Urban Housing Markets

Joe Gyourko
Martin Bucksbaum Professor of Real Estate & Finance
The Wharton School, University of Pennsylvania
gyourko@wharton.upenn.edu

Draft of December 17, 2007

Abstract

The decline in the share of substandard housing in U.S. cities is a major urban success of the last half century. Indicators of housing consumption at the bottom end of the income distribution also show improvement over recent decades. Given these favorable changes, the challenges that housing markets provide for cities and urban public policy more generally now lie more in how they mediate urban growth and decline. The durability of housing is a major reason why urban decline is such a lengthy process and why the poor and less skilled tend to concentrate in declining markets. Among growing cities, the rise of local land use and building restrictions helps determine whether strong demand manifests itself more in terms of higher house prices or population growth. Thus, these regulations affect where we live, and there is evidence of increased spatial sorting along income lines. These examples illustrate that how housing markets function has important implications for how cities function, for better or worse.

I.   *Introduction*

Forty years ago when policy makers and scholars thought about urban housing, they invariably focused their attention on the large fraction of substandard housing units in America's cities and the inevitable implication of this for the nation's poorer households, many but by no means all of whom were members of a minority group.[1] Fourteen percent of whites and 46 percent of nonwhites occupying housing units in urban areas in 1960 were living in substandard housing, where substandard implied the housing was unsafe or inadequate in some fundamental way. When measured along income rather than racial lines, 36 percent of those in the bottom third of the income distribution in 1960 lived in substandard units, compared to only 4 percent among those in the top third of the income distribution (Frieden (1968)).

By the turn of the 21st century, substandard housing had become extremely rare in central cities. Data from the *American Housing Survey* show that complete plumbing facilities now are absent in only about 1 percent of owner-occupied units and just over 2 percent of rental units in the nation's primary central cities. Other indicators of very low housing quality confirm that such housing has been dramatically reduced in urban housing stocks, and space consumption by those in the bottom quartile of the income distribution has been rising.

This certainly is one of the great urban successes of the past half century. However, it does not mean that housing issues no longer are relevant to urban policy affecting America's cities. Poverty has not been eliminated, so there still are very poor households that cannot afford to purchase the decent quality housing that now is widely

[1] The words 'urban' and 'city' are used interchangeably in this chapter. Unless specifically noted, all data reported refer to conditions in the central cities of metropolitan areas, not the broader labor market area.

1

available. However, it is important to distinguish between affordability problems caused by low incomes versus those caused by house prices being above the level that would prevail in a truly free market. Affordability problems due to poverty are best resolved with income transfers to the poor. If that is not feasible, housing vouchers clearly are cheaper than public housing construction programs or subsidies to private development.

The near elimination of very low quality housing units from the privately-supplied urban stock especially and the recognition that housing consumption by the very poor is a problem of very low income, not of very low housing quality, suggests a change in focus for housing policy thinking. What heretofore has been driven by a redistributionist impetus needs to become much more cognizant of how the functioning of housing markets can affect the fortunes of cities and the welfare of their residents, for better or worse. Housing markets act as a mediator of city growth and decline, and understanding this process is important for policy in a variety of ways.

This is illustrated below by analyzing three ways in which housing markets affect the fate of cities. The first focuses on how the long-lived nature of houses helps ensure that urban decline is lengthy process. Particularly relevant for policy purposes is the fact that durable housing in declining cities is relatively more attractive to the less skilled. Thus, it is the physical nature of cities that helps explain why low human capital and poorer workers tend to concentrate in declining markets. To the extent there are negative spillovers from such concentrations of the poor and less skilled, a policy response is almost certainly appropriate.

The second case examines local regulation pertaining to land use and residential construction. This example illustrates that housing markets mediate urban growth, not

just decline. The rise of regulations restricting the ability of developers to supply new units to the market is one of the most important developments in recent decades. First, they change the way in which strong demand trends manifest themselves. In relatively unregulated markets such as Las Vegas or Charlotte, increased demand is reflected more in terms of population and housing unit growth and less in terms of rising house prices. The converse is true in highly regulated markets such as San Francisco, New York City, and Boston.

Recent research also suggests that sorting across cities along income lines is becoming more intense because it is the relatively rich who can best tolerate the high prices in high demand markets with inelastic supplies of housing. More broadly, there are potentially large economic welfare losses from the misallocation of households that results from local building regulation that is too restrictive. Essentially, attractive and highly productive labor market areas such as the Bay Area, New York City, and Boston are underpopulated. Research has only begun on this topic and more is needed, but policy makers should be considering plans to deal with the inefficient allocation of people across markets.

A third and final example focuses on how construction costs can affect the fortunes of cities by influencing the amount of reinvestment in local housing stocks. An extensive finance literature informs us that asset owners do not reinvest in an asset when its market value is less than the cost of replacing it. Homeowners have to make reinvestment decisions regularly and the same principal applies to them. Recent research shows that if house prices are below construction costs, much less reinvestment in the existing stock occurs. Price can be below construction costs for various reasons. For

example, negative demand shocks driven by the loss of market share for U.S. car companies may lead to very low house prices in Detroit. However, construction costs themselves also can be high, and the data show meaningfully large variation in these costs across markets. And, there is evidence that local conditions influence the level of those costs. Some of these conditions are at least partially under local control in a way that the fortunes of General Motors clearly are not. The policy implication is that declining cities in particular cannot afford to be high construction cost cities, and that whether they are is somewhat under their control.

Before getting to these policy matters, we first document the rise in housing unit quality that has occurred in American cities over the past few decades. That is followed in Section III by a more detailed discussion and analysis of how the functioning of housing markets mediates urban growth and decline. There is a brief conclusion.

II. *The Quality and Consumption of Housing in America's Cities*

A natural starting point for this analysis is Bernard Frieden's 1968 chapter on housing and urban policy in *The Metropolitan Enigma*. Frieden's focus was on the housing problems faced by the poor in general and by minorities in particular. The literature of the day noted that low quality housing was associated with a variety of negative outcomes, ranging from the spread of disease to psychological problems for the occupants.[2] While the standards for ascertaining causality in such matters have changed considerably since then, there is no doubt that much substandard housing existed in our major cities, and the presence of urban slums were intimately linked with the burgeoning racial problems of the day.

---

[2] See Schorr (1963) for a leading example that was extensively discussed by Frieden (1968).

The two primary measures Frieden and other researchers employed were whether the unit was crowded and whether it was dilapidated. The traditional definition of overcrowding is more than one person per room, with severe crowding defined as more than 1.5 persons per room. What determines whether a unit is dilapidated is more complex, but it has become the definition of what it means for housing to be substandard. The Census definition in 1960 was that the unit did not provide 'safe or adequate shelter'. A variety of traits could lead to a unit not providing safe or adequate shelter. Among these were significant holes in the unit (over the foundation or in the walls or roof), other damage that meant the occupants were not secure from the elements, the absence of a private toilet or bath (or shower), or a lack of hot running water.[3]

By 1960, 14 percent of whites in occupied housing units in urban areas were rated as 'unsound' or lacking in basic plumbing facilities. The fraction of non-whites living in similar conditions was over three times greater at 46 percent. Crowding was somewhat less widespread. Eight percent of whites lived in units with more than one person per room, versus 25 percent for nonwhites.[4] Not unexpectedly, the poor were disproportionately represented in such housing. Frieden divided the income distribution into thirds and showed that 36 percent of families in the bottom third lived in substandard housing, versus only 4 percent of families from the top third (p. 173).

Frieden also showed that these figures for 1960 represented a fairly substantial improvement over conditions in 1950—for all races. He also noted some predictions, including one by Grigsby (1963), that substandard housing largely would disappear over the next couple of decades. Both demand and supply side factors were cited as potential

---

[3] See Siegelman (1963) for more detail
[4] See Table 2 in Frieden (1968, p. 172). His figures are based on decennial census data analyzed by the U.S. Housing and Home Finance Agency.

causes of improvement. On the demand side, rising incomes were seen as key, while

more production was seen as essential on the supply side.

　　More recent data finds that the optimists largely were correct.[5] The *American

Housing Survey* (*AHS*) serves as the primary data source for our analysis over the past

two decades, but the information in Table 1 provides a broader historical overview using

decennial censuses dating back to 1940. These data, which are for the entire nation (not

just central cities), document the extent to which substandard housing has virtually

disappeared from the housing stock. As late as 1950, over a third of the nation's housing

units did not have complete plumbing facilities and a quarter did not have a septic system

or a connection to a public sewer system. Moderate crowding existed in nearly 16

percent of the units. The improvement in quality over the 1950's that was described by

Frieden (1968) is evident in these data, too, with the improving trend continuing in

ensuing decades. By the year 2000, only 1-in-200 housing units did not have complete

plumbing facilities. About 1 percent did not have a septic system or sewerage connection

in 1990.[6] Severe crowding has not occurred in more than 2.7% of housing units since

1960 (column 4). Moderate crowding is more prevalent and has been present in about 1-

in-20 units over the past two decades (column 3).

---

[5] Real disposable income per capita in America has more than tripled since 1960, implying a compound annual growth rate of about 2.5 percent (Table B31 of the *Economic Report of the President*, which can be accessed at http://www.gpoaccess.gov/eop/tables07.html) . With housing being a normal good, one would expect the market to deliver higher quality units to satisfy the demand for them. Regulation of housing quality also has tightened over this time period. For example, single room occupancy hotels in cities largely have been regulated out of existence, and HUD imposes minimum habitability standards for all units covered by its subsidy programs. In addition, housing quality controls at the local level in particular have become more stringent, as we discuss below. Thus, income growth and regulation are both relevant in accounting for the rise in city housing quality documented immediately below, but research has not convincingly identified which is the more important factor.
[6] No question about sewerage connections was asked in the 2000 census.

The *AHS*, which provides more detail at higher frequencies than the Census, paints a similar picture of declining fractions of substandard housing. We use data from the national files of this survey dating back to 1985, when the new panel of housing units was begun. In many cases, disaggregated information for renters versus owners is available only beginning in 1987, but we report information from 1985 whenever possible.[7] Table 2 reports results on housing units only in central cities of metropolitan areas and disaggregates the data across owners and renters. In addition to the measure involving the presence of complete plumbing facilities, we report four other quality measures: the fraction of units with less than one full bathroom, the fraction of units with one or fewer bathrooms, the fraction of units without full kitchen facilities, and the fraction of units without a central heating system, radiators, or a fireplace.

Each measure tells a similar story. The share of units with traits consistent with very low quality is quite small, but there generally are more substandard rental units relative to owner-occupied ones. The number of owner-occupied units in central cities without complete plumbing facilities has fallen from about 1-in-50 in the late 1980s to 1-in-100 in the most recent data. The data for rental units show a slight decline in the fraction without complete plumbing since 1987, but there is volatility across survey years. This should be interpreted as a relatively flat trend, with the 2005 data indicating that about 1-in-40 apartments in primary central cities were without complete plumbing.

---

[7] Prior to 1985, the survey was conducted annually. Many questions were changed when the house panel was changed in 1985, making it problematic to compare answers before and after that year. We do not use weights in calculating our figures, as they are relevant for scaling to the national level, and our sample is for housing units in primary central cities of metropolitan areas. Sample sizes are large in every year, which suggests these data are likely to be representative of city housing stocks, although there is a significant change in the number of observations in 1997 that is discussed below.

The fraction without a complete bathroom is even lower (column 2). Among owner-occupied units, the fraction has not been above 0.5 percent over the past two decades. Among rental units, barely more than 1-in-100 apartments do not have a full bathroom according to the most recent surveys..

Other evidence confirming the small amount of clearly substandard housing units is provided in the next two columns. For example, almost all housing units in cities, whether owned or rented, have some type of heating system (column 3). The data in the fourth column on the fraction without a full kitchen indicate that only 1-in-300 owner-occupied units now are without this feature. The fraction of rental units without full kitchens has ranged from about 1-in-37 in the mid-1980s to 1-in-20 in the most recent data from 2005 (column 4). This is the only measure suggesting that quality might have decreased over time among the urban rental stock. Even so, the absolute share remains low.

The fifth column of Table 2, which documents the fraction of units with one or fewer full bathrooms, illustrates how the average quality of the city housing stock has increased over time, especially among owner-occupied units. In 1987, about 60 percent of owner-occupied units had more than one bathroom. Well over two-thirds of owner-occupied units in cities had more than one bathroom in 2005, according to the *AHS*. More than one full bathroom is not yet the norm for apartments, but one-quarter of city rental units had more than one full bathroom in 2005, up from 19 percent in 1987. Given that much of the rental stock is targeted towards unmarried singles, one would not expect as high a share for apartments.

Table 3 reports data on crowding. The *AHS* does not break down these data separately for owners and renters, so we report figures for the combination of both groups. Severe crowding as reflected in having more than 1.5 persons per room has been very rare (1 percent or less) over the last twenty years. Moderate crowding with more than one person per room has existed in under four percent of all city housing units since 1997. These data are slightly lower than those reported in the 2000 census, and if accurate, indicate that city housing is slightly less crowded than the national average. Taken together, these figures and those in Table 1 suggest that between 1-in-25 and 1-in-20 housing units currently is crowded, as traditionally defined.

The information in Table 4 documents changes in tenure patterns and in types of units. The first column shows that the share of the stock that is owner-occupied has increased by about 10 percent since 1987, so that city housing stocks nationally no longer are accurately characterized as being primarily rental in nature. Of those units that are owner-occupied, the vast majority always have been single-unit dwellings, with that share rising marginally over time. Among rental units, the share in traditional multifamily settings (defined as in structures with 5 or more apartments) also has increased modestly over the past three decades.

Another important quality metric is the physical amount of housing being consumed by city residents. Since 1985, the *AHS* has asked occupants how large their units are in square feet. Figure 1 plots the average size of owner-occupied and rental units in central cities over the past two decades.[8] There is a slight positive trend in the

---

[8] The data for 1997 in Figures 1-3 are smoothed via interpolation between the results for 1995 and 1999. These figures are created from the micro data provided by the *AHS*. The national sample was significantly smaller in 1997 compared to all other surveys, and there is a spike in central city dwelling size for that year.

size of owner-occupied units, with the average square footage increasing by about 140 feet, from 1,500 in 1985 to 1,640 in 2005. The change is less in absolute and percentage terms for rental units, but there has been no decline in square footage for this part of the stock. The typical city apartment unit contains over 800 square feet of space, which is consistent with there being two bedrooms. While one would expect stability in these series given how large the existing stock is compared to the amount of new construction in a typical year, these data still indicate that the size of new units is increasing modestly over time.

Figure 2 then plots unit size data scaled by the number of occupants. Living space per person has gone up slightly for both the owner-occupied and rental stock in America's cities. While this is useful for gauging quality at the center of the distribution, any potential problem in this regard probably lies with those at the bottom of the income distribution. To gain insight into what is happening to housing consumption of the poor, Figure 3 plots unit size per person for those in the top and bottom quartiles of the income distribution.[9] Not surprisingly, housing consumption per person has increased over time among the relatively rich. However, it has risen more so for those in the bottom quartile of the income distribution, too. Thus, the gap in space consumption between the richest and poorest city residents has narrowed considerably over the past two decades.

One final illustration of the increase in the quality of city housing stocks is in the fraction of units reporting some type of air conditioning present.[10] The 2005 data from

---

The weights provided by the *AHS* do not correct for this. Hence, we interpolate using data from adjacent survey years.

[9] The data used in this plot are restricted to units occupied by households with heads under 55 years old. This is necessary to avoid the confusion caused by retirees, who report little or no income, living in large housing units. If the elderly are included in the sample, the bottom quartile of the income distribution lives in the largest units on average.

[10] This includes a room unit, not only central air conditioning.

the *AHS* indicate that 86 percent of occupied housing units in central cities had a least one room air conditioning unit. This is nearly double the fraction reported in the 1974 survey. While Frieden (1968) reported that 14 percent of white families living in urban areas in 1960 were in dilapidated housing, the most recent data suggests that only 14 percent of urban housing units do not have some type of air conditioning.

Of course, rising quality does not mean housing always is affordable, although the increasing size of units suggests that space is not being sacrificed even at the low end of the income distribution. Figure 4 plots median gross rent for a sample of large U.S. cities and shows that real rental costs have risen across the quality spectrum, with the increase at the top end of the distribution being relatively greater. Figure 5 then documents that, even with rising real rents, gross rental costs as a share of real GDP per capita were much lower in 2000 than they were in 1960. Thus, city rental housing is not rising in cost relative to the growth of the broader economy.[11]

While this is so for relatively cheap and expensive apartments on average, it still does not deny that there are very poor people who cannot afford the plentiful decent quality housing that is available. However, the data presented above indicate this is not a housing problem *per se*, but a poverty problem. Decent quality housing now is widespread, so it no longer is so critical a policy issue for urban housing stocks to be upgraded in quality in order for our poorest citizens to have a good place to live. The real issue with respect to the nation's urban poor is to provide them with enough resources so that they can afford to live in the decent housing that is available.

This basic fact should remind us that, amidst all the good news about the improved quality of the privately-supplied urban housing stock, we should not lose sight

---

[11] I thank Ed Glaeser for providing these data.

of the on-going poverty problem that renders even the most efficiently-provided housing unaffordable by the truly poor. Not only has poverty not gone away, it remains highly concentrated in our central cities. Moreover, increased resource transfers will be needed to the extent that regulation raises the minimum quality level for residences.

This highlights the point that what constitutes a proper housing unit has changed over time. This is perhaps best illustrated by the virtual elimination via regulation of single-room occupancy hotels. Many poor and sometimes mentally ill individuals lived in such units, which constituted perhaps the cheapest housing in our cities, and there is a debate in the urban policy literature about the role this policy played in the rise of homelessness (Jencks, 1994; O'Flaherty, 1996). One does not have to take a stand on any causal relationship in that particular issue to recognize that there is no free lunch to raising minimum quality standards, as doing so clearly requires more resources to house poor people in the available higher quality stock.[12]

Economists prefer lump sum transfers on efficiency grounds to achieve such redistribution. Absent that, vouchers clearly are more efficient than government building programs (e.g., public housing) or subsidies to private developers of affordable housing (U.S. GAO (2002)).[13] This is not to imply that there is no role for supply side policies in

---

[12] Moreover, the costs of the necessary transfers to facilitate consumption of decent residences would be greater were we not 'housing' over 1.5 million more individuals in jail or prison in 2006 than in 1980 (see the Bureau of Justice Statistics web site at http://www.ojp.usdog.gov/bjs/glance/tables/corr2tab.htm for the precise numbers). This certainly is not to argue that it would not be socially and fiscally beneficial to develop policies to reduce our prison populations (see Cook's chapter in this book for more on that), only to note that we still need good policy and sufficient resources to house our least fortunate residents. The same argument applies to the elderly and others residing in nursing homes, which also tend to be outside the traditionally defined housing stock.

[13] Recent work by Kling, Liebman and Katz (2007) suggests there are limited economic and social spillovers associated with the mobility provided by vouchers, so their benefits should not be overstated.

general, only that the real issue for the poor is very low income. Building more housing will not solve what fundamentally is a problem of deficient resources for them.[14]

III.   *Housing Markets As a Mediator of Urban Growth and Decline*

While it clearly is a good thing for the nation that we no longer have to worry about large fractions of our urban residents living in dilapidated housing, it remains critical for urban policy makers to understand that how housing markets function can have important implications for how cities function—for better or worse. This section highlights this point by examining three facets of how housing markets influence the growth and decline of cities.

The Durability of Housing and the Nature of Urban Decline

One of the most defining traits of housing is its durability, with recent research arguing that urban decline is not the mirror image of urban growth largely because housing is so long-lived once it is produced (Glaeser and Gyourko (2005)). In the absence of constraints on the ability of homebuilders to supply new housing units to the market, population can expand very quickly in the face of positive demand shocks to a city. However, population loss and urban decline play out slowly over decades because the presence of cheap housing slows the decline of population even in the presence of negative demand shocks to the city.

For this perspective on how housing markets affect city growth and decline to be true, it must be the case that the distribution of city population growth is skewed, that

---

[14] However, as is discussed in Section III, inefficiently low supply is a growing problem in many markets. In those places, more construction is needed to help bring down prices, but that construction should not be targeted only at one income group.

population loss is a long-term and not a one-time event, and that housing in declining cities really is cheap. Each requirement is readily confirmed in the data.

First, the distribution of city population growth is extremely skewed. In the 1990s among larger cities with at least 100,000 residents at the beginning of the decade, Las Vegas experienced the greatest population growth of almost 62 percent. No large city declined nearly so much, with Hartford, CT, experiencing the greatest population loss of about -14 percent in the 1990s. This pattern is very similar in other decades.

Second, it is the case that urban decline generally is not a fleeting process. All but four of the 15 largest cities in America in 1950 lost population between 1950 and 2000, and eight of them (Baltimore, Buffalo, Cleveland, Detroit, Philadelphia, Pittsburgh, St. Louis, and Washington, DC) lost population in each decade.

Third, housing costs in declining cities tend to be very low in declining cities. Table 5 compares the median home price from the 2000 Census for the 25 largest cities in the country as of 1990 with an estimate of the physical construction costs for a modest quality, 2,000 square foot single family home in each market.[15] The final column indicates whether the city lost population in the 1990s. A striking feature of these data is that the typical home in a declining city tends to be valued well below construction costs. For example, even though construction costs in Detroit are lower than they are in New York City, Detroit's median house value of $63,600 according to the 2000 Census was only 59 percent of the construction costs of a very modest quality single family home. A

---

[15] The construction cost data are from the R.S. Means Company, a consultant and data provider to the building industry. These particular figures reflect the physical costs of constructing a very modest quality home, which the R.S. Means Company terms an economy quality house. This is the lowest quality unit they cost out, but it meets all local building code requirements.

large negative gap, typically 20 percent or more, between prices and construction costs is evident for other cities that lost population during the 1990s.

Figure 6 illustrates why this is so. Essentially, the housing market is characterized by a kinked supply schedule that tends to be elastic when prices are above construction costs, but is very inelastic otherwise. Because housing is so durable, the supply schedule is inelastic when price is below construction cost, so a negative demand shock like that illustrated by shift in demand from D_0 to D_1 is associated with a large drop in prices to a level well below construction costs.

Perhaps more important for policy purposes is the implication that the functioning of housing markets in declining cities has for the concentration of poverty. Declining cities tend to be both poor and have relatively low human capital levels. Regression results from Glaeser and Gyourko (2005) confirm that among cities losing residents, a greater rate of loss is associated with a significant decline in the population share of college graduates (who presumably have high skills and are not poor), while there is no statistically significant correlation between the rate of population growth and the share of college graduates in growing cities. The effects themselves are statistically different across the two sets of cities. Moreover, they are economically meaningful. A ten percent greater rate of population loss can account for between one-quarter and one-third of the gap between the average share of college graduates in growing versus declining cities in their sample.[16]

For cheap housing to be responsible for this pattern, it must be the case that it is relatively more attractive to those with lower wages (and, presumably, lower skill) to

---

[16] See Table 5 in Glaeser and Gyourko (2005) for the underlying specification and coefficient estimates. details. Their underlying data include observations on 321 cities over the three most recent decades: 1970s, 1980s, and 1990s.

remain in or move to declining cities. For that to be true, the wage premium associated with being in a growing labor market needs to be small for the unskilled compared to the difference in their housing costs across growing versus declining markets. Table 6 reports on differences in wages and housing costs in the fastest and slowest growing cities in the United States during the 1990s. Note that there are only modest wage differences across these markets for those with no more than a high school degree, while the differences in housing costs are very large. Given that strong labor markets do not pay much of a premium for less skilled labor and that weak labor markets offer much cheaper housing, a low skill person easily can be better off by staying in (say) Detroit and economizing on housing costs which are well below replacement value.[17]

The tendency of declining cities to disproportionately attract the poor because of their abundance of cheap housing is particularly important if concentrations of poverty then further deter growth. If low levels of human capital foster negative externalities or result in lower levels of innovation, this can become a self-reinforcing process in which an initial decline leads to higher poverty rates which then creates further negative pressure on the city (e.g, as in Berry-Cullin and Levitt (1999)). In addition, as Inman's chapter in this volume documents, the poor are very costly to the city in fiscal terms. Deteriorating fiscal conditions provide another pathway for negative spillovers to amplify themselves over time.

---

[17] More formally, if a favorable trade-off between wages and housing costs does account for why the relatively less skilled tend to stay in declining cities, then controlling for the *ex post* distribution of housing costs should eliminate (or substantially weaken) the correlation pattern discussed just above in which a greater rate of population decline was associated with an increasing concentration of the less skilled. Glaeser and Gyourko (2005; Table 5) show that controlling for the (log) median house price completely eliminates the relationship between city decline and the share of college graduates in the population.

While there still is debate about these dynamic considerations, they have important implications for urban policy. They suggest that mayors of declining cities should not be in the business of supplying additional cheap housing, even when it is subsidized by higher levels of government. Public housing construction programs and policies to subsidize private development of non-market housing are not needed in these places, and, in fact, only exacerbate the effects described above. Simply put, the problem is too much, not too little, cheap housing in these places.[18]

However, an effective policy is needed to address any negative externalities that arise from high concentrations of poverty. It is the potential for very harmful negative spillovers from concentrated poverty that make this an issue of national importance. One sensible policy would be to create a program that encouraged mobility of the less skilled out of declining cities. The analysis here suggests that aid would need to be enough to compensate for the difference in housing expenses across growing versus declining cities, so it would cost more than a traditional voucher. At least some of the additional resources needed should come from transferring funds presently allocated for subsidized construction programs in these declining markets.

This should apply even in the case of New Orleans following the terrible tragedy from hurricane Katrina. That city has been in long-term decline and the private market has not supported the rebuilding of housing units with prices below their replacement costs. At least some of the monies used to subsidize the construction of these units should be allocated to a person-based voucher program that recipients could use anywhere in the country. No family should be forced to relocate, but sound policy should

---

[18] If dispersed, low density public housing were being brought to market to replace high density, high rises, the benefits well could outweigh the costs. However, it is difficult to imagine that a voucher program for the poor would not be far more efficient from an economic perspective.

offer that option. This simply reflects the principle that the primary goal of policy should be to help individuals, not specific places or their developers.

Local Land Use and Construction Regulations and their Impacts on Housing Markets

The rise of local land use and residential building controls constitutes a second important way in which the functioning of housing markets can affect the fortunes of cities. Residential land use regulations in the United States are widespread, largely under local community control, and are thought to be a major factor in accounting for why housing appears to be in inelastic supply in many of our larger coastal markets in particular. Their primary impact is on the nature of urban growth, not decline, because they can be binding only when demand is growing. If supply is very inelastic as indicated by the schedule S_0' in Figure 7, then standard price theory indicates that increases in demand for an area, as reflected by the shift from D_0 to D_1, will generate higher house prices with little increase in the number of homes. This is shown by the change from (P^*, Q^*) to (P_1, Q_1) in Figure 7. If supply is elastic as reflected in the schedule S_0, the same increased demand manifests itself in much higher quantities than in higher prices (i.e., the move to (P_2, Q_2) .[19]

The nature of local land use regulation can be described using newly available data from Gyourko, Saiz and Summers (forthcoming).[20] Those authors calculate a

---

[19] The literature on this issue is expanding rapidly. Just the empirical studies on the linkage between the stringency of the local regulatory environment and home prices or the intensity of new construction include Noam (1983), Katz & Rosen (1987), Pollakowski & Wachter (2000), Malpezzi (1996), Levine(1996), Mayer & Somerville (2000), Glaeser & Gyourko (2003), Glaeser, Gyourko and Saks (2005a,b), Quigley (2005), Quigley & Raphael (2005), Quigley & Rosenthal (2005), Saks (2005), Glaeser and Ward (2006), and Ihlanfeldt (forthcoming).

[20] This source is used for the obvious reason that it is readily available to the author. Two other important data bases have been released within the last year. Pendall, Puentes and Martin (2006) provide another recent cross section of communities based on a national survey, while Glaeser, Scheutz and Ward (2006) provide a very detailed look at the local regulatory environment for the Boston metropolitan area. Saks (2005) provides a useful summary of earlier data sets for the interested reader.

measure of regulatory stringency called the Wharton Residential Land Use Regulatory Index (WRLURI) for over 2,600 communities based on a national survey conducted in 2005. They asked a broad set of questions to elicit information about the general characteristics of the local regulatory process, the formal rules of local residential land use regulation, and certain outcomes of the regulatory process. Factor analysis was then used to create an index of regulatory stringency based on the survey responses. This measure is standardized so that the mean index value is zero with a standard deviation of one.

These data show that the average place is far from unregulated. The typical land use regulatory environment in the nation has the following traits: (a) two entities, be they a zoning commission, city council, or environmental review board, are required to approve any project requiring a zoning change; (b) more than one entity also is required to approve any project, even if it does not involve a zoning change; (c) it is highly unlikely that any form of direct democracy is practiced in which land use issues or projects must be put to a popular vote; (d) there probably is no onerous density restriction such as a one acre lot size minimum anywhere in the community, although some less stringent minimum constraint generally is in place; (e) some type of exactions and open space requirement exist, even though they are not as omnipresent as is the case in the more highly-regulated places; and (f) there is about a six month lag on average between the submission of an application for a permit and permit issuance for a standard project.

While residential land use and building restrictions are thought to be more of an issue in the suburbs, the data show that at least some major cities have stringent

regulatory environments too. The mean index value for the 73 cities in the Wharton sample with populations of at least 200,000 in the year 2000 is 0.27, indicating that the regulatory regime in these places is almost 0.3 standard deviations greater than the national average.[21] However, there is great heterogeneity in conditions across cities, as indicated by the data for 15 individual cities reported in Table 7. Charlotte, Dallas, and Las Vegas are high growth Sunbelt markets with local regulatory climates less stringent than average, as indicated by their negative index values. Other warm weather markets such as Phoenix and Raleigh appear more restrictive according to this measure, and virtually all the major cities on the west coast (plus Hawaii) have index values that are more than 1.5 standard deviations above the national average.

Because housing in one community is at least somewhat substitutable for housing in another jurisdiction within a given labor market area, the impact of binding building regulations on market prices generally will depend on the behavior of a central city's suburbs, not just its own choices (presuming it does not comprise a dominant share of the metropolitan area housing market). One way to gauge the restrictiveness of a metropolitan area is to average WRLURI values across communities in the area. Presuming that averaging across 10 or more jurisdictions within a metropolitan area is necessary to reasonably accurately characterize the regulatory climate of the overall market, metropolitan area-wide index values can be matched with median house prices for 43 areas.[22]

---

[21] The sample includes communities not in metropolitan areas. The mean index value for the 1,904 places located within well-defined metropolitan areas is 0.17, so the typical large city still is slightly more regulated than the average suburb according to these data.

[22] The house price data, which are taken from Glaeser and Gyourko (2006), are for 2005 to match the time period of the land use regulation survey. They represent the real value (in 2000 dollars) of a house with the traits of the median priced home for each metropolitan area, as reported in the 2000 census.

Figure 8's plot of 2005 house prices against the WRLURI index values for these markets illustrates the variables are strongly positively correlated. The simple correlation coefficient is 0.58, and the bivariate regression of prices on index values implies that a one-unit increase in the WRLURI value (which equals a standard deviation change by construction) is associated with a $128,008 higher median house price in the metropolitan area.[23] The magnitude roughly equals the physical construction costs of a decent quality, single family unit of 1,700 square feet. While correlation is not causality, this pattern is consistent with the implications of Figure 7 in which the highly regulated places have relatively inelastic supplies and high prices in the face of strong demand.[24] Moreover, it is among the first direct evidence that a strict regulatory regime is associated with substantially higher house prices.[25]

Even more important for the purposes of policy analysis is whether current local land use and building controls are efficient. It is possible that they are, as the optimal zoning tax or regulatory burden clearly is not zero because development typically generates some negative externalities. Glaeser, Gyourko and Saks (2005a) consider this

---

[23] The actual regression is $HousePrice_i = 184,174(17,535) + 128,008(28,367)*WRLURI_i$, where i indexes the metropolitan areas, $R^2=0.33$, n=43, and standard errors are in parentheses.

[24] Caution is in order about attributing all of the house price differential to stricter regulation because one can imagine higher house prices leading to more regulation. For example, communities in coastal areas might want to use regulation to protect valuable amenities such as access to a beautiful coastline.

[25] See Quigley (1995) and Quigley and Raphael (1995) for more such evidence. Most other evidence on the impacts on prices is indirect. Glaeser and Gyourko (2003) and Glaeser, Gyourko and Saks (2005a) are typical examples in that they infer the influence of regulation by comparing the price of land on its intensive and extensive margins. More specifically, standard hedonic techniques are employed to estimate the value consumers place on larger lots (the intensive margin). The value of land on the extensive margin equals the worth of a lot with a home on it. This is imputed by subtracting estimates of physical construction costs from home prices. One minus the ratio of the value on the intensive to extensive margins provides an estimate of the impact of regulation on land values. These estimates find that that local regulation, which the authors refer to as a 'zoning tax', amounts to from one-third to one-half of land value in the big coastal California markets. In markets such as Boston and Washington, D.C., the zoning tax represents about 20 percent of total property value. The impact of regulation is negligible in many markets ranging from Philadelphia and Pittsburgh to Minneapolis, presumably because local regulations are not binding in those places.

issue in their study of the effects of local regulation on Manhattan condominium prices. They find a large regulatory burden that roughly doubles the price of condos on the island. They then consider three added social costs of bringing a new housing unit to market and ask whether they might justify such high prices. Those three costs are as follows: (a) the value associated with blocked views from the new apartment buildings; (b) the costs created by extra crowding; and (c) any net fiscal burden created by new residents. Their analysis concludes that the optimal zoning tax cannot be more than half the existing regulatory burden in Manhattan.

This suggests that local land use regulation in highly restrictive markets is inefficient in the sense that far less housing is being built than would be optimal even considering the potential negative externalities associated with such units. Essentially, markets such as New York, Washington, D.C., Boston, and most of coastal California are underpopulated. A social loss arises from the misallocation of consumers to less productive, less attractive places. To the extent that the value of productive agglomerations in highly productivity labor market areas is lowered, the full social costs could be significant, but good estimates of its true size not available.

That said, it must be acknowledged that this type of analysis is most straightforward in a place like Manhattan because the increased density associated with a bigger population living in the added housing units will not change the underlying nature of the community. Put more starkly, it is not credible to argue that more housing and people will destroy the bucolic atmosphere of Manhattan, but the same cannot always be said for a low density suburb. The utility loss from having more density can be very high if residents believe the fundamental nature of their community is altered, and economics

does not weight the utility of an existing resident less than that of the marginal entrant.

However one thinks about the (in)efficiency of such regulations at the jurisdiction level, there is little doubt that they are at least partly responsible for why growth pressures show up in high prices in San Francisco and in increasing population in Las Vegas. Not only does high demand manifest itself very differently in these cities, but some researchers have argued that this is leading to more intense sorting by income across metropolitan areas (Gyourko, Mayer and Sinai (2006)). The rich can more readily afford higher house prices, so it makes sense that they would tend to sort into these areas over time.

In a very real sense, the rise of local residential building restrictions has created a new affordability problem—this time for the middle class in highly regulated cities and markets. Affordability is not defined here in terms of ability to pay, but in terms of housing being expensive relative to its fundamental costs of construction (i.e., the costs that would obtain in a truly free market).[26] This is better benchmark for gauging

---

[26] This is an important distinction because using ability-to-pay metrics such as the share of income spent on housing often confuses the issue and mistakenly leads to concluding that there is an affordability problem in high cost markets. This can be seen more clearly with the following simple example comparing two metropolitan areas that contain the same quality homes, but have different levels of productivity. In the first market, the average household earns $50,000 per year and housing costs $100,000. Moreover, assume that interest, maintenance and taxes are such that the household must pay 10 percent of the cost of the home each year to live in it. This implies the annual costs of housing are $10,000 (0.1*$100,000). Abstracting from any complications associated with changing housing prices or incomes, the household has $40,000 left over to spend on other goods ($50,000-$10,000=$40,000). In the second metropolitan area, productivity is higher so the households earn $75,000. This $25,000 difference in household incomes requires that house prices be $250,000 greater if people are not to continue to move into this more productive area. Note that with house prices of $350,000 and the same assumption that annual costs equal 10 percent of house value (or $35,000), after-housing income is $40,000 which is identical to that in the first market ($75,000-$35,000=$40,000).

Thus, modest differences in income levels across metropolitan areas require fairly wide gaps in house prices for there to be spatial equilibrium. In the less productive, low cost region, households are spending 20 percent of their incomes on housing each year ($10,000/$50,000=0.2). In the high cost region, households are spending almost 50 percent of their income on housing annually ($35,000/$75,000=0.47). The traditional price-to-income affordability index would suggest that the low cost region is highly affordable, while the high cost region is unaffordable. But this is not true as the example shows. Households are equally well off in either market, so that there is no meaningful sense in which there is a

affordability problems because if one believes that there is such a crisis in a market, presumably the proper policy response is to see to it that more units are delivered to the market so that prices are bid down nearer production costs. After all, the social cost of housing cannot be lower than the cost of constructing a new unit, and for there to be a social benefit from new building, housing prices must be above that level.

By this metric, housing is far too expensive in many major cities and metropolitan areas, and policy should function to reduce barriers to new construction in these places. Table 8 reports data on house price-to-construction cost ratios and implied land shares in housing costs across major metropolitan areas since 1980. These figures show that land was not particularly expensive in most markets as recently as 1980. In that year, the average price-to-construction cost ratio of 1.15 implies a land share of only 13 percent. By 2000, the mean price-to-construction cost ratio had risen to 1.46, which implies a 32 percent land share. And, for the top ten percent of the distribution, implied land shares now are near 50 percent or more.

Because the market failure generating the high land costs probably arises from the fact that the costs of new development are borne primarily by existing residents, while the benefits are captured mostly by new entrants, any successful policy will have to compensate the existing residents to counterbalance their incentives to restrict entry. The

housing affordability crisis in the second market. Nobody in that market has any incentive to leave for the cheaper market because they will have the same amount left over to spend on other goods in either place (presuming you earn the assumed average income in each market, of course).

And, mean income differences of $25,000 across labor markets are not extreme. According to 2000 census data, family income averaged just over $107,000 in the San Francisco primary metropolitan area, about $75,000 in the Dallas and Atlanta metros, and about $66,000 in the Phoenix market. In addition, the assumption that the annual user costs of living in a home are 10 percent of house value is not extreme. This number varies by income because of mortgage interest deductibility, but it is well within the range of annual user costs estimated by Poterba (1992) and others who have studied this issue.

federal government seems the appropriate level for policy initiation, as this properly is a national issue because the social losses are from a misallocation of people away from productive and attractive areas across the nation.[27]

Local Conditions, Construction Costs, and Reinvestment in the Housing Stock

A third example of how housing markets mediate the nature of growth or decline in a city focuses on the role of construction costs and reinvestment by homeowners. Investment theory suggests that owners of assets generally will not redevelop if the values of their assets are below replacement costs. Research has shown that homeowners, who have both investment and consumption motives, behave similarly. Using information on prices and construction costs, this work finds that owners of homes with market values below replacement cost spend much less (50 percent) on renovation than do owners of similar homes with market values above replacement costs (Gyourko and Saiz (2004)).[28]

The relevance of this for urban policy depends upon whether the reason for lower reinvestment is purely driven by (negative) demand factors or whether the supply side of the housing market plays a meaningful role. The traditional explanation for decay of housing stocks in declining areas relies on some strong negative demand shock (e.g., the deurbanization of manufacturing in older cities in the northeast or the decline of

---

[27] Aura and Davidoff (2006) have pointed out that new supply need not result in dramatic falls in house values if there is a long queue of people waiting to enter a market at slightly lower prices. Their argument suggests that the biggest impacts on prices are likely to be had from a national effort, not one that focuses on a single market. However, even for a single market with little fall in price from added supply, welfare still is improved from the superior allocation of people across space.

[28] There are a variety of reasons the fraction is not 100 percent. One is the consumption motive that consumers also have. Another is that these decisions may be relevant to particular attributes of the house (as opposed to the entire structure) that have market values above replacement costs. In addition, some maintenance and repair may be optimal for durable goods such as housing even if their value has fallen below replacement cost. If the asset's remaining life is sufficiently long relative to current maintenance costs, some reinvestment can be rational even if one would not rebuild the entire asset. See Gyourko and Saiz (2004) for a more extensive discussion of these issues and the underlying estimation strategy.

American automobile companies in Detroit and other parts of the midwest) that drives prices well below replacement value. However, it is possible that price is below construction cost, at least in part, because those costs are high. Because the values of the marginal investment in the house (e.g., renovation, remodeling, etc.) and their marginal costs are both relevant, a potentially important question is whether construction costs themselves play a role in mediating urban decline.

The large effects on reinvestment by existing owners found in recent empirical indicate that declining cities in particular cannot afford to be expensive cities in terms of replacement costs. However, the data reported in Table 9 show that there is substantial variation in construction costs across metropolitan areas and that a number of declining areas are relatively costly. Among large markets with populations of at least one million, there is a $34 per square foot difference in costs. And, there are many declining areas in the upper half of this distribution, and some very high growth markets in North Carolina, Texas, and Florida that have the lowest construction costs.

Other research indicates that differences in construction levels across markets of varying size do not explain this variation, as home building appears to be a constant returns to scale business. Rather, a set of supply shifters appears responsible for the spatial variation in construction costs across markets. These include the extent of unionization in the construction trades, local wages (which reflect the opportunity cost of labor in the market), local topography as reflected by the presence of steep hills or mountains that could make it difficult to build, and the local land use regulatory environment (Saiz and Gyourko (2006)).

That some of these factors are, at least to some extent, under local control suggests it is important that local officials in flat to declining markets, where prices are likely to be close to construction costs (or, at least, not well above them), not encourage policies or practices that increase those costs. The topography of an area that might lead to increased construction costs is determined by very long-run geological forces, but land use regulation and the political support for higher cost union construction labor can be influenced by city officials. The real lesson is that declining markets cannot afford to be costly markets. Cities such Detroit or Philadelphia which have been losing population over many decades cannot control the trend that pushed manufacturers out of big American cities. However, they do have some control over the level of replacement costs, and they should work to keep them as low as possible.

IV. Conclusions

The dramatic decline in the fraction of very low quality units in city housing stocks is a significant urban success story, but it should not make us lose sight of the fact that there has been no similarly large drop in urban poverty. Hence, we need to recognize that sound policy requires both sufficient and efficient policies to ensure that the poor are able to consume the decent quality housing that now is provided by the private market. Recent evaluations suggest that vouchers should play an increasingly important role in this area for efficiency reasons.

Perhaps even more importantly, the significant reduction in the amount of truly dilapidated urban housing affords us the opportunity to rethink housing policy more generally. First and perhaps foremost, we need to recognize that housing does not hold

the key to urban growth or decline *per se*. As Glaeser's chapter in this volume explains, human capital is much more important than physical capital in that regard. Thus, housing policy will not provide some type of 'magic bullet' with which declining cities can revitalize themselves.

However, it is vital that both policy makers and scholars to recognize how the workings of housing markets mediate urban growth and decline. The most important lesson in this regard surrounds the need for public officials to better comprehend how land use regulation increasingly is determining how growth manifests itself. Where regulation does not raise costs much, increased demand results in growing population with only modest increases in house prices. Where land use and building controls are much stricter, strong demand results in higher prices with little population growth for the city. While this outcome well may be favored by city residents in some cases, the available evidence indicates that it is not justified on economic grounds, resulting in these markets being inefficiently small. Given the importance of cities in providing productive agglomeration economies, this makes land use policy an issue of national, not just local, importance. State and federal policy makers, not only city mayors, need to work to ensure that growth is allowed to occur where it will be most productive for the nation.

Not all cities grow, and leaders in declining places also need to understand how the workings of housing markets impact them. Recognizing that cheap housing is disproportionately attractive to the relatively poor who tend to be among the less skilled is particularly important. Mayors in cities experiencing weak demand should not exacerbate the situation by providing additional low cost housing, even though it is subsidized by various existing federal programs. That said, there is a good case for

policy to address the negative externalities that arise from concentrated poverty in such places. Individual cities should not be held responsible for the financial burden of these policies, so there is an important role for higher levels of government here, too. For example, housing voucher programs should be made national in scope so that poor recipients can use them anywhere in the country. This encourages mobility of the less skilled to places with stronger labor markets by counterbalancing the incentives to stay in depressed markets with very cheap housing that is priced well below construction costs.

Finally, city leaders always should work to see that they are not high construction cost markets. Home owners are like all asset owners in that they will not reinvest if the benefits do not outweigh the costs of doing so. More specifically, they will not reinvest if asset values are below replacement costs. This can happen because of a secular decline in demand or because costs themselves are artificially high. Research shows that local construction costs can be high for a variety of reasons, including union power in the building trades and land use regulations. Mayors who want their home owners to rehabilitate their homes through reinvestment should encourage policies that make the cost of doing as cheap as possible consistent with the workings of an efficient market. This means supporting market rate labor costs and sound land use regulations that are not unduly burdensome.

<p style="text-align:center">References</p>

Aura, Saku and Thomas Davidoff. "Supply Constraints and Housing Prices", Working Paper, University of California, Berkeley, December 2006.

Berry-Cullen, Julie and Steven Levitt, "Crime, Urban Flight, and the Consequences for Cities", *Review of Economics and Statistics*, 81(2), May 1999: 159-69.

Frieden, Bernard. "Housing and National Urban Goals: Old Policies and New Realities", Chapter 6 in *The Metropolitan Enigma: Inquiries into the Nature and Dimensions of America's Urban Crisis*" (James Q. Wilson, ed.). Cambridge, MA: Harvard University Press, 1968.

Glaeser, Edward and Joseph Gyourko. "The Impact of Building Restrictions on Housing Affordability", *FRBNY Economic Policy Review*, (June 2003): 21-39.

_____. "Urban Decline and Durable Housing", *Journal of Political Economy*, Vol. 113, no. 2 (2005): 345-375.

_____. "Housing Dynamics", NBER Working Paper No. 12787, December 2006.

Glaeser, Edward, Joseph Gyourko and Raven Saks. 2005a. "Why Is Manhattan So Expensive? Regulation and Rise in Housing Prices", *Journal of Law and Economics*, Vol. 48, no. 2 (2005a): 331-370.

_____. 2005b. "Why Have Housing Prices Gone Up?, *American Economic Review*, Vol. 95, no. 2 (2005b): 329-333.

Glaeser, Edward, Jenny Schuetz, and Bryce Ward. "Regulation and the Rise of Housing Prices in Greater Boston." Cambridge: Rappaport Institute for Greater Boston, Harvard University and Boston: Pioneer Institute for Public Policy Research, 2006.

Glaeser, Edward and Bryce Ward. "The Causes and Consequences of Land Use Regulation: Evidence from Greater Boston", Harvard University Economics Department Working Paper, September 2006.

Grigsby, William. *Housing Markets and Public Policy*. Philadelphia, PA: University of Pennsylvania Press, 1963.

Gyourko, Joseph, Christopher Mayer, and Todd Sinai. Superstar Cities. NBER Working Paper No. 12355, June 2006.

Gyourko, Joseph and Albert Saiz. "Reinvestment in the Housing Stock: The Role of Construction Costs and the Supply Side", *Journal of Urban Economics*, Vol. 55, no. 2 (2004): 238-256.

Gyourko, Joseph, Albert Saiz and Anita A. Summers. "A New Measure of the Local Regulatory Environment for Housing Markets, *Urban Studies*, forthcoming.

Ihlanfeldt, Keith."The Effect of Land Use Regulation on Housing and Land Prices", *Journal of Urban Economics*, forthcoming.

Jencks, Christopher. *The Homeless*. Cambridge, MA: Harvard University Press, 1994.

Kling, Jeffrey, Jeffrey Liebman and Lawrence Katz. "Experimental Analysis of Neighborhood Effects", *Econometrica*, Vol 75, no. 1 (2007): 83—119.

Katz, Lawrence, and Kenneth T. Rosen. "The Interjurisdictional Effects of Growth Controls on Housing Prices." *Journal of Law and Economics*, Vol. 30 (April 1987): 149-60.

Levine, Ned. "The Effects of Local Growth Controls on Regional Housing Production and Population Redistribution in California", *Urban Studies*, Vol. 36, no. 12 (1996): 2047-2068.

Noam, Eli. "The Interaction of Building Codes and Housing Prices", *Journal of the American Real Estate and Urban Economics Association*, Vol. 10, no. 4 (1983): 394-403.

O'Flaherty, Brendan. *Making Room: The Economics of Homelessness*. Cambridge, MA: Harvard University Press, 1996.

Pendall, Rolf, Robert Puentes, and Jonathan Martin. "From Traditional to Reformed: A Review of the Land Use Regulations in the Nation's 50 largest Metropolitan Areas." Metropolitan Policy Program, The Brookings Institution, 2006.

Pollakowski, Henry O. and Susan M. Wachter. **"**The Effects of Land-Use Constraints on Housing Prices." *Land Economics*, Vol. 66, no. 3 (1990): 315-24.

Poterba, James. "Taxation and Housing: Old Questions, New Answers", *American Economic Review*, Vol. 82, no. 2 (1992): 237-242.

Quigley, John M. and Steven Raphael. "Regulation and the High Cost of Housing in California." *American Economic Review*, Vol. 94, no. 2 (2005): 323-328.

Quigley, John and Larry Rosenthal. "The Effects of Land Regulation on the Price of Housing What Do We Know? What Can We Learn?", *Cityscape*, Vol. 8, no. 1 (2005): 69-137.

R.S. Means. *Residential Cost Data*. Kingston, MA: R.S. Means Company, various
    annual issues.

Saks, Raven. "Job Creation and Housing Construction: Constraints on Metropolitan
    Area Employment Growth", Federal Reserve Board of Governors Working Paper
    2005-49, 2006.

Schorr, Alvin. *Slums and Social Insecurity*. Washington, D.C.: Division of Research
    and Statistics, Social Security Administration, U.S. Department of Health, Education,
    and Welfare, 1963.

Siegelman, Leonore. "A Technical Note on Housing Census Comparability, 1950-1960",
    Journal of the American Institute of Planners, Vol. 29 (February 1963): 48-54.

TABLE 1: The Decline of Substandard Housing in the Stock

| Census Year | % Units Without Complete Plumbing Facilities | % Units Without Sewer Connection or Septic Tank | Crowding | |
			%>1 Person Per Room	%> 1.5 Person Per Room
1940	45.3	35.3	20.2	9
1950	35.5	24.5	15.7	6.2
1960	16.8	10.3	11.5	3.6
1970	6.9	4.3	8.2	2.2
1980	2.7	1.8	4.5	1.4
1990	1.1	1.1	4.9	2.1
2000	0.6	NA	5.7	2.7

Source: US Census Bureau. The sample
includes all housing units in the nation.

note: The 2000 census stopped tabulating housing units without sewer or septic tank

TABLE 2: Substandard Housing in American Cities

American Housing Survey Data on Primary Central Cities

Owner Occupied Units

Year	1 % Units Without Complete Plumbing Facilities	2 % Units with less than one complete bathroom	3 % Units without heating facilities	4 % Units without complete kitchen facilities	5 % Units with one complete bathroom or less
1985	na	na	na	na	na
1987	2.17	0.10	0.84	0.64	40.14
1989	2.11	0.19	0.60	0.57	37.59
1991	1.67	0.13	0.94	0.47	36.99
1993	1.32	0.13	0.83	0.63	35.58
1995	1.40	0.17	0.97	0.65	33.35
1997	0.74	0.43	0.62	1.00	35.63
1999	1.01	0.28	0.51	0.58	31.67
2001	0.94	0.44	0.07	1.33	30.52
2003	1.27	0.35	0.18	0.65	28.97
2005	1.08	0.29	0.19	0.34	27.86

Renter Occupied Units

Year	1 % Units Without Complete Plumbing Facilities	2 % Units with less than one complete bathroom	3 % Units without heating facilities	4 % Units without complete kitchen facilities	5 % Units with one complete bathroom or less
1985	na	na	na	na	na
1987	2.94	1.92	1.62	2.72	81.41
1989	2.91	1.74	1.56	2.62	79.50
1991	2.30	1.56	1.89	2.38	79.04
1993	1.15	1.45	1.82	2.44	78.64
1995	1.07	1.00	1.78	1.95	78.23
1997	2.42	1.75	1.47	5.85	78.29
1999	1.95	1.53	1.28	4.80	78.32
2001	2.24	1.56	0.64	4.61	76.87
2003	2.27	1.27	0.60	4.19	76.38
2005	2.38	1.27	0.62	4.98	74.69

Notes: a. Data is not available for 1985 due to the fact that the AHS did not provide data for renters and owners separately.

b: Source: Table A-4 of the American Housing Survey report from 1987-2005

c. Units without heating facilities are classified as those homes without central heating, fireplaces or radiators.

TABLE 3 : Crowding in City Housing Stocks: Owners and Renters

American Housing Survey Data on Primary Central Cities

	1	2
	Owners and Renters	
Year	% >1/room	%>1.5/room
1985	3.70	0.91
1987	3.82	0.80
1989	4.18	0.98
1991	4.06	0.97
1993	3.91	0.85
1995	3.94	0.87
1997	4.29	1.06
1999	3.84	0.72
2001	3.67	0.85
2003	3.48	0.66
2005	3.52	0.74

notes: Data from Table 2-3 of the American Housing Survey, 1985-2005

TABLE 4 : Tenure and Unit Type

American Housing Survey Data on Primary Central Cities

	1	2	3
		% Owner-occupied units	% or rental units in
Year	% Owner Occupied	in 1 unit buildings	5 + unit buildings
1985	na	na	na
1987	48.60	86.77	51.65
1989	48.73	86.00	48.99
1991	48.66	86.65	48.73
1993	49.08	86.94	50.68
1995	48.96	97.16	50.36
1997	48.92	86.81	51.34
1999	49.83	88.88	50.20
2001	53.17	88.52	48.85
2003	53.36	88.49	50.43
2005	54.30	87.73	52.64

notes:
a. Data for 1985 are not available due to the fact that the AHS did not provide unit type data for central cities separately.
b. Data from Table 1B-1 of the American Housing Survey 1987-2005

TABLE 5 : Price and Construction Costs In Large Cities

25 Largest Cities according to the 1990 Census

		1	2	3	4
	Year	1990 Population	2000 Median House Value	2000 Construction Cost for 2000 sq ft home	Population Growth 1990-2000 (%)
1	New York, NY	7,322,564	$211,900	$136,937	9.4
2	Los Angeles, CA	3,485,398	$221,600	$112,543	6.0
3	Chicago, IL	2,783,726	$132,400	$113,927	4.0
4	Houston, TX	1,630,553	$79,300	$91,782	19.8
5	Philadelphia, PA	1,585,577	$59,700	$114,792	-4.3
6	San Diego, CA	1,110,549	$233,100	$109,256	10.2
7	Detroit, MI	1,027,974	$63,600	$107,872	-7.5
8	Dallas, TX	1,006,877	$89,800	$89,100	18.1
9	Phoenix, AZ	983,403	$112,600	$91,695	34.4
10	San Antonio, TX	935,933	$68,800	$86,246	22.3
11	San Jose, CA	782,248	$394,000	$126,903	14.4
12	Baltimore, MD	736,014	$69,100	$93,512	-11.5
13	Indianapolis, IN	731,327	$98,200	$97,405	8.3
14	San Francisco, CA	723,959	$396,400	$126,903	7.3
15	Jacsksonville, FL	635,230	$87,800	$87,803	15.8
16	Columbus, OH	632,910	$101,400	$96,799	12.4
17	Milwaukee, WI	628,088	$80,400	$103,547	-5.0
18	Memphis, TN	610,337	$72,800	$87,284	6.5
19	Washington, DC	606,900	$157,200	$98,702	-5.7
20	Boston, MA	574,283	$190,600	$119,463	2.6
21	Seattle, WA	516,259	$259,600	$108,304	9.1
22	El Paso, TX	515,342	$71,300	$79,585	9.4
23	Cleveland, OH	505,616	$72,100	$105,104	-5.4
24	New Orleans, LA	496,938	$87,300	$87,803	-2.5
25	Nashville, TN	488,374	$113,300	$86,765	16.7

Notes: a. Columns 1, 2 and 4 from the US Census Bureau
         b. Column 3 from RS Means Construction Cost Data, 2000.

TABLE 6 : Labor and Land Market Fundamentals Across Growing and Declining Cities, 2000

	Growing Cities	Declining Cities	Percentage Difference
Mean Hourly Wages	$14.75	$14.49	1.8
Mean Contract Rent for Two Bedroom Apartments	$585	$383	34.4
Mean House Price for Owned Homes with Three Bedrooms	$112,540	$71,560	37.1

Notes: a. Figures computed from samples of male workers between ages of 25 and 55 in the 10 fastest and 10 slowest growing central cities in the 1990s with populations in excess of 100,000 as of 1990. All monetary figures are in 2000 dollars.
b. The 10 highest growth central cities with populations in excess of 100,000 in 1990 are: Las Vegas, NV; Plano, TX; Boise, ID; Laredo, TX; Bakersfield, CA; Austin, TX; Salinas, CA; Durham, NC; Charlotte, NC; Santa Clarita, CA;
c. The 10 lowest (i.e. most negative) growth central cities with populations in excess of 100,000 in 1990 are: Hartford, CT; St. Louis, MO; Baltimore, MD; Flint, MI; Buffalo, NY; Norfolk, VA; Syracuse, NY; Pittsburgh, PA; Cincinnati, OH; Macon, GA;
d. source: US census bureau, IPUMS Public Use Microdata, 5% Sample

TABLE 7 : Residential Land Use Stringency for Select Major Cities

Wharton Residential Land Use Regulation Survey

	City	Wharton Residential Land Use Regulation Index Value
1	Atlanta	0.70
2	Austin	2.08
3	Charlotte	-0.08
4	Chicago	-1.15
5	Dallas	-0.14
6	Denver	0.49
7	Honolulu	2.32
8	Las Vegas	-0.34
9	Los Angeles	2.00
10	Miami	0.36
11	Phoenix	1.24
12	Raleigh	1.02
13	San Diego	1.59
14	San Francisco	1.96
15	Seattle	2.39

notes: The Wharton Residential Land Use Regulation Index (WRLURI) is computed so that the average
community has an index value of zero. The standard deviation of the distribution is one.
Hence, the 0.70 index value for the city of Atlanta indicates that city's regulation climate is
0.7 standard deviations above the national average. See discussion in the text and in Gyourko,
Saiz, and Summers (forthcoming) for more detail.

TABLE 8 : Price-to-Construction Cost Ratios (P/CC) Over Time

102 Metropolitan Areas

	1	2	3
	1980	1990	2000
Mean	1.15	1.35	1.46
Standard Deviation	0.30	0.59	0.55
90th Percentile	1.49	2.17	1.85
Maximum	2.17	3.49	4.06
Implied Land Share (~ 1- CC/P)			
90th Percentile	0.33	0.54	0.46
Maximum	0.24	0.71	0.75

notes: These data are taken from Glaeser, Gyourko and Saks (2005 b, Table 2). Mean house prices
are constructed for each metropolitan area using county-level data from the relevant decenial census.
Construction cost data are from the R.S. Means Company. See their article for more detail on various
adjustments that were made to the price and cost data.

TABLE 9: 2005 Construction Costs in Markets with 1,000,000+ People

Cost Per Sq Ft. ($2000)

		Economy Unit: Cost per Sq.Ft.			Economy Unit: Cost per Sq.Ft.
1	New York	$78.92	29	Indianapolis	$55.90
2	San Francisco	$73.10	30	Cincinnati	$55.65
3	Boston-Worcester-Lawrence-Lowell-Brockton	$69.00	31	Baltimore	$55.25
4	Philadelphia	$67.69	32	Louisville	$54.96
5	Minneapolis-St. Paul	$66.96	33	Atlanta	$53.58
6	Chicago	$66.88	34	Salt Lake City-Ogden	$52.64
7	Newark	$66.68	35	Houston	$52.48
8	Bergen-Passaic	$66.31	36	Memphis	$52.32
9	Sacramento	$65.54	37	Phoenix-Mesa	$52.28
10	New Haven-Bridgeport-Stamford-Danbury-Waterbury	$65.42	38	Nashville	$52.03
11	Hartford	$64.93	39	Tampa-St. Petersburg-Clearwater	$51.95
12	Los Angeles-Long Beach	$63.91	40	Miami	$51.71
13	Orange County	$63.67	41	New Orleans	$51.34
14	Detroit	$63.54	42	Fort Lauderdale	$51.26
15	Riverside-San Bernardino	$63.22	43	Orlando	$51.26
16	Seattle-Bellevue-Everett	$62.61	44	Richmond-Petersburg	$51.01
17	San Diego	$62.57	45	Dallas	$50.32
18	Portland-Vancouver	$61.92	46	Norfolk-Virginia Beach-Newport News	$50.24
19	Kansas City	$61.55	47	Grand Rapids-Muskegon-Holland	$50.08
20	Las Vegas	$60.82	48	Oklahoma City	$49.47
21	St. Louis	$60.78	49	San Antonio	$49.35
22	Buffalo-Niagara Falls	$60.78	50	Fort Worth-Arlington	$48.57
23	Milwaukee-Waukesha	$60.37	51	Jacksonville	$48.49
24	Cleveland-Lorain-Elyria	$60.17	52	Austin-San Marcos	$47.96
25	Rochester	$59.92	53	Raleigh-Durham-Chapel Hill	$45.60
26	Pittsburgh	$59.64	54	Greensboro-Winston-Salem-High Point	$45.60
27	Denver	$57.40	55	Charlotte-Gastonia-Rock Hill	$44.95
28	Columbus	$56.14			

The data correspond to an average 2,000 square feet housing unit of low quality (economy cost)

MSA with population over 1,000,000 in 2003

Data from R.S. Means Company Construction Cost series, 2005.

Figure 1: Size of Existing Renter and Owner-Occupied Homes
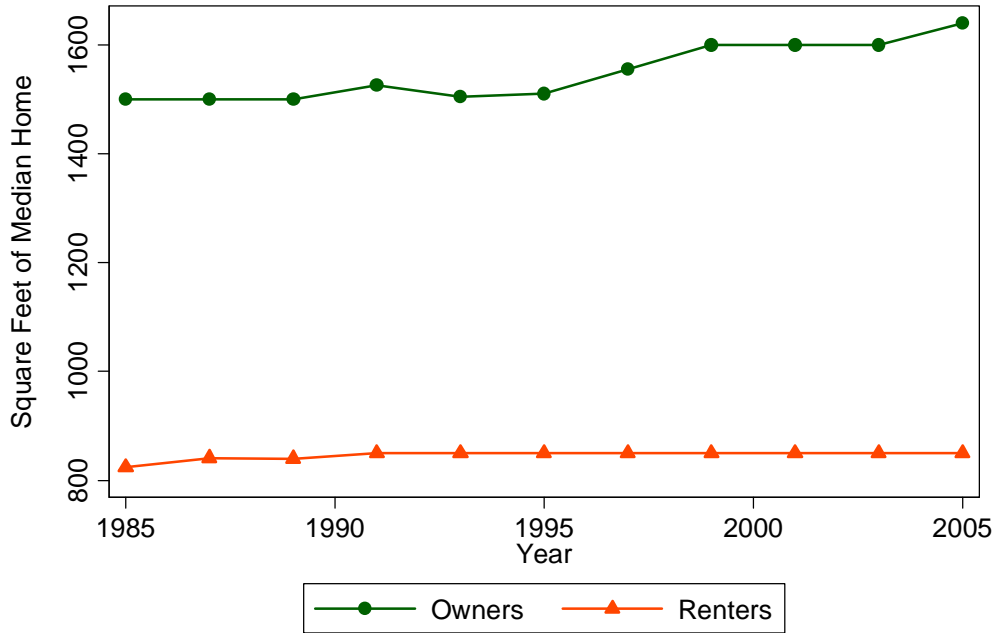### Central Cities, AHS National Files

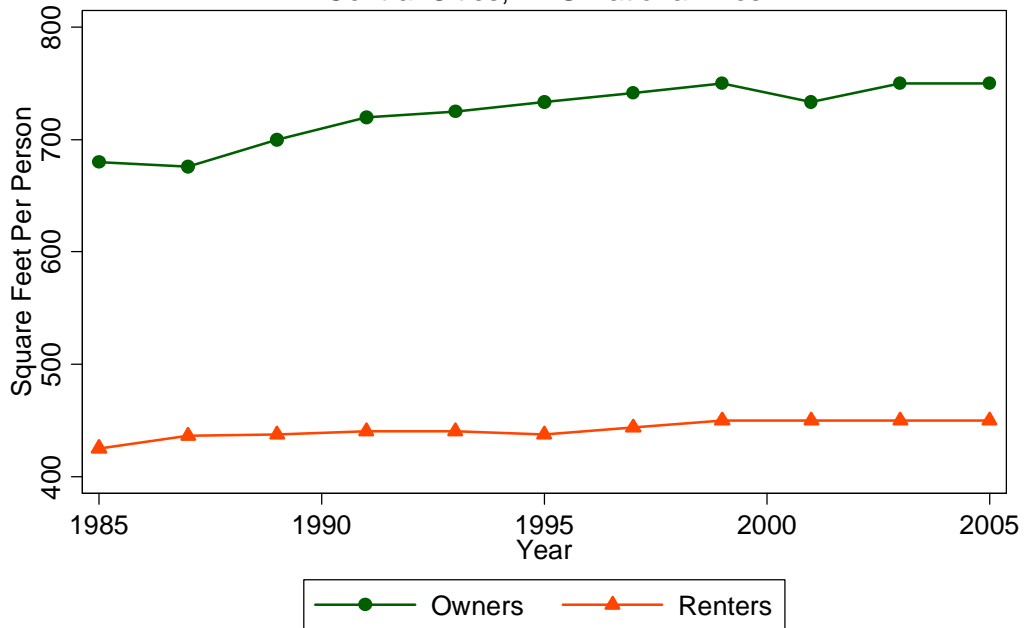## Figure 2: House Size Per Person
Central Cities, AHS National Files

Figure 3: House Size per person by Income Quartile
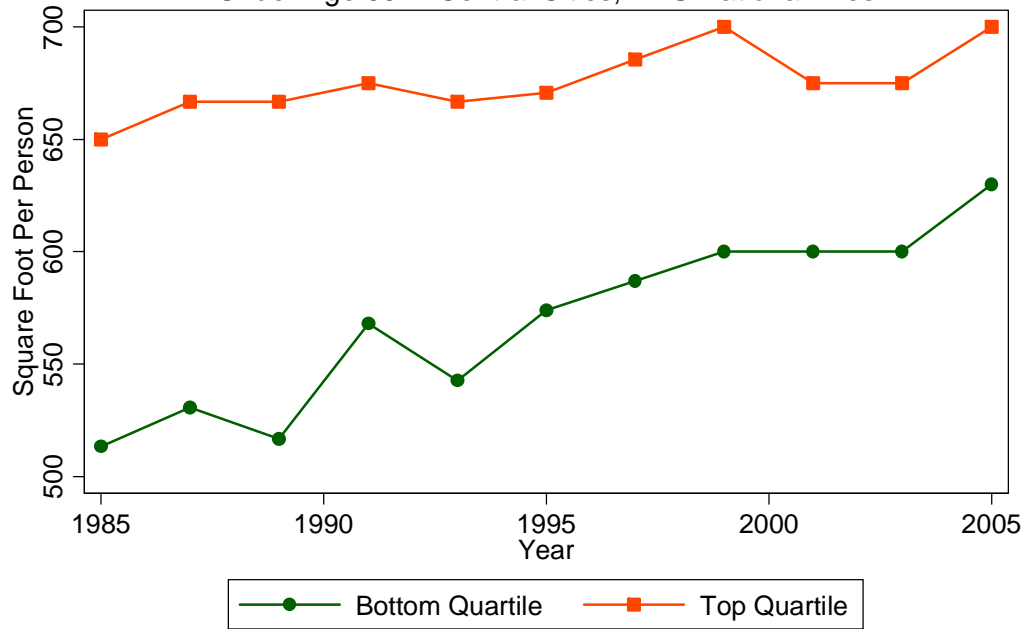Under Age 55 in Central Cities, AHS National Files

Figure 4: Median Gross Monthly Rent of US Cities ($2005)
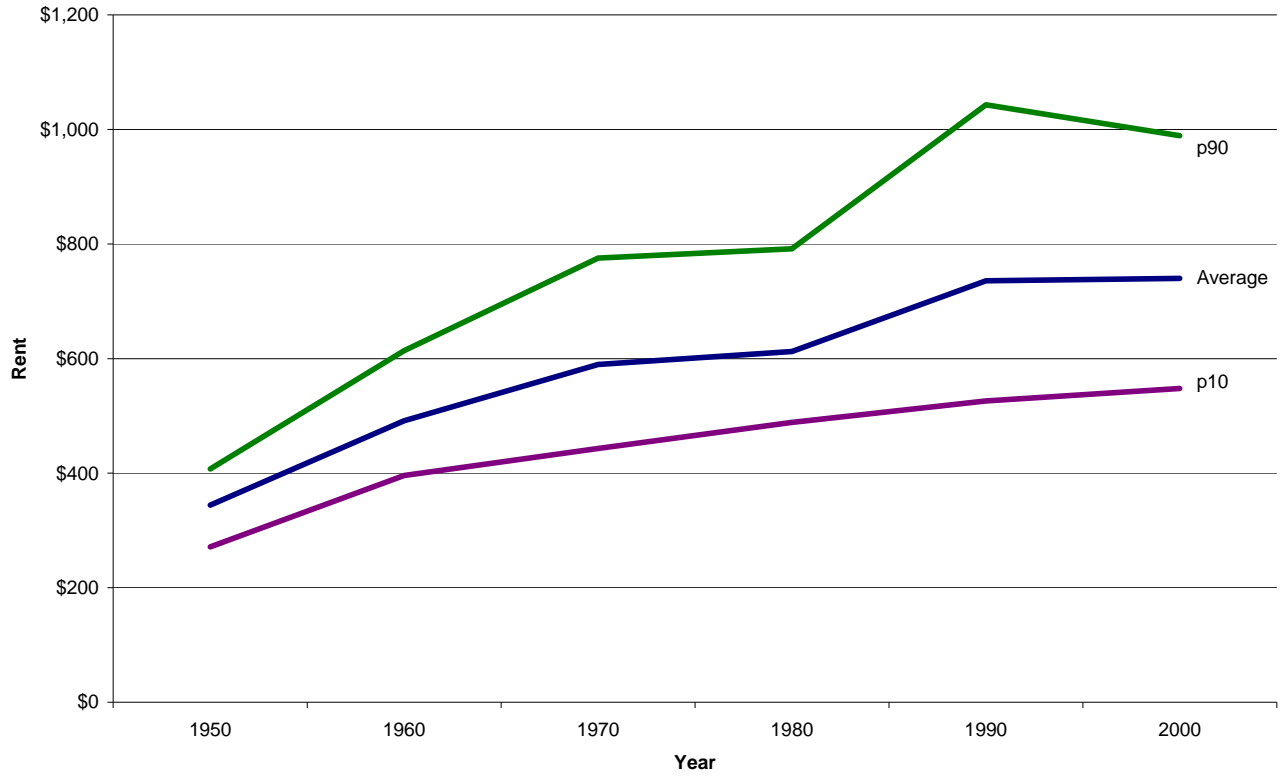**(Sample of 254 cities with 100,000+ people in 2000)**

Figure 5: Median Gross Rent of US Cities as Percent of National GDP per Capita
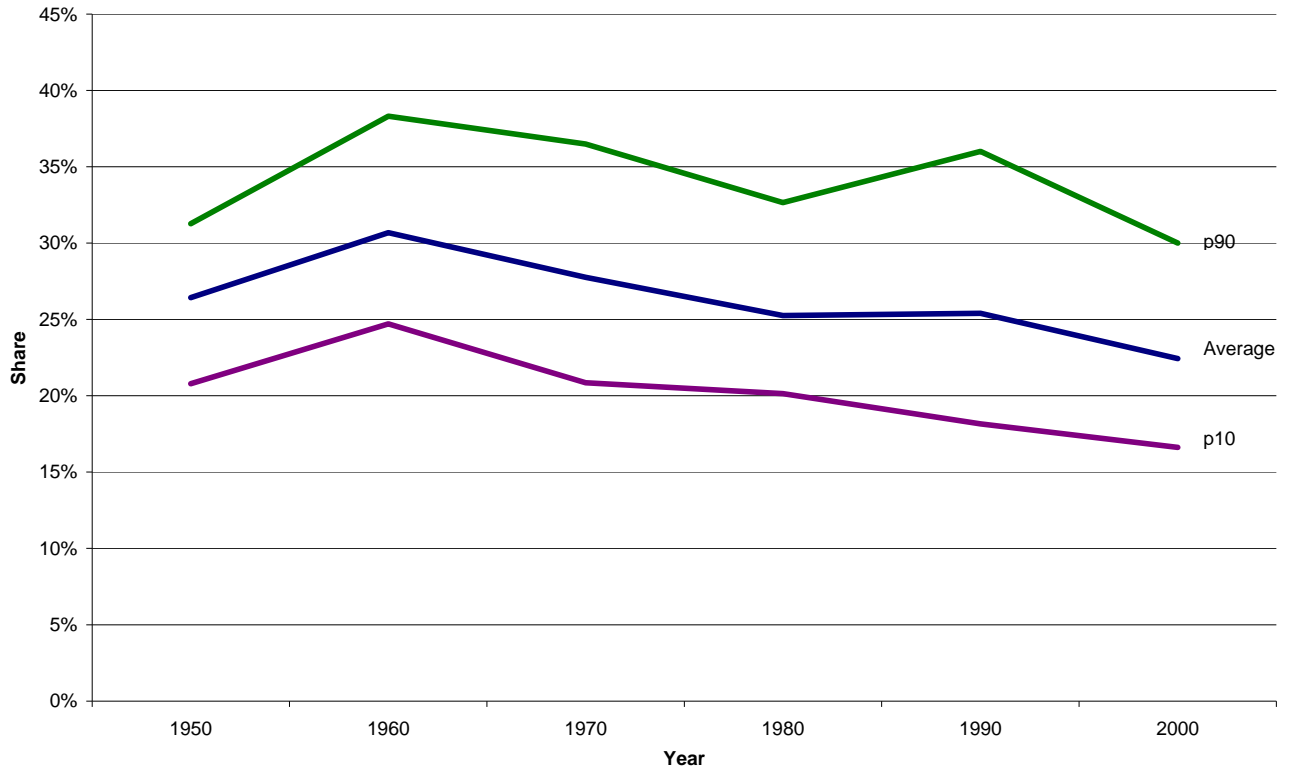**($2005, Sample of 254 cities with 100,000+ people in 2000)**
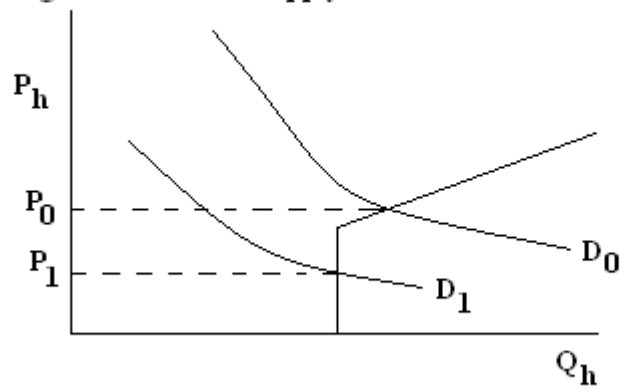
Figure 6: Kinked Supply and Shifts in Demand

P_h

P_0

P_1

D_0

D_1

Q_h

Figure 7: Supply Elasticity and the Nature of Growth

P_1

P_2

P^*

S_0

D_1

S_0'

D_0

$Q^* Q_1$ Q_2
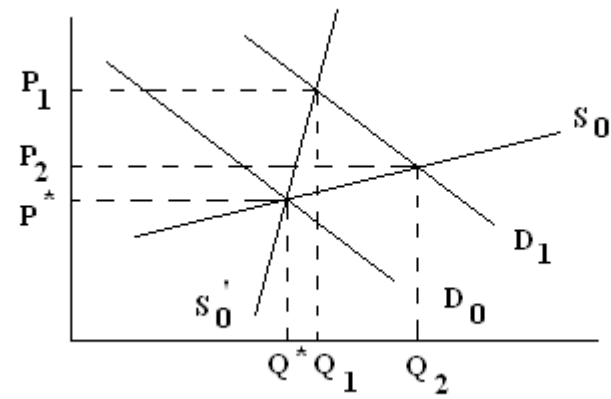
Figure 8: House Prices and Local Regulatory Stringency

43 Metro Areas

San Francisco

New York

Oakland

San Diego

Los Angeles-Long Beach

Washington, DC-MD-VA-WV

Nassau-Suffolk

Newark   Seattle-Bellevue-Everett   Boston

Riverside-San Bernardino

Monmouth-Ocean   Providence-Fal

Chicago   Portland, OR

Hartford, CT

Minneapolis-St. Paul-Mesa   Philadelphia

Salt Lake City   Springfield, MA

Detroit

Allentown-Bethlehem-Easton   Milwaukee-Waukesha

Tampa-St. Pete

Cincinnati   Cleveland   Rapids-Muskegon   Harrisburgh-Lebanon-Carlisle

Kansas City

Dayton   Wilkes Barre   Pittsburgh

Oklahoma City

House Price

WRLURI

Data from Gyourko, Saiz and Summers (forthcoming)