our third research question, we find that there is strong statistical evidence that stabilized renters would have saved more in rent in either decade, but more modest evidence that these savings would have translated into those same renters no longer being rent burdened during the same periods. We take this to mean that the average renter is saving money, but the amount they save does not necessarily move them out of rent burden status. There is no doubt that stagnant wages and rising housing costs in New York City during the study period largely contributed to rent burden increases over time. Gentrification also likely played a role as median rents rose steadily in every borough during the 2000s. Yet, we also suspect lax enforcement and landlord-favorable 2003 regulation changes served as structural incentives for landlords to encourage tenant turnover because when units would become vacant landlords could take vacancy bonuses to further increase rents for the next tenant and eventually deregulate the unit once it reached a specific threshold (Wyly and DeFilippis 2010). During vacancies landlords could permanently pass on improvement costs to incoming renters in the form of higher rents. While this likely explains some of the higher rent burdens and lower stabilized tenant retention we see during the 2000s, it likely does not explain it all. We agree with Nagy (1997) that vacancy bonuses did not serve to equalize rents in the two sectors and suspect that stabilized savings and rent burden reduction would have been higher had there been better regulation enforcement.

DISCUSSION AND CONCLUSION

As cities and states across the country consider adopting new rent stabilization measures, this paper reviews both the immediate and long-term monetary benefits of rent regulation and how they might provide affordability to tenants. Using the two most recently available longitudinal NYCHVS samples in New York City, we measure the savings and burden reduction capacity of the city's rent stabilization policy during the 1990s and 2000s. We find clear evidence that (1) Hispanic and foreign-born households were more likely to live in rent-stabilized housing compared to their non-Hispanic White and native-born counterparts, (2) rent stabilization saved tenants money initially and increasingly over time, and (3) those rent savings translated into

a modest reduction in the share of rent-burdened tenants. On average, stabilized renters saved as much as $18,420 between 1991 and 1996 and $37,224 between 2002 and 2008.[12] During the same periods, the share of rent-burdened tenants was predicted to have decreased as much as 6 percent and 12 percent, respectively. Rent stabilization is not a panacea to alleviate unaffordability, but, as we show, it did provide substantial savings and some protections against the rent surges of the 2000s.

Contributions

This study contributes to the housing affordability and rent regulation literature in several ways. First, our paper reinforces the practice of modeling tenant housing consumption and the effects of rent stabilization over time. Our analysis uses two decades of panel data (covering the years 1991–1996 and 2002–2008) to better understand the gradual "stream of benefits" over time (Nagy 1997:76). Our findings suggest that the "effects of rent controls tend to be cumulative" since savings were shown to be greater in the 2000s than in the 1990s (Arnott 1995:112). Second, our paper contextualizes rent stabilization benefits within the current housing affordability crisis. As the crisis has intensified, rent regulations have gained popularity across the country because they offer immediate relief to renters (National Multifamily Housing Council 2021). Our results show stabilized renters entering their units in 2002 saved an average $179 a month. Further, we show that these savings increase over time in expensive housing markets like New York City where housing construction lags and renters need immediate relief. As policymakers weigh the costs and benefits of rent regulations, research on the long-term effects of rent stabilization measures is even more important. Finally, our research frames rent stabilization as an important housing affordability policy. New York City is one of the most expensive and unequal housing markets in the country but has stabilization laws that were effective at depressing rents below market rates, providing substantial rent saving to tenants, and moderately reducing rent burdens for some.

Limitations and Future Research

Perhaps the most obvious limitation is that our paper does not speak to causality. Recent studies using causal analysis techniques by exploiting sudden implementation or elimination of rent regulations found they lower rents and prevent displacement but also worsen housing quality and decrease supply (Diamond et al. 2019; Sims 2007). While a quasi-experimental design was not possible using these data, New York City's long and continuous rent history makes it a good case study of the cumulative effects of rent savings and burden reduction. Furthermore, in a system that is unlikely to end soon, quantifying the rent savings and burden reduction capacity of modern rent regulation measures gives policymakers useful data to make informed decisions regarding regulation implementation.

Another set of limitations stem from the data. First, as we have already noted, restricting our analysis to remaining-new tenants limits our sample size; however, we are confident in our results because we use sampling weights and find similar results using AIPW. Relatedly, sample size and research design prevent us from investigating how rent benefits differ by gentrification and neighborhood context. Future research using more geocoded observations could better examine long-term rent stabilization effects by gentrification status or neighborhood context. Second, we cannot use more recent data. The within-decade longitudinal design is central to assessing the cumulative benefits of rent control; however, recent correspondence with NYCHVS survey administrators has confirmed that more recent data from the 2011, 2014, and 2017 samples will not be made longitudinal due to data confidentiality concerns. Additionally, there is substantial flexibility and variation across second-generation controls that make it difficult to broadly generalize about their effects. For instance,

there are no eligibility requirements to live in a rent-stabilized unit in New York City. Further research might compare rent stabilization benefits in a universal system like New York City with those that impose tenant income eligibility requirements. Also, our findings are specific to New York City regulations during the study period, but policymakers should consider them in the context of their own localities.

Policy Implications

Determining whether rent stabilization is a successful housing affordability policy depends on the framing of affordability need. If the goal of rent stabilization is to produce affordable housing for low-income tenants, then our study finds evidence of moderate success—some disadvantaged households (specifically foreign-born and Hispanic) are more likely to reap long-term benefits although some non-disadvantaged households do as well. Adding income restrictions could better target benefits to disadvantaged households; however, means-testing housing regulation is usually counterproductive, requires significant administrative oversight (NYU Furman Center 2021), and might incentivize landlords to discriminate against low-income tenants by preferentially renting to others (Glaeser 2003; Montojo, Barton, and Moore 2018; Sims 2011).

Alternatively, it is precisely because New York City's rent stabilization system is broadly accessible that it provides an "important protective covering for a much broader range of low- and moderate-income households" (Defilippis and Wyly 2008:795). Certainly, middle-income renters also benefit from broad access to rent stabilization, which is especially important in tight housing markets where the middle class is a vulnerable population that needs protection against rent inflation (Woldoff et al. 2014). Policymakers can either grant universal access or set income eligibility restrictions to tailor rent regulation provisions to the affordability needs of their communities but rent regulation provisions provide non-monetary benefits as well: they prevent evictions and reduce displacement pressures in the context of gentrification (Freeman and Braconi 2004), ensure tenant and community stability and improve tenant quality of life (Woldoff et al. 2014), and curb the privatization of public investment by preventing landlords from charging higher rents when the public invests in transportation, park maintenance, or new housing construction (Stein 2019a, 2019b).

We do not think that rent stabilization is a cure-all for the current affordability crisis, but our findings suggest that it can provide rent savings and moderately reduce rent burden. Certainly, expanded rent stabilization coverage could negatively impact landlord profits,[13] but a sociological perspective promotes a shared responsibility to provide affordable housing to tenants—even if that means limiting landlord profits (Baiocchi et al. 2020; Desmond and Wilmers 2019; Pattillo 2013). As the affordability crisis continues, we argue that state and local governments should not only expand rent stabilization coverage, but pair expanded regulations with policies that increase housing supply (Levine, Grigsby, and Heskin 1990).

Nevertheless, some low-income households may still need further subsidies to reduce their rent burdens, since we found that increased savings did not dramatically reduce rent burden. The Rent Relief Act of 2018, sponsored by then-Senator Kamala Harris (2018), serves as a template for such subsidies: low-income renters could receive tax credits on rent paid in excess of 30 percent of their income. Targeted, means-tested subsidies for specific populations are easy to implement "because local governments already have the infrastructure in place to administer direct cash subsidies" (NYU Furman Center 2021:6). To extend rent regulation coverage, cities could implement policies similar to New York City's 421-a and J-51 property tax abatement programs whereby landlords of non-stabilized units

receive tax breaks if they opt into rent stabilization. Tax breaks could be distributed on a sliding scale proportional to the income bracket of their newly stabilized tenants to incentivize landlords of lower income tenants to opt-into stabilization. However, given that rent-regulated tenants often live in lower quality housing (Diamond et al. 2019; Pollakowski 2003; Sims 2007) that is often stratified by ethno-racial and immigrant status (Rosenbaum and Friedman 2007), new policies and programs should explicitly promote equity in housing quality while also providing adequate quality enforcement (Summers 2020). While New York City rent stabilization measures already incentivize landlords to maintain quality by allowing them to pass along upgrade costs to renters, in some instances the resulting higher rents can place undue burden on low-income and minority renters (Collins 2020).

As housing affordability policies target different aspects of the housing crisis, rent stabilization provides stability and affordability. Even though rent stabilization provides protection against eviction and long-term rent savings, housing supply shortages will continue to be an important source of the housing affordability crisis (Been, Ellen, and O'Regan 2019). Therefore, we argue that expanded rent stabilization should be paired with policies and programs directly aimed at increasing the supply of housing. City officials can encourage housing production in particular neighborhoods by coupling inclusionary zoning mandates with strong rent stabilization measures to stem fears of displacement, stall rent increases, and provide housing security for vulnerable populations (Mukhija et al. 2010; NYC Department of City Planning 2015). Tenant groups and housing advocates might be more receptive to controversial rezonings if they were paired with meaningful commitments to enforce and expand rent regulations in those same neighborhoods. Cities could also pair rent stabilization with revamped *In Rem* programs that transfer foreclosed properties to a "scatter-site community land trust" that would preserve affordable units without adding luxury housing that might stimulate displacement (Krinsky 2015; Saegert 2015; Stein 2018:9). Enhanced rent stabilization would ensure renter stability while a community land trust program would allow some renters to transition to homeownership through individual and collective ownership of the land by reducing home prices, lowering monthly rents or mortgages, and restricting resale that would maintain long-term affordability (Hackett et al. 2019). Finally, with the current COVID-19 pandemic facilitating a shift to remote working, there is an opportunity for cities to rezone former office and industrial space to residential dwellings to increase the supply of available units. Converting vacant units in tight housing markets where land is scarce increases supply without demolishing the current housing stock.

Our study demonstrates that rent stabilization provides "a baseline for housing affordability" on which localities could build and focus on providing higher minimum wages and greater access to education and job security (Chapple 2017; Montojo et al. 2018:29). State and local government reliance solely on market solutions or investment pledges from tech giants like Google and Microsoft will not solve housing affordability problems. Instead, policymakers may want to expand rent regulation to stabilize rent inflation and provide immediate savings to renters while also pairing that expansion with supply-stimulating policies like upzoning or inclusionary zoning to address lack of supply concerns. Such a policy framework could go a long way toward providing housing stability and affordability to renters desperately in need as the housing affordability crisis rages.

APPENDIX A

Permanent Rent Calculation

We follow Nagy's (1997) calculation of permanent rent, which takes the following form:

$$g_m = \frac{1}{X} \ln\left(\frac{Pt_f}{Pt_i}\right) \tag{A1}$$

where we first calculate a real monthly growth rate (g_m) during the period observed, in which X represents 60 months for the 1990s data and 72 months for the 2000s, Pt_f is the gross rent of the apartment at the final survey-year analyzed in each decade (1996/2008), and P_{t_i} is the gross rent of the apartment at the first survey-year for each decade (1991/2002). From this, and assuming that tenants discount the future at a monthly rate of 5 percent (0.05), the monthly annuity payment C is calculated as:

$$\mathrm{C} = \frac{r_m Pt_i}{0.05 - g_m} \frac{[1 - \exp\left(Xg_m - X\left(0.05\right)\right)]}{1 - \exp\left(-X\left(0.05\right)\right)] } \quad \text{(A2)}$$

We also perform calculations assuming a discount rate of 10 percent (0.10).

APPENDIX B

Heckman Selection Model Details

The first stage model calculates the probability stabilized renters stay in their units for the duration of the study period using the same characteristics as in Equation 1 and includes a set of covariates where at least one variable should directly predict duration but not rental price in order to satisfy the exclusion restriction condition. The first stage model includes all of the unit and neighborhood characteristics described in the "Logistic models" section above, as well as controls for householder race/ethnicity, sex, age, and foreign-born status. In addition, we include two variables we think satisfy the exclusion restriction (that we think are related to duration but not predictive of rents): a categorical variable capturing the various reasons stabilized tenants moved into their unit (job related, family/demographic, housing related, neighborhood, or other miscellaneous related reasons) and a dichotomous variable capturing overcrowding. The specification for this first stage can be represented as:

$$P(\mathrm{S}_i = 1 | \mathrm{Z}_i) = \Phi\left(\mathrm{Z}_i \gamma\right) \quad \text{(B1)}$$

where, S_i indicates the probability that a new stabilized apartment renter stays in the same unit for six years, $\boldsymbol{Z}_i$ is a vector of predictors that includes all regressors described in the previous paragraph, Φ is the distribution function for a standard normal variable, and γ_i is a vector of unknown parameters.

From Equation B1, we get what Heckman (1979) calls the Inverse Mill's ratio (λ) that allows us to estimate the selection hazard of being in our observed sample. The Inverse Mill's ratio is given by:

$$\lambda = \frac{\phi\left(\mathrm{Z}_i \gamma\right)}{\Phi\left(-\mathrm{Z}_i \gamma\right)} \quad \text{(B2)}$$

Given the probability of selection into our sample, our second stage determines our selectivity adjusted expected rental prices using a vector of original predictors W_i, plus an additional regressor term dependent upon the value of the Inverse Mill's ratio calculated from our probit model:

$$E(p_i \mid z_i, \mathrm{s} = 1) = \beta' \mathrm{W}_i + \rho\lambda\left(Z_i \gamma\right) \quad \text{(B3)}$$

where ρ is the correlation between the error term in the price equation and the error term in the probit model.

APPENDIX C

Results from Augmented Inverse-Probability Weighing Models

Below are the results from our Augmented Inverse-Probability Weighing (AIPW) models. Figure C1 reports monthly mean rent difference for AIPW models using permanent rents (using 5 and 10 percent discount rates).

Figure C2 shows difference in the likelihood of a household to be rent burdened. Results are substantially similar to those reported in Table 3, albeit with slightly reduced effect sizes. As we note above, we prefer Table 3 results because we think those models better account for differences between remaining and leave households.

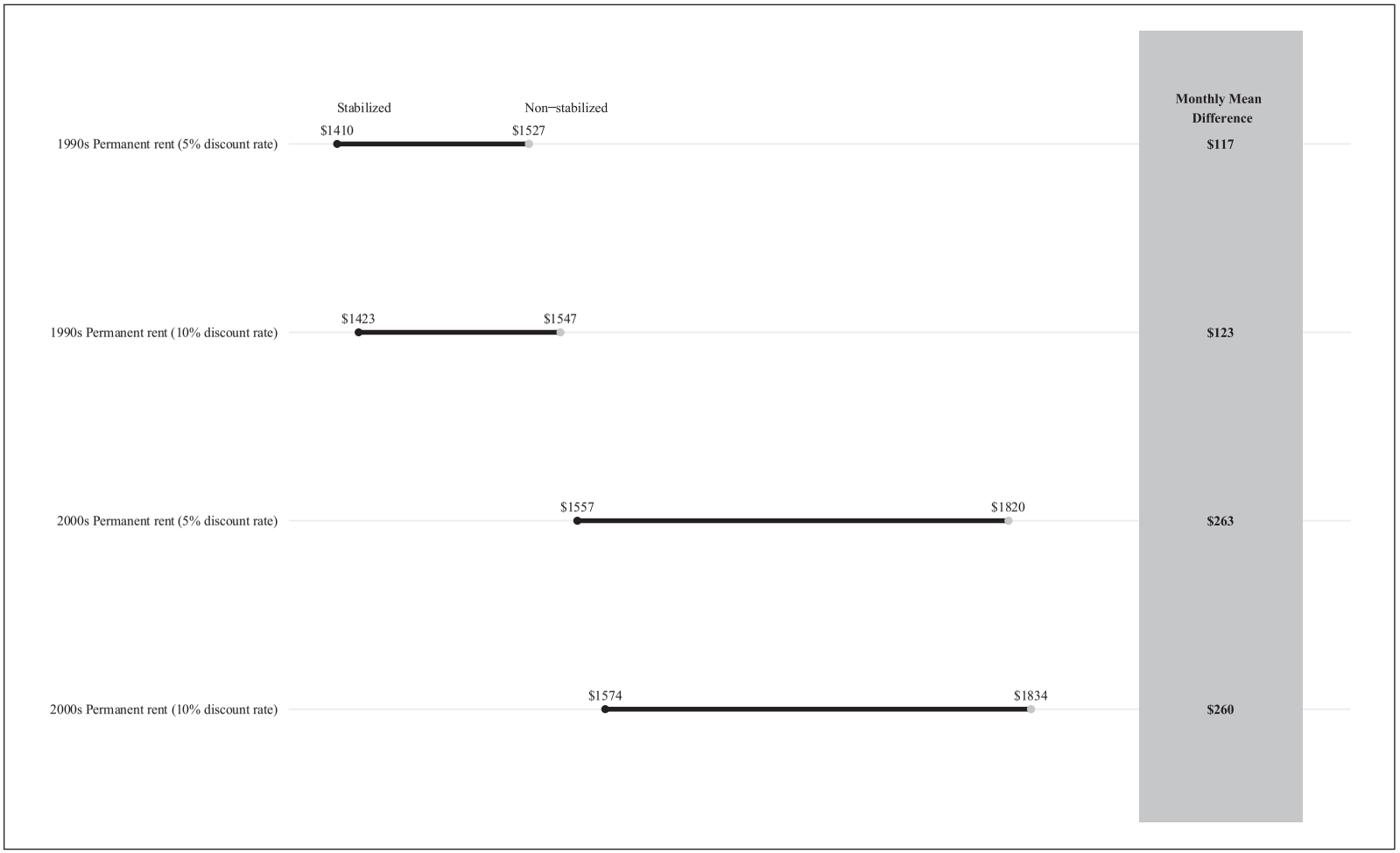

Figure C1. Monthly mean rent difference.
Note. 1990 models: $N = 1{,}002$; 2000 models: $N = 855$.

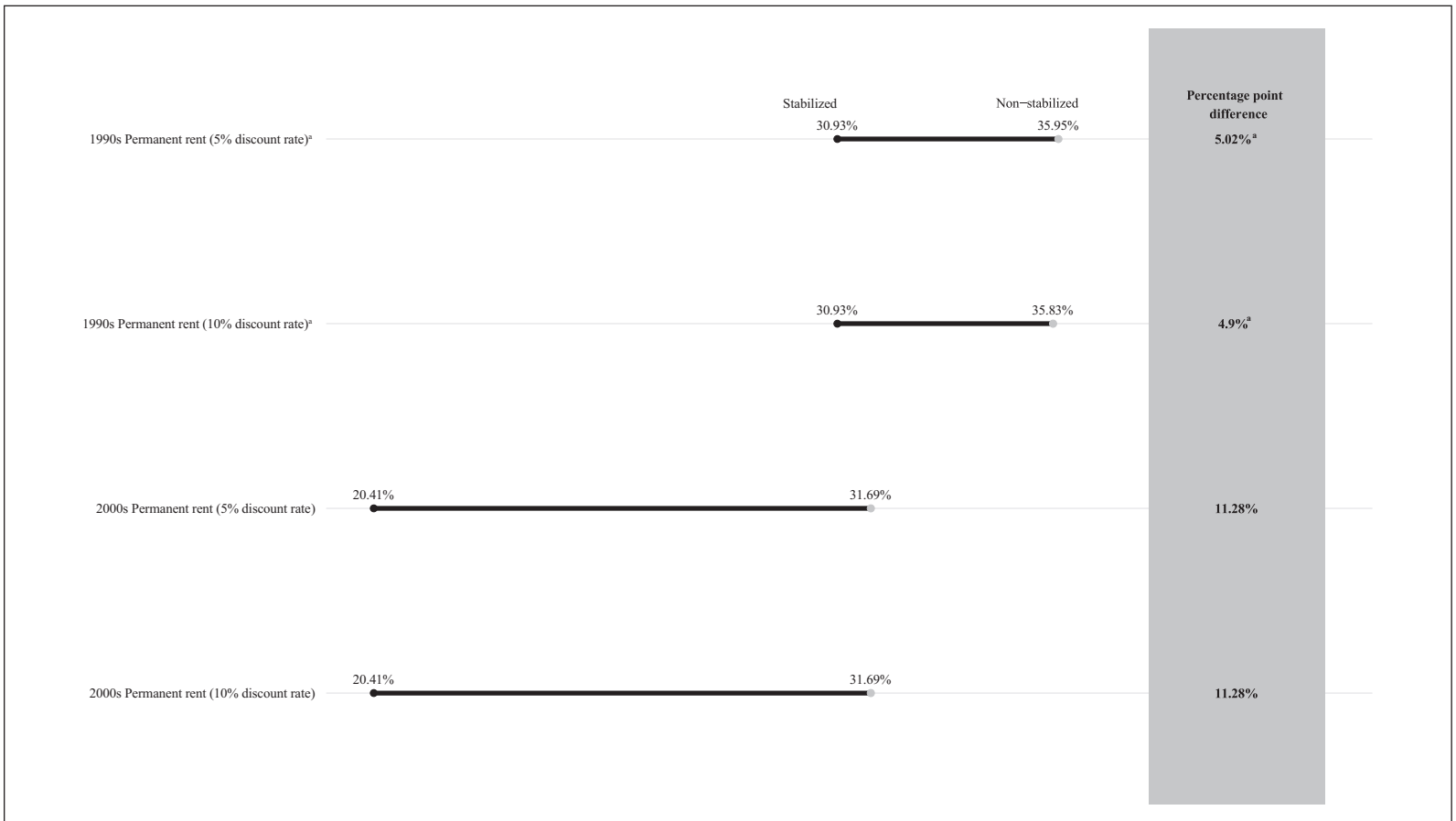

Figure C2. Likelihood of household to be rent burdened.
Note. 1990 models: N = 1,231; 2000 models: N = 1,081.
[a]1990s mean difference is not statistically signficant.

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NOTES

1. While the literature often uses "controls" to refer to a variety of rent regulations provisions, this can be confusing since New York City has both rent control and rent stabilization measures that operate differently. For clarity, we only use the term "rent control" to refer to first-generation measures that set hard rent ceilings and "rent stabilization" to refer to second-generation measures that limit rent increases. We use "rent regulation" to refer to both "rent control" and "rent stabilization" measures, which often include other types of housing-related restrictions.
2. Although homeownership is an important mechanism of wealth generation and inter-generational transfer, predatory lending drained the wealth from many communities, particular minority ones, and remains a deeply racialized process (Killewald and Bryan 2016; Oliver and Shapiro 1995; Rugh and Massey 2010).
3. One important contextual piece here is that many rent regulation studies are conducted in different cities under different housing market contexts. This helps explain disparate findings from one study to the next and highlights the importance of the particular form of rent stabilization in a given city.
4. For instance, a tenant signing a two-year lease where the vacated unit rented for $1,000, would pay $1,200 ($1,000 + ($1,000*0.20)), whereas they would pay $1,170 ($1,000 + ($1,000*0.17)) if they signed a one-year lease and the statutory difference was 3 percent.
5. The NYCHVS was conducted in 1991 instead of 1990 to prevent overlap with the decennial census.
6. We found similar results using probit and linear probability models, which are available upon request.
7. We adjust all monetary values for inflation and benchmark them to 2019 dollars to ease interpretation of results. We also normalize gross monthly rent by taking its natural logarithm.
8. We found similar results specifying both probit and linear probability models.
9. A note of caution is warranted in interpretation of estimates from the 2000 models because of small sample size and statistical significance at $p < .1$.
10. AIPW techniques assign weights to correct for non-random selection into treatment and then allow for the estimation of treatment effects. This research design results in a larger sample size than our primary results because AIPW compares both treated (stabilized) and untreated (not stabilized) households in a full sample, whereas our Heckman design only uses treated households that remained throughout each study period to predict what rents would have been had those households not been treated. While each method addresses slightly different concerns, that we obtain substantially similar estimates gives us confidence in our primary results.
11. Note that the AIPW research design estimates the likelihood a household is rent burdened, whereas the primary findings estimate the share of rent burdened households.
12. Again, a note of caution is warranted in interpretation of estimates from the 2000 models because of small sample size and statistical significance at $p < .1$.
13. Recent research in New York City suggests large-scale landlords (6 or more buildings) own more rent-stabilized units than small-scale landlords (fewer than 5 buildings) (Rabiyah 2020).

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