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Abstract

Dense, expensive, litigious, and highly regulated, Manhattan is the quintessential coastal US housing market. Residential construction in Manhattan has fallen relative to total US residential construction over the last 45 years. This time trend has been attributed to tightening local regulation, but is entirely explained away by a combination of the decline of public housing construction and the decreasing national share of construction that is multifamily. Reliance on multifamily housing also helps explain slow construction growth in California and New York State, but not in other Northeast states.

JEL Codes: R140, R310, R380.

JEL Keywords: Housing Supply and Markets; Regulatory Policies; Land Use Patterns.

1 Introduction

Why is Manhattan so expensive? For that matter, why have coastal metropolitan areas gotten so expensive? A prominent explanation relies on the familiar fact that residential development is more heavily regulated in coastal areas than elsewhere.[1] If mobility across metropolitan areas is inelastic with respect to housing prices, then demand growth will lead to greatly increased supply and limited price appreciation in most of the country, but greatly increased prices and limited supply growth on the coasts.

An extension of this argument offered by Glaeser et al. (2005b) is that price appreciation has accelerated in coastal areas because regulation has gotten tighter over time. Glaeser et

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[1]See, e.g. Green et al. (2005).

al. (2005a) use Manhattan as a case study, showing that construction volume and sensitivity to price have fallen with time. While there is almost no vacant land in Manhattan, there are certainly buildings that can profitably be redeveloped.

National trends driven largely by federal policy motivate an alternative explanation for Manhattan's reduced share of national housing supply. Because Manhattan land is too expensive for all but a small number of extremely rich people to build single family homes, almost all residential construction in Manhattan is multifamily (2 out of 113 buildings and 8,790 units were single family in 2006). Multifamily housing construction in the US been buffeted by at least two types of shocks in the post-war period. First, in the 1950s through the 1970s, a large quantity of public and subsidized housing was financed by the federal government, triggered by the Housing Act of 1949. Direct federal housing assistance was sharply cut back starting around 1980.[2]

The second set of changes to federal policy relate to the tax treatment of rental housing, which is typically multifamily. In the 2000 US Census, 86% of owner occupied units were single family homes. Only 30% of rental units were single family homes. Federal tax laws became more generous and then much less generous to rental housing construction in the 1980s through treatment of depreciation and losses. Complementary to these tax law changes were changes in the regulation of savings and loan institutions that sharply increased and then reduced credit available to developers of rental real estate. The reductions in tax support were offset somewhat by the introduction of affordable housing tax credits.[3]

This paper shows empirically that a negative time trend in Manhattan's share of US multifamily building permits over the past five decades can be explained away by the end of the boom in publicly owned and subsidized housing projects. Almost equivalently, Manhattan's declining share of all US building permits can be explained away by a combination of the end of New York City's urban renewal and public housing boom and cycles in the share of all US building permits issued in multifamily housing developments. The results are interest-

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[2]von Hoffman (2000) and Quigley (2000) provide histories.
[3]See Poterba (1992).

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ing both because Manhattan is the quintessential highly regulated, densely populated, and expensive US coastal housing market and because they suggest that similar markets' recent supply performance may relate importantly to reliance on multifamily housing. Indeed, I present evidence that recent weak supply growth in California and New York State can be explained in large part by reliance on multifamily rental housing.

2   Empirical Analysis

There is no question that Manhattan's share of all US residential construction has fallen over time. The top panel of Figure 1 shows this by plotting the annual ratio of building permits issued in Manhattan to the number of building permits issued in the United States against time between 1959 and 2005. The Census Bureau collects this information from local permitting authorities.[4] In this data, the number of permits is the number of units permitted, so a building with ten apartments accounts for ten permits. Only new construction counts, permits issued to renovate existing structures are supposed to be excluded.

Glaeser et al. (2005a) argue that increasing regulation has caused the supply trend by showing that the elasticity of building permits with respect to rents and prices has fallen in Manhattan since the 1960s. Manhattan has had zoning since the early 20th century, but restrictions on demolition of existing structures tightened after a preservation movement arose in response to extensive urban renewal.[5] Whether obstacles to private development in Manhattan and elsewhere have grown close to monotonically since the 1960s has not been established.

The bottom panel of Figure 1 plots two other time series from 1950 through 2005. The first is the annual fraction of all US residential permits issued for units in buildings with five or more units. We see that the multifamily series looks like a smoothed version of

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[4]Joseph Gyourko and Raven Saks generously shared the Manhattan Census data, which they collected by hand.

[5]In the authors' words: "there has been a reallocation of property rights over the past 30 years. In the 1960s, landowners were generally free to develop their property in the manner they desired. However, neighbors have become increasingly effective in opposing new construction in more recent decades."

Figure 1: Top panel: annual ratio of private residential building permits issued in Manhattan to all private building permits issued in the US. Bottom panel: annual ratio of all US private residential building permits located in buildings with five or more homes to total US private residential permits (dark line, left scale) and number of permits issued to the New York City Housing Authority in Manhattan (dashed light line). Data from the US Census Bureau and the Office for Metropolitan History.
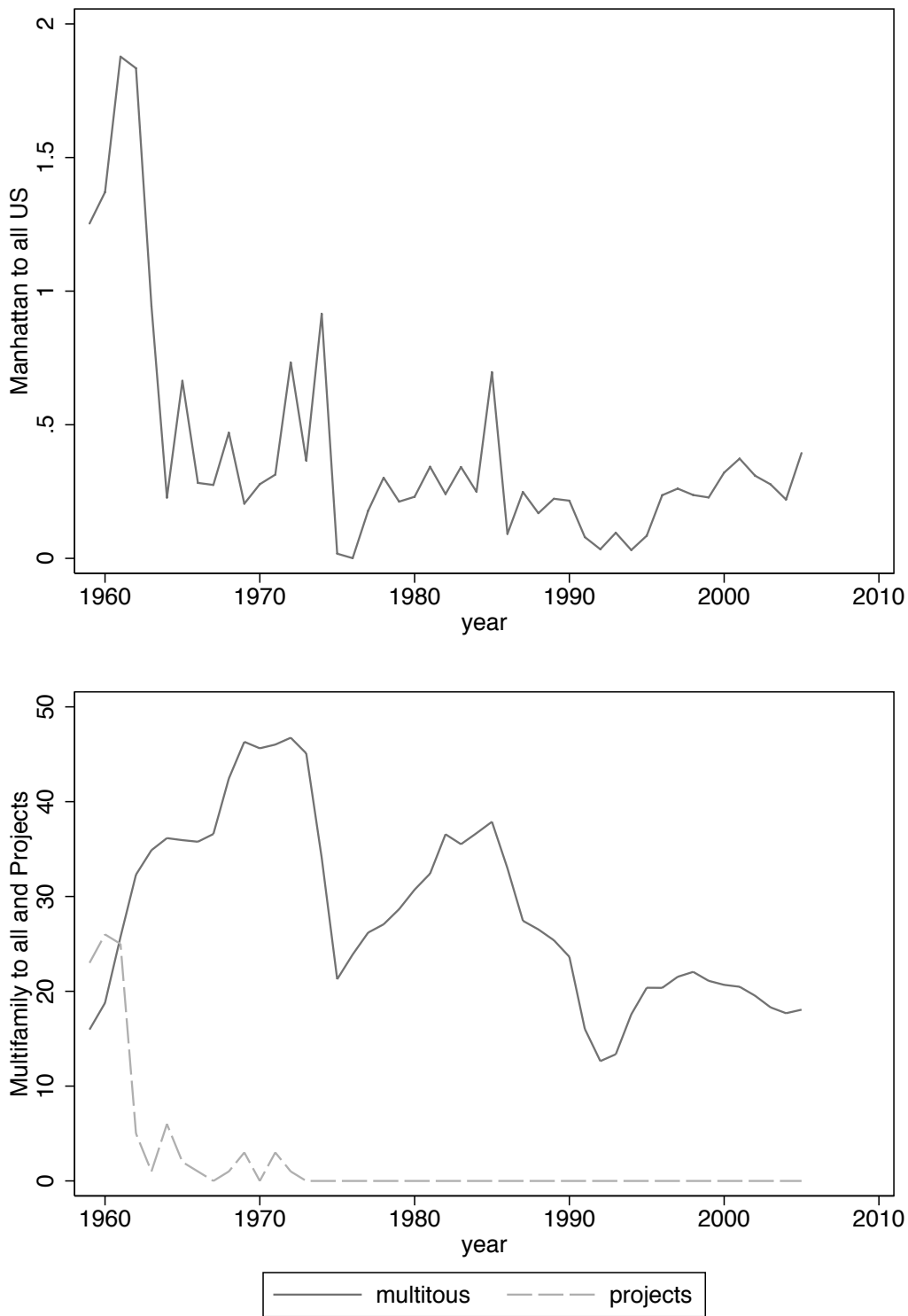
the analogous Manhattan share plotted in the top panel, except for a failure to match the Manhattan share's sharp decrease between 1960 and 1964. After 1964, there is no trend toward Manhattan having a diminished share of multifamily construction. Perusal of Glaeser et al. (2005a) supports a non-market interpretation for the initial spike and decline, because Consumer Price Index estimates of housing costs in New York indicate no unusual changes around 1950-1964.

Conceivably, the initial spike in Manhattan's share of US construction could have been caused by an extreme change in the regulatory environment, reflecting rising resentment against redevelopment czar Robert Moses and urban renewal in New York City generally.[6] The relative rise in Manhattan construction after 1964 makes this interpretation unattractive.

An alternative explanation for the spike in construction at the start of our time series is a fact noted by von Hoffman (2000): during the late 1950s and early 1960s, Moses was able to capture a large share of urban renewal funding from the federal government for New York City and hence Manhattan.

To test whether the initial spike in Manhattan construction relates to a temporarily very high level of federally and locally subsidized urban renewal projects, I construct a time series of the annual number of public housing projects permitted in Manhattan in this period. This series, plotted along with the national multifamily share in the bottom panel of Figure 1 explains the early spike in Manhattan's share of all US residential construction with remarkable precision.[7]

The building permit data plotted in Figure 1 is meant to exclude public housing, but includes subsidized privately owned or not for profit urban renewal projects. Conversations with New York's department of building permits suggest that public housing units may be included in the data sent to the Census Department. Either way, public housing projects

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[6]For a history, see Caro (1974).

[7]Raw data is available online from a non-profit group in New York City, the Office for Metropolitan History. This group has a database of building permits issued in Manhattan, with project level detail: `http://www.metrohistory.com/dbpages/NBsearch.lasso`. The time series all Projects is my own hand count of projects (not units) from that list.

may be a good proxy for federally subsidized non-public housing, in that Moses spurred construction of both during the same time period. Inspection of the micro Manhattan permit data from 1959 through the mid-1960s reveals that much of the permitting volume was from large urban renewal projects not undertaken by the New York City Housing Authority (e.g. Manhattantown, Chatham Green, and the ILGWU houses, all in 1959) that should be included in the US permit data.

Quantifying the plots in Figure 1, Table 1 reports results from the following regression:

$$\text{Manhattan Ratio}_t = \beta_0 + \beta_1 \text{Projects}_t + \beta_2 \text{Year} + X\gamma + u_t. \tag{1}$$

The dependent variable Manhattan Ratio represents the percentage of all US residential building permits issued in Manhattan in columns (1) and (2). In columns (3) and (4), the denominator of Manhattan Ratio is the number of all US residential building permits that were in multifamily buildings with five or more units, but the numerator is still units permitted in Manhattan. β_2 is the estimated effect of the passage of one year on the dependent ratio. Standard errors are Newey West with four lags. Additional regressors X relating to prices are present in columns (5) and (6) and described below.

Column (1) of Table 1 illustrates the point of Glaeser et al. (2005a) seen in the top panel of Figure 1: building activity in Manhattan has fallen significantly over time relative to construction in the US as a whole. Thus the significant negative coefficient on the Year variable. Because the dependent variable is multiplied by 100, the point estimate of -.017 implies that ten years into the future, we expect Manhattan's share to be .0017 smaller than it is today. Including the number of projects permitted in Manhattan in column (2) reduces the magnitude of that effect by more than half. Likewise, in column (3) we find that there is a large but insignificant effect of time on the ratio of Manhattan permits to all US multifamily permits. However, conditional on the number of permits issued, column (4) shows that there is an insignificantly positive effect of time. Notably, Projects explain more than 75% of the variation in the ratio of Manhattan building permits to all multifamily

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Table 1: Regression of ratio of units permitted in Manhattan to all US building permits ((1), (2), and (5)) and to all US permits in buildings with five or more units ((3), (4), and (6)), on number of public housing projects permitted in Manhattan and on year.

Ratio: Manhattan to	All US		US Multifamily		All US	US Multifamily
	(1)	(2)	(3)	(4)	(5)	(6)
Year	-0.017*	-0.007	-0.057	0.005	-0.003	-0.032
	(0.008)	(0.005)	(0.043)	(0.016)	(0.012)	(0.036)
Projects		0.043**		0.268**		
		(0.005)		(0.019)		
Year×Price					0.009	0.120*
					(0.021)	(0.058)
Price					-17.810	-238.064*
					(40.945)	(115.184)
Constant	34.461*	14.737	114.482	-9.038	6.240	63.706
	(16.353)	(9.369)	(85.573)	(31.160)	(23.019)	(70.826)
Observations	47	47	47	47	30	30

Notes: All US refers to all US private residential building permits. US Mutifamily refers to all US private residential units permitted that were in projects with over 5 units. Projects refers to the number of permits issued to the New York City Housing Authority. Price is the ratio of the OFHEO home price index for the New York metropolitan area to that for the entire US. The dependent ratios are multiplied by 100. Regressions (1) through (4) are for the years 1959 through 2005. (5) and (6) start with the OFHEO data in 1976. Newey West standard errors with four lags in parentheses; * significant at 5%, ** significant at 1%.

building permits.

An alternative way to check if there is any time trend in Manhattan's share of all US construction is to maintain the denominator used in columns (1) and (2) and to then add the Projects variable and the multifamily share plotted in Figure 1 as controls. Using this approach, we find that the coefficient on Year falls in magnitude from a significant -.017 with no controls, to an insignificant -.007 with only Projects as a control, to an insignificant -.003 with both Projects and the multifamily share as controls.

There is thus no significant time trend in Manhattan for tightening regulations to explain, conditional on urban renewal in Manhattan and national multifamily housing activity. Local regulation explains the results in columns (1) through (4) of Table 1 only if one believes both that (a) the spike in Manhattan residential construction from 1959 to 1963 was driven by the private sector, not subsidized urban renewal (despite the nearly perfect correlation with

public housing projects that were driven by urban renewal funding) and (b) the trend towards restrictive zoning in Manhattan started and ended in 1964.

A more appealing explanation for Manhattan's falling building share grounded in policy is that federal redevelopment subsidies and tax treatment of rental housing have been important and changing drivers of residential construction in Manhattan, where almost all housing is multifamily. These phenomena clearly explain the early spike (urban renewal) and the spike and collapse between 1982 and 1990 (the rise and fall of favorable treatment of rental housing) in Manhattan's share of all US construction.

Columns (5) and (6) of Table 1 ask whether the elasticity of Manhattan's relative supply with respect to prices in Manhattan relative to elsewhere in the US has fallen over time. This question is different from the question of whether Manhattan's relative level of construction has fallen. One proxy for relative Manhattan prices is the Office of Federal Housing Enterprise Oversight's (OFHEO) repeated transaction price index, which includes prices for the New York metropolitan area and for the entire US.[8] This series is available only starting in 1976, after the end of housing project construction, so there is no way to control for the Projects series while exploring the relationship between prices and relative construction volume in Manhattan.

Columns (5) and (6) add the ratio of the OFHEO index for metropolitan New York to the OFHEO index for the entire US as an additional control variable ("Price"). The variable of interest interacts Year with Price; a negative coefficient would indicate that Manhattan's share of construction has become less sensitive to relative price over time. We find instead that the interaction Year×Price has a positive sign both when Manhattan's permits relative to all US permits is the dependent variable (column (5)) and when the dependent variable is Manhattan permits relative to all US multifamily permitting (column (6)). In the latter case, the interaction between relative price and time is significantly larger than zero. There

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[8]A perfect measure would be the price of apartments when most construction was for sale, and some measure of the risk adjusted present value of future rents when most construction was rental. The latter measure is unobservable.

is thus no evidence of declining sensitivity of Manhattan's relative permitting to relative price over time.

The empirical focus in this paper is on Manhattan because Glaeser et al. (2005a) have raised the profile of this case and unearthed a long time series of Census building permit counts for Manhattan. However, Manhattan typically accounts for less than one percent of all US residential Moreover, one might argue as Glaeser et al. (2005a) do, that permitting is becoming more difficult nationally, so that our results for Manhattan might reflect a nationally shared local policy trend against multifamily housing more than the urban renewal and 1980s tax policy changes we describe. However, a slow trend does a very poor job of characterizing the multifamily share series plotted in the bottom panel of Figure 1. Notably, the national multifamily share was roughly the same in 2006 as in 1959.

Expanding beyond Manhattan's borders, one wonders if the results generalize in the sense that larger, but still notoriously regulated and expensive coastal markets exhibit relative construction patterns similar to Manhattan's. To get an idea of the role of rental housing share in explaining decreasing coastal construction volume, I compare state level permits issued in the construction boom of 1984 through 1986 to permits issued between 2002 and 2006 based on publicly available US Census data.[9] The ratio of permits issued in the boom of the 2000s to permits issued in the boom of the 1980s is notably low in the notoriously regulated Northeast and California. However, as of the 2000 census, New York and California had the first and third highest fractions of homes that are rental units in the US (Hawaii is second).

Regressing the ratio of (permits issued in the later boom)/(permits issued during the eaarlier boom) on the fraction of housing units that were rentals as of 2000 at the state level, we obtain an almost significantly negative coefficient of -.7 (standard error 3.6) on the rental share of housing stock. California has the 7th lowest value for the permitting ratio and New York the 15th lowest out of 50 states. However, their residuals from the

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[9]The years 1984 through 1986 and 2002 through 2006 were chosen because construction volume was highest in those years in the Census data that runs from 1980 through 2006.

regression are only the 21st and 39th most negative, respectively. Thus there is little relative construction shortfall to be explained by regulation in these states over the last two cycles. Results are almost unchanged if change in the OFHEO home price index is included as an additional regressor.[10] By contrast, Connecticut, New Jersey, and Massachusetts are all heavily regulated states and have very low permitting ratios (first, fourth, and fifth lowest, respectively). These states do not have particularly high rental housing shares, and thus rank almost identically low in regression residuals. These results must be interpreted with extreme caution, as their is only one data point obfuscated by a variety of unobserved factors, including the odd pattern of construction induced by the favorable tax treatment of real estate losses in the early 1980s. The share of construction that was multifamily in that period was large in some unusual places, such as Sherman-Denison, TX and Huntington-Ashland WV-KY.

3 Conclusion

After accounting for the fact that construction in Manhattan is almost exclusively multifamily and for the boom in urban renewal projects in the late 1950s and early 1960s, there is no downward trend in Manhattan's share of US housing construction. Indeed, the boom in housing projects explains more than three quarters of the variation in Manhattan's share of all US multifamily housing. The relative decline of construction in Manhattan thus appears to relate more to the end of federal intervention through slum clearance and generous depreciation rules than to any steady rise of local regulation that may have occurred.

Dependence on rental housing appears to explain some difference across states in differences in construction volume across two recent housing booms. Relative to the rest of the country, California and New York State enjoyed far less residential permitting growth between the boom of the 1980s and that of the 2000s. These large state's rental housing

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[10]One might argue that regulations are tighter in more densely populated states that tend to have tight regulation, making it difficult to disentangle rental share from regulation, but see the next two sentences.

share explains most of that difference. However, relatively slower growth in heavily regulated Northeastern states outside of New York cannot be explained by reliance on rental housing. Even if trends in construction activity cannot be attributed to regulation, the results in this paper do not invalidate the claim of Green et al. (2005) that local regulations cause differences in housing supply levels and elasticities in the cross section of US metropolitan areas. The role of any such regulatory constraints on supply in rapid coastal price appreciation is also unknown, as shown by Aura and Davidoff (2006) and Van Nieuwerburgh and Weill (2006).

A task left to future research is to present or rule out evidence analogous to Figure 1 that particular changes in regulation track changes in relative supply in some coastal markets that are known for intense regulation. Future research might also take more seriously the complexity of the optimal timing of redevelopment, an issue that makes it difficult to attribute any time relationship between price and redevelopment to a cause. The results for Manhattan seem strong enough to obviate that concern.

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