William J. McDonough

Opening Remarks

I am delighted to welcome you to the Federal Reserve Bank of New York. Today's conference, "Policies to Promote Affordable Housing," has been organized by this Bank and the Furman Center for Real Estate and Urban Policy of New York University. I would also like to recognize Ronay Menschel's leadership in the development of today's program. Ronay is Chairman of Phipps Houses, a major provider of low- and moderate-income housing, and a member of the Board of Directors of this Bank.

As the title of the conference suggests, today we intend to advance our understanding of the issue of affordable housing: the cost burdens that housing places on low- and moderate-income households, the policies that are designed to lower the cost of housing for these households, and the policies that—in pursuit of some other worthy goal—may have exacerbated the lack of affordable housing. Many of the papers presented today will discuss the issue from a national perspective, but we will also focus on the unique conditions of New York City and the surrounding metropolitan area.

To help set the stage for today's discussion, let me provide a broad overview of what we know about affordable housing, or the lack thereof. We have been involved in this issue for some time through the work of our Office of Regional and Community Affairs, headed by Elizabeth Rodriguez-Jackson, and through past conferences, internal research, and the volunteer activities of our staff.

First, it is noteworthy that the words "housing quality" are not included in the title of this conference. An analysis of longer term trends at the national level, presented at a conference held here in May of 1999, indicated that relatively few housing units in the United States meet the criteria of "severely physically inadequate" or "overcrowded." By this, we mean that, with the growth of the U.S. economy over the post–World War II period, most housing units in the United States are safe and provide the basic comforts of life. Of course, what is deemed to be physically adequate would not necessarily appeal to the people in this room. Housing quality problems have not been completely eliminated, but we have certainly made great strides in this area relative to where we were in 1950.

Again at the national level, housing affordability has improved for the population as a whole over the past decade. The proportion of household income devoted to housing costs increased from the mid-1970s to the mid-1980s, a period of relatively high inflation and high nominal interest rates. It then declined from the mid-1980s through the mid-1990s as inflation and interest rates declined, ending the 1990s at roughly the same level it held in the early 1970s. Indeed, buying a home has become vastly more affordable over the past decade, with the result being that the rate of homeownership climbed to a record 68 percent by the second half of 2001. Because homeownership makes people stakeholders, builds

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wealth, and enhances social cohesion, increasing the homeownership rate has long been a goal of U.S. domestic policy. The rise in the homeownership rate is even more noteworthy in that many of these new homeowners are minorities with moderate incomes.

Nonetheless, for those in the lowest income quintile, housing affordability has not improved over the past decade. For the nation as a whole, housing costs for this group rose from around 40 percent of income in the mid-1970s to around 60 percent by the mid-1980s and have stayed at roughly that level since then. Those who can least afford it must pay what I regard as an unconscionable share of their income for what must surely be basic shelter. It is part of a broader problem that the incomes of these families have risen at rates well below average.

This is not an abstract statistical issue. There is growing evidence that poor housing outcomes are associated with poor outcomes in other aspects of life, such as health, education, and the incidence of crime. As we have seen time and again, the problems of poorer communities very quickly become everyone's problems.

Because the New York area is such an attractive place to live and conduct business, the housing affordability problem here extends much further up the income distribution. Over the period from 1997 through 2001, employment in this area grew at a compound annual rate of 2.1 percent, the fastest growth of any five-year period for which we have reliable data. According to the 2000 census, the population of New York City has surpassed its previous peak, in 1970. But because the area is already so densely populated and new construction is so expensive, even middle-income professionals struggle to pay the rent or the mortgage while still being able to afford life's other necessities. Imagine the difficulties of those on the first rungs of the income ladder.

Our understanding of the appropriate role for government in alleviating the unduly high housing cost burdens faced by low- and moderate-income households has evolved dramatically over the past fifty years. Government construction or financing of high-density housing in general did not work and in some cases produced disastrous results. In the worst cases, such housing was isolated from employment opportunities as well as health and social services. More recently, this housing has begun to be replaced by lower density homes that are developed as part of a broader community plan and that, in many cases, offer ownership opportunities.

While the lessons learned have been hard ones, it is now widely recognized that tax incentives and subsidies can be effective in encouraging economic development, provided they are appropriately structured. At the macro level, we use tax policy to encourage many things, including homeownership, research and development, and historic preservation. Local governments provide tax rebates, build or improve roads, and make other infrastructure investments using bonding authority to make their regions more enticing to companies. Providing tax incentives and subsidies to make housing more affordable and thereby keep communities growing and vibrant is an equally important role for government at all levels. Moreover, it is the right thing to do. Our job is to discover the most effective and efficient designs for these incentives. Today's conference is part of that process.

Now, you might ask why the central bank—the institution charged with setting monetary policy and maintaining financial stability—is involved in this issue. One reason is that it matters to us as people. I have been active in this area for a long time, both in my native Chicago and here in New York. I am a firm believer that disparities in the distribution of wealth and income threaten the social fabric of the United States. It is in every citizen's self-interest to address the inequalities that exist in our society and to strive to eliminate the permanent underclass.

Furthermore, the Federal Reserve is concerned with economic growth in all sectors of the economy. Growth of the national economy is nothing more than the sum total of growth in the nation's numerous local economies. At the Federal Reserve Bank of New York, we work with the private, nonprofit, and government sectors to furnish information about new ideas and models to help address local issues. We bring together key players in neutral forums and act as a catalyst for the exchange of ideas.

Your attendance today is evidence of your commitment, interest, and willingness to help your fellow citizens and improve our local communities. It is my sincere hope that this conference will further advance our understanding of how best to achieve these honorable goals. As you all know well, there is no magic formula. But we must ensure that there is concrete hope and economic opportunity for all in order for our society to prosper. The fundamental strength of our economy offers a unique opportunity to bring disadvantaged people and communities into the social and economic mainstream.

Michael H. Schill and Glynis Daniels

State of New York City's Housing and Neighborhoods: An Overview of Recent Trends

1. Introduction

New York City is well-known for the special challenges it faces in providing the largest urban population in the United States with quality affordable housing. The city's housing problems are frequently the subject of intense debate. It is sometimes said that housing problems in New York City are exceptional and cannot be compared with those of other cities. In this paper, we provide this comparative perspective through an examination of certain housing indicators for New York City, the nation as a whole, and several comparison cities. Our results suggest that New York is not as exceptional as some might think.

Many housing and neighborhood indicators improved substantially in New York City over the late 1990s. Although a large number of New Yorkers live in poor-quality housing or pay extraordinarily high proportions of their incomes for rent, housing problems by and large either stabilized or, in some instances, moderated during the late 1990s. Nevertheless, significant housing problems remain and not all improvements were felt everywhere in the city.

Much of the information on New York City presented here is taken from our recent report, "State of New York City's Housing and Neighborhoods 2001."[1] In that report and in this presentation, we derive many indicators from the New York City Housing and Vacancy Survey (HVS). This survey, which is modeled on the Census Bureau's American Housing Survey

(AHS), is conducted every two to three years and is based on a sample of approximately 18,000 housing units—a substantially larger sample than the metropolitan area surveys of the AHS, which range from 1,300 to 3,500 housing units. Because the HVS is unique to New York City, AHS data for New York, the United States, and six comparison cities are also presented to place the city's housing situation in context.[2]
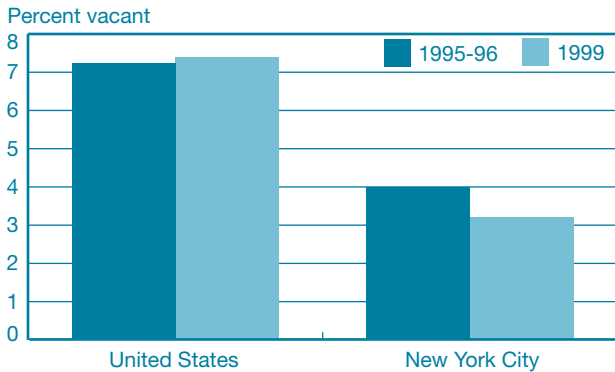
2. Vacancy Rates and Housing Creation

The scarcity of housing in New York City is well-known. As shown in Chart 1, rental vacancy rates in New York are consistently lower than rates for the United States as a whole, reflecting the fact that the city has one of the tightest housing markets in the nation. According to the HVS, from 1996 to 1999, rental vacancy rates in New York declined from 4.0 percent to 3.2 percent. This decline may be an indication of a reversal of the generally upward trend in the vacancy rate since 1984, when only 2 percent of rental units were vacant and available. The current vacancy rate is well below the 5 percent level that statutorily constitutes an official housing emergency in the city. As shown in the chart, the decline in New York City's vacancy rate contrasts with the change in the nation as a whole. According to the AHS, from 1995 to 1999, the

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CHART 1
Rental Vacancy Rates

Percent vacant

CHART 2
Rental Vacancy Rate: New York City Sub-Borough Areas, 1999

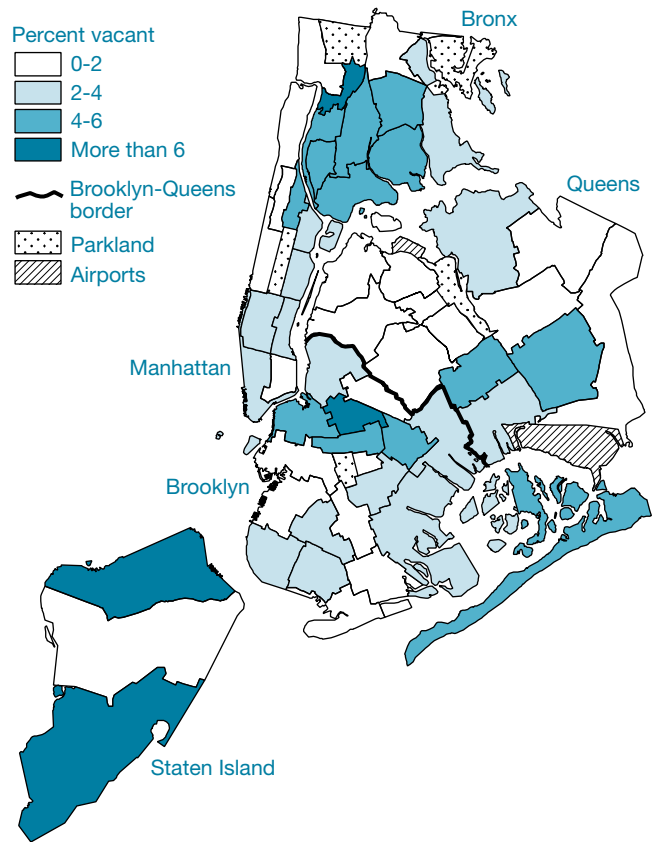Source: 1999 New York City Housing and Vacancy Survey.

nationwide rental vacancy rate increased slightly, from 7.2 percent to 7.4 percent.

New York City's housing market is not the tightest in the nation, however (Table 1). According to the 2000 U.S. census, two other cities—San Francisco (2.5 percent) and Boston (3.0 percent)—had lower rental vacancy rates. Los Angeles also had a very low vacancy rate of 3.5 percent. At the other extreme are Philadelphia, which has experienced substantial population loss and has a relatively high vacancy rate of 7.0 percent, and Houston, an expanding city, which has the highest vacancy rate of the cities examined, 8.7 percent.

Within New York City, there is substantial variation in rental vacancy rates.[3] As Chart 2 indicates, the areas of

TABLE 1
Housing Units, Vacancies, and Crowding in the United States and Selected Cities

Area	Year	Persons[a]	Households	Housing Units	Vacancy Rate (Percent)[a]	Severe Crowding (Percent)
United States	1999	281,421,906	102,803,000	112,292,000	7.4	0.4
New York City	1999	8,008,278	2,868,415	3,038,796	3.2[b]	3.0[b]
Chicago	1999	2,896,016	1,061,928	1,152,868	5.7	1.5
Los Angeles	1999	3,694,820	1,099,000	1,337,706	3.5	4.0
Boston	1998	589,141	228,300	251,935	3.0	0.1
San Francisco	1998	776,733	307,300	346,527	2.5	2.1
Philadelphia	1999	1,517,550	582,300	661,958	7.0	0.0
Houston	1998	1,953,631	642,800	782,009	8.7	1.6

Source: American Housing Survey.

[a]Source: 2000 United States Census.
[b]Source: New York City Housing and Vacancy Survey.

New York that have the most vacancies are generally those neighborhoods with high populations of low- and moderate-income families, such as the South Bronx and Central Brooklyn. One exception is southern Staten Island, where land is more available and construction levels are relatively high.

Low vacancy rates can be thought of as reflecting strength or weakness. On the one hand, the extremely tight housing market indicates high demand for residence in the City of New York. People flocked to New York City during the 1990s, largely because of immigration and the attraction of a booming economy. According to the 2000 census, the city's population grew by 686,000 people over the 1990s. Roughly one-half of this increase was probably attributable to the efforts of the City Planning Commission to find people who were always there but had gone uncounted. Nevertheless, the city probably grew by about 300,000 people, or about 122,000 households, over the decade, resulting in a growth rate of between 4.1 percent (using an adjusted 1990 population) and 9.4 percent (using unadjusted data). New York City's population did not grow as fast as the nation's (13.2 percent growth over the decade), but the relatively strong growth in population confirmed a turnaround in the trends of population loss and decline in desirability of urban residential location that has plagued New York and other older cities since the 1950s.

On the other hand, the less desirable implication of low vacancy rates is that housing supply did not keep up with the demand for residence in the city. Over the decade, the city issued certificates of occupancy for only 81,000 new units of housing. That total is less than half the average number of housing units built in the 1970s and only one-fifth the number completed in the 1960s.

As Chart 3 indicates, the bulk of the production in the city was in Manhattan south of Ninety-Sixth Street, Staten Island, Jamaica, and East New York. The development in Manhattan and Staten Island was primarily market-driven; the development in Jamaica and East New York, however, was largely subsidized.

One unique factor in New York City housing production is the large role that government has played in financing and supporting the creation of affordable housing, particularly through the city's capital programs. Since 1987, the city has produced nearly 28,000 new units of housing designated for low- and moderate-income residents. In addition, these programs have rehabilitated another 155,000 units of housing. Some distressed neighborhoods have been affected tremendously by these efforts (Chart 4). Neighborhoods in the South Bronx, for example, have had from 18 percent to 35 percent of their currently existing housing units created or rehabilitated through these programs.

New Housing Units Issued Certificates of Occupancy: New York City Community Districts, 1991-2000
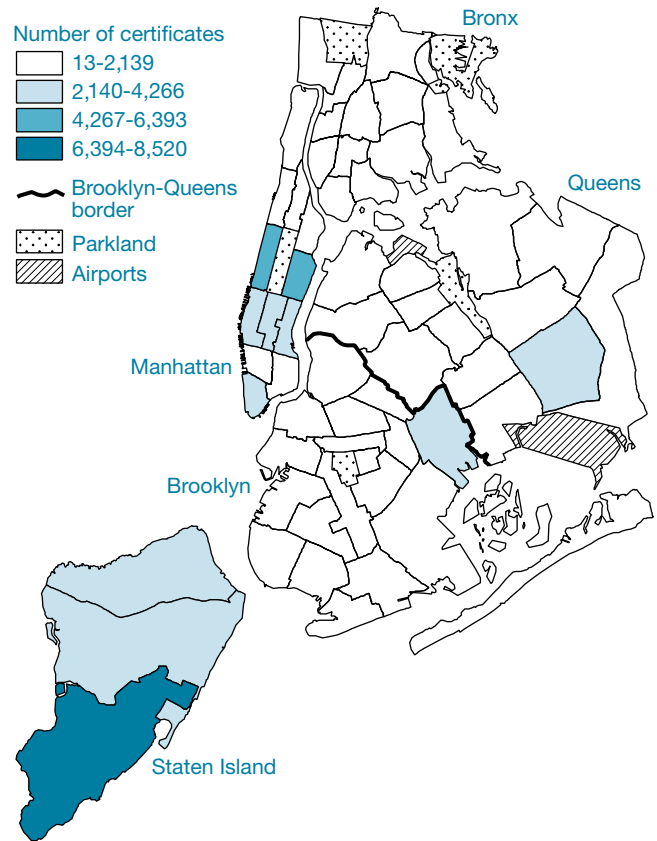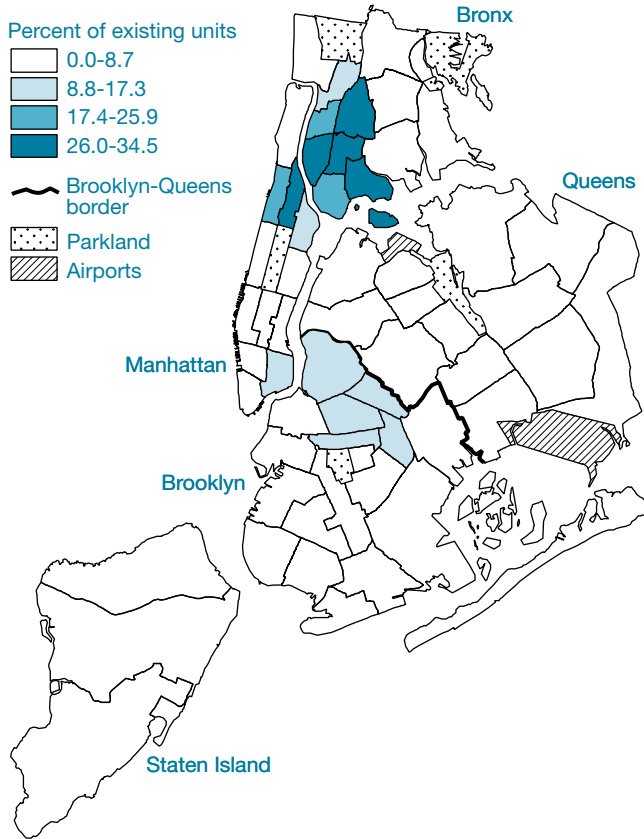

Source: New York City Department of City Planning.

One impact of the tight housing market is crowding. According to HVS data, severe crowding (1.5 persons or more per room) grew worse in New York City during the late 1990s, increasing from 2.7 percent of all households in 1996 to 3.0 percent in 1999. This is much higher than the nationwide incidence of severe crowding observed in the AHS data, which actually decreased from 0.5 percent in 1995 to 0.4 percent in 1999 (Chart 5). Among our six comparison cities, only Los Angeles (4.4 percent) had a higher rate of severe crowding than New York. San Francisco had about 2 percent of housing units with severe crowding, Chicago and Houston each had about 1.5 percent severe crowding, while Boston and Philadelphia had severe crowding rates of less than 1 percent.

Some crowded households are actually two households doubled up in one housing unit. According to estimates from

CHART 4
Percent of Total Housing Units Assisted through New York City's Capital Programs: New York City Community Districts, 1987-2000

Percent of existing units

- 0.0-8.7
- 8.8-17.3
- 17.4-25.9
- 26.0-34.5

— Brooklyn-Queens border

Parkland

Airports

Bronx

Queens

Manhattan

Brooklyn

Staten Island

Source: New York City Department of Housing Preservation and Development.

the 1999 HVS, there were 25,295 households in New York City that contained one or more persons who had doubled up with other households. Of these, 44 percent (11,177 households) doubled up specifically for affordability reasons. This is a decrease of about 5,000 households since 1996. Although the number of doubled-up households in New York is only a small percentage of total households (slightly less than 1 percent), the figure is troubling nonetheless because doubling up is an indicator that a household may be on the verge of homelessness.

3. HOUSING AFFORDABILITY

Housing affordability is a major concern in New York City. As Chart 6 indicates, median gross rent (out-of-pocket rent exclusive of subsidies) in New York is substantially higher than the national averages. According to the American Housing Survey, median gross rent grew by 8.7 percent from 1995 to 1999 in New York City. Over the same period, the national median rent grew at a faster rate, 10.9 percent, to reach $580 per month, but it was still substantially lower than the median monthly rent of $640 paid by New Yorkers.

Median rent varies widely across New York City neighborhoods. Chart 7 displays median contract rent data from the 1999 HVS. Three very desirable neighborhoods—the Upper East Side, Stuyvesant Town/Grammercy/Turtle Bay, and Greenwich Village/SoHo/Financial District—each had median contract rents above $1,000 per month. Certain neighborhoods, including those in Central and East Harlem,
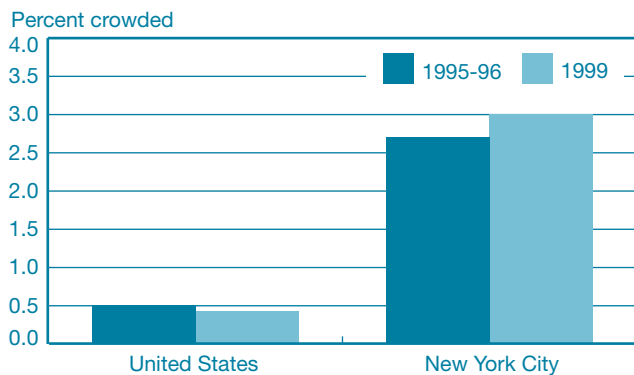
CHART 5
Severe Crowding

Percent crowded

Legend: 1995-96, 1999

United States, New York City

CHART 6
Median Gross Rent

Median rent (dollars)

Legend: 1995, 1999

United States, New York City
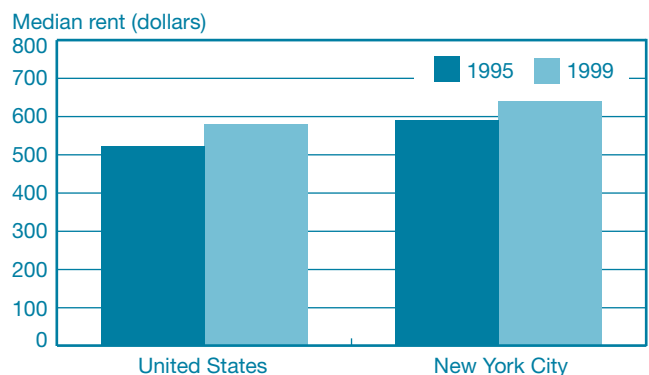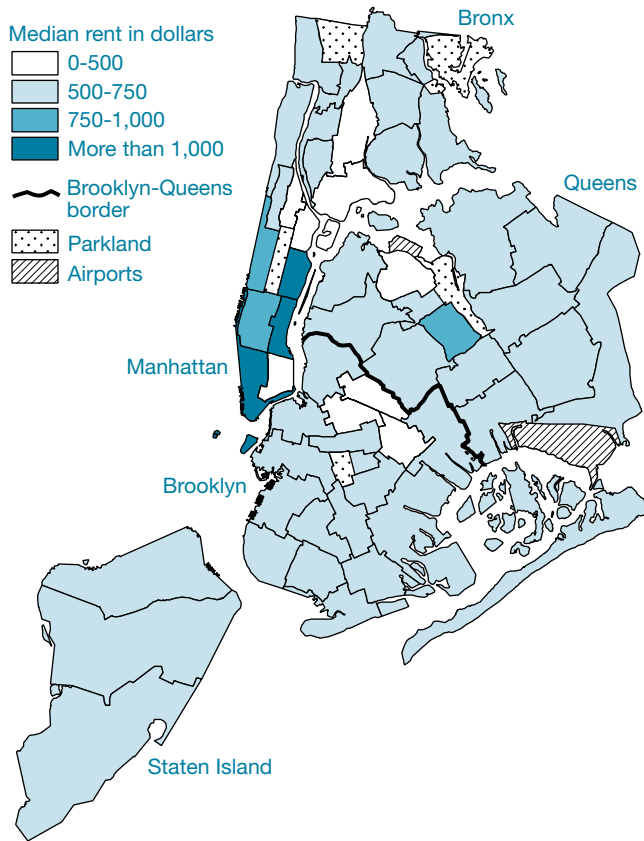
Median Monthly Rent: New York City Sub-Borough Areas, 1999

Source: 1999 New York City Housing and Vacancy Survey.

Rents and Rent Burdens in the United States and Selected Cities

Area	Year	Median Rent (Dollars)	Severe Rent Burden (Percent)	Median Rent Burden (Percent)
United States	1999	580	21.4	28
New York City	1999	640	22.4	27
Chicago	1999	586	26.1	27
Los Angeles	1999	613	29.2	30
Boston	1998	750	30.6	30
San Francisco	1998	839	26.7	28
Philadelphia	1999	559	25.9	27
Houston	1998	527	20.5	24

Source: American Housing Survey.

the South Bronx, and Central Brooklyn (Bedford-Stuyvesant, Brownsville, and Bushwick) had median rents below $500 per month.

Perhaps surprisingly, New York does not have the highest average rent among all the cities we examined (Table 2). San Francisco had the highest median gross rent ($839) and Boston residents paid an average of $750 per month for rental housing. Los Angeles ($613), Chicago ($586), Philadelphia ($559), and Houston ($527) each had lower average rents than New York.

Despite rising housing costs, severe affordability problems declined in New York City in the late 1990s (Chart 8). According to the 1999 AHS, more than one in five New York renter households (22.4 percent) experienced a severe rent burden, defined as paying more than 50 percent of household income for rent and utilities.[4] This represents an improvement—it is more than 6 percent less than the proportion with severe rent burdens in 1996 (28.7 percent)— reflecting the fact that incomes rose faster than rents as a result of the economic expansion. However, it also means that more than 600,000 New Yorkers pay a staggering proportion of their income in rent.

This decline in severe rent burdens made the New York picture nearly comparable to the national picture. In 1999, 21.4 percent of renter households spent 50 percent or more of their income on rent nationwide, just 1 percent less than the figure for New York City. This national figure also represents a decrease of about 1 percent from the 1995 level of 22.3 percent.

Also surprisingly, all but one of the comparison cities had higher levels of severe rent burdens than New York. Houston,

Severe Rent Burdens
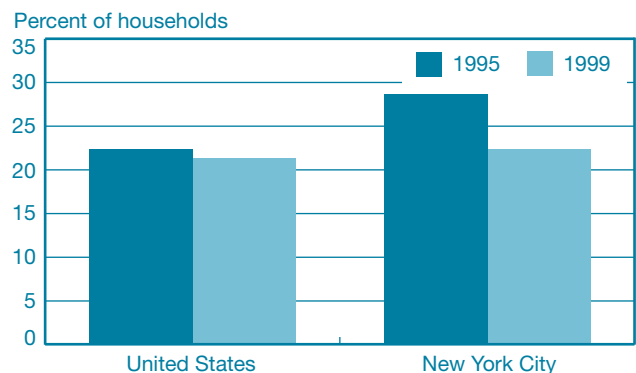
with 20.5 percent of households paying more than 50 percent of their income for rent, experienced lower levels than either New York City or the nation. The other comparison cities had greater proportions of households with severe rent burdens than New York. Boston had the highest level of severe rent burden (30.6 percent), followed by Los Angeles (30.0 percent), San Francisco (26.7 percent), Chicago (26.1 percent), and Philadelphia (25.9 percent).

According to the AHS data, the national median rent burden, defined as the median percentage of household income spent on rent and utilities, was 28 percent in 1999 (Table 2). Most of the cities we examined fall within 2 percent of this figure. The highest median percentage of income spent on rent is found in Boston and Los Angeles, where residents typically pay 30 percent of their income for rent. The median rent burden is substantially lower in Houston, only 24 percent; this may well be related to the low rents and high vacancy rates found in that city. In New York, the median rent burden was 27 percent.

High rent burdens mean different things to different households. A 50 percent rent-to-income ratio would be difficult for affluent families, but for them sufficient income would be available for essential expenses such as food, clothing, and medical care after paying for housing. In New York City, however, most households with severe rent burdens are not affluent. According to the 1999 HVS, about nine out of ten renters with severe rent burdens are low-income (80 percent of median) and 62 percent are below the poverty level.

The lower prevalence of severe rent burdens in New York City—compared with Boston, Chicago, Los Angeles, Philadelphia, and San Francisco—can be attributed, at least in part, to high levels of rent subsidies and rent regulation in the city. As shown in Table 3, data from the 1999 HVS and the New York City Housing Authority indicate that nearly three-quarters of all New York City renters either receive some form of rent subsidy or have their rents regulated.[5] This is more than three times the national rate of rent subsidy and/or regulation reported in the 1999 American Housing Survey. And it is the highest level of relief from market-rate rents found in any of the cities we examined. The only city that has similarly high rates of rent relief is San Francisco, where 67.6 percent of renters are protected from market rents through regulation or subsidy. In Boston and Los Angeles, about one-quarter of renters are protected from market rents. In Chicago, nearly one-fifth of renters receive protection or subsidy, and in Houston and Philadelphia, only about 13 percent of renters receive relief from market-rate rents.

TABLE 3
Rent Regulation and Subsidies in the United States and Selected Cities

Area	Year	Rent Regulation (Percent)	Public Housing (Percent)	Subsidized (Percent)	Total (Percent)
United States	1999	2.7	5.6	13.1	21.4
New York City[a]	1999	55.4	5.9	10.3	71.6
Chicago	1999	0.0	7.5	12.2	19.8
Los Angeles	1999	9.9	2.5	11.9	24.3
Boston	1998	0.7	13.0	12.1	25.8
San Francisco	1998	54.3	3.9	9.4	67.6
Philadelphia	1999	0.0	6.2	6.7	13.0
Houston	1998	0.0	2.1	11.0	13.1

Source: American Housing Survey.

[a]Sources: New York City Housing and Vacancy Survey; New York City Housing Authority.

4. HOUSING QUALITY

One of the nation's great achievements over the past century has been the improvement of housing quality. Housing quality improved so much that we actually had to change the previous definition of substandard housing used in 1940 (units lacking full plumbing) because virtually all housing now meets that standard. Data from the Housing and Vacancy Survey indicate that housing quality in New York City continued to improve between 1996 and 1999. According to the HVS, the proportion of units with severe maintenance deficiencies—defined as five or more of seven deficiency criteria—declined from 4.5 percent to 3.1 percent.[6] The pattern of housing-quality problems in New York City suggests that most of the units with multiple deficiencies are in low- and moderate-income neighborhoods. For example, Chart 9 shows that the proportion of units with five or more maintenance deficiencies is greatest in Harlem, the South Bronx, and Central Brooklyn. Similar patterns exist for serious housing code violations (Chart 10).

The American Housing Survey provides two other indicators of housing quality: the percent of units with a severe physical problem and the percent of units with a moderate physical problem. The specific physical deficiencies used to create the AHS measures vary somewhat from the HVS, but the

primary difference is that for the AHS indicators, housing units experiencing any of the criteria of physical problems are counted as having physical problems. The HVS maintenance deficiency measure we utilize requires that a unit have five or more problems simultaneously.

The AHS indicators of physical problems present a different picture of housing quality in New York City. As shown in Chart 11, the percent of housing units with serious physical problems actually increased from 6.1 percent in 1995 to

7.6 percent in 1999.[7] These figures are substantially higher than the incidence of severe physical problems nationwide, which decreased slightly from 2.1 percent in 1995 to 2.0 percent in 1999.

In fact, the AHS data indicate that New York City has the highest incidence of severe physical problems of the cities we examined (Table 4). San Francisco has the next highest rate, with 6.5 percent of units experiencing severe problems, followed by Los Angeles, with 5.0 percent. Houston has the

CHART 9

Percent of Housing Units with Five or More Maintenance Deficiencies: New York City Sub-Borough Areas, 1999
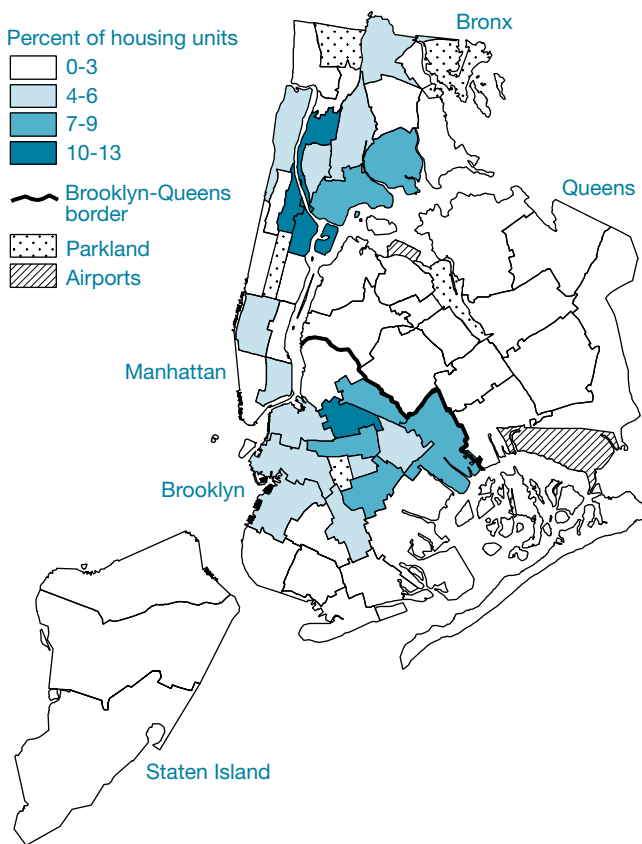
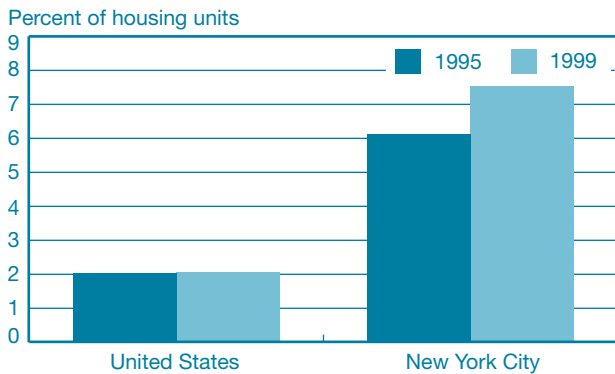Source: 1999 New York City Housing and Vacancy Survey.

CHART 10

Serious Housing Code Violations per 1,000 Rental Units: New York City Community Districts, 2000
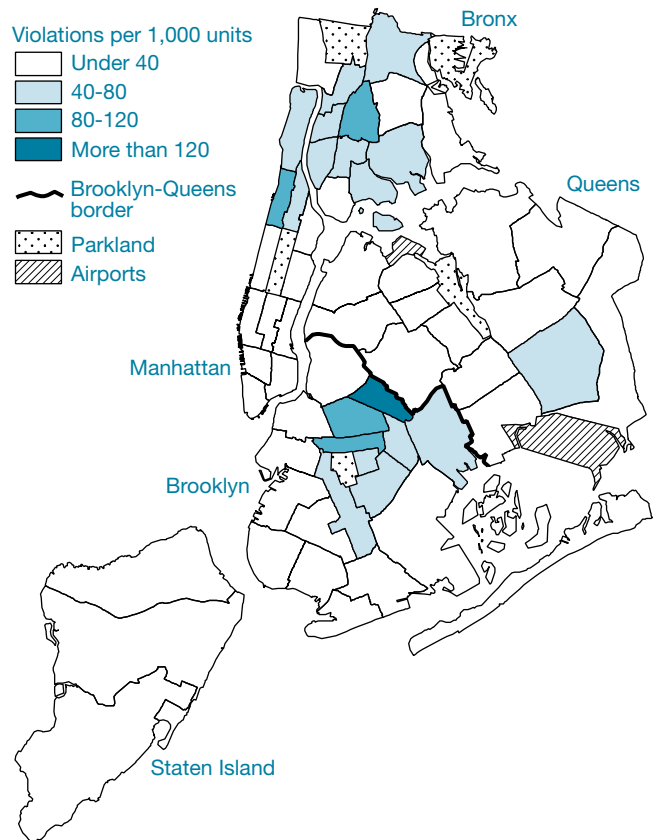
Source: New York City Department of Housing Preservation and Development.

CHART 11

Severe Physical Problems

Percent of housing units

lowest rate, 1.9 percent. The picture is very different, however, when moderate physical problems are examined.[8] New York actually has the lowest incidence of moderate physical problems (6.2 percent) of the seven cities. The highest rate of moderate problems is found in Houston (12.1 percent), followed by San Francisco, with 9.4 percent. This suggests that although there is a substantial core of lower quality housing in New York City, housing deficiencies are largely limited to this group of substandard housing units and are not widespread throughout the housing stock.

TABLE 4

Physical Problems of Housing Units in the United States and Selected Cities

Area	Year	Severe Problems (Percent)	Moderate Problems (Percent)	Units Built before 1930 (Percent)
United States	1999	2.0	4.7	13.6
New York City	1999	7.6	6.2	40.9
Chicago	1999	3.8	7.6	37.1
Los Angeles	1999	5.0	7.1	11.4
Boston	1998	2.5	7.1	52.0
San Francisco	1998	6.5	9.4	39.0
Philadelphia	1999	3.2	6.9	44.3
Houston	1998	1.9	12.1	3.2

Source: American Housing Survey.

The age of New York's housing stock is certainly one factor contributing to its higher rates of physical problems. In 1999, about 41 percent of all units in the city were built before 1930. This means that two out of every five housing units were seventy years old or more. Nationwide, only 13.6 percent of housing units were built before 1930. Only Boston (52.0 percent) and Philadelphia (44.3 percent) had a greater proportion of their housing stock built before 1930. By contrast, in Los Angeles and Houston, the proportions are 11.4 percent and 3.2 percent, respectively.

Another factor impacting the quality of New York's housing stock is the legacy of housing abandonment and disinvestment that plagued the city from the late 1960s through the 1970s. During this time of financial crisis and social unrest, many middle- and working-class households fled the city. From 1970 to 1980, the city lost more than 800,000 people—more than 10 percent of its population. Entire communities were devastated, and many landlords walked away from their buildings.

Over the past two decades, tremendous progress has been made in New York as a result of a strengthening economy combined with a variety of housing investment programs and anti-abandonment policies. The city took ownership of many abandoned buildings through *in rem* legal actions. A substantial proportion of these properties have been rehabilitated and returned to the private sector through the capital programs mentioned earlier. Many other properties that were never taken *in rem* have been rehabilitated or constructed. But a core of problem buildings in distressed neighborhoods still exists.

Two of the best indicators of fiscal distress and potential abandonment are long-term property tax delinquencies and high lien-to-value ratios. From 1996 to 2000, both the number and proportion of New York City properties with tax delinquencies persisting longer than one year fell substantially—from 9.5 percent to 3.5 percent (Chart 12). Similarly, tax delinquencies that constitute more than half of a property's market value also declined from 4.2 percent of all properties to 3.8 percent. Among the reasons for these declines in tax delinquency are the program of tax lien sales instituted by the city in the mid-1990s, the city's anti-abandonment policies, and the resurgence of the city's economy.

Nevertheless, despite these improvements, some neighborhoods still have extremely high rates of tax delinquency. For example, Chart 13 shows the high rates of tax delinquencies of one year or more that exist in the northern portion of

CHART 12
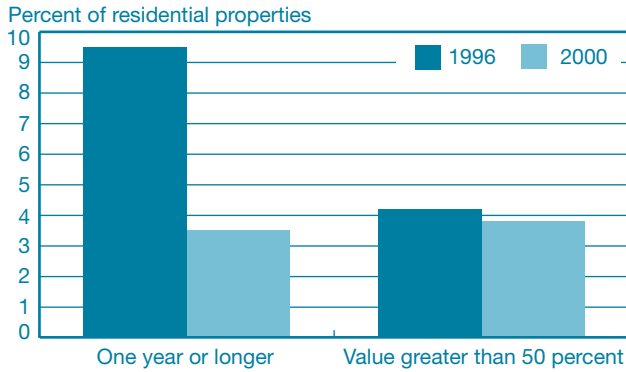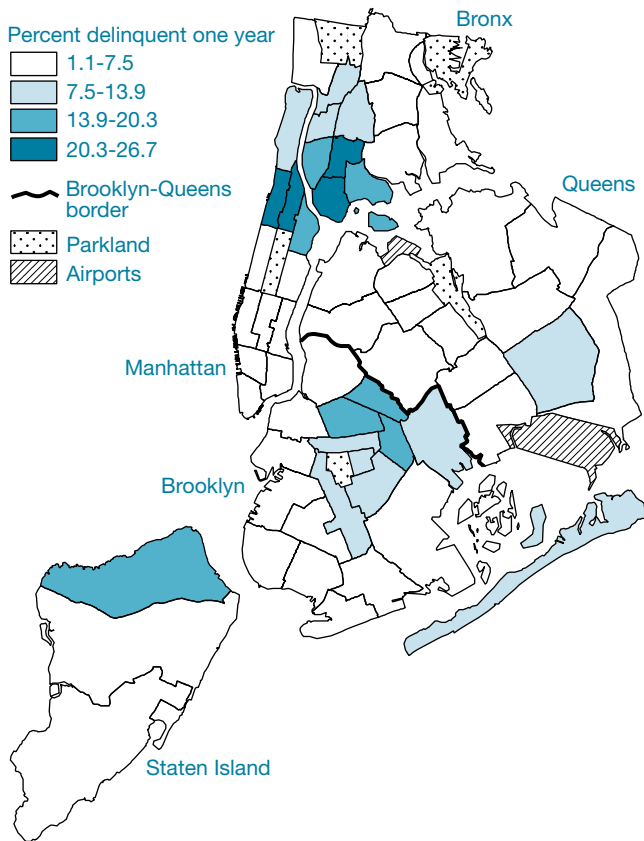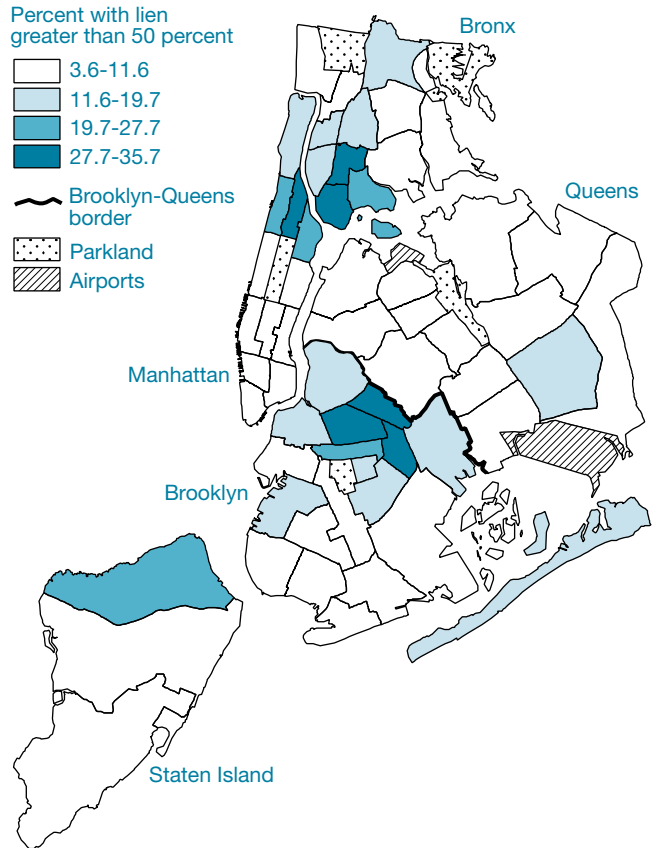## Property Tax Delinquencies in New York City

Percent of residential properties

Legend: 1996, 2000

Categories: One year or longer, Value greater than 50 percent

Staten Island, the South Bronx, Harlem, Morningside Heights in Manhattan, and Central Brooklyn. Similar patterns exist for delinquencies in excess of 50 percent of property value (Chart 14). This is a similar, though not identical, geographic pattern as was seen in the map of severe maintenance deficiencies. One implication is that neighborhoods such as northern Staten Island and Manhattan's Morningside Heights might be at risk of further disinvestment if the current problems with the fiscal health of their housing stock are not reversed.

CHART 13
Rental Properties with Tax Delinquencies of One Year or More: New York City Community Districts, 2000

Percent delinquent one year
- 1.1-7.5
- 7.5-13.9
- 13.9-20.3
- 20.3-26.7

Brooklyn-Queens border
Parkland
Airports

Bronx, Queens, Manhattan, Brooklyn, Staten Island

Source: New York City Department of Finance.

CHART 14
Rental Properties with Tax Delinquency Amounts Greater Than 50 Percent of Property Value: New York City Community Districts, 2000

Percent with lien greater than 50 percent
- 3.6-11.6
- 11.6-19.7
- 19.7-27.7
- 27.7-35.7

Brooklyn-Queens border
Parkland
Airports

Bronx, Queens, Manhattan, Brooklyn, Staten Island

Source: New York City Department of Finance.

5. Homeownership and Mortgage Finance

According to the Housing and Vacancy Survey, homeownership rates edged up slightly in New York City, from 30.0 percent in 1996 to 31.9 percent in 1999.[9] As shown in Chart 15, national homeownership rates also increased slightly, from 65.0 percent in 1995 to 66.9 percent in 1999. New York's homeownership rate remains less than half that of the nation as a whole, and New York has the lowest rate of homeownership among the cities we examined (Table 5). San Francisco (33.3 percent), Boston (33.7 percent), and Los Angeles (38.1 percent) also have low rates of homeownership; Chicago (45.4 percent) and Houston (46.3 percent) have somewhat higher homeownership rates; and Philadelphia's homeownership rate (61.9 percent) approaches that of the nation.

Nevertheless, housing investment, at least as reflected in home purchase loans, boomed in New York City in the second half of the 1990s. Between 1996 and 1999, the number of home purchase loan originations increased by 44 percent. This rise is much higher than the 4.9 percent increase in home purchase loans in the nation's metropolitan areas identified in the Joint Center for Housing Studies' "State of the Nation's Housing" report over the same period. Each borough in New York enjoyed significant increases, with Staten Island leading the way, followed by Manhattan and the Bronx.

In terms of the dollar amount of home purchase lending in New York, the increase was even greater, 77 percent. As Chart 16 illustrates, the total dollar amount of home purchase

CHART 15
Homeownership Rates
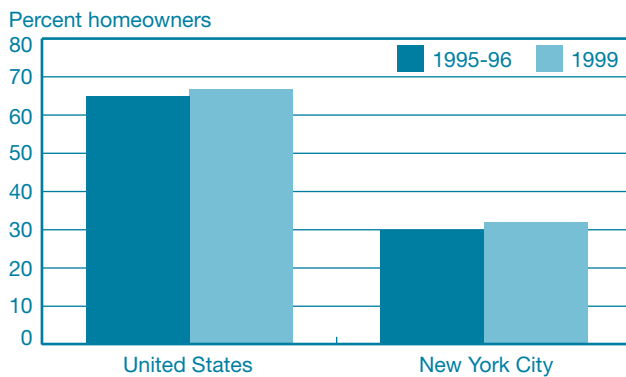
TABLE 5
Homeownership Rates in the United States and Selected Cities

Area	Year	Homeownership Rate (Percent)
United States	1999	66.9
New York City[a]	1999	31.9
Chicago	1999	45.4
Los Angeles	1999	38.1
Boston	1998	33.7
San Francisco	1998	33.3
Philadelphia	1999	61.9
Houston	1998	46.3

Source: American Housing Survey.

[a]Source: New York City Housing and Vacancy Survey.

CHART 16
Total Dollar Amount of Home Purchase Mortgage Loans: New York City Sub-Borough Areas, 1999
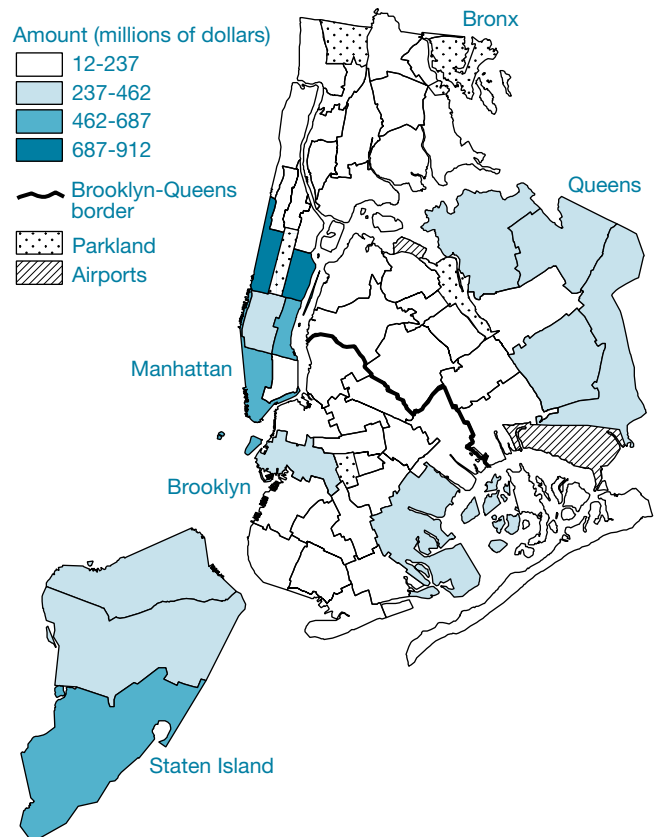
Source: Home Mortgage Disclosure Act.

mortgage loans was predictably greatest in Manhattan south of Ninety-Sixth Street, Staten Island, and parts of the more affluent sections of Queens and Brooklyn. Loan originations per 1,000 properties, however, were more evenly distributed across neighborhoods (Chart 17).

One possible problem area related to the increase in loan origination is predatory lending. Almost all of these loans are made by subprime lenders. Although the share of home purchase loans made by subprime lenders decreased from 1996 to 1999—from 7.2 percent to 3.8 percent—in some

neighborhoods in the city, as much as 25 percent of home purchase loans were made by subprime lenders in 1999. Again predictably, Chart 18 shows that the proportion of home purchase loans made by subprime lenders is much higher in many of the city's poorest areas. Even more pronounced patterns exist for subprime refinance loans (Chart 19). It is important to underscore, however, that not all subprime lending is undesirable. In many instances, poor families would not be able to access the credit market without a subprime lender.

CHART 17

Home Purchase Mortgage Loan Originations per 1,000 Homeowner Units: New York City Sub-Borough Areas, 1999
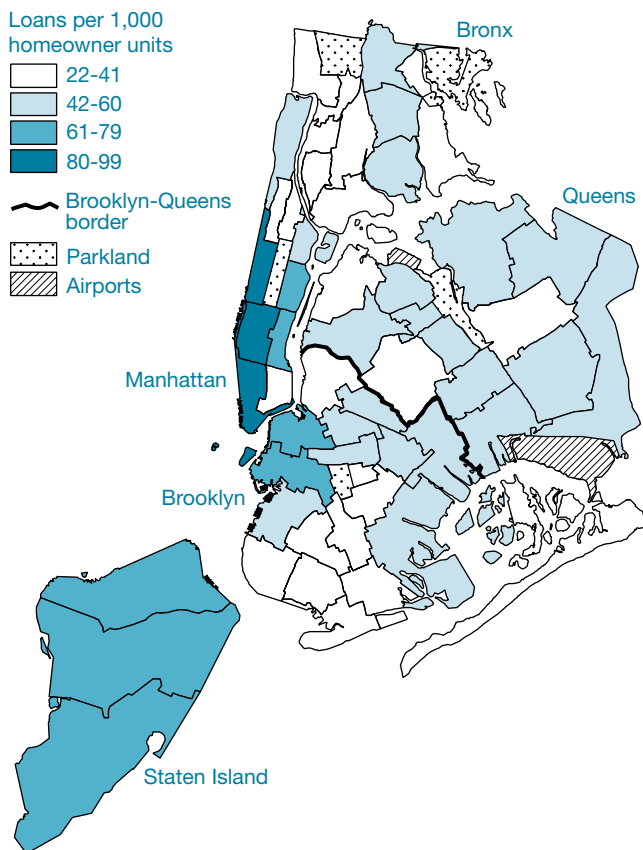
Source: Home Mortgage Disclosure Act.

CHART 18

Percent Subprime Home Purchase Mortgage Loan Originations: New York City Sub-Borough Areas, 1999
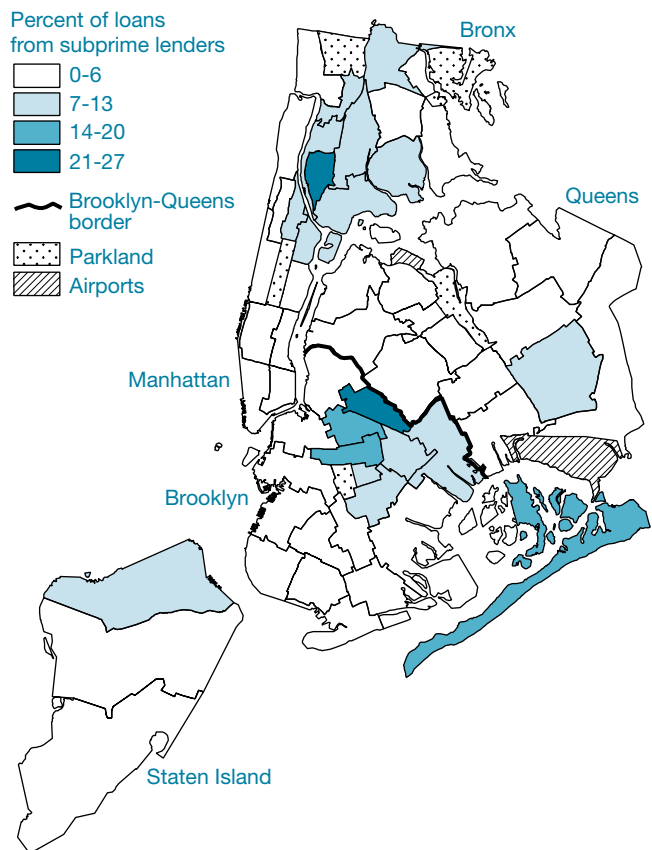
Source: Home Mortgage Disclosure Act.

Chart 19

Percent Subprime Refinance Mortgage Loan Originations: New York City Sub-Borough Areas, 1999

Percent of dollars
from subprime lenders

- 0.5-16.1
- 16.1-31.6
- 31.6-47.2
- 47.2-62.7

Brooklyn-Queens border

Parkland

Airports

Bronx

Queens

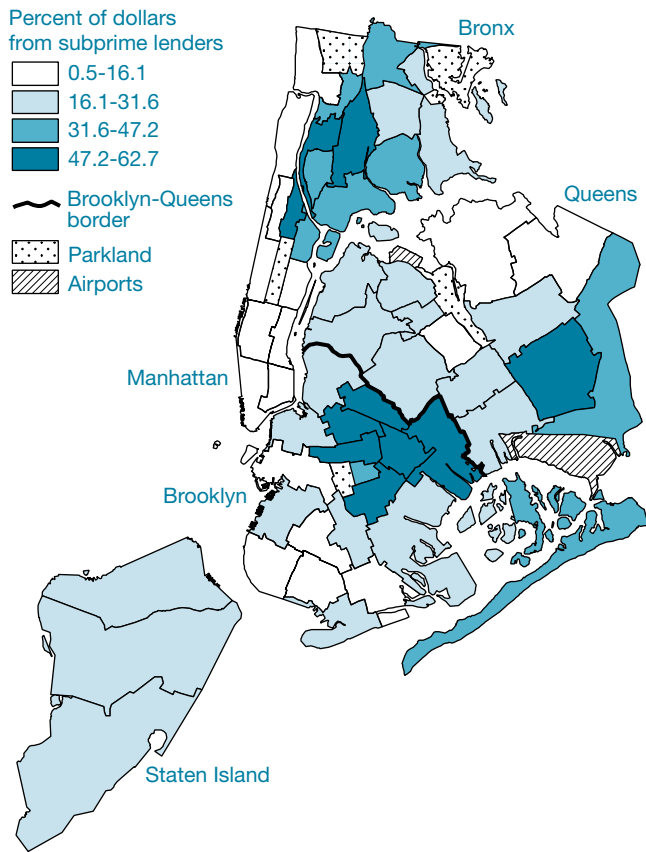Manhattan

Brooklyn

Staten Island

Source: Home Mortgage Disclosure Act.

6. Conclusion

Recent data suggest that although substantial numbers of New Yorkers experience rather severe housing problems, the intensity of these problems did not increase in the late 1990s. Indeed, over the last half of the 1990s, as the city's economy boomed and its massive investment in housing bore fruit, levels of severe housing cost burdens and substandard housing moderated slightly. Similarly, homeownership rates crept up, mortgage capital flowed more freely, and tax delinquency declined.

Somewhat surprisingly, data from the American Housing Survey indicate that the housing situation of New Yorkers is better in some respects than that of residents of several other large cities. Although substandard housing is more prevalent in New York, the rate of severe affordability problems is somewhat lower. At least part of the reason for New York's relatively favorable comparative performance on affordability is the fact that a large proportion of the housing stock is either rent-regulated or subsidized. Furthermore, even though rates of severe affordability problems among renters may be somewhat lower in New York City than in other large cities, these other cities typically have much higher rates of owner-occupancy. Therefore, the absolute number and proportion of all households in the city with affordability problems are likely to be as great or greater in New York than in these cities.

Most of the data examined in this paper were collected in 1999 or 2000. New York's financial picture is much different today. The national recession hit the New York area shortly before September 11. Since then, the city has lost jobs, businesses, and tax revenues. It will be a substantial challenge for New York City to maintain the gains of the 1990s. Things will be especially challenging for low-income New Yorkers, who are more dependent on government subsidies, are more likely to have lost jobs or wages after September 11, and may face a loss of income subsidies as a result of the five-year time limits enacted in the Welfare Reform Act of 1996. The strength and speed of the hoped-for economic recovery—combined with the ability of local, state, and federal governments to find ways to provide support to the neediest New Yorkers—will determine whether New York City is able to maintain its hard-won improvements, or whether it will reexperience a downward cycle of housing abandonment and neighborhood degradation.

Endnotes

1. The report is available at <http://www.law.nyu.edu/ realestatecenter>.

2. In some instances, HVS data for New York City are compared with indicators from the AHS. When these comparisons are made, care is taken to utilize similar computational methods so that the indicators are comparable.

3. Care should be taken when interpreting data from the HVS for sub-borough areas. For some indicators, small sample sizes render the estimates statistically unreliable.

4. Calculations from the HVS, as reported in our "State of New York City's Housing and Neighborhoods 2001" report, resulted in a severe rent burden of 24.3 percent in 1999, down slightly from 25.3 percent in 1996. The differences between the HVS and AHS are due to differences in the measurement of rent used in the calculations (gross rent in the AHS and contract rent in the HVS) and differences in the measurement of income. When calculating rent burdens, the AHS uses family income as reported in a single question; the HVS uses household income derived from a series of income questions detailed by source.

5. Data from the American Housing Survey yield significantly lower numbers of rent-regulated housing units, 21.8 percent instead of the 55.4 percent reported in the HVS. The AHS probably underestimates the number of households whose rent is kept stable through regulation. This discrepancy may result from the fact that the AHS uses the wording "rent control" to describe rent-regulated apartments. In New York City, the term rent control refers to a strict form of rent regulation that was phased-out beginning in the 1970s and now covers about 3 percent of rental units. However, many New York apartments, 51.9 percent, are covered by the city's rent stabilization law, under which allowable rent increases are determined annually by a rent guidelines board.

6. The seven criteria of maintenance deficiencies in the HVS are: heating equipment breakdowns; additional heat required; rodent infestation; cracks/holes in walls, ceilings, or floors; broken plaster or peeling paint larger than 8 ½ by 11 inches; toilet breakdowns; or water leaking from outside the unit.

7. The indicators of severe physical problems in the AHS are: plumbing (lacking hot or cold piped water or lacking both bathtub and shower, all inside the structure); heating (having been uncomfortably cold last winter because the heating equipment broke down, and it broke down at least three times last winter for at least six hours each time); electric (having no electricity, or all of the following three problems: exposed wiring, a room with no working wall outlet, and three blown fuses or tripped circuit breakers in the last ninety days); hallways (having all of the following four problems in the public areas: no working light fixtures, loose or missing steps, loose or missing railings, and no working elevator); and upkeep (having any five of the following six problems: water leaks from the outside, leaks from inside the structure, holes in the floors, holes or open cracks in the walls or floors, more than 8 by 11 inches of peeling paint or broken plaster, or signs of rats in the last ninety days).

8. The AHS definition of moderate physical problems is having any of the following five problems, but none of the severe problems: plumbing (on at least one occasion during the last three months, all the flush toilets were broken down for at least six hours); heating (having unvented gas, oil, or kerosene heaters as the primary heating equipment); kitchen (lacking a kitchen sink, refrigerator, or cooking equipment inside the structure for the exclusive use of the unit); hallways (having any three of the four problems listed in endnote 7); and upkeep (having any three or four of the six problems listed in endnote 7).

9. AHS data for New York City indicate a slight decline in homeownership rates, from 29.8 percent in 1995 to 29.3 percent in 1999. There is no clear reason for the difference in HVS and AHS results. We rely on homeownership data from the HVS because of its substantially larger sample size.

Edward L. Glaeser and Joseph Gyourko

The Impact of Building Restrictions on Housing Affordability

1. Introduction

A chorus of voices appears to proclaim unanimously that America is in the midst of an affordable housing crisis. Housing and Urban Development Secretary Andrew Cuomo asserted the existence of such a crisis in his introduction to a March 2000 report that documents a continuing and growing housing affordability crisis throughout the nation. Indeed, Secretary Cuomo regularly justified aggressive requests for funding by pointing to this crisis. Advocacy groups for the poor such as the Housing Assistance Council pepper their documents with assertions that "the federal government should commit to a comprehensive strategy for combating the housing affordability crisis in rural America." Trade associations such as the National Association of Home Builders decree that "America is facing a silent housing affordability crisis." The National Association of Realtors agrees: "there is a continuing, growing crisis in housing affordability and homeownership that is gripping our nation."

Does America actually face a housing affordability crisis? Are home prices high throughout the United States, or are there just a few places where housing prices become extreme? In those places that are expensive, why are home prices so high? Is subsidized construction a sensible approach to solving this problem—relative to other, deeper reforms? This paper examines whether America actually does face an affordable housing crisis, and why housing is expensive in high-price areas.

In general, housing advocates have confused the role of housing prices with the role of poverty. Both housing costs and poverty matter for the well-being of American citizens, but only one of these factors is a housing issue per se. Certainly, the country should pursue sensible antipoverty policies, but if housing is not unusually expensive, these policies should not be put forward as a response to a housing crisis.[1] To us, a housing affordability crisis means that housing is expensive relative to its fundamental costs of production—not that people are poor. Therefore, we will focus entirely on housing prices, not on the distribution of income.

A second key concept in thinking about a housing affordability crisis is the relevant benchmark for housing costs. Affordability advocates often argue for the ability to pay (for example, some percentage of income) as a relevant benchmark, but this again confuses poverty with housing prices. We believe that a more sensible benchmark is the physical construction costs of housing. If we believe that there is a housing crisis, then presumably the correct housing response would be to build more housing. Yet the social cost of that new housing can never be lower than the cost of construction. For there to be a "social" gain from new construction, housing must be priced appreciably above the cost of new construction.

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This argument is not meant to deny that the existence of poor people who cannot afford housing is a major social problem. However, if housing does not cost appreciably more than new construction, then it is hard to understand why policies oriented toward housing supply would be the right response to this problem. Hence, we focus on the gap between housing costs and construction costs.

To look at the housing affordability issue, we use the R.S. Means Company's data on construction costs in various U.S. metropolitan areas (hereafter, the Means data). These data give us information (based on the surveying of construction companies) on the costs of building homes with various characteristics. As a basic number, the Means data suggest that construction costs for the lowest of the four quality types they track (termed an economy home) are about $60 per square foot. Construction costs for the next highest quality type (termed an average home) are about $75 per square foot. Ultimately, we compare this information with data on housing prices.

To get a better sense of the distribution of housing prices throughout the United States, we turn to the American Housing Survey (AHS), but for a quick look at the affordability issue, it is useful to examine the 2000 U.S. census. The census indicates that the self-reported median home value is $120,000.[2] Sixty-three percent of single-family detached homes in America are valued at less than $150,000. Seventy-eight percent of these homes are valued at less than $200,000. The American Housing Survey reports that the median size of a detached owned home is 1,704 square feet. The construction costs of an average home imply that this home should cost about $127,500 to build, with a lower quality economy home costing $102,000 to construct.[3]

Together, these numbers provide us with the first important lesson from housing markets. The majority of homes in this country are priced—even in the midst of a so-called housing affordability crisis—close to construction costs. The value of land generally seems modest, probably 20 percent or less of the value of the house. To us, this means that America as a whole may have a poverty crisis, but its housing prices are basically being tied down by the cost of new construction. Unless state intervention can miraculously produce houses at far less than normal construction costs, such programs are unlikely to reduce the distribution of housing costs in America radically.

If housing costs in the United States are so low, why the horror stories? What about the tear-downs going for millions in Palo Alto? What about the multi-million-dollar apartments in Manhattan? The American Housing Survey allows us to see the distribution of house prices across the country. In addition, this source improves on the census by providing much better information on housing characteristics. Thus, we can better compare the self-reported value of a house with the cost of building a home from scratch. When combined with the Means data, the American Housing Survey allows us to examine housing prices in a wide range of cities as well as the gap between these prices and new construction costs.

These data suggest that America can be divided into three broad areas. First, there are a number of places where housing is priced far below the cost of new construction. These areas are primarily central cities in the Northeast and the Midwest, such as Detroit and Philadelphia. In these places, which were the subject of our previous work (Glaeser and Gyourko 2001), there is almost no new growth. In general, these places had significant housing price appreciation over the 1990s, but values are still below construction costs.

In the second category of housing, in large areas of the country, costs are quite close to the cost of new construction. These places generally have robust growth on the edges of cities, where land is quite cheap. These areas represent the bulk of American housing, although they seem to be somewhat underrepresented in the AHS.

Finally, there is a third category of cities and suburbs where the price of homes is much higher than the cost of new construction; Manhattan and Palo Alto are two examples. Indeed, many of these places are in California, but the 1990s saw an increase in such areas in the Northeast and South as well. Although there are a number of such places with extremely expensive homes, they do not represent the norm for America. Both poor and nonpoor people suffer from higher housing costs in such areas.

In this paper, after first surveying housing costs in the United States, we examine why the expensive places have such high housing costs. High-cost places generally have either very attractive local amenities (great weather or good schools) or strong labor markets. The Rosen (1979) and Roback (1982) framework has proved useful in such studies, and one of us (Gyourko and Tracy 1991) has written on this topic.

It is noteworthy that we do not focus here on the housing demand side of the cost equilibrium. Instead, we focus on the role of housing supply. What is it that creates places where the cost of housing is so much higher than the physical construction costs? We offer two basic views. First, there is the classic economics approach, which argues that houses are expensive because land is expensive. According to this view, there is a great deal of demand for certain areas, and land, by its very nature, is limited in supply. As such, the price of housing must rise. Traditional models, such as the classic Alonso-Muth-Mills framework, take this view.

Our alternative view is that homes are expensive in high-cost areas primarily because of government regulation, that is, zoning and other restrictions on building. According to this view, housing is expensive because of artificial limits on construction created by the regulation of new housing. It argues that there is plenty of land in high-cost areas, and in principle new construction might be able to push the cost of houses down to physical construction costs. This is not to imply that high prices exist in areas with weak demand fundamentals. A strong demand, because of attractive amenities or a thriving labor market, is essential. However, this hypothesis implies that land prices are high, not due to some intrinsic scarcity, but because of man-made regulations. Hence, the barriers to building create a potentially massive wedge between prices and building costs.

We present three pieces of evidence that attempt to differentiate between these two hypotheses. First, we look at two different ways of valuing land. The first, classic way, is to use a housing hedonic and compare the price of comparable homes situated on lots of different sizes. With these comparisons, we are, in principle, able to back out the value that consumers place on larger lots. Our second methodology is to subtract the construction costs from the home value and divide by the number of acres. This gives us another per-acre value of land that is implied by the home price. The first, or hedonic, methodology can be thought of as giving the intensive value of land—that is, how much land is worth on the margin to homeowners. The second methodology gives the extensive margin—or how much it is worth to have a plot of land with a house on it.

The two hypotheses outlined above offer radically different predictions about the relationship of these two values. The neoclassical approach suggests that land should be valued the same using either methodology. After all, if a homeowner does not value the land on his plot very much, he would subdivide and sell it to someone else. The regulation approach suggests that the differences can be quite large. Empirically, we find that the hedonic estimates produce land values that often are about 10 percent of the values calculated with the extensive methodology. We believe that this is our best evidence for the critical role that building limitations may play in creating high housing costs.

Our second empirical approach is to look at crowding in high-cost areas. The neoclassical approach tells us that if these are areas with a high cost of land, then individuals should be consuming less land. The regulation approach argues that highly regulated areas will have large lots and high prices. Our evidence suggests that there is little connection across areas between high prices and density. This again is consistent with a critical role for regulation.

Our third approach is to correlate measures of regulation with the value of housing prices. This approach is somewhat problematic because high values of land may themselves create regulation. Nonetheless, we find a robust connection between high prices and regulation. Almost all of the very high-cost areas are extremely regulated—even though they have fairly reasonable density levels. Again, we interpret this as evidence of the importance of regulation.

As a whole, our paper concludes that America does not uniformly face a housing affordability crisis. In the majority of places, land costs are low (or at least reasonable) and housing prices are close to (or below) the costs of new construction. In the places where housing is quite expensive, building restrictions appear to have created these high prices.

One implication of this analysis is that the affordable housing debate should be broadened to encompass zoning reform, not just public or subsidized construction programs. Although poor households almost certainly are not consuming the typical unit in areas with extremely high prices, we suspect that most filtering models of housing markets would show that they too would benefit from an increased focus on land-use constraints by affordability advocates.

That said, we have done nothing to assess the possible benefits of zoning (well discussed by Fischel [1992], for example). So we cannot suggest that zoning should be eliminated. However, we believe that the evidence suggests that zoning is responsible for high housing costs, which means that if we are thinking about lowering housing prices, we should begin with reforming the barriers to new construction in the private sector.

2. Housing Prices in the United States

We start with an analysis of housing prices across the United States. This work follows the methodology of Glaeser and Gyourko (2001). In this paper, we use the American Housing Survey and the U.S. census to gather data on housing characteristics and values; we use the R.S. Means data for construction costs. We then create measures relating home prices to construction costs.

R.S. Means monitors construction costs in numerous American and Canadian cities. The Means Company reports local construction costs per square foot of living area. Its data

on construction costs include material costs, labor costs, and equipment costs for four different quality types of single-unit residences. No land costs are included.[4]

The Means data contain information on four quality types of homes—economy, average, custom, and luxury. The data are broken down further by the size of living area (ranging from 600 to 3,200 square feet), the number of stories in the unit, and a few other differentiators. We focus on costs for a one-story, economy house with an unfinished basement, with the mean cost associated with four possible types of siding and building frame, and with small (less than 1,550 square feet), medium (1,550 to 1,850 square feet), or large (1,850 to 2,500 square feet) living areas. Generally, our choices reflect low to modest construction costs. This strategy will tend to overestimate the true gap between housing prices and construction costs. If the relevant benchmark is an average-quality unit, not an economy-quality unit, construction costs should generally be increased by about 20 percent.

The housing price data used in this paper to create the relationship between home prices and construction costs come from the American Housing Survey. We focus on observations of single-unit residences that are owner-occupied and exclude condominiums and cooperative units in buildings with multiple units, even if they are owned.

Excluding apartments simplifies our analysis, but in some ways the connection between construction costs and home prices is easier with apartments. In general, the marginal construction cost of an apartment is the price of building up. For example, other data from R.S. Means show that the price per square foot of building in a typical high-rise of from eight to twenty-four stories was nearly $110 per square foot in New York City in 1999.[5] This implies that the purely physical costs of construction for a new 1,500-square-foot unit in New York City are about $166,500. Anyone familiar with the New York housing market knows that a large number of Manhattan apartments trade at many multiples of this amount.

Because house price will be compared with construction costs, and the latter are reported on a square-foot basis, the house price data must be put in similar form. This is straightforward for the AHS, which contains the square footage of living areas. For every single unit reported in the 1999 or 1989 AHS, we can then compute the ratio of house value to construction costs (as long as it is in an area tracked in the Means data).[6] From this, we can calculate the distribution of homes priced above and below construction costs and can do so for nearly forty cities in both 1989 and 1999. We look at two measures: the first is the share of housing in the area that costs at least 40 percent more than new construction. These are the homes in the area where land is actually a significant share of

new construction costs. If the appropriate benchmark is an economy home, then for these homes land is about 40 percent or more of the value. If the appropriate benchmark is an average home, then for these homes land is approximately 20 percent of the value of the home. Our view is that homes below this cutoff are sitting on relatively cheap land. We also calculate the share of homes with prices that are more than 10 percent below the cost of new construction.

Table 1 shows the distribution of homes—relative to construction costs—for the nation as a whole and for the four main census regions. These data highlight the point that at least half of the nation's housing is less than 40 percent more expensive than economy-quality home construction costs, or no more than 20 percent more expensive than average-quality home construction costs. They also suggest that a large share of the nation's housing has its price determined roughly by the physical costs of new construction, as most of the housing value is within 40 percent of physical construction costs. That said, the regional breakdowns reported in Table 1 emphasize that much land in Western cities looks to be relatively expensive.

Charts 1 and 2 give an overall impression of the underlying data. In Chart 1, for central cities, we have graphed the share of homes with prices that are more than 40 percent above construction costs in the 1999 American Housing Survey on the share of comparable homes in the 1989 AHS. The straight line in the chart is the 45-degree line. In Chart 2, we have repeated this procedure for the suburban parts of the metropolitan areas.

TABLE 1

Distribution of Single-Family House Prices Relative to Construction Costs
American Housing Survey Data: 1989 and 1999, Central-City Observations

	1989		1999	
	Fraction of Units Valued below 90 Percent of Construction Costs	Fraction of Units Valued above 140 Percent of Construction Costs	Fraction of Units Valued below 90 Percent of Construction Costs	Fraction of Units Valued above 140 Percent of Construction Costs
Nation	0.17	0.46	0.17	0.50
Midwest	0.41	0.14	0.30	0.27
Northeast	0.12	0.58	0.37	0.34
South	0.11	0.50	0.13	0.46
West	0.05	0.69	0.04	0.77

Source: Authors' calculations.

Chart 1 makes two major points. First, there is a great deal of permanence in these measures. The correlation coefficient between the 1989 and 1999 measures is 82 percent. The average of this variable across central cities was 47.8 percent in 1989 and 50.2 percent in 1999, so it does not look like the 1990s were a watershed in terms of housing price changes. Second, there is a great deal of heterogeneity across places. A number of places—primarily in California—have almost no homes that cost less

than 1.4 times construction costs. However, in a number of places, almost all of the homes cost less than this benchmark.

Chart 2 makes similar points. The correlation between the 1989 and 1999 measures is lower, but remains high at 0.70. There is also heterogeneity across space in suburban areas, but in general these places are more likely to have land values that are substantially higher than construction costs. The unweighted mean across the thirty-seven suburban areas was

House Prices/Construction Costs over Time
Central Cities
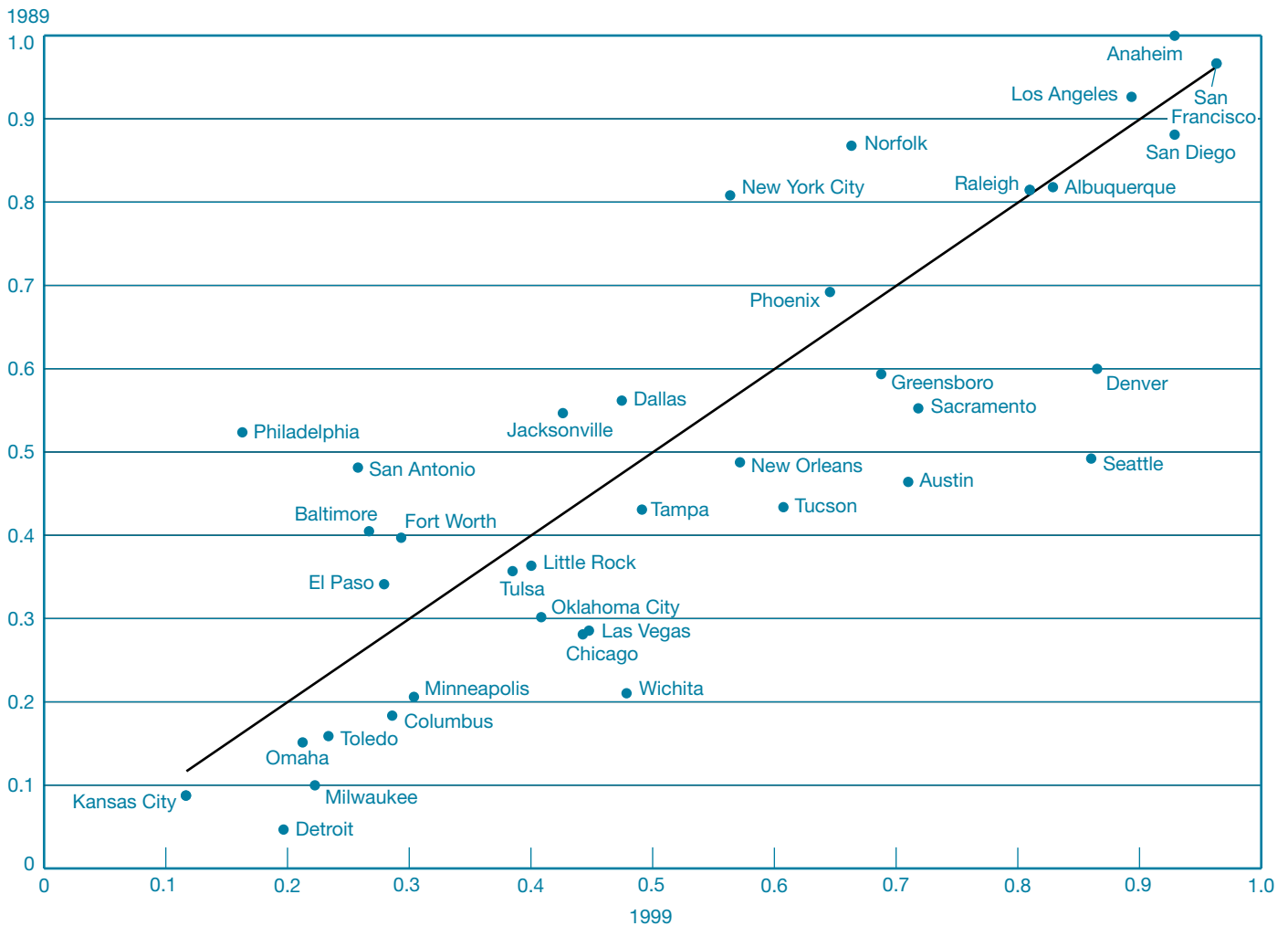
Note: The x-axis (y-axis) denotes the share of homes in central cities with prices that are more than 40 percent above construction costs in the 1999 (1989) American Housing Survey.

61 percent in 1989 and 63 percent in 1999. We suspect that one reason for the higher fractions of expensive housing is that suburban homes are newer and are likely to be of high quality. A second reason is that suburban homes have more land and suburban land is more expensive.

The data by local area are shown in Tables 2 and 3. These tables also report the share of the housing stock that is priced at least 10 percent below construction costs. Across the United States, there are many areas with extremely cheap housing. However, in this sample, only Philadelphia and Detroit had extremely large values of this measure in 1999.[7] We should note that our previous work using the 1990 census suggests that there is a greater amount of cheaper housing than is indicated by the AHS. Our suspicion is that the census is more representative, but we leave further examination of these discrepancies to future work.

CHART 2

House Prices/Construction Costs over Time
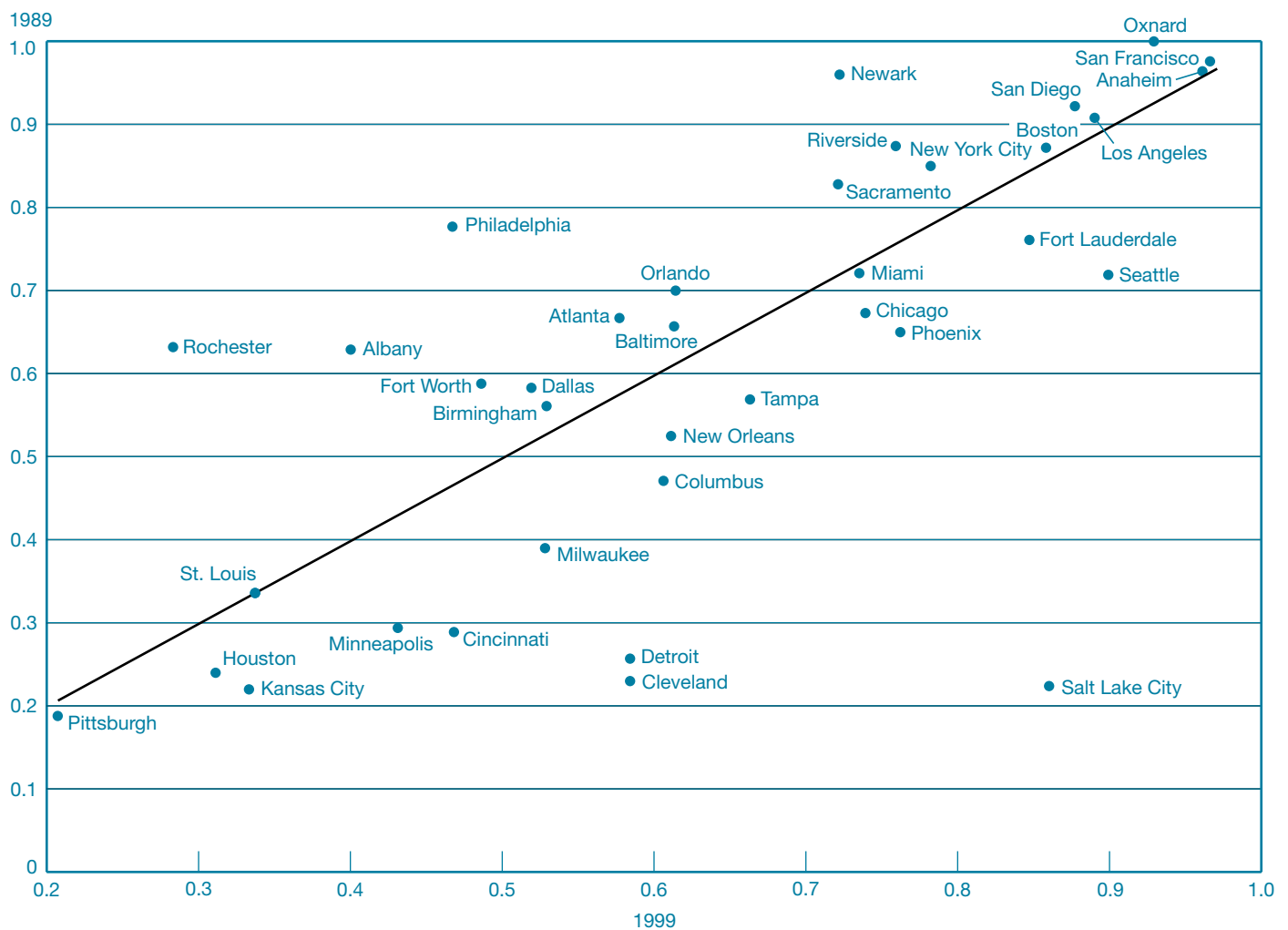### Suburban Areas

Note: The x-axis (y-axis) denotes the share of homes in suburban areas with prices that are more than 40 percent above construction costs in the 1999 (1989) American Housing Survey.

Distribution of House Prices/Construction Costs
City Areas, 1989 and 1999

City	1989 Fraction of Units Valued below 90 Percent of Construction Costs	1989 Fraction of Units Valued above 140 Percent of Construction Costs	1999 Fraction of Units Valued below 90 Percent of Construction Costs	1999 Fraction of Units Valued above 140 Percent of Construction Costs
Albuquerque	0.02	0.82	0.03	0.83
Anaheim	0.00	1.00	0.00	0.93
Austin	0.00	0.46	0.06	0.71
Baltimore	0.18	0.41	0.30	0.27
Chicago	0.20	0.28	0.16	0.44
Columbus	0.33	0.18	0.12	0.29
Dallas	0.06	0.56	0.13	0.47
Denver	0.04	0.60	0.08	0.86
Detroit	0.85	0.05	0.54	0.20
El Paso	0.05	0.34	0.02	0.28
Fort Worth	0.12	0.40	0.26	0.29
Greensboro	0.13	0.59	0.00	0.69
Houston	0.25	0.40	0.25	0.27
Indianapolis	0.25	0.22	0.24	0.22
Jacksonville	0.08	0.55	0.11	0.43
Kansas City	0.33	0.09	0.40	0.12
Las Vegas	0.00	0.29	0.03	0.45
Little Rock	0.09	0.36	0.08	0.40
Los Angeles	0.02	0.93	0.04	0.89
Milwaukee	0.32	0.10	0.27	0.22
Minneapolis	0.22	0.21	0.20	0.30
Nashville-Davidson	0.02	0.69	0.05	0.56
New Orleans	0.02	0.49	0.03	0.57
New York City	0.04	0.81	0.11	0.56
Norfolk	0.01	0.87	0.02	0.66
Oklahoma City	0.13	0.30	0.16	0.41
Omaha	0.21	0.15	0.30	0.21
Philadelphia	0.10	0.52	0.60	0.16
Phoenix	0.02	0.69	0.05	0.65
Raleigh	0.06	0.81	0.02	0.81
Sacramento	0.00	0.55	0.03	0.72
San Antonio	0.12	0.48	0.30	0.26
San Diego	0.07	0.88	0.03	0.93
San Francisco	0.00	0.97	0.04	0.96
Seattle	0.06	0.49	0.02	0.86
Tampa	0.09	0.43	0.13	0.49
Toledo	0.27	0.16	0.40	0.23
Tucson	0.06	0.43	0.04	0.61
Tulsa	0.07	0.36	0.08	0.38
Wichita	0.18	0.21	0.13	0.48

Distribution of House Prices/Construction Costs
Suburban Areas, 1989 and 1999

City	1989 Fraction of Units Valued below 90 Percent of Construction Costs	1989 Fraction of Units Valued above 140 Percent of Construction Costs	1999 Fraction of Units Valued below 90 Percent of Construction Costs	1999 Fraction of Units Valued above 140 Percent of Construction Costs
Albany	0.06	0.63	0.00	0.40
Anaheim	0.02	0.96	0.03	0.96
Atlanta	0.03	0.67	0.06	0.58
Baltimore	0.05	0.66	0.01	0.61
Birmingham	0.10	0.56	0.12	0.53
Boston	0.01	0.87	0.02	0.86
Chicago	0.06	0.67	0.05	0.74
Cincinnati	0.10	0.29	0.10	0.47
Cleveland	0.15	0.23	0.05	0.58
Columbus	0.12	0.47	0.03	0.61
Dallas	0.03	0.58	0.06	0.52
Detroit	0.24	0.26	0.08	0.58
Fort Lauderdale	0.00	0.76	0.00	0.85
Fort Worth	0.09	0.59	0.09	0.49
Houston	0.23	0.24	0.08	0.31
Kansas City	0.15	0.22	0.05	0.33
Los Angeles	0.04	0.91	0.04	0.89
Miami	0.05	0.72	0.00	0.73
Milwaukee	0.05	0.39	0.08	0.53
Minneapolis	0.08	0.29	0.05	0.43
Newark	0.01	0.96	0.01	0.72
New Orleans	0.10	0.53	0.06	0.61
New York City	0.03	0.85	0.09	0.78
Orlando	0.03	0.70	0.04	0.61
Oxnard	0.00	1.00	0.04	0.93
Philadelphia	0.03	0.78	0.11	0.47
Phoenix	0.02	0.65	0.00	0.76
Pittsburgh	0.23	0.19	0.25	0.21
Riverside	0.05	0.87	0.02	0.76
Rochester	0.01	0.63	0.09	0.28
Sacramento	0.03	0.83	0.05	0.72
Salt Lake City	0.10	0.22	0.02	0.86
San Diego	0.04	0.92	0.05	0.88
San Francisco	0.01	0.98	0.02	0.97
Seattle	0.02	0.72	0.01	0.90
St. Louis	0.11	0.34	0.21	0.34
Tampa	0.03	0.57	0.05	0.66

Our focus here is not on the cheap areas, however, but on the expensive ones. Moreover, we believe that these data confirm that there are some areas of the country that do indeed have a dearth of affordable housing. Still, for much of the country, prices are determined by new construction costs. As we discussed, this means that there is not an affordable housing crisis in such areas. The problem probably lies in the labor market, not the land market. We now consider why home prices are high relative to construction costs in the areas that are expensive.

3. Discussion: Demand for Land versus Zoning

Housing prices are determined by both demand and supply concerns. High housing prices must reflect high consumer demand for a particular area. However, they must also reflect some sort of restriction on supply. Data from sources such as Means suggest that physical houses can be supplied almost perfectly elastically. As such, the limits on housing supply must come from the land component of housing. The usual urban economics view of housing markets suggests that the restriction on housing supply is the availability of land. Because land is ultimately inelastically supplied, this naturally creates a limit on the supply of new housing at construction costs. An alternative view is that land itself is fairly abundant, but zoning authorities make new construction extremely costly. These costs can take the form of classic impact fees or Byzantine approval processes that slow or put up costly hurdles to construction. Obviously, there could be some truth to both views. In this section, we provide an analytical framework for our attempts to distinguish empirically between the two views of expensive land: intrinsic scarcity versus zoning. Section 4 then examines a variety of data to determine if the weight of the evidence more strongly supports one view over the other.

As noted, we have decided to ignore the housing demand component of the housing prices. Two reasons underpin this decision. First, housing demand has been studied much more extensively than housing supply. A distinguished literature, including Alonso (1964), Muth (1969), Rosen (1979), and Roback (1982), has considered the determinants of housing demand. Labor market demand and consumption amenities, such as weather and schools, are both important causes of particular demand for some areas. We have little to add to these findings. Second, policy responses to housing prices are unlikely to change housing demand. Increasing supply is a much more natural policy response to high housing prices than is reducing demand.

To clarify the issues, let us consider a jurisdiction with a supply of land equal to A. Assume that the construction cost for a home is K. Here we are not interested in the margin of interior space. The free market price of land equals p. We represent zoning and other building restrictions with a tax T on new construction. In principle, zoning could also work by limiting the total number of homes in the area to a fixed number or, equivalently, by constraining lot size to be greater than a given amount. As we assume homogenous residents, a minimum lot size and a constraint on the number of residents will be equivalent. Also, as we are not interested in the incidence of the policy, a tax and a quantity limit will yield the same outcomes.

As such, the supply price of building a house with L units of land will be $K + T + pL$. We will not generally directly observe either p or T. The sales price of the home will be denoted $P(L)$, where $P(L)$ refers to the price of a home with L units of land. In equilibrium, $P(L)$ must equal $K + T + pL$ so $P'(L) = p$.

Our primary interest is in the relevant magnitudes of pL and T in creating expensive housing. We do not directly observe either p or T, but we do observe $P(L)$ and K. As such, we can compute $P(L) - K$, which gives us an estimate of $T + pL$. Using standard hedonic analysis, we can estimate $P'(L)$, which is the amount the housing price increases within a given neighborhood as the amount of land rises. By estimating $P'(L)$, we are estimating p—the implicit price of land. Even in communities where new houses are not being built, the hedonic value of land still gives us an implicit price of land. We can then compare p with $(P(L) - K)/L$, which equals $p + T/L$. The difference between these two values gives us a sense of the relative importance of land prices and building restrictions.

A second test of the model requires us to look across communities with different levels of some local amenity that we denote as E. In this case, we write the home price function as $P(L, B)$. If we differentiate across communities and T changes across communities but K does not, then $\frac{dP(L,B)}{dB} = \frac{dp}{dB}L + \frac{dT}{dB}$. The value of T might differ across communities because impact fees differ, but more likely T will differ if zoning takes the form of quantity controls. If zoning takes the form of minimum lot size or maximum residents, then the implicit tax will be higher in high-amenity communities. In a sense, our interest lies in determining the relative magnitudes of $\frac{dp}{dB}L$ and $\frac{dT}{dB}$.

One way to examine this is to look at our implied measures of p and T found using the methodology discussed above.

Another way is to look at land densities. We specify utility as a function of the location-specific amenity B, consumption of land, and consumption of a composite commodity, denoted C, which is equal to income (denoted Y) minus housing costs. Thus, total utility equals $U(B, L, Y - P(L, B))$. This implies an optimal level of land, denoted L^*, which satisfies $U_L = P'(L^*) U_c$ (where U_x denotes the derivative of $U(.,.,.)$ with respect to an argument X). For simplicity, we assume that $U(B, L, Y - P(L, B))$ equals $W(B) + V(L) + Y - P(L, B)$, so the first-order condition for land becomes $V'(L^*) = p$. Differentiating this with respect to B then yields $dL^*/dB = (dp/dB)/V''(L^*)$. If $V(L)$ equals vL^{α}, then this tells us that $\log(L) = \dfrac{\log(v\alpha)}{1 - \alpha} - \dfrac{1}{1 - \alpha}\log(p)$. This yields the clear implication that if dp/dB is big, we should expect there to be lower densities in areas with large amenities and high costs. Conversely, if there is no connection between housing costs and density, then this is more evidence for the zoning model rather than the neoclassical housing price model.

Our third empirical approach relies on the existence of zoning. If we have measures of the difficulty of obtaining building permits in a particular area, then we should expect them to drive up housing costs (holding B constant). This is just documenting that $dP/dT > 0$. Obviously, this approach is likely to be compromised if high-amenity areas impose more stringent zoning. Nonetheless, a connection between the strength of zoning rules and housing prices seems like a final test for the zoning view. As an added test, if we have measures of zoning controls across communities, we would expect the estimated value of T/L to be higher.

4. Evidence on Zoning: The Intensive Margin and the Extensive Margin

As our first test, we follow the framework and attempt to estimate p: the market price of land, and T/L: the implicit zoning tax. Using data from the 1999 American Housing Survey, we begin by estimating p using the standard hedonic methodology in a regression of the following specification:

(1)   *housing price = p* land area + other controls.*

The other controls include the number of bedrooms, the number of bathrooms, the number of other rooms, an indicator variable that takes on a value of 1 if the home has a fireplace, an indicator variable that takes on a value of 1 if the home has a garage, an indicator variable that takes on a value of 1 if the home is in a central city, an indicator variable that takes on a value of 1 if the home has a basement, an indicator variable that takes on a value of 1 if the home has air conditioning, and the age of the home. We ran each regression separately for 26 metropolitan areas for which there were 100 observations so that trait prices would reasonably be precisely estimated.[8]

Column 1 of Table 4 reports the hedonic price of land for different metropolitan areas using this linear specification. The hedonic literature has generally argued that non-normal error terms make a logarithmic specification more sensible. As such, we have also estimated logarithmic equations of the following form:

(1′) *log(home price) = p′* log(land area) + other controls.*

To transform the estimate of p', which is an elasticity, into a value of land, we take this coefficient and multiply it by the ratio of mean home price to mean land area. After this transformation, our elasticity-based estimates should be comparable to those in column 1, and we report them in column 2.

The two hedonic estimates are strongly correlated ($\rho = .5$), although the implicit prices arising from the logged specification tend to be slightly higher. In any event, functional form does not lead one to materially different conclusions regarding the value of a small change in lot size about the sample mean in these areas. In general, the hedonic estimates suggest that land is relatively cheap on this margin. In some cities, the estimated price is below $1 per square foot. Although estimates in those places tend not to be precise, the *t*-statistics reported still do not imply really high prices, even at the top end of the 95 percent confidence interval. In places where the point estimate is reasonably precise, land prices tend to be between $1 and $2 per square foot. In these areas, this implies that an average homeowner would be willing to pay between $11,000 and $22,000 for an extra quarter-acre of land.[9] The estimates are higher in some cities, primarily in California. For example, in San Francisco, it appears that homeowners are willing to pay almost $80,000 for an extra quarter-acre of land.[10] Although we do not have very good benchmarks against which to compare these prices, intuitively they seem reasonable to us as a whole.

To implement our first test, we must compare these prices with the implicit price of land found by computing the

TABLE 4
Land Price on the Extensive and Intensive Margins

City	Hedonic Price of Land/Square Foot, Linear Specification	Hedonic Price of Land/Square Foot, Log-Log Specification	Imputed Land Cost from R.S. Means Company Data (Intensive Margin)	Mean House Price
Anaheim	$2.89	$3.55	$38.99	$312,312
	(1.54)	(1.34)		
Atlanta	$0.23	-$0.30	$3.20	$150,027
	(0.50)	(-0.70)		
Baltimore	$1.15	$5.21	$4.43	$152,813
	(2.53)	(2.31)		
Boston	$0.07	$0.55	$13.16	$250,897
	(0.10)	(0.67)		
Chicago	$0.79	$0.80	$14.57	$184,249
	(2.43)	(1.96)		
Cincinnati	$0.89	$0.50	$2.71	$114,083
	(1.92)	(1.14)		
Cleveland	$0.26	$0.24	$4.13	$128,127
	(0.95)	(0.81)		
Dallas	-$0.83	$0.21	$5.42	$117,805
	(-1.14)	(0.27)		
Detroit	$0.14	$0.45	$5.10	$138,217
	(0.92)	(2.31)		
Houston	$1.43	$1.62	$4.37	$108,463
	(2.61)	(2.66)		
Kansas City	$2.06	$1.65	$1.92	$112,700
	(2.75)	(2.11)		
Los Angeles	$2.19	$2.60	$30.44	$254,221
	(4.63)	(3.53)		
Miami	$0.37	$0.18	$10.87	$153,041
	(0.45)	(0.24)		
Milwaukee	$1.44	$0.95	$3.04	$130,451
	(3.08)	(1.90)		
Minneapolis	$0.29	$0.35	$8.81	$149,267
	(0.93)	(1.09)		
Newark	$0.42	$0.10	$17.70	$231,312
	(0.62)	(0.11)		
New York City	$0.84	$1.62	$32.33	$252,743
	(1.09)	(1.60)		
Philadelphia	$1.07	$0.77	$3.20	$163,615
	(6.41)	(5.28)		
Phoenix	$1.89	$1.86	$6.86	$143,296
	(3.88)	(3.26)		
Pittsburgh	$2.28	$1.71	$3.08	$106,747
	(6.26)	(4.55)		
Riverside	$1.35	$1.60	$7.92	$149,819
	(3.55)	(2.95)		
San Diego	$0.58	$1.29	$26.12	$245,764
	(0.97)	(1.33)		
San Francisco	$0.97	$7.84	$63.72	$461,209
	(0.76)	(2.42)		
Seattle	-$0.68	$0.48	$18.91	$262,676
	(-0.69)	(0.06)		
St. Louis	$0.63	$0.07	$1.74	$110,335
	(1.91)	(1.55)		
Tampa	$0.19	$0.89	$6.32	$101,593
	(0.36)	(1.30)		

Note: *t*-statistics are in parentheses.

difference between home prices and structure costs. Subtracting structure costs (provided by the Means data) from reported home values and then dividing by the amount of land generates an estimate of $p + T/L$, as described above—the value of land including the implicit tax on new construction. These average values of $p + T/L$ for each metropolitan area appear in column 3 of Table 4.

Comparing columns 1 and 2 with column 3 illustrates the vast differences in our estimates of the intensive and extensive prices of land, or p and $p + T/L$. In many cases, our estimate of $p + T/L$ is about ten times larger than p. For example, in Chicago, our imputed price of land per square foot from the extensive margin methodology is $14.57. This means that a home on a quarter-acre plot (or 10,890 square feet) will cost more than $140,000 above construction costs. In San Diego, this quarter-acre plot is implicitly priced at nearly $285,000. The analogous figure is even higher in New York City, at slightly more than $350,000. In San Francisco, the plot is apparently worth just under $700,000.

This is our first piece of evidence on the relative importance of classic land prices and zoning. In areas where the ratio is 10:1, the findings suggest that for an average lot, only 10 per-cent of the value of the land comes from an intrinsically high land price as measured by hedonic prices.[11]

Although the hedonic land prices from the linear specification (column 1) are not significantly correlated with the mean house prices reported in column 4 of Table 4, both the hedonic prices from the logged model (column 2) and the extensive margin prices (column 3) are strongly positively correlated with mean prices. Simple regressions of each of the three land price series on mean house price find that the dollar impact of house price with respect to land price is far larger for the series that reflects the implicit development tax. Specifi-cally, a one-standard-deviation increase in house price (which equals $82,239 in this twenty-six-city sample) above its mean is associated with a $13.82 increase in land price as reflected in our $p + T/L$ measure. The analogous standardized effect with respect to our measure of p arising from the logged hedonic model is $1.10.[12] Although these results are based on an admittedly small sample, we believe that the difference in the scale of the changes provides evidence consistent with the hypothesis that high home prices appear to have more to do with regulation than with the operations of a free market for land.

5. EVIDENCE ON ZONING: DENSITY AND HOUSING COSTS

Our second test is to look at the connection between housing prices and density. As described in the model, the neoclassical land model strongly suggests that there should be a positive connection between density and housing prices. The free land market view suggests that higher amenities will lead to higher land prices and lower consumption of land. The zoning view suggests that higher amenities will just lead to a higher implicit zoning tax. This zoning tax does not impact the marginal cost of additional land and there should therefore be little connection between the cost of land and density.

To test this implication, we correlate land density within a central city with our various measures of housing prices within that city. Because the framework suggested the relationship $log(L) = \frac{log(v\alpha)}{1 - \alpha} - \frac{1}{1 - \alpha} log(p)$, we estimate a logarithmic equation. We use as our land area measure the logarithm of the land area in the city divided by the number of households.[13] Obviously, density is higher the lower the value of this variable.

Table 5 presents the results from a series of regressions exploring the relationship of our density measure with the index of expensive homes and land in our sample of cities. In regression 1, we use as the independent variable our measure of the share of houses that cost at least 40 percent more than construction does. In this case, the relationship is negative, so a higher concentration of expensive homes is associated with greater density. However, there still is no meaningful statistical relationship. Chart 3 plots the relationship with the regression line included. The chart highlights the extraordinary amount of heterogeneity in the relationship between density and the distribution of house prices. For example, Detroit, Seattle, and Los Angeles have similar land densities per household, but radically different fractions of units sitting on expensive land. Analogously, New York City and San Diego have similarly high fractions of expensive land, but very different residential densities.

In regression 2, we control for median income in the city in 1990 to help account for the possibility that richer people live in expensive areas and demand more land. However, there still is no really strong relationship between density and the fraction of expensive land and homes. Density is slightly higher in more expensive areas on average, but the relationship is tenuous even when controlling for income. In regression 3, median house price in 1990 is used as the independent variable. There is a statistically significant negative relationship between density and price in this case, with the elasticity being -0.56. However, there is much heterogeneity here too. The statements above

regarding Detroit, Seattle, Los Angeles, New York City, and San Diego still hold true when median price is on the right-hand side of the regression.

For regressions 4, 5, and 6, we take the model more seriously and use an amenity to look at the impact of housing costs and land consumption. We focus on a particularly well-studied amenity—average January temperature. In regression 4, we show that there is a strong positive relationship between the fraction of expensive homes and land and average January temperature. This relationship is necessary for this variable to qualify as an instrument. In regression 5, we regress the logarithm of land area per household on January temperature. In this case, the relationship is much less strong statistically. The t-statistic is 1.6. Taken together, these results show that a warmer January temperature may raise housing prices,[14] but there is no strong evidence that it increases densities—at least not by very much. Indirectly, this suggests that it is not raising the marginal cost of land by much.

In regression 6, we follow the spirit of the framework most closely. We regress the logarithm of land area per household on the distribution of housing prices using average January temperature as an instrument. January temperature is meant to represent the exogenous variation in amenities that causes prices to rise. Not only is there no statistically meaningful connection between prices and land consumption, but these instrumental-variables results imply that higher prices are associated with lower, not higher, densities. One possibility is that incomes are higher in these areas and that richer people are demanding more land. Consequently, we redid the analysis adding median family income as a control, but the results were largely unchanged. That is, there is no statistically significant relation between instrumented prices and density, and the point estimate still is slightly positive (albeit small). Although we acknowledge that the sample is small and that there could be other omitted factors, these results suggest to us that higher prices have more to do with zoning than a higher marginal cost of land.

As a final test of this view, we regress our two measures of land costs from Table 4 with average January temperature. We only have twenty-six observations, but the results are still quite

TABLE 5

## Density and the Distribution of House Prices in Cities, 1990

	Log Land Area per Household	Log Land Area per Household	Log Land Area per Household	Fraction of Units Valued at or above 140 Percent of Construction Costs	Log Land Area per Household	Log Land Area per Household[a]
			Dependent Variable			
Fraction of units valued at or above 140 percent of construction costs	-0.510 (0.451)	-0.576 (0.507)				1.177 (0.880)
Log median family income, 1989		0.266 (0.895)				
Median house price, 1990			-0.565 (0.225)			
Mean January temperature				0.013 (0.003)	0.015 (0.009)	
Intercept	-7.050 (0.245)	-9.784 (9.191)	-0.959 (2.536)	-0.021 (0.113)	-7.882 (0.387)	-17.254 (8.678)
$\bar{R}^2$	0.01	-0.02	0.12	0.34	0.04	
Number of observations	40	40	40	40	40	40

Notes: Standard errors are in parentheses. Density is defined as the log of the ratio of square miles of land in the city divided by the number of households.

[a] Two-stage least squares: Mean January temperature as instrument.

Land area per household, 1990
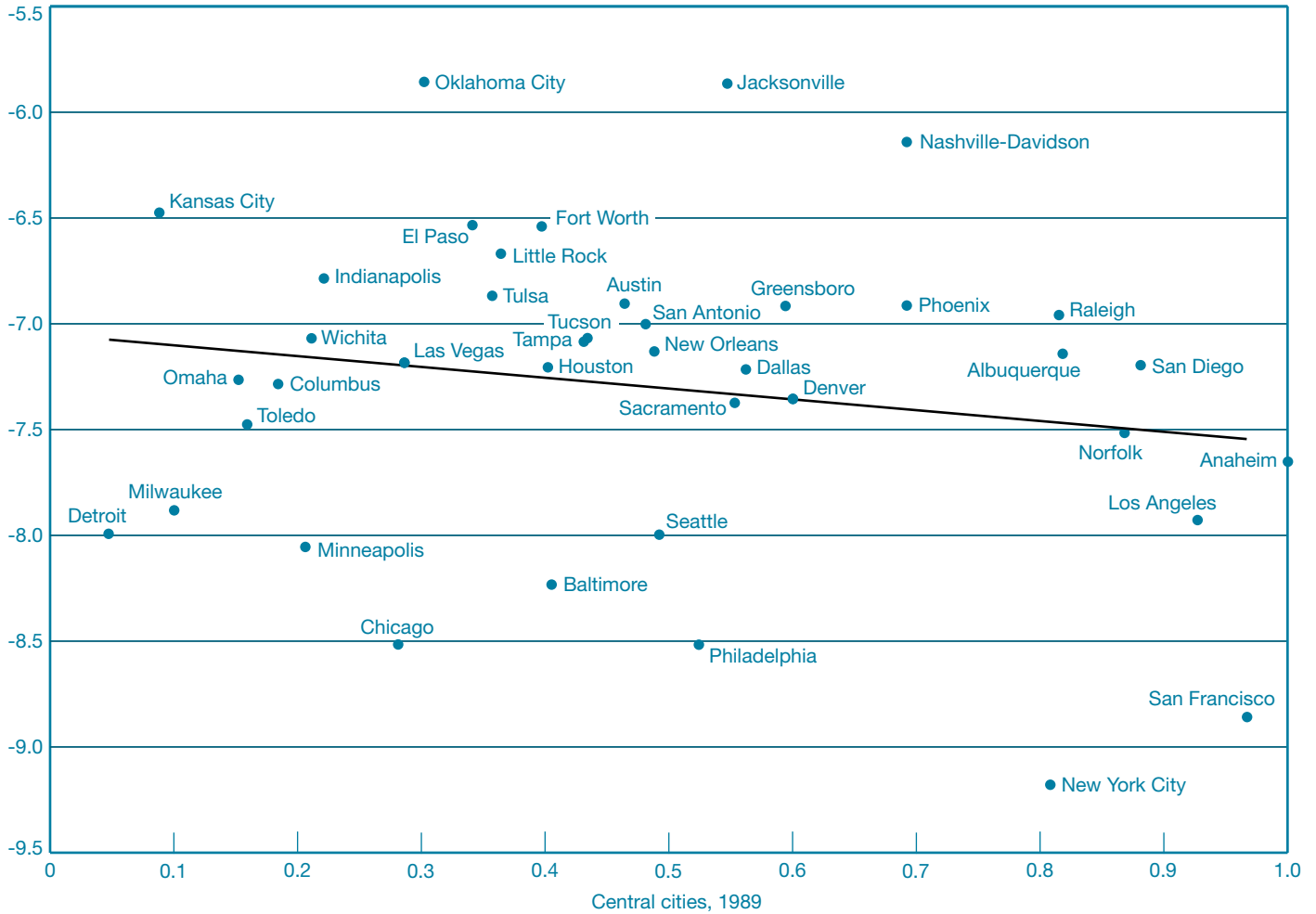
Note: The x-axis denotes the share of homes in central cities with prices that are more than 40 percent above construction costs in the 1989 American Housing Survey.

illuminating. A standard-deviation increase of 14.7 degrees in mean January temperature is associated with a $5.02 higher construction-cost-based price of land. The same increase in warmth is associated with only a $0.47 higher hedonic-based price of land.[15] Once again, amenities seem to have more of an effect on the implicit zoning tax than on the marginal cost of land.

6. Evidence on Zoning: Housing Costs and Zoning

Our last perspective on the role of zoning comes from an examination of the correlation between land prices and measures of zoning. Such data are very difficult to obtain. Our measures of zoning come from the Wharton Land Use Control

Survey. This survey, which took place in 1989, covers jurisdictions in sixty metropolitan areas. Because of the limitations of our American Housing Survey data, we are forced to consider only observations on the central cities of forty-five metropolitan areas.

The variable we focus on here is a survey measure of the average length of time between an application for rezoning and the issuance of a building permit for a modest size, single-family subdivision of fewer than fifty units. This measure can take on values ranging from 1 to 5: a value of 1 indicates the permit issuance lag is less than three months, a value of 2 indicates the time frame is between three and six months, a value of 3 indicates a seven-to-twelve-month lag, a value of 4 indicates the lag is between one and two years, and 5 indicates a very long lag of more than two years. Before proceeding to a regression, we note that the correlation of the permit length variable with the fraction of housing stock priced more than 40 percent above the cost of new construction is fairly high at 0.43. The mean fraction of high-cost housing among the cities with permit waiting times of at least six months (that is, a value of 3 or more for this variable) is 0.75. Difficult zoning seems to be ubiquitous in high-cost areas.[16]

Table 6 reports regression results using the permit length variable. In the first column, we regress our housing cost measure (again using the share of the city's housing stock priced more than 40 percent above the cost of new construction) on the first zoning measure—the time required to get a permit issued for a rezoning request. We find a strong positive relationship, so that when the index increases by one, 15 percent more of the housing stock becomes quite expensive. This positive relationship also survives controlling for population growth during the 1980s and median income, as shown in the second column.[17]

In the final column of Table 6, we return to our implied zoning tax—T/L from above. This value is calculated using the data in Table 4. Specifically, we subtract the cost of land estimated in the nonlinear hedonic equation (that is, p from column 2 of Table 4) from the cost of land implied by subtracting structure cost from total home value (that is, $p+T/L$ from column 3 of Table 4). We then regress this variable on our zoning measure. As the results show, the implied zoning tax is strongly increasing in the length of time it takes to get a permit issued for a subdivision. Increasing a single category in terms of permit issuance lag is associated with a nearly $7 per-square-foot increase in the implicit zoning tax. If the dependent variable is logged, the results imply that a one-unit increase in the index is associated with a 0.50-log-point increase in the implicit zoning tax.[18]

TABLE 6

Zoning Regulations and the Distribution of House Prices

	Dependent Variable		
	Fraction of Units Valued at or above 140 Percent of Construction Costs	Fraction of Units Valued at or above 140 Percent of Construction Costs	T/L from Table 4 (Implied Zoning Tax)
Time to permit issuance for rezoning request	0.150	0.112	6.796
	(0.051)	(0.044)	(3.048)
Log median family income, 1989		0.260	
		(0.255)	
Percentage population growth, 1980-90		1.080	
		(0.411)	
Intercept	0.111	-2.512	-3.527
	(0.120)	(2.634)	(7.732)
$\bar{R}^2$	0.16	0.40	0.15
Number of observations	40	40	22

Note: The independent zoning variable is a categorical measure of time lag between the application for rezoning and the issuance of a building permit for development of a modest size, single-family subdivision.

7. Conclusion

America is not facing a nationwide affordable housing crisis. In most of the country, home prices appear to be fairly close to the physical costs of construction. In some of the country, home prices are even far below the physical costs of construction. Only in particular areas—especially New York City and California—do housing prices diverge substantially from the costs of new construction.

In the areas where houses are expensive, the classic urban model fares relatively poorly. These areas are not generally characterized by substantially higher marginal costs of land, as estimated by a hedonic model. The hedonic results imply that the cost of a house on 10,000 square feet is usually pretty close in value to a house on 15,000 square feet. In addition, these high prices often are not associated with extremely high densities. For example, there is as much land per household in San Diego (a high-price area) as there is in Cleveland (a low-price area).

The bulk of the evidence marshaled in this paper suggests that zoning, and other land-use controls, are more responsible for high prices where we see them. There is a huge gap between the price of land implied by the gap between home prices and construction costs and the price of land implied by the price differences between homes on 10,000 square feet and homes on 15,000 square feet. Measures of zoning strictness are highly correlated with high prices. Although all of our evidence is suggestive, not definitive, it seems to suggest that this form of government regulation is responsible for high housing costs where they exist.

We have not considered the benefits of zoning, which could certainly outweigh these costs. However, if policy advocates are interested in reducing housing costs, they would do well to start with zoning reform. Building small numbers of subsidized housing units is likely to have a trivial impact on average housing prices (given any reasonable demand elasticity), even if well targeted toward deserving poor households. However, reducing the implied zoning tax on new construction could well have a massive impact on housing prices.

The positive impact of zoning on housing prices may well be zoning's strongest appeal. If we move to a regime with weaker zoning rules, then current homeowners in high-cost areas are likely to lose substantially. To make this politically feasible, it is crucial that any political reform also try to compensate the losers for this change.

A number of adjustments are made to the underlying house price data in the comparison of prices and construction costs. These include imputation of the square footage of living area for observations from the Integrated Public Use Microdata Series for the 1980 and 1990 census years. However, because the results reported in this paper do not include census data, we omit the description of that imputation. See Glaeser and Gyourko (2001) for those details.

Two adjustments have been made to the American Housing Survey (AHS) house price data to account for the depreciation that occurs on older homes and to account for the fact that research shows that owners tend to overestimate the value of their homes. The remainder of this appendix provides the details.

As noted, one adjustment takes into account the fact that research shows that owners tend to overestimate the value of their homes. Following the survey and recent estimation by Goodman and Ittner (1992), we presume that owners typically overvalue their homes by 6 percent.[19]

Empirically, the most important adjustment takes into account the fact that the vast majority of homes are not new and have experienced real depreciation. Depreciation factors are estimated using the AHS. More specifically, we regress house value per square foot (scaled down by the Goodman and Ittner [1992] correction) in the relevant year on a series of age controls and metropolitan area dummies. The age data are in interval form so that we can tell if a house is zero to five years old, six to ten years old, eleven to twenty-five years old, twenty-five to thirty-six years old, and more than forty-five years old. The coefficients on the age controls are each negative, as expected, and represent the extent to which houses of different ages have depreciated in value on a per-square-foot basis.

Finally, we note that our procedure effectively assumes that units with a basement in the AHS have unfinished basements, so that we underestimate construction costs for units with finished basements. Having a basement adds materially to construction costs, according to data from R.S. Means Company. Depending on the size of the unit, those with unfinished basements have about 10 percent higher construction costs. Units with finished basements have up to 30 percent higher construction costs, again depending on the size of the unit. After these adjustments have been made, house value is then compared with construction costs to produce the distributions reported in our paper.

1. This is not to say that housing vouchers might not be a sensible part of an antipoverty program. However, if housing is not expensive, then policies should be thought of as a response to poverty and not a response to a housing affordability crisis.

2. Goodman and Ittner (1992) document that self-reported values tend to be about 7 percent higher than true sale prices.

3. Another relevant issue is change over time. The census reports a significant (15 percent) increase in the median value of a home over the 1990s. However, when we look at repeat-sales indices, which control for housing quality, we see much less of an increase over the 1990s.

4. Two publications are particularly relevant for greater detail on the underlying data: R. S. Means Company's *Residential Cost Data*, 19th ed., and *Square Foot Costs*, 21st ed.

5. See R. S. Means Company (2002).

6. The actual computation is more complicated, as adjustments are made to correct for depreciation, inflation, the fact that owners tend to overestimate the value of their homes, and regional variation in the presence of basements. See the appendix for details. We also performed the analysis using the 1991 AHS; the results are virtually unchanged from 1989's results.

7. The Philadelphia numbers for 1989 are not typos. They reflect a small sample bias associated with the number of units with basements. This is a statistical oddity that does not show up in other samples, whether in the AHS or decennial censuses.

8. There are only ninety-six observations in the Baltimore metropolitan area, which is the smallest number across all cities. Visual inspection of the findings found sensible results for most traits when the number of observations was at or above 100.

9. There are 43,560 square feet in an acre of land.

10. The estimate from the linear specification is much lower, but logging materially improves the overall hedonic in the case of San Francisco.

11. This ratio obviously is sensitive to biases in our hedonic estimates. We need to be concerned especially about the possibility that the quantity of land is correlated with price and (omitted) amenities. It is easy to construct examples in which the bias goes in opposite directions. For example, land undoubtedly costs different amounts in different parts of a given metropolitan area. Although our hedonic model includes a control for whether the observation is located within the central city of an area, this may only imperfectly capture a location-specific amenity that reflects, say, distance from a key employment node. Thus, people could be buying bigger lots in those parts of the metropolitan area with lower costs, and by not being able to control for this fully, our hedonic land price estimates will be biased downward.

That said, it is not at all clear that the net bias will be in that direction. We find it at least equally plausible that richer households, who tend to have larger lots, end up congregating in higher amenity (and higher price) areas. In this case, our estimated hedonic price of land would be biased upward. Although we cannot be certain what the net bias is, we find it highly unlikely that our estimates are so severely skewed downward that bias could account for the huge differential reported between land prices on the intensive and extensive margins. Our estimates would have to be off by an order of magnitude for that possibility to be relevant.

12. The coefficients are precisely estimated in the underlying regressions and are available upon request. Because the hedonic land price arising from the linear model is virtually uncorrelated with mean house price, the analogous impact is near zero for that land price series.

13. Using population per square mile yields similar results.

14. There is a statistically and economically significant positive relationship between mean January temperature and median house price. Those results are not reported here, but are available from the authors upon request.

15. We use the price series from the nonlinear hedonic in the underlying regression. Only the regression involving the construction-based land prices (column 3 of Table 4) yields statistically significant results at conventional levels.

16. Other measures in the database include the analogue to this rezoning question, except that the permit length time applies to a completely new subdivision that does not require rezoning. We examined this and other variables and found correlation patterns similar to those presented below.

17. Adding region dummies to the specification eliminates any significant positive correlation between this zoning control and the fraction of expensive housing in the area.

18. Finally, similar results are obtained if other approval-time variables are used (such as those for a new subdivision).

19. This effect turns out to be relatively minor in terms of its quantitative impact on the results.

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Brendan O'Flaherty

Commentary

Edward Glaeser and Joseph Gyourko present a good paper, but the paper is not what it claims to be, at least for lay readers who do not interpret words literally. For most people, "affordable housing" has something to do with housing for the poor. This conference, according to the program, aimed to "explore . . . strategies easing the housing problems of low- and moderate-income families." This connection very likely takes liberties with the English language, but the connection has been made, and it makes good sense to respect it.

Therefore, arguments for affordable housing policies ought to show either that poor people would be better off as they perceive it, or that the poor would be better off according to some metric not tied to desire/satisfaction. (Thus, housing policies for poor people are targeted not only at high supply prices or at poverty, but also at intrahousehold or inter-household externalities—just as homeowner tax preferences are.) Although Glaeser and Gyourko acknowledge that such a link probably can be made—a contention that I think is plausible—they do not make it, and so they leave the paper incomplete as an affordable housing paper as the term is commonly (and probably mis-) understood.

The paper's real interest lies in the finding that in some cities, land is very expensive—more expensive than people appear willing to pay for it. This finding makes Glaeser and Gyourko's study important in that it is likely to spur a great deal of further research.

Basically, Glaeser and Gyourko fit an hedonic equation:

$$P = \alpha S + \beta L,$$

where S represents structure and L land. The authors find that $\alpha > c$, the known construction cost of structure in some metropolitan areas. They conclude that zoning is holding up the price of land, and provide evidence that zoning is more restrictive in areas where the difference is greatest.

The step from $\alpha > c$ to "zoning is the problem" is a very big one. There is an instructive analogy in the study of household economics. Different methods (for example, replacement versus opportunity cost) produce radically different estimates of the hourly value of time devoted to household work. But that does not imply that a government policy, perverse or not, is causing the discrepancy. I think the consensus now is that the theories that imply no discrepancy are the ones that are wrong, even in the absence of government intervention. Similarly, we should look further at why the combination of Glaeser and Gyourko's statistical methods and accepted urban economics theory fails to work before concluding that government policies are the only possible explanation. (The correlation—absent regional dummies—between high estimated land prices and restrictive zoning, although suggestive, is certainly not definitive. Jewelry stores with more expensive wares spend more on security, but we do not think that the security expenditures are driving the value of the jewelry.)

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Thus, we can look at two kinds of possible alternatives to the zoning conclusion—statistical and theoretical.

1. Statistical Alternatives

When examining this type of alternative, there might be omitted variable errors, collinearity problems, or measurement issues. To consider omitted variable errors, suppose that the true model is

$$P = \alpha S + \beta L + \gamma b,$$

where b represents some other attribute, such as proximity to a train station or a school, or a scenic view. Neoclassical theory would lead us to think that the covariance between S and b would be positive and that the covariance between L and b would be negative. Both of these covariances imply that α should be too big and that β should be too small. The Glaeser and Gyourko regressions have very poor measures of amenities and location.

In a note to their paper, Glaeser and Gyourko speculate that covariances might very well go in the opposite direction—that neoclassical urban theory might be wrong. This adds to the possibilities for new theories.

Collinearity problems could arise if land and structure, or aspects of structure, were correlated. This is not unlikely, since the aspects of structure that the authors measure include the presence of a garage and the number of rooms. I will give a not terribly implausible example below that shows how this collinearity can lead to serious underestimates of β.

Finally, the estimation procedure relies on construction costs and depreciation being the same in all metropolitan areas. There are several reasons why construction costs can differ, aside from differences in construction laws and regulations. Weather is one: colder climates entail more insulation, more solid windows and doors, and greater interest and scheduling costs due to winter delays. Notice that this supply interpretation works in the opposite direction from the demand-side January temperature used by Glaeser and Gyourko to measure amenities. Labor is another source of variation: because wages vary between metropolitan areas and wages are a substantial part of building costs, the cost of building identical structures will vary between metropolitan areas. Other inputs, such as electricity, also vary in price.

Depreciation is also likely to vary, because the rate at which houses depreciate depends on economic decisions about

maintenance, repair, and home improvement. Demand shocks that make housing in certain metropolitan areas more expensive may be correlated with greater home maintenance and home improvement expenditures. A thirty-five-year-old Cape Cod with 1,700 square feet in New York may, on average, be a very different house in ways unobservable to the econometrician in a similar house in Dallas.

2. Theoretical Alternatives

The basic premise of the Glaeser and Gyourko paper is that if you know the square footage of a lot, the price per square foot of land, and the construction costs of the structure, you know everything you need to find the price that would prevail in a market without zoning. This idea is probably wrong, although Glaeser and Gyourko are probably correct in interpreting this premise as an implication of standard urban economics. There are several reasons for this.

First, all relevant costs of a house are not incurred on the lot. The costs of roads, sewers, gas and electric, telephones, cable, and other infrastructure are quite hefty relative to the costs of a private structure—roads are going to account for at least 20 percent of land in a new development, and the materials used in them are not cheap. In equilibrium, the (marginal) cost of new developments is going to be the replacement cost of existing houses, so the price of installed infrastructure is going to be part of the price of land—even without zoning. On the other side, some part of the capitalized value of property taxes is going to be subtracted from a house's value. Infrastructure pricing practices, like taxes, may vary between metropolitan areas. Combined with the uncertainty about structure costs introduced by variations in construction costs and depreciation, these add up to a hefty uncertainty about the value of land.

Second, lumpiness and selection present problems. There are serious increasing returns to scale in housing, for example, from the 2/3 rule, the sharing of utility connections, and the sharing of furniture. The restriction to single-family detached houses further reduces the possibilities for using very small pieces of land. This means that small pieces of unused land are not going to be very valuable.

Consider a simple example. Suppose land is only one dimension, you are a profit-maximizing developer without any zoning constraints, and the marginal product of a plot of land of size x is $x - x^2$. Assume you are working with a plot of land of size z. If $z = 3/4$, or any multiple, you will build one house (or

the multiple), and the usual optimizing condition of marginal equals average will hold. But if z is not a multiple of 3/4, marginal will not equal average at the optimum. Let $D(z) =$ average profit minus marginal profit, assuming optimal-sized lots. Then for $z < 1$,

$$D(z) = z\ (2/3\ z - 1/2),$$

which rises to 1/6 at $z = 1$. In general, $D(z)$ goes up and down, crossing zero at 3/4 n for every n, and decreasing in amplitude as n increases. But for small n—the likely condition for small developers with physical constraints and existing buildings around them—marginal is likely to be very different from average. It could be bigger or it could be smaller. The hedonic equation measures at best the marginal value of land, while the construction-cost measures back out the average.

Third, land is not a quantity. I am not indifferent between my 5,000 contiguous rectangular square feet of New Jersey and 720,000 randomly chosen square inches spread across the face of the earth.

One distinction that matters is frontage versus depth (assuming that plots are roughly rectangular, which is endogenous). Frontage is more costly to construct and is probably more valuable because it sets the minimum distance to neighbors. Depth is less valuable. Land area is the product of the two, and there is probably more variation in depth than in frontage. If that is the case, the hedonic is picking up the less valuable dimension.

To see how this can be compounded by collinearity, suppose a community has two kinds of houses—those with garages and those without. Houses with garages are on lots with greater frontage, otherwise all structures are identical. Frontage is much more valuable than depth. All houses of each type have the exact same frontage, but depth varies randomly. An hedonic regression with the presence of garages and the square footage of the lot would conclude that land was valueless, or close to it, no matter what it was really worth. The value of frontage would show up in the coefficient on garages.

Land also varies in topography and physical characteristics. Some land is just lousy to build on or live on (due, for instance, to the presence of rock outcroppings, steep slopes, or bad swamps). People who want land for less valuable purposes (privacy rather than construction) are likely to end up holding

such land. Differences in lot size within a community therefore are also likely to reflect differences in bad rather than good land. This is similar to the frontage scenario.

Fourth, with two dimensions and physical obstacles, the optimal subdivision problem becomes very difficult. In operations-research terms, it is a suitcase problem. One interesting result of these difficult problems is that "greedy algorithms"—the sort of myopic hill-climbing you could expect from a bunch of independent developers—usually do not produce optimality. So it is not clear that in the absence of zoning, optimal subdivisions would occur. Without optimal subdivisions, there is no chance that marginal cost will equal average cost even with regard to a large problem.

Finally, even if neighborhoods were constructed originally with marginal cost equal to average cost of land on every lot, they would not stay that way for long. Unanticipated shocks would destroy this equality and change optimal density. Of all the ways to increase density in an existing neighborhood, increasing the number of single-family homes on existing single-family land is the most drastic and the most expensive. To make small changes, you have to move all of the existing houses. This is not easy: the arrangement of houses and lots in a neighborhood is not likely to change much unless everything is torn down. Thus, the equality of marginal and average cost of land upon which the Glaeser and Gyourko paper is based will not be observed very often in neighborhoods more than a few years old, even in the best of all possible cases.

3. Summary

Glaeser and Gyourko are probably correct in observing that excessive zoning in certain jurisdictions makes life worse for poor people who do not live there. In that regard, their paper did not dramatically change my view. The paper's actual contribution is much more novel and much more fundamental: the authors have raised very deep questions about how urban economists think about land and land markets. It will probably be a long time before these questions are answered properly.

C. Tsuriel Somerville and Christopher J. Mayer

Government Regulation and Changes in the Affordable Housing Stock

1. Introduction

In terms of housing issues, the primary public policy focus of economists has been the affordability of homes, mortgage availability, land-use regulation, and rent control. Studies of land-use regulation focus on the effects of regulation on the price of owner-occupied housing. Work on low-income housing has concerned itself more with issues of measurement and the debate over supply-side versus demand-side subsidies.

In this paper, we look at the relationship between these two issues to examine how government regulation affects the dynamics of the low-income housing stock. We find that, consistent with theoretical models of housing, restrictions on the supply of new units lower the supply of affordable units. This occurs because increases in the demand for higher quality units raise the returns to maintenance, repairs, and renovations of lower quality units, as landlords have a stronger incentive to upgrade them to a higher quality, higher return housing submarket. This result is disturbing because it highlights how policies targeted toward new, higher income owner-occupied suburban housing can have unintended negative consequences for lower income renters.

Our research differs from most studies of affordable housing in that we are not concerned with identifying the size of the affordable stock or matching it to the number of low-income households. The gap between the housing needs of low-income households and the stock of units deemed affordable has been demonstrated in a considerable amount of other research.[1] Here, we build on the Somerville and Holmes (2001) study of the effects of the unit, neighborhood, and market characteristics on the probability that a unit will stay in the stock of rental units affordable to low-income households; we do so by looking at how government regulations affect this probability. Our approach is to look at individual units in successive waves of the American Housing Survey (AHS) metropolitan area sample. In doing so, we follow Nelson and Vandenbroucke (1996) and Somerville and Holmes (2001), who use the panel nature of the AHS metropolitan area survey data to chart the movements of individual units in and out of the low-income housing stock.

The remainder of the paper is structured as follows. First, we lay out the theoretical framework for our analysis. We follow with a discussion of our data. Finally, we present our empirical results, both for measures of constraints on the supply of new residential units and for the pervasiveness of rent control in an area.

2. Theoretical Framework

We model movements of units in and out of the stock of affordable housing as the filtering down of units through successive housing submarkets. The filtering model describes the housing market as a series of submarkets differentiated by

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unit quality. Rents fall as quality declines, so units that are lower on the quality ladder have lower rents than units of the same size in the same location at the top. Without expenditures on maintenance, renovation, and repairs, units decline in quality as they depreciate physically and technologically. As this occurs, the units move down the quality ladder. The cost to maintain a given level of quality is assumed to increase with unit age. Extra expenditures on maintenance and renovation can move units back up the ladder. Relative rents in the different submarkets vary with the distribution of income across households (demand) and the supply of units in that submarket. When quality is least expensive to provide at the time units are built, new units will be of high quality. The supply of the most affordable, lowest quality units will be those units built in earlier periods that have been allowed to depreciate and move down—to filter down—the quality ladder. Landlords will choose a level of maintenance to maximize profits, and that choice determines into which housing submarket their unit will fall. When incomes, population, and the housing stock raise rents in the submarket for higher quality units relative to those in the submarket for lower quality units, landlords in the latter submarket have a greater incentive to increase maintenance, renovation, and repair expenditures to cause units to filter up, that is, to move to the higher quality submarket. Reducing the supply of low-end affordable units can potentially exacerbate affordability problems for the least well-off. Although this may occur when the entire demand curve for a neighborhood's amenities shifts out, we do not formally model neighborhood gentrification, focusing instead on unit-specific decisions.

The focus of this paper is on use of the filtering model to explain the effect of restrictions on new construction and rent control on the movement in units in and out of the low-income housing stock. We expect that factors that lower the market's new-construction-supply response to increases in demand will reduce the affordable housing stock. This occurs because the increase in demand that is unmet with new construction raises the returns to landlords for moving units up the quality ladder. These factors can include explicit government land-use regulations that constrain the new supply or an area's market supply elasticity, which for reasons such as unobserved regulation, land supply, and builder industry organization can differ across markets.

One of the major forms of government regulation of housing markets with important implications for the affordable housing stock is rent control. The question of interest for this paper is what effect rent control has on the uncontrolled affordable housing stock. We know from Early and Phelps (1999) and Fallis and Smith (1984) that rent control lowers the supply of uncontrolled affordable housing because excess demand for units raises rents in this segment. This suggests that it raises the probability that in any time period the uncontrolled units that remain affordable will be more likely to filter up. Alternatively, there may be reasons why these units remain affordable and cannot filter up easily. The units could be of particularly low quality or there may be negative neighborhood effects from surrounding, poorly maintained rent-controlled buildings. Finally, an application of the labor markets' efficiency wage model suggests that some landlords who prefer to keep rents low to give themselves the advantage of selecting from a larger pool of prospective tenants increase their ability to weed out those who may be more likely to be bad tenants.

3. The Existing Literature

This paper draws from a wide variety of existing work. There is a literature on filtering stretching back to Ratcliff's (1949) discussion of the phenomenon. Government land-use regulation as it applies to new construction has spawned a voluminous theoretical and empirical literature looking at zoning restrictions on use and density, development fees, greenbelts, growth controls, and factors that delay and slow the new supply response to demand shocks. Furthermore, in an area where economists mostly agree with one another, there is a copious literature on rent control and its effect on rents, maintenance, and housing market equilibria. All of this work bears on our paper.

Sweeney (1974) is credited with the first thorough theoretical treatment of filtering, where the level of maintenance affects the rate of depreciation. The theoretical literature includes papers that expand his model to include other issues.[2] Most of the recent empirical filtering literature does not examine individual units directly, but looks for outcomes consistent with filtering. Phillips (1981) uses cross-sectional data to compare mean neighborhood income with descriptive statistics of the neighborhood housing stock. Weicher and Thibodeau (1988), using aggregate data, test for the effect of new construction on the low-income housing stock. A more targeted study is Susin's (1999) examination of the effect of Section 8 housing vouchers on rents for the least expensive third of units. Using the AHS neighborhood sample, he finds a fairly inelastic supply curve and little downward filtering as rents are clearly higher in the presence of vouchers. The notable exception to these studies with aggregate data is Somerville and Holmes (2001). They use micro data to describe the relationship between individual unit, neighborhood, and market characteristics, and the probability that units will filter up or down.

Here, we look at the effect of land-use regulations on filtering. Although no work has done this explicitly, a considerable body of research has studied the theoretical and empirical effects of various land-use regulations on urban form, development patterns, and the price of housing. Nearly all of the existing empirical work (see Fischel [1990] for a review) explores the impact of regulation on house prices, with the bulk of the papers finding that increased local regulation leads to higher house prices. Constraints on supply result in higher house prices, but so too does the capitalization of benefits that regulations provide for local residents. A much smaller literature looks specifically for the effects of regulation on new construction, and finds lower levels of construction in the presence of higher regulatory barriers and fees.[3] This latter literature is relevant for our analysis because we expect that restrictions on new development will affect the supply of affordable units from the existing stock by creating excess demand in the market for newer and higher quality units, which increases the incentives for landlords to upgrade their units.

We also examine the relationship between rent control and filtering. There is a copious literature that highlights aspects of the aggregate welfare losses associated with rent control.[4] Olsen (1998) provides a brief of summary of the economics of rent control; other important work is Glaeser (1996) and Glaeser and Luttmer (1997) on the welfare losses from the mis-allocation of housing under rent control, and the seminal empirical analysis by Olsen (1972).

4. Data Description

We use the AHS metropolitan surveys to create a data set of individual rental units in metropolitan statistical areas (MSAs) from 1984 to 1994 for those MSAs for which we have land-use regulation data. An "observation" is an individual rental unit that is included in two successive surveys. Each MSA is surveyed every three or four years in waves of approximately eleven MSAs per survey, so that we have potentially two observations per unit for twenty-three of the MSAs and one observation per unit for the remaining twenty-one. As a result, our time periods of analysis are not constant across MSAs. However, our right-hand-side variables are either survey-period-specific or assumed to be time-invariant within an MSA. Observations per unit are constrained by the introduction of a new survey questionnaire in 1984 and a new sample in 1995.[5] When examining rent control, we look only at those MSAs that include jurisdictions that impose significant rent control.

In this paper, we define the affordable housing stock as those units for which the gross rents are less than or equal to 30 percent of household income for a household with 35 percent of the median MSA household income. We map this cutoff to different unit sizes using the Department of Housing and Urban Development's methodology for calculating differences in fair market rents by unit size.[6] Throughout, we use rent to refer to gross rents.[7] Although there are a variety of approaches to defining affordability, we have a taken a naïve approach. We do not believe that how we define the housing stock should cause problems. Our test is of the effect of a vector of variables on the probability that a unit will cross a threshold, relative to not doing so. How we define the threshold only matters if the effect of explanatory variables varies systematically along the quality ladder.

This study analyzes how restrictions on new construction and rent control affect the evolution of the affordable stock. Units must appear in at least two surveys to be included in our sample. As a result, we exclude units that for whatever reason appear in only one survey. A unit identified as affordable in the first survey year can have one of four outcomes in the subsequent survey year, assuming that the occupants respond to the second survey. First, it can remain affordable. Second, the unit's rent can exceed the affordability cutoff, that is, filter up. Third, a unit can become owner-occupied. Fourth, it can either be abandoned, or demolished or converted.[8] For rental units that were identified as unaffordable in the first survey year, we have a similar set of possible outcomes, except that the baseline remains unaffordable and option two is to filter down and become affordable.

We employ a mixed strategy to private-market units where the occupant receives a subsidy. Work by McArdle (n.d.) indicates that in many cases in the AHS, one cannot distinguish between the actual gross rent and the gross rent paid (net of the subsidy). We choose to exclude units where the occupant receives a subsidy in the first survey year. However, a unit whose occupying household did not receive a subsidy in the first survey, but did in the second survey, is considered to be affordable in the second survey. This approach does not result in bias, as treating subsidized units as a separate category into which units can move does not qualitatively change our results.

Table 1 shows the frequency of each outcome for movements out of the affordable housing stock and out of the unaffordable stock between any two AHS metropolitan surveys. Similar to Nelson and Vandenbroucke (1996), we find substantial movement in and out of the affordable stock. Not surprisingly, units in the unaffordable stock are less likely to become government-subsidized or be demolished, but are more likely to convert to owner-occupancy than are units initially classified as affordable. These figures show an increase

TABLE 1

Changes in the Affordable Housing Stock

	Number	Percentage
Units beginning as affordable		
Remain affordable	4,171	45.3
Become unaffordable	2,928	31.8
Become subsidized	760	8.3
Become owner-occupied	506	5.5
Are demolished or converted	837	9.1
Total	9,202	
Units beginning as unaffordable		
Remain unaffordable	54,298	78.1
Become affordable	6,007	8.6
Become subsidized	3,185	4.6
Become owner-occupied	4,703	6.8
Are demolished or converted	1,369	2.0
Total	69,562	

Notes: Only units that had observations for two consecutive years are included; units that were initially government subsidized or classified as public housing are excluded. A unit is defined as affordable if the sum of rent and utilities is less than 30 percent of household income for a household at 35 percent of the median income for four-person families for that year in that city. To account for different unit sizes, we make an adjustment based on the number of bedrooms. These aggregate data are likely to underestimate the number of units that become unaffordable because rents tend to increase more when tenants change, but new tenants are less likely to become American Housing Survey respondents.

of approximately 1,700 units. This result may be misleading because the AHS will tend to exclude units with a change in occupants in successive surveys; this leads to bias because these are the units most likely to experience rent increases.[9]

In Table 2, we present the distribution of rent-controlled units for those MSAs with rent-control policies. The number of

rental units subject to rent control varies widely, from a low of 4 percent in Boston to a high of more than 25 percent in San Francisco. The principal determinant appears to be whether the central city itself imposes rent control. Even in cities with little rent control, there is at least one zone for which rent-controlled units make up more than 10 percent of the rental stock.

In the analysis, we include unit and neighborhood variables that enter into the landlord's optimal maintenance and renovation decision as well as the MSA land-use and supply restriction variables. All regressions also include a set of control variables. We include unit characteristics such as a dummy variable for the unit if it is defined as adequate by AHS standards, unit age, a dummy for multiunit buildings, and the number of units in the structure. Adequacy is an AHS-coded summary variable based on responses to questions about physical problems in the unit. The lack of hot piped water or a flush toilet would classify a unit as severely inadequate, while multiple leaks and holes in the floor and walls would classify the unit as moderately inadequate.

Neighborhood effects enter the decision to invest in a unit's quality. We use AHS zones—socioeconomically homogeneous areas of approximately 100,000 people—as our definition of a neighborhood. Although larger than a neighborhood, this is the most geographically disaggregated variable available in the AHS metropolitan survey. For each zone, we estimate the ratio of rental units to all units, affordable units to all rental units, public housing units to all rental units, and subsidized units to all rental units in the zone. We also measure the average age of the rental stock, the percentage of households headed by an African-American, and the median household income in the zone.

Both market and unit measures act as control variables. The first controls for the effect of aggregate MSA changes in house prices and rents in causing movements of individual units into and out of the affordable stock. We use DiPasquale and Somerville's (1995) methodology to generate hedonic price

TABLE 2

Rent-Control Descriptive Statistics
Percentage of Rent-Controlled Units in Rental Stock

Metropolitan Statistical Area (MSA)	MSA Mean (Percent)	Number of Zones in MSA	Percentage of Rent-Controlled Rental Units in Zone				
			Average across Zones	25th Percentile across Zones	Median across Zones	75th Percentile across Zones	90th Percentile across Zones
Boston	4.0	31	2.3	0.0	0.0	1.8	5.7
Los Angeles	25.0	44	19.2	2.1	8.0	39.0	47.9
New York	17.1	83	11.6	0.0	9.3	18.0	28.7
San Francisco	25.5	22	17.6	0.9	4.2	36.1	56.4
San Jose	10.1	10	9.2	5.5	6.9	12.7	16.5
Washington, D.C.	9.3	23	6.6	0.8	2.0	4.1	25.9

and rent series from the AHS, with mean values of the affordable stock used to describe the bundle. The second is the ratio of a unit's rent to the affordability conditions that the most marginally affordable units are more likely to filter up.

Data on land-use regulation come from the Wharton Urban Decentralization Project Data Set (Linneman and Summers 1991). These data summarize surveys sent to local planners in a sample of sixty MSAs, of which we have price data and American Housing Survey information for thirty-eight. We include two measures of regulation, a count of the number of ways in which growth management techniques have been introduced in the MSA, and whether development or impact fees are imposed in the cities in the MSA. The number of growth management techniques is the sum of five different dummy variables, each of which indicates whether one of the following approaches to introducing growth management policies is prevalent in the MSA: citizen referendum; legislative action by municipalities, counties, and the state; and administrative action by public authorities. We assume that the more types of actions taken and the greater the number of groups that act to control development, the more constrained the regulatory environment. These variables vary by MSA, but are constant over time. This forces us to assume that the regulatory environment described by these variables is time-invariant.

In Table 3, we present descriptive statistics for these variables separately for affordable units and unaffordable units. Comparing these two sets, we note that the difference of means t-tests rejects equality of means for nearly all variables.

TABLE 3
Descriptive Statistics

	Affordable Units			Unaffordable Units			
Variable	Count	Mean	Standard Deviation	Count	Mean	Standard Deviation	t-Test on Mean Difference
Unit							
Adequacy of unit (1 if adequate, 0 otherwise)	9,202	0.72	0.45	69,562	0.90	0.30	37.44
Age of unit	9,202	46.56	19.58	69,562	27.91	20.64	85.33
Unit is part of multiunit building (1 if yes, 0 if no)	9,202	0.70	0.46	69,562	0.76	0.43	12.43
Number of units in building	9,202	8.35	19.00	69,562	13.63	29.19	23.25
Neighborhood							
Ratio of subsidized units to rental units in zone	9,202	0.11	0.06	69,562	0.10	0.06	19.52
Average age of rental units in zone	9,202	37.15	13.67	69,562	28.28	12.92	58.85
Ratio of public housing units to rental units in zone	9,202	0.07	0.07	69,562	0.04	0.05	39.15
Ratio of rental units to all units in zone	9,202	0.48	0.17	69,562	0.44	0.15	21.53
Ratio of affordable units to rental units in zone	9,202	0.31	0.17	69,562	0.14	0.13	92.42
Percentage African-American heads of household in zone	9,202	0.27	0.30	69,562	0.13	0.18	44.67
Median household income in zone	9,202	21,487	8,665	69,562	27,650	8,998	63.83
Regulation							
New single-family permits—supply elasticity	7,502	15.96	8.64	56,552	14.37	7.38	15.25
Jurisdictions in MSA use impact fees (dummy)	8,571	0.36	0.48	61,708	0.51	0.50	27.35
Number of approaches to growth management	8,215	0.54	0.83	59,713	0.69	0.89	14.66
Percentage rent control in zone greater than 10 percent (1 if yes, 0 if no)	761	0.47	0.50	8,302	0.30	0.46	9.04
Percentage rent control in zone	761	0.14	0.16	8,302	0.10	0.14	6.67
Control							
Hedonic price change in MSA (affordable units)	9,202	0.07	0.38	69,562	0.08	0.34	1.95
Hedonic rent change in MSA (affordable units)	9,202	0.23	0.11	69,562	0.21	0.12	19.54
Number of years current resident has occupied unit	7,878	6.33	8.60	60,907	2.92	4.96	34.39
Ratio of rent to cutoff of affordability	9,202	0.76	0.20	69,562	1.62	0.46	319.24

Notes: Only units that were included in two consecutive surveys are included; units that dropped out of the sample in successive surveys are excluded. All price and rent changes are measured in nominal dollars. The mean values in the affordable units column and the unaffordable units column for the hedonic price and rent changes differ because these two categories of units are not distributed identically across metropolitan statistical areas (MSAs). Rent-control variables are only for Boston, Los Angeles, Newark, San Francisco, San Jose, and Washington, D.C., American Housing Surveys. Supply elasticities and regulation variables are only available for thirty-eight of forty-four American Housing Survey MSAs.

Qualitatively, affordable units are in poorer condition and in older and smaller buildings. Tenants have a notably longer mean stay in the affordable units, 6.3 versus 2.9 years. Affordable units are both more concentrated in space than are rental units in general and are much more likely to be in areas with a higher proportion of African-Americans. Although other differences are statistically significant, they are not meaningful. The rent changes, which are calculated at the zone rather than at the unit level, differ by class because affordable and nonaffordable units do not have the same distribution across space, while price and rent changes vary by area. Those MSAs with more affordable units are likely to have higher supply elasticities and less land-use regulation.

5. Empirical Results

We estimate the model using a multinomial logit specification where any observation $i = 1$ to n can fall into one of k groups. For a unit currently in the low-income stock, these groups are remaining in the low-income stock, filtering up (defined as having a rent that surpasses the affordability threshold), converting to owner-occupied, or being demolished. For each observation, we have a probability:

(1) $$Pr(i \in j) = \frac{e^{X\beta_j}}{\sum_{j=1}^{k} e^{X\beta_k}} \text{ for all } k = 1 \text{ to } 4 \text{ groups.}$$

Equation 1 is unidentified unless we set $e^{X\beta_1} = 1$. The standard procedure is to present the odds ratio, the ratio of the probability that $i \in k (k \neq 1)$ relative to the probability that $i \in 1$. For instance:

(2) $$\frac{Pr(i \in 2)}{Pr(i \in 1)} = \frac{e^{X\beta_2}}{1 + \sum_{j=2}^{k} e^{X\beta_k}} \bigg/ \frac{1}{1 + \sum_{j=2}^{k} e^{X\beta_k}} = e^{x\beta_2}.$$

The multinomial regression results are presented in the appendix. There, Tables A1 and A2 show the effects of land-use regulation on affordable and unaffordable units, while Table A3 does the same for the effect of the rent-control variables. The relatively small number of degrees of freedom at the MSA level causes us to separate these two into distinct tables.

Multinomial logit regression output can be difficult to interpret. The coefficients are both exponentiated and relative to the baseline outcome, which, in our case, is when the unit's affordability status remains unchanged. We present the results in a set of tables that show the sensitivity of relative probabilities to given changes in the values of right-hand-side variables. These describe the percentage-point change in the

probability of outcome i, relative to remaining affordable, for a 10 percent change in the explanatory variables. These results are like elasticities, but are applied to relative rather than to absolute probabilities.

Table 4 shows the effects of the unit characteristics, neighborhood quality measures, and control variables. Adding the government regulation variables to these variables does not change the results, so for clarity of presentation, we show them just once. The results in column 1 describe the sensitivity that an affordable unit filters up, relative to staying affordable. Several factors stand out. Older units are less likely to filter up, as the cost of improving quality is higher. Neighborhood effects matter: filtering up is more likely to occur in neighborhoods with lots of rental units, but less likely if those units are mostly affordable. The control variables matter: units are more likely to become unaffordable if rents are rising in the market and if the unit's initial survey rent is closer to the cutoff. Being in better shape relative to the neighborhood also matters. From columns 2 and 3, the older the zone average, controlling for the unit's own age, the more likely the unit is to become owner-occupied, and the less likely it is to be demolished, though conversion to owner-occupancy is falling and demolition or conversion is rising in the unit's own age. For units initially unaffordable—columns 3-6—median zone income and market conditions are extremely important. Units are dramatically less likely to filter down or be demolished/converted the higher the median zone income is and the greater the increase in rents is.

Table 5 presents the effects of changes in regulation measures on changes in the stock of affordable units. All of the regression specifications used in Table 5 include the full set of unit, neighborhood, and control variables in Table 4. The results here are consistent with the filtering model: the more constrained the supply response for new residential units to demand shocks, the greater the probability that an affordable unit will filter up and out of the affordable stock relative to staying in the stock. Explicitly, the greater the supply elasticity of new single-family construction, the lower this relative probability will be, as builders are able to respond much more quickly to demand shocks. With more units coming in more quickly in response to an increase in demand, relative rents between high- and low-quality markets diverge less, reducing the returns to upgrading a unit so that it can filter up. The sign is robust across specifications, though the coefficient is not uniformly statistically different from zero. We find this a compelling result, clearly identifying the linkage between construction of new high- and standard-quality homes and the affordable stock consisting of lower quality units.

In regressions 2 and 3, we add the two measures of government land-use regulation, the presence of impact fees, and measures of the number of growth management

TABLE 4

Percentage Change in Relative Probabilities
10 Percent Change in Mean Values

Variable	Affordable Units			Unaffordable Units		
	Filters up—Becomes Unaffordable (1)	Converts to Owner-Occupied (2)	Converted or Demolished (3)	Filters down—Becomes Affordable (4)	Converts to Owner-Occupied (5)	Converted or Demolished (6)
Adequacy of unit	2.28	NS	-5.26	NS	NS	-7.36
Age of unit	-5.03	-6.38	8.35	1.90	NS	9.63
Unit is part of multiunit building	1.24	-10.82	-2.37	-2.91	-14.55	-5.46
Number of units in building	-0.68	NS	NS	0.26	NS	NS
Ratio of subsidized units to all units in zone	NS	NS	NS	2.32	NS	NS
Average age of rental units in zone	NS	5.98	-10.38	1.00	NS	-7.66
Ratio of public housing units to rental units in zone	NS	NS	NS	0.25	0.37	NS
Ratio of rental units to all units in zone	6.89	NS	NS	-1.22	-1.97	NS
Ratio of affordable units to rental units in zone	-4.62	NS	NS	0.89	1.48	1.03
Percentage African-American heads of household in zone	-0.96	-2.17	NS	0.45	-0.80	0.94
Median income in zone	0.00	0.00	NS	-24.16	NS	-24.16
Hedonic price change in MSA (affordable units)	0.13	NS	NS	0.35	NS	NS
Hedonic rent change in MSA (affordable units)	4.89	2.64	NS	-39.01	13.62	-26.17
Number of years current resident has occupied unit	-0.90	—	-1.10	0.17	0.28	-0.54
Ratio of rent to cutoff of affordability	5.29	NS	-6.27	0.00	0.00	0.00

Notes: The table reports changes in the odds ratios due to a 10 percent increase from the mean and due to an increase equal to one standard deviation from the mean. The odds ratios are relative to the outcome with the unit remaining affordable or becoming subsidized. The metropolitan statistical area (MSA) dummies are used in specification 1 but are not reported. NS indicates that the variable was not significant at the 5 percent level; the dash indicates that the variable was not used in this specification.

techniques used in the MSA. We argue that both describe constraints on supply. In both cases, greater regulation results in an increase in the probability that an affordable rental unit will filter up to become unaffordable. This is consistent with the predictions of the filtering model, as the constraints on new development can be expected to increase the returns to maintenance and renovation because with less new construction, relative rents for units of higher quality will be greater. The effects of elasticity and regulation variables on the relative probability of conversion to owner-occupied status or being demolished or converted are not statistically different from their effect on a unit remaining affordable.

We believe that the negative effect of supply regulations is more pronounced than is suggested by the absolute magnitude of these coefficients. When we compare the quasi-elasticities in Table 5 with those in Table 4, 10 percent increases in each of the elasticity and regulations variables have no more than one-quarter the effect of a similar increase in unit age and less than half the effect for unit quality. The effect is also less than one-quarter that of the neighborhood measures, mix of rental,

owner-occupied, and affordable units in the zone. However, to say that the effects of regulations are unimportant would be erroneous. Our regulation measures are quite crude, yet they still provide robust, theoretically compelling results. More important, an increase in these measures affects all units in the affordable stock, so that even with a small effect per unit, the aggregate effect on affordable housing can be substantive. In contrast, unit age or quality affects the unit alone.

In Table 6, we present the same results for units unaffordable to low-income renters. Regulation variables have no effect on the relative probability that one of these will leave the stock. However, the new-construction-supply elasticity does matter. Higher end rental units are less likely to become owner-occupied and less likely to be demolished or converted when the supply response to a given demand shock is greater. This is consistent with the spirit of the filtering model, particularly if we think of the purchase of an existing rental unit and its conversion to an owner-occupied unit and the redevelopment of an existing structure as inferior to new greenfield development.

Table 7 presents the effects of rent control. Our prior is that in a rent-controlled environment, uncontrolled units are more likely to filter up. Early and Phelps (1999) and Fallis and Smith (1984) demonstrate that rent control increases the rents for uncontrolled rental units. However, we find that an uncontrolled unit in an area with more rent control is less likely to filter up or become owner-occupied and more likely, though the effect is not statistically different from zero, to be demolished or converted. In trying to explain this outcome, the other results do shed some light on the apparent paradox. Although not robust in significance, as the percentage of rental

units subject to rent control in an area rises, uncontrolled units are less likely to convert to ownership, relative to remaining affordable, and more likely to be demolished or converted. Given that rents for uncontrolled units will be higher, and that rent control is typically imposed in locations where rents are high and rising, this suggests two possible explanations. First, uncontrolled units that remain affordable in the presence of rent control are more likely to be very low-quality units, suggesting selection bias. Despite the presence of rent control, the quality of these units indicates that they are less appealing for owner-occupants, unable to filter up, and more likely to be

TABLE 5
Effect of a 10 Percent Change in Regulation Variables
Affordable Units

	Specification (Percent)		
Variable	1	2	3
Filters up			
New single-family permits—supply elasticity	-1.19*	-0.53	-1.23**
Jurisdictions in MSA use impact fees (dummy)		0.92***	
Number of approaches to growth management			0.33*
Converts to owner-occupied			
New single-family permits—supply elasticity	1.46	1.55	1.40
Jurisdictions in MSA use impact fees (dummy)		0.15	
Number of approaches to growth management			-0.28
Demolished or converted			
New single-family permits—supply elasticity	0.83	1.20	0.80
Jurisdictions in MSA use impact fees (dummy)		0.50	
Number of approaches to growth management			-0.34

Notes: The table reports the percentage change in the odds ratios due to a 10 percent increase from the mean. The odds ratios are relative to the outcome with the unit remaining affordable or becoming subsidized. MSA is metropolitan statistical area.

***Statistically significant at the 1 percent level.

**Statistically significant at the 5 percent level.

*Statistically significant at the 10 percent level.

TABLE 6
Effect of a 10 Percent Change in Regulation Variables
Unaffordable Units

	Specification (Percent)		
Variable	1	2	3
Filters down			
New single-family permits—supply elasticity	-0.38	-0.27	-0.38
Jurisdictions in MSA use impact fees (dummy)		0.24	
Number of approaches to growth management			0.10
Converts to owner-occupied			
New single-family permits—supply elasticity	-0.92**	-0.88**	-0.92**
Jurisdictions in MSA use impact fees (dummy)		0.09	
Number of approaches to growth management			0.00
Demolished or converted			
New single-family permits—supply elasticity	-1.25	-1.48*	-1.26*
Jurisdictions in MSA use impact fees (dummy)		-0.58	
Number of approaches to growth management			-0.18

Notes: The table reports the percentage change in the odds ratios due to a 10 percent increase from the mean. The odds ratios are relative to the outcome with the unit remaining affordable or becoming subsidized. MSA is metropolitan statistical area.

***Statistically significant at the 1 percent level.

**Statistically significant at the 5 percent level.

*Statistically significant at the 10 percent level.

Effect of a 10 Percent Change in Rent-Control Measures
Affordable Units

Variable	Specification (Percent) 1	Specification (Percent) 2
Filters up		
Percentage of units in zone that are rent-controlled is greater than 10 percent	-3.65***	
Percentage of units in zone that are rent-controlled		-2.18*
Converts to owner-occupied		
Percentage of units in zone that are rent-controlled is greater than 10 percent	-4.99*	
Percentage of units in zone that are rent-controlled		-5.25
Demolished or converted		
Percentage of units in zone that are rent-controlled is greater than 10 percent	0.32	
Percentage of units in zone that are rent-controlled		1.02

Notes: All regressions have metropolitan statistical area (MSA) fixed effects and a dummy if the unit is in the MSA's central city. The table reports the percentage change in the odds ratios due to a 10 percent increase from the mean. The odds ratios are relative to the outcome with the unit remaining affordable or becoming subsidized.

***Statistically significant at the 1 percent level.

**Statistically significant at the 5 percent level.

*Statistically significant at the 10 percent level.

demolished. Second, if there are strong negative neighborhood externalities from being in an area with an undermaintained rent-controlled stock, this might reduce the returns to maintenance and renovation on uncontrolled units. Even though there is an incentive for the rents to rise, this second effect would work in the opposite direction. Both of these approaches allow for uncontrolled rents to be higher, while the returns to maintenance, for filtering up, to be lower. We are

reluctant without a better sense of the data to reach any strong conclusion from this result, and we caution readers to use discretion when interpreting it.

6. CONCLUSION

This paper takes a new approach to studying the effects of land-use regulation. Instead of focusing on the effects of supply restrictions, both explicit and implicit, on new construction, we examine how they affect the filtering process. This allows us to examine the dynamics of the relationship between housing affordable to low-income households and local-government-imposed land-use regulations. Our approach, which borrows from Somerville and Holmes (2001), looks at how regulation affects the probability that a rental unit currently deemed affordable will become unaffordable, owner-occupied, or demolished, relative to staying affordable.

We find that regulation does matter: when new construction is more constrained, as measured either by a lower supply elasticity or the presence of certain regulations, affordable units are more likely to filter up and become unaffordable, relative to remaining in the affordable stock. We find this result to be quite compelling and to offer an important lesson for policymakers. The effects of land-use regulation are not limited to raising the price of owner-occupied housing and reducing access to homeownership. They also have a clear negative impact on the most vulnerable. Given the ample efforts to document the difficult and worsening affordability crisis for the least well-off, this has to be a concern.

There are a number of aspects of this paper that should caution against using this work to predict the effects of any new policies on the affordable stock. We examine the dynamics of the stock, but our supply control variables are MSA-specific and time-invariant. Consequently, we know little of the timing of these processes. Given the long-run nature of the filtering process, this suggests that the outcome of short-run changes in policy would be hard to predict. Still, through our examination of changes in the stock of affordable units across MSAs—rather than the size of the MSA stock itself—we are able to avoid some of the more egregious problems of MSA-level, excluded-variable bias.

Table A1

Affordable Rental Units
Multinomial Logit/Excluded Option/Remain Affordable

Variable	Specification 1 Pseudo R^2 = 7.94 Percent			Specification 2 Pseudo R^2 = 8.01 Percent			Specification 3 Pseudo R^2 = 7.98 Percent		
	Rent Rises	Owner-Occupied	Demolished/Converted	Rent Rises	Owner-Occupied	Demolished/Converted	Rent Rises	Owner-Occupied	Demolished/Converted
Adequacy of unit	1.4121	1.2719	0.5504	1.4045	1.2731	0.5488	1.4134	1.2773	0.5507
(1 if adequate, 0 otherwise)	(4.26)	(1.54)	(5.38)	(4.19)	(1.54)	(5.40)	(4.27)	(1.56)	(5.37)
Average resident's evaluation of unit	0.9936	1.0340	0.8649	0.9945	1.0341	0.8652	0.9940	1.0334	0.8643
(scale of 1-10: 1 is worst, 10 is best)	(0.48)	(1.28)	(7.21)	(0.41)	(1.28)	(7.20)	(0.46)	(1.26)	(7.24)
Age of unit	0.9899	0.9856	1.0198	0.9900	0.9856	1.0198	0.9899	0.9857	1.0200
	(5.16)	(3.92)	(5.70)	(5.09)	(3.91)	(5.71)	(5.17)	(3.89)	(5.74)
Unit is part of multiunit building	1.1901	0.2005	0.7236	1.1924	0.2006	0.7245	1.1894	0.2006	0.7245
(1 if yes, 0 if no)	(2.40)	(11.80)	(2.79)	(2.42)	(11.80)	(2.78)	(2.39)	(11.80)	(2.78)
Number of units in building	0.9930	0.9902	0.9975	0.9927	0.9902	0.9973	0.9929	0.9903	0.9977
	(3.93)	(1.78)	(0.73)	(4.06)	(1.78)	(0.78)	(3.96)	(1.77)	(0.66)
Ratio of subsidized units to rental units	1.6727	2.2670	0.4304	1.2908	2.1206	0.3801	1.6012	2.3343	0.4278
in zone	(0.85)	(0.72)	(0.81)	(0.42)	(0.65)	(0.92)	(0.78)	(0.74)	(0.81)
Average age of rental units in zone	0.9982	1.0118	0.9752	1.0003	1.0121	0.9764	0.9975	1.0121	0.9757
	(0.45)	(1.49)	(3.65)	(0.08)	(1.50)	(3.40)	(0.60)	(1.52)	(3.56)
Ratio of public housing units to rental	0.6161	0.9293	5.2494	0.6336	0.9471	5.5030	0.5255	1.0082	6.0647
units in zone	(0.74)	(0.06)	(1.73)	(0.70)	(0.04)	(1.78)	(0.98)	(0.01)	(1.86)
Ratio of rental units to all units in zone	4.0005	1.5240	0.8627	3.3228	1.4826	0.7920	3.8044	1.6012	0.8900
	(4.96)	(0.72)	(0.30)	(4.20)	(0.66)	(0.47)	(4.76)	(0.79)	(0.23)
Ratio of affordable units to rental units	0.1852	0.8163	0.6334	0.1771	0.8132	0.6191	0.2046	0.7675	0.5854
in zone	(6.08)	(0.39)	(1.04)	(6.22)	(0.40)	(1.09)	(5.61)	(0.50)	(1.19)
Average resident's evaluation of neighborhood	1.0298	1.3643	0.8603	1.0852	1.3724	0.8874	1.0296	1.3590	0.8596
(scale of 1-10: 1 is worst, 10 is best)	(0.41)	(2.13)	(1.22)	(1.11)	(2.11)	(0.94)	(0.41)	(2.10)	(1.23)
Percentage African-American heads	0.7339	0.4705	0.9249	0.8793	0.4789	1.0162	0.7493	0.4635	0.9080
of household in zone	(2.03)	(2.44)	(0.31)	(0.79)	(2.23)	(0.06)	(1.89)	(2.48)	(0.38)
Median income in zone	1.0000	1.0000	1.0000	(0.79)	1.0000	1.0000	1.0000	1.0000	1.0000
	(3.22)	(0.52)	(0.20)	(0.79)	(0.44)	(0.02)	(3.04)	(0.61)	(0.27)
Hedonic price change in MSA	0.9855	1.8291	0.8197	(0.79)	1.8519	0.8390	0.9892	1.8245	0.8283
(affordable units)	(0.12)	(2.50)	(0.87)	(0.79)	(2.54)	(0.77)	(0.09)	(2.50)	(0.83)
Hedonic rent change in MSA	6.6865	2.5710	0.7265	(0.79)	2.6750	0.8462	6.3513	2.6997	0.7892
(affordable units)	(5.16)	(1.36)	(0.56)	(0.79)	(1.36)	(0.28)	(4.99)	(1.42)	(0.41)

Table A1 (continued)
Affordable Rental Units
Multinomial Logit/Excluded Option/Remain Affordable

Variable	Specification 1 Pseudo R^2 = 7.94 Percent			Specification 2 Pseudo R^2 = 8.01 Percent			Specification 3 Pseudo R^2 = 7.98 Percent		
	Rent Rises	Owner-Occupied	Demolished/ Converted	Rent Rises	Owner-Occupied	Demolished/ Converted	Rent Rises	Owner-Occupied	Demolished/ Converted
New single-family permits— supply elasticity	0.9925 (1.96)	1.0091 (1.23)	1.0052 (0.78)	(0.79) (0.79)	1.0097 (1.23)	1.0075 (1.06)	0.9923 (2.01)	1.0087 (1.19)	1.0050 (0.76)
Jurisdictions in MSA use impact fees (dummy)				(0.79) (0.79)	1.0421 (0.26)	1.1484 (1.00)			
Number of approaches to growth management							1.0623 (1.69)	0.9490 (0.71)	0.9395 (0.97)
Number of years current resident has occupied unit	0.9877 (3.23)	1.0044 (0.65)	0.9823 (2.57)	0.9876 (3.26)	1.0043 (0.65)	0.9823 (2.57)	0.9874 (3.30)	1.0047 (0.70)	0.9826 (2.52)
Ratio of rent to cutoff of affordability	2.0477 (4.16)	0.8783 (0.40)	0.3351 (4.07)	2.1028 (4.31)	0.8805 (0.39)	0.3388 (4.03)	2.0585 (4.19)	0.8782 (0.40)	0.3331 (4.09)

Notes: Number of observations: 6,168. The dependent variable has four possible values: 1) an affordable rental unit can remain affordable, 2) become unaffordable because of increases in its rent relative to the affordability cutoff, 3) become owner-occupied, or 4) be demolished or converted to another use. The excluded (base) outcome is to remain affordable. The top number reported is the unit odds ratio e^b; the bottom number (in parentheses) is the Z-statistic. The odds ratio is the probability of outcome i divided by the probability of the null (or excluded) outcome, and is equal to e^{XB}. The unit odds ratio is the odds ratio for a one-unit increase to the independent variable. Thus, it is not b that is reported in the table, but eb. The Z-statistic is based on the null hypothesis that $b = 0$, which is equivalent to the unit odds ratio $e^b = 1$. MSA is metropolitan statistical area.

TABLE A2
Unaffordable Rental Units
Multinomial Logit/Excluded Option/Remain Unaffordable

Variable	Specification 1 Pseudo R^2 = 14.58 Percent			Specification 2 Pseudo R^2 = 14.59 Percent			Specification 3 Pseudo R^2 = 14.58 Percent		
	Rent Falls/ Subsidized	Owner- Occupied	Demolished/ Converted	Rent Falls/ Subsidized	Owner- Occupied	Demolished/ Converted	Rent Falls/ Subsidized	Owner- Occupied	Demolished/ Converted
Adequacy of unit (1 if adequate, 0 otherwise)	0.8675 (2.93)	1.0149 (0.19)	0.4966 (7.11)	0.8685 (2.91)	1.0153 (0.19)	0.4953 (7.13)	0.8680 (2.92)	1.0150 (0.19)	0.4966 (7.11)
Average resident's evaluation of unit (scale of 1-10: 1 is worst, 10 is best)	1.0016 (0.22)	1.0284 (2.71)	0.9096 (5.48)	1.0018 (0.25)	1.0285 (2.71)	0.9092 (5.51)	1.0017 (0.24)	1.0284 (2.70)	0.9094 (5.50)
Age of unit	1.0082 (8.58)	1.0021 (1.66)	1.0336 (13.61)	1.0082 (8.59)	1.0021 (1.65)	1.0336 (13.60)	1.0082 (8.59)	1.0021 (1.66)	1.0337 (13.61)
Unit is part of multiunit building (1 if yes, 0 if no)	0.6930 (10.14)	0.1333 (43.85)	0.4521 (9.27)	0.6931 (10.14)	0.1333 (43.84)	0.4516 (9.29)	0.6932 (10.14)	0.1333 (43.85)	0.4517 (9.28)
Number of units in building	1.0016 (2.74)	0.9991 (0.94)	1.0007 (0.35)	1.0016 (2.74)	0.9991 (0.95)	1.0007 (0.37)	1.0016 (2.75)	0.9991 (0.94)	1.0007 (0.35)
Ratio of subsidized units to rental units in zone	8.0568 (7.44)	0.6546 (1.08)	0.2030 (1.94)	7.7836 (7.29)	0.6535 (1.08)	0.2141 (1.87)	7.9195 (7.36)	0.6545 (1.08)	0.2078 (1.90)
Average age of rental units in zone	1.0032 (1.64)	1.0028 (1.05)	0.9732 (5.34)	1.0036 (1.83)	1.0029 (1.09)	0.9720 (5.48)	1.0031 (1.57)	1.0028 (1.05)	0.9734 (5.29)
Ratio of public housing units to rental units in zone	1.3729 (0.88)	1.2864 (0.43)	0.0738 (2.73)	1.3555 (0.84)	1.2731 (0.41)	0.0734 (2.73)	1.3328 (0.79)	1.2862 (0.43)	0.0777 (2.66)
Ratio of rental units to all units in zone	0.6826 (2.79)	0.4465 (4.06)	0.8638 (0.41)	0.6644 (2.95)	0.4429 (4.08)	0.9040 (0.28)	0.6763 (2.85)	0.4465 (4.06)	0.8693 (0.39)
Ratio of affordable units to rental units in zone	2.6278 (5.88)	4.1712 (5.47)	3.7485 (3.15)	2.5791 (5.74)	4.1394 (5.43)	3.9768 (3.27)	2.6867 (5.93)	4.1674 (5.39)	3.5933 (3.00)
Average resident's evaluation of neighborhood (scale of 1-10: 1 is worst, 10 is best)	1.0327 (0.89)	0.9513 (0.95)	0.9293 (0.77)	1.0430 (1.14)	0.9561 (0.83)	0.9040 (1.03)	1.0344 (0.93)	0.9511 (0.95)	0.9267 (0.80)
Percentage African-American heads of household in zone	1.4736 (4.54)	0.5119 (4.18)	1.8318 (2.84)	1.5326 (4.70)	0.5225 (3.86)	1.6618 (2.22)	1.4840 (4.60)	0.5118 (4.15)	1.8133 (2.79)
Median income in zone	1.0000 (6.80)	1.0000 (1.31)	1.0000 (4.44)	1.0000 (6.92)	1.0000 (1.36)	1.0000 (4.24)	1.0000 (6.84)	1.0000 (1.31)	1.0000 (4.41)
Hedonic price change in MSA (affordable units)	1.3389 (4.94)	1.1121 (1.37)	1.0197 (0.12)	1.3478 (5.04)	1.1140 (1.39)	1.0070 (0.04)	1.3404 (4.95)	1.1122 (1.37)	1.0225 (0.14)
Hedonic rent change in MSA (affordable units)	0.1328 (13.40)	1.8894 (3.24)	0.3134 (3.10)	0.1379 (12.90)	1.9044 (3.26)	0.2891 (3.26)	0.1305 (13.38)	1.8912 (3.19)	0.3240 (2.98)

Table A2 (Continued)
Unaffordable Rental Units
Multinomial Logit/Excluded Option/Remain Unaffordable

	Specification 1 Pseudo R^2 = 14.58 Percent			Specification 2 Pseudo R^2 = 14.59 Percent			Specification 3 Pseudo R^2 = 14.58 Percent		
Variable	Rent Falls/ Subsidized	Owner- Occupied	Demolished/ Converted	Rent Falls/ Subsidized	Owner- Occupied	Demolished/ Converted	Rent Falls/ Subsidized	Owner- Occupied	Demolished/ Converted
New single-family permits— supply elasticity	0.9973 (1.37)	0.9936 (2.32)	0.9913 (1.64)	0.9981 (0.92)	0.9939 (2.11)	0.9897 (1.89)	0.9974 (1.33)	0.9936 (2.32)	0.9912 (1.66)
Jurisdictions in MSA use impact fees (dummy)				1.0474 (1.26)	1.0184 (0.39)	0.8917 (1.23)			
Number of approaches to growth management							1.0141 (0.84)	0.9996 (0.02)	0.9743 (0.58)
Number of years current resident has occupied unit	1.0105 (3.92)	1.0162 (4.04)	0.9610 (3.89)	1.0104 (3.88)	1.0161 (4.03)	0.9612 (3.88)	1.0104 (3.89)	1.0162 (4.04)	0.9612 (3.87)
Ratio of rent to cutoff of affordability	0.1101 (45.98)	1.9436 (15.53)	0.5795 (5.07)	0.1100 (45.99)	1.9413 (15.46)	0.5827 (5.01)	0.1099 (45.95)	1.9438 (15.43)	0.5829 (4.99)

Notes: Number of observations: 48,347. The dependent variable has four possible values: 1) an unaffordable rental unit can remain unaffordable, 2) become affordable because of decreases in its rent relative to the affordability cutoff, 3) become owner-occupied, or 4) be demolished or converted to another use. The excluded (base) outcome is to remain unaffordable. The top number reported is the unit odds ratio e^b; the bottom number (in parentheses) is the Z-statistic. The odds ratio is the probability of outcome i divided by the probability of the null (or excluded) outcome, and is equal to e^{XB}. The unit odds ratio is the odds ratio for a one-unit increase to the independent variable. Thus, it is not b that is reported in the table, but eb. The Z-statistic is based on the null hypothesis that $b = 0$, which is equivalent to the unit odds ratio $e^b = 1$. MSA is metropolitan statistical area.

TABLE A3
Affordable Rental Units
Multinomial Logit/Excluded Option/Remain Affordable

	Specification 1 Pseudo R^2 = 10.79 Percent			Specification 2 Pseudo R^2 = 10.35 Percent		
Variable	Rent Rises	Owner-Occupied	Demolished/Converted	Rent Rises	Owner-Occupied	Demolished/Converted
Adequacy of unit (1 if adequate, 0 otherwise)	2.1860	1.2212	0.4240	2.0122	1.0494	0.4315
	(2.74)	(0.29)	(1.74)	(2.47)	(0.07)	(1.71)
Average resident's evaluation of unit	0.9240	1.1128	0.9087	0.9282	1.1147	0.9095
(scale of 1-10: 1 is worst, 10 is best)	(1.86)	(0.95)	(1.12)	(1.77)	(0.97)	(1.11)
Age of unit	0.9976	0.9697	1.0114	0.9973	0.9698	1.0117
	(0.37)	(2.11)	(0.84)	(0.41)	(2.10)	(0.86)
Unit is part of multiunit building (1 if yes, 0 if no)	1.7279	0.1558	0.2353	1.6745	0.1617	0.2357
	(2.19)	(3.03)	(2.77)	(2.09)	(3.02)	(2.75)
Number of units in building	0.9911	0.9973	0.9954	0.9915	0.9968	0.9950
	(1.77)	(0.33)	(0.42)	(1.72)	(0.39)	(0.45)
Ratio of subsidized units to rental units in zone	0.7921	0.0002	0.2915	0.4865	0.0001	0.2465
	(0.13)	(2.05)	(0.28)	(0.41)	(2.20)	(0.32)
Average age of rental units in zone	0.9698	0.9700	0.9290	0.9735	0.9829	0.9262
	(1.66)	(0.67)	(1.76)	(1.42)	(0.36)	(1.78)
Ratio of public housing units to rental units in zone	0.0040	0.0318	0.1173	0.0122	0.0915	0.0888
	(2.39)	(0.73)	(0.43)	(1.97)	(0.53)	(0.50)
Ratio of rental units to all units in zone	0.7950	4.9530	104.5796	0.9647	8.5545	77.8929
	(0.23)	(0.71)	(1.99)	(0.03)	(0.92)	(1.83)
Ratio of affordable units to rental units in zone	0.7486	11.9466	1.9007	0.5920	13.4601	1.9701
	(0.25)	(0.81)	(0.23)	(0.45)	(0.84)	(0.24)
Average resident's evaluation of neighborhood	1.1137	1.2297	1.1343	1.1639	1.4238	1.0564
(scale of 1-10: 1 is worst, 10 is best)	(0.49)	(0.43)	(0.27)	(0.66)	(0.69)	(0.11)
Percentage African-American heads of household in zone	0.4929	0.0373	0.2794	0.4870	0.0352	0.2909
	(1.11)	(1.82)	(0.88)	(1.12)	(1.79)	(0.87)
Median income in zone	0.9999	0.9999	1.0000	0.9999	0.9999	1.0000
	(2.63)	(1.49)	(0.21)	(2.46)	(1.33)	(0.22)
Hedonic price change in MSA (affordable units)	0.7749	0.2247	5.0766	0.7991	0.2322	4.9279
	(0.43)	(1.07)	(0.98)	(0.38)	(1.05)	(0.96)
Hedonic rent change in MSA (affordable units)	0.0368	0.0000	0.0000	0.2773	0.0000	0.0000
	(0.51)	(1.23)	(0.93)	(0.20)	(0.99)	(0.96)
Dummy variable = 1 if percentage of units in zone	0.4516	0.3349	1.0714			
that are rent-controlled is greater than 10 percent	(3.04)	(1.85)	(0.12)			
Percentage of units in zone that are rent-controlled				0.2057	0.0210	2.0694
				(1.66)	(1.62)	(0.35)
Dummy variable = 1 if zone is in central city	1.4884	2.7934	1.3968	1.2578	2.5738	1.3405
	(1.33)	(1.50)	(0.50)	(0.78)	(1.39)	(0.45)
Dummy variable = 1 for Washington, D.C.	0.4480	0.0682	0.1614	0.5596	0.1001	0.1613
	(0.68)	(0.99)	(0.87)	(0.50)	(0.84)	(0.87)

Table A3 (Continued)
Affordable Rental Units
Multinomial Logit/Excluded Option/Remain Affordable

Variable	Specification 1 Pseudo R^2 = 10.79 Percent			Specification 2 Pseudo R^2 = 10.35 Percent		
	Rent Rises	Owner-Occupied	Demolished/Converted	Rent Rises	Owner-Occupied	Demolished/Converted
Dummy variable = 1 for New York City	0.6799	0.5997	0.6003	0.6866	0.4254	0.7762
	(0.55)	(0.32)	(0.37)	(0.52)	(0.52)	(0.17)
Dummy variable = 1 for San Francisco	0.4021	0.0914	0.2025	0.4563	0.1195	0.1935
	(0.97)	(1.10)	(0.94)	(0.84)	(0.96)	(0.97)
Dummy variable = 1 for San Jose	0.3275	0.1017	0.2308	0.4102	0.1489	0.2342
	(1.26)	(1.04)	(0.88)	(1.00)	(0.86)	(0.87)
Dummy variable = 1 for Boston	1.2361	5.1691	3.2279	1.2339	3.4391	4.1158
	(0.34)	(1.14)	(0.88)	(0.32)	(0.83)	(0.94)
Number of years current resident has occupied unit	0.9990	0.9866	1.0083	0.9982	0.9859	1.0080
	(0.11)	(0.55)	(0.39)	(0.19)	(0.58)	(0.38)
Ratio of rent to cutoff of affordability	0.6567	1.0654	1.1459	0.6721	1.1626	1.0885
	(0.90)	(0.06)	(0.13)	(0.85)	(0.14)	(0.08)

Notes: Number of observations: 592. The dependent variable has four possible values: 1) an affordable rental unit can remain affordable, 2) become unaffordable because of increases in its rent relative to the affordability cutoff, 3) become owner-occupied, or 4) be demolished or converted to another use. The excluded (base) outcome is to remain affordable. The top number reported is the unit odds ratio e^b; the bottom number (in parentheses) is the Z-statistic. The odds ratio is the probability of outcome i divided by the probability of the null (or excluded) outcome, and is equal to e^{XB}. The unit odds ratio is the odds ratio for a one-unit increase to the independent variable. Thus, it is not b that is reported in the table, but eb. The Z-statistic is based on the null hypothesis that $b = 0$, which is equivalent to the unit odds ratio $e^b = 1$. The excluded metropolitan statistical area (MSA) dummy is for Los Angeles.

1. Among the many papers in this literature are Bogdon, Silver, and Turner (1994) on the relationship between affordability and adequacy, Nelson (1994) on the association between the affordable stock and low-income households, O'Flaherty (1996) on the economics of homelessness, and especially Nelson and Vandenbroucke's (1996) seminal work charting the size of and change in the aggregate low-income housing stock.

2. The older empirical treatments of filtering are well surveyed by Brzeski (1977). Arnott, Davidson, and Pines (1983) allow for maintenance and rehabilitation, and Braid (1981) studies filtering in rental housing markets. Among a number of their papers on this topic, Bond and Coulson (1989) analyze neighborhood change in a model where the value of housing is related to neighborhood characteristics.

3. Mayer and Somerville (2000b) formally test the effects of regulation on the dynamics of the supply response to demand shocks.

4. An exception is Arnott (1995), who identifies several potential welfare benefits of rent control.

5. DiPasquale and Somerville (1995) demonstrate how to merge the 1974-83 AHS data with those from 1984-94, but the earlier period does not report precise rents. Combining the two sets would bias our results because we must set a precise cutoff for affordability.

6. Rents are a percentage of the four-person family, 30 percent cutoff as follows: zero bedrooms, 70 percent; one bedroom, 75 percent; two bedrooms, 90 percent; three bedrooms, 104 percent; four bedrooms, 116 percent; then increasing by 12 percentage points for each additional bedroom up to fourteen bedrooms.

7. In 1989, the survey question about utility costs was changed, resulting in a shift in responses. To correct for this change, we follow Nelson and Vandenbroucke (1996) and adjust reported utility costs for 1989 and later years.

8. The category "demolished or converted" includes units that were converted to business use, eliminated in a conversion, abandoned, destroyed by disaster, demolished, or condemned. It also includes units with an interior now exposed to the elements and mobile-home sites that no longer have a home on them.

9. We expect that a new occupant is less likely to respond to the AHS than an occupant who has responded in the past. Rents for a unit tend to increase more with unit turnover. Thus, we are likely to undercount units whose rents rise, resulting in an undercount of those units that move out of the affordable stock because the new rent exceeds the affordability cutoff.

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Jack Goodman

Commentary

Housing affordability is a wide-ranging topic, and the conference organizers have wisely chosen to organize the program sessions around different themes. The theme of this session is housing markets, but it is really about housing markets as they are affected by local regulation. It is an appropriate and important focus.

I will do two things in these comments. First, I offer some thoughts on the paper by Tsuriel Somerville and Christopher Mayer, by way of the mandatory critique, and then go on to discuss some broader issues related to the topic of their paper.

The authors use a sample of rental housing units from thirty-eight metropolitan areas in the 1980s and 1990s to examine the effects of regulation on housing affordability. They find that regulation and other constraints on new construction put upward pressure on rents in the existing housing stock and cause units to filter up and out of the affordable stock. This is not a surprise. Their finding on rent control is a surprise, however, in that they estimate that uncontrolled units are less likely to leave the affordable stock in areas where rent control is more prevalent. This finding is at odds with previous findings and common sense, and as the authors indicate, they think it is due to the characteristics of these units.

There is a lot to like about this paper. First is its focus on regulation as an influence on housing affordability. There are two other ways by which governments influence housing affordability: demand subsidies to give people money or tax breaks to help them buy or rent housing, and supply subsidies to reduce the cost of building or renovating housing. We know a fair amount about these two forms of government action to promote affordability. One thing we know is that they cost a lot of money. Regulation is different in that it involves neither cash outlays nor credit guarantees from governments.

But, with the exception of rent control, we do not know much about regulation's effects on housing affordability in the existing housing stock. There are many opinions and anecdotes, but little hard evidence, in part because it is difficult to quantify regulation. It is a tough topic to tackle empirically, and the authors are to be commended for taking it on.

Another attraction of this research is that it offers a new approach: following individual housing units over time and relating their performance to their characteristics and to the local market and regulatory structure around them. The research looks at multiple possible outcomes for affordable units—another innovation. And the authors explain how it fits into the literature. The paper is a logical extension of previous work by Somerville and Mayer and their coauthors.

Lastly, the data source is potentially quite powerful. The same questions are asked of statistically valid samples in a large number of metro areas. The data provide the opportunity to go way beyond case studies and anecdotes, which are useful but are hard to generalize with confidence.

Jack Goodman is president of Hartrey Advisors.

These are all strengths of the research. Yet the authors face a number of research challenges with this work as well.

One challenge to all researchers on housing affordability is to define what affordable housing is. The Somerville and Mayer study adopts a fairly conventional standard in terms of household income and how much of it can be allocated to housing. But affordability is an inherently subjective notion on which reasonable people can and do disagree. Yet even if people disagree on what affordable housing is, they may be able to agree on whether housing is getting more or less affordable over time. For this reason, counting units that cross a threshold (which is the approach in this study) can be less controversial than selecting the threshold itself. Picking another threshold would likely have produced qualitatively similar results.

Note that the authors only look at rental housing. This does not mean that owner-occupied housing presents no affordability issues, but renters have lower incomes on average than owners, and therefore appropriately receive special attention in policy discussions. In addition, measurements of housing costs, market dynamics, and government programs all differ between rental and owner-occupied housing. For all these reasons, it is sensible to study rental housing on its own.

A second challenge is to quantify regulation. It is very tough to boil regulation down to a ten-point scale or anything similar. Much of regulation's effect on housing affordability comes down to land-use controls, and the authors rightly focus on this effect.

Another challenge is to use the American Housing Survey (AHS) data fully, but to avoid pushing the data beyond their limits. I have used the AHS data a lot, and I know that these data are not easy to link longitudinally or to aggregate across the different metro surveys. Much behind-the-scenes work was needed to get the data to where the authors have them, and Somerville and Mayer should be credited for that work.

But I am concerned that the resulting data set is a bit of a grab bag. It mixes time periods, jurisdictional differences within metropolitan areas, and different sampling fractions across metro areas. And the timing of the growth management survey does not necessarily match the timing of the housing unit observations to which it is linked.

Without getting into the econometrics, let me just say that these characteristics of the sample put pressure on the model to include all the relevant variables so that influences ascribed to one variable are not really reflecting the influence of a variable left out of the model. Some of these data issues, as well as simple misreporting of rent control and subsidy status in the AHS, may help explain the counterintuitive rent control results. The interpretation given by the authors is not inconsistent with the data, but it seems just a little too easy and convenient.

Separate from these data issues is the paper's approach of using long-run differences across areas to explain short-run dynamics. In particular, land-use regulations are used to explain movement of units across the affordability threshold. It seems more appropriate to look at the regulations' effects on the proportion of units above and below the threshold. The model's specification calls for caution in drawing conclusions. For example, one cannot project from these results that, if regulations were changed, a jurisdiction would experience within that same three- or four-year period the changes in filtering estimated by the model.

A last comment specifically about the paper regards the summary statement that regulation is less important than unit or neighborhood characteristics in determining filtering. I take exception to this as a portable conclusion that can be applied elsewhere. It is very specific to the variables used in this analysis, their calibration, and the model specification. This will always be the case, so it is unlikely that any general statement about the relative importance of regulation, housing unit, and neighborhood characteristics in the filtering process is a meaningful statement.

The paper is about housing filtering. Let me offer a framework and set of charts that I think capture the authors' approach and will help me to illustrate some more general points: Every housing unit in a local market can be defined in terms of a quality index and a price index. The quality index (q) is a single-dimensional summary of all the size, amenity, and locational attributes that are valued in housing. The price index (p) measures the price per unit of housing quality paid for that house or apartment. This price index will vary from house to house and from apartment to apartment even within a local housing market due to segmentation of the market and various market "imperfections." Speaking loosely, this price index can be viewed as a profitability index from the supplier's perspective and as an (inverse) "good deal" index from the consumer's perspective. Chart 1 offers an illustration, where each dot represents a house or apartment. Apartments A and B provide the same quality housing, but Apartment A is more expensive. Similarly, Apartments B and C have the same price per unit of quality, but unit B is of higher quality.

To be in the housing stock, units must meet two criteria: a minimum quality standard, set by government through code enforcement, zoning, and occupancy standards; and a price (loosely a proxy for profitability) threshold, set by the market. In Chart 1, these two minimums are indicated by the hash marks.

When people think about affordable housing, many think about modest but decent housing that is not too expensive and fits within a family's budget. A household's expenditure on housing is the product of how much housing they consume (q)

and the price per unit of quality (*p*) that they pay. A fixed budget for housing is consistent with various combinations of *q* and *p*. All households hope, of course, to get a good deal on housing so that their housing expenditure gives them a lot of *q* at a low *p*.

The triangle in Chart 1 defines the housing units with combinations of *p* and *q* that meet all three requirements for affordable housing: minimum standards, minimum profitability, and within a moderate-income household's budget constraint. The downward slope to the hypotenuse indicates that households that get a better deal (lower *p*) on their housing can consume more housing (higher *q*) without exceeding their housing budget. Drawn here for simplicity as a straight line, the combinations of *p* and *q* consistent with a fixed budget actually trace out a line that bows inward (concave to the origin).

Filtering in its simple form is represented by horizontal movement over time of individual housing units in the chart. Units increase or decrease in housing quality, but with no change in the "profitability" of the units. Vertical movement, in contrast, indicates a change in housing price or profitability, but with no change in physical characteristics.

Gentrification, shown in Chart 2, can be represented by a unit filtering up in quality level, with a profit incentive driving the upgrading, indicated here by the upward tilt to the line.

Housing can also be lost from the affordable stock if its profitability turns negative due to insufficient demand relative to available supply. This phenomenon is depicted in Chart 3 by

the price index falling below the threshold level for the site and structure to avoid abandonment or redevelopment into nonresidential use. Redevelopment can occur on any residential site providing any level of housing quality, but it typically occurs where the existing structures are reaching the end of their economic life and often are in the affordable triangle.

Lastly, housing can be lost to the affordable stock through government action. Local governments establish and enforce the zoning ordinances, building codes, and occupancy standards that set the minimum quality level of housing in a neighborhood. If units fall below that threshold, as shown in Chart 4, they are subject to removal from the stock, regardless of their profitability.

In this paper and in a previous one, Somerville and Mayer show that neighborhood influences are especially important in determining whether housing filters up and out of the affordable stock. They find that, all else equal, units are more likely to filter up if they are surrounded by higher value housing. In other words, it is hard to maintain housing heterogeneity in neighborhoods with strong housing demand. Let me say a few things about neighborhood heterogeneity.

It is a value judgment, to be sure, but many people want diversity in their local populations and housing. Despite "NIMBYism," many communities promote diversity, if not within blocks, then diversity within neighborhoods, or at least within local jurisdictions.

Chart 1
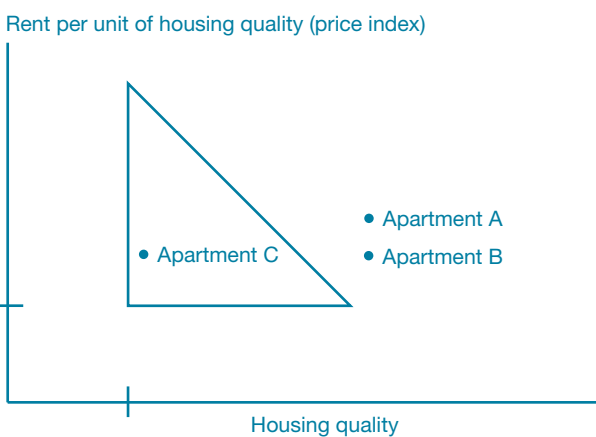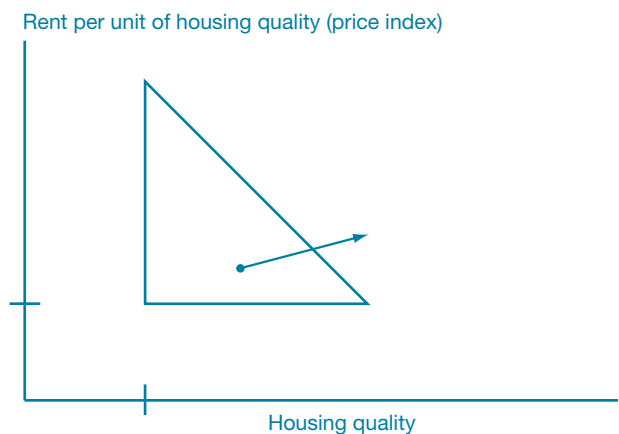The Affordable Housing Triangle

Chart 2
Gentrification

Neighborhood is important to housing affordability because mixed, diverse neighborhoods are where a lot of the affordable stock is found. But neighborhood diversity tends to be transitional, a nonequilibrium condition. Some diverse neighborhoods are on their way up, growing in demand and being redeveloped into newer, higher density places. Other mixed neighborhoods are on their way down, characterized by outmigration by those who can leave and by housing abandonment. Affordable housing is lost in both instances.

The challenges of maintaining a housing mix in neighborhoods and communities growing in popularity are different from those that are declining. If citizens should charge their government with maintaining a housing mix, what can government do to achieve that objective?

Here, I am talking about local governments. Each of the three levels of government has a distinct role, I would argue, in promoting housing affordability. First, the federal government is the program designer and financier for most of the country's largest demand- and supply-side affordability initiatives. Second, state governments are the gatekeepers that provide legislative authority to local jurisdictions and allocate funds from some federal and state revenues. Third, local governments are the enablers/implementers that run or oversee programs and control development and property operations through zoning and building codes.

Local governments have a lot of sticks and carrots that can be brought to bear on maintaining housing diversity. But these tools work better in growing areas than in declining ones. In declining neighborhoods, government intervention is a bit like

pushing on a string. Regulation usually means keeping people from doing something, and you cannot keep people from moving out of a neighborhood.

In growing areas, depending on state laws, local governments may be able to mandate that development be of a certain type and include affordable housing. In other jurisdictions, a "carrot" approach of offering density bonuses or other regulatory incentives for inclusion of on-site affordable housing may be more appropriate. The bonus density approach will not always result in diversity in housing types, but it can retain diversity in neighborhood incomes.

There is another, potentially powerful but much more controversial, tool that local governments have at their disposal for promoting housing affordability: housing-quality standards can be relaxed. The housing affordability problem in large part is an income problem. People do not have enough money to pay rent for the housing that is available. And that housing is constrained not only by the cost of building and maintaining it, but also by restrictions placed by government on the types of housing that can be offered in the community. These government restrictions force some residents to consume more housing than they would choose to, given their resources.

"Reduce housing-quality standards," is a phrase certain to raise blood pressures among some in the local electorate. But closely related policy prescriptions include "eliminate exclusionary zoning" and "remove barriers to affordable housing." The latter, by the way, is very close to the name of the presidentially mandated Advisory Commission on Regulatory Barriers to Affordable Housing, which issued its report in 1991.

CHART 3
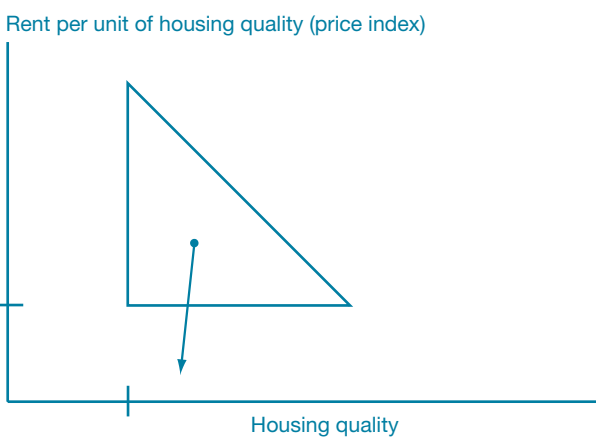## Lost through Insufficient Demand

Rent per unit of housing quality (price index)

Housing quality

CHART 4
Lost through Government Regulation

Rent per unit of housing quality (price index)
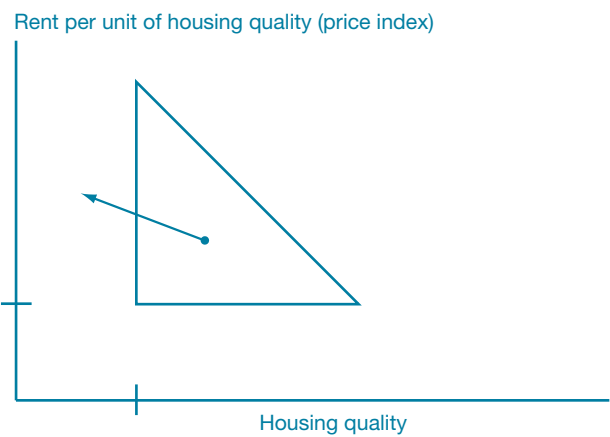

Housing quality

Effect of Government Easing of Quality Constraint

Rent per unit of housing quality (price index)

Housing quality

A policy focus on housing-quality standards is not a new or radical idea, but one that may need reinforcing.

Housing standards typically are set at levels way above those required to ensure safety and sanitation. Zoning and building code restrictions on lot sizes and required interior space per housing unit are good examples of regulations that can force overconsumption or exclusion. Easing standards can have significant effects on the availability of affordable housing. Within the triangle framework, this potential is illustrated in Chart 5.

In conclusion, any way you look at it, local governments, through their regulations, directly and indirectly affect the affordable housing stock and changes to it. The paper by Somerville and Mayer and others similar to it shed light on this local government role and help to calibrate it, and by doing so provide a valuable resource to the policy debate.

Ingrid Gould Ellen, Michael H. Schill, Amy Ellen Schwartz, and Ioan Voicu

Housing Production Subsidies and Neighborhood Revitalization: New York City's Ten-Year Capital Plan for Housing

1. Introduction

A perennial question in housing policy concerns the form that housing assistance should take. Although some argue that housing assistance should be thought of as a form of income support and advocate direct cash grants to needy households, others favor earmarked assistance—but they differ over whether subsidies should be given to the recipients as vouchers or to developers as production subsidies.

The appropriate composition of housing assistance has recently taken on particular import. In 2000, Congress created the Millennial Housing Commission and gave it the task of evaluating the "effectiveness and efficiency" of methods to promote housing through the private sector. As part of its mandate, the commission is examining changes to existing programs as well as the creation of new production programs to increase affordable housing.

This paper reexamines the debate over the appropriate form of housing assistance. First, we briefly summarize and evaluate arguments in favor of demand-oriented housing subsidies (such as Section 8 vouchers) and supply-oriented housing subsidies (such as production subsidies). We conclude that although demand-oriented subsidies are preferable to supply-oriented subsidies on a number of grounds, government support for production may, at least theoretically, be justified as a way to promote positive spillover effects and neighborhood revitalization. Whether sufficient spillovers exist is, in the end, an empirical question. Although much of the existing research finds little evidence of spillover effects, our findings on the New York City experience suggest that spillovers may be significant and large enough to justify government support for production.

Next, we describe the most extensive experiment in the United States in which a city used supply-oriented subsidies to rebuild neighborhoods—New York City's Ten-Year Capital Plan for Housing (the "Ten-Year Plan"). Born out of the necessity to rebuild communities devastated by years of abandonment and arson, the program, launched by New York

City in 1986, ultimately led to the investment of more than $5.1 billion in housing in many of the city's poorest neighborhoods.

Finally, we describe the results of several empirical studies we have recently completed on the effect of the Ten-Year Plan on property values in New York City. Our results suggest that the use of production subsidies can indeed generate positive spillovers and contribute to neighborhood revitalization. Furthermore, by comparing and contrasting New York City's experiences with those of other cities, we explain why New York was so successful, and identify aspects of its program that could be transplanted to other cities.

2. Justifications for Housing Assistance: Revisiting the Supply-versus-Demand Debate

Although housing subsidies have become commonplace in the United States, it is still worthwhile to consider whether household financial assistance might be tied to housing rather than just provided as unrestricted cash grants. If the only housing-related problem facing Americans was insufficient income among poor families to purchase adequate housing, then a strong argument could be made that unrestricted cash grants would be best. In a liberal society dedicated to free choice, allowing individuals to make their own decisions with respect to consumption would generally seem desirable. Furthermore, considerable evidence suggests that unrestricted cash grants would lead to increases in housing consumption that fall short of the grant amount (Polinsky and Ellwood 1979). The implication is that earmarking subsidies for housing would be a less efficient way than cash grants to enhance household welfare. Finally, earmarked housing assistance carries an additional inefficiency—the cost of administration necessitated by the requirement that the money be spent on a specific good.

Despite the inefficiency, since the end of World War II, federal, state, and city governments have repeatedly tied subsidies to housing consumption. A number of justifications might be offered for this. First, consumers may have incomplete information about the benefits and importance of adequate housing, leading them to spend too little on it. People who choose other goods and services before a minimum level of shelter may do so because they lack sufficient information or are unable to assess rationally the true worth of decent housing, thereby justifying societal paternalism. Second, efforts to

provide a minimum level of housing consumption may be necessary to protect children from irresponsible parents, who would, without government intervention, provide inadequate housing for their children. Third, taxpayers may derive utility merely from the knowledge that people are not living in desperately deteriorated and unhealthy accommodations (Aaron 1972; Schill 1990; Olsen 2001). Thus, taxpayers may prefer that their tax dollars subsidize someone's shelter directly, since it yields a greater increase in housing consumption per public dollar spent than do cash transfers, even if housing subsidies are less useful to the recipient than cash transfers.

In addition to achieving redistributive and/or paternalistic goals, earmarked housing assistance may be preferable to cash transfers in addressing other economic and social objectives. Such goals might include lessening adjustment lags in supply and demand, ameliorating the impact of discrimination in the housing market, improving the locations in which families live, and promoting positive spillovers and neighborhood redevelopment (see Ellen, Schill, Schwartz, and Voicu [2001]).

The observation that earmarked housing assistance may further some or all of these objectives does not, however, suggest what form this assistance should take. In the remainder of this section, we examine what we have learned about the relative merits of different approaches. In particular, we discuss the advantages and disadvantages of supply- and demand-oriented housing subsidy programs.

According to recent estimates, the federal government provides housing assistance to roughly 5.2 million renter households. An additional 9 million households qualify for assistance but do not receive it because housing subsidies are neither an entitlement nor a fully funded social welfare program (U.S. General Accounting Office 2001). This scarcity of subsidies makes efficient deployment of government resources crucial. Thus, it is important to begin by noting that virtually every empirical study performed over the past twenty-five years has found that demand-oriented subsidies (that is, vouchers and certificates) are more cost-effective than supply-oriented programs that subsidize the production of housing (including the public housing program, the Section 8 new construction program, and the low-income housing tax credit).[1]

A 2001 study by the U.S. General Accounting Office (GAO), for example, compared the cost, both in total and in the amount borne by the federal government, of housing vouchers over a thirty-year period with the cost of housing built using the low-income housing tax credit, the HOPE VI program, Section 202, Section 811, and Section 515. According to the analysis, the total per-unit costs for housing production

programs ranged from 12 percent to 27 percent more than the cost of voucher programs (U.S. General Accounting Office 2001, p. 2). In terms of the cost to the federal government, the production programs were between 15 percent and 38 percent more expensive.[2]

In addition to being cheaper than production programs, housing vouchers have typically led to better locational (neighborhood) outcomes. Supply-oriented programs operate with a built-in contradiction: programs that try to target scarce resources to the neediest recipients (such as the public housing program) end up creating intensely concentrated poverty. And there is growing and persuasive evidence that concentrations of poverty are related to a wide variety of social problems, including high crime, dropout, welfare receipt, and teenage pregnancy rates.[3] Programs with less effective targeting (such as HOPE VI or the low-income housing tax credit) foster more economically integrated environments—but the cost is vertical inequity.

Housing vouchers resolve this contradiction. Because the voucher recipient can rent housing in the private market (restricted only by maximum fair market rents), the more narrowly a voucher program is targeted to the poor, the more likely it is that deconcentration will occur. Indeed, research has typically shown that the neighborhood outcomes of voucher recipients dominate those who live in housing supported by production subsidies; voucher recipients see greater improvement in their neighborhood conditions than do public housing recipients. As an example, using data from the 1990 census, Newman and Schnare (1997) conclude that project-based assistance programs "do little" to improve the quality of recipients' neighborhoods (and, in the case of public housing, "appear to make things significantly worse"), while certificate and voucher programs reduce the probability that a family will live in the most economically and socially distressed areas (pp. 726-7). They provide a powerful argument in favor of vouchers.

In some housing markets, however, vouchers may not live up to their promise. In markets with extremely low vacancy rates, such as New York City in the late 1990s, voucher recipients might experience significant difficulties identifying standard-quality housing with rents below federally prescribed maximum levels.[4] Although this imbalance of supply and demand might be a short-term phenomenon caused by a sudden exogenous increase in demand for housing, it might be chronic and attributable to barriers (including regulatory barriers) in the housing market (Salama, Schill, and Stark 1999).

In such tight housing markets, production subsidies can, in principle, enable households to obtain housing faster and more cheaply than vouchers can. In practice, however, government-supported development is frequently slowed by bureaucratic delays, neighborhood opposition, and political pressure. Moreover, if regulatory barriers are the problem, direct government provision is hardly the ideal response—instead, a much better solution would be to remove the barriers that interfere with the smooth operation of the housing market.

Subsidizing production can also, again in principle, be justified as a method of eliminating or ameliorating the effects of discrimination in the housing market.[5] Discriminatory treatment may increase search costs, drive up the cost of housing for its victims, and interfere with optimal residential location decisions. Since government provision should be nondiscriminatory, direct provision of housing by government may be proposed as a partial solution to the problem of housing discrimination. Unfortunately, some of the most blatant acts of discrimination by landlords in the United States have been committed by government agencies and some of the most segregated housing developments in the nation are owned by public housing authorities (Hirsch 1983). Furthermore, even if government could be relied upon to operate in a nondiscriminatory manner, it is unclear whether production programs would be the most effective way to ameliorate the effects of housing discrimination. Instead, more vigorous enforcement of antidiscrimination laws may be more effective and preferable.

Although production programs do not have a comparative advantage over vouchers in cost-effectiveness or improving locational outcomes, and the case for relying upon them to deal with market failures such as adjustment lags and discrimination seems weak, production programs may be justified by their ability to promote neighborhood development. Production programs may generate positive external benefits to the neighborhoods in which they are located above and beyond the benefits received by the housing consumers themselves.

Because housing is fixed in space, its condition influences the value of neighboring properties. A dilapidated structure, for instance, can reduce the value of neighboring homes and may lead to disinvestment in the neighborhood. Introducing a high-quality building might, however, generate positive spillovers and increase values and confidence in the area. Adding new housing might also bring new people to a neighborhood, which may, in turn, improve neighborhood safety and fuel demand for retail services. If building owners do not bear all of the costs (or benefits) generated by their properties, the private sector will underinvest in housing. Public intervention, such as slum clearance or rehabilitation assistance, may therefore be appropriate.

Similarly, production programs may generate informational externalities. Housing developers may be averse to investing in distressed urban neighborhoods because they have little information about the demand for new housing in the area. Housing investment in distressed neighborhoods, then, may be delayed or be insufficient because each developer hesitates to make the first move. Government, through subsidies and planning, can, in principle, encourage developers to make the first move, provide information, and thereby reduce risk (Caplin and Leahy 1998).

If any form of housing subsidy is likely to be capable of generating positive spillovers and catalyzing neighborhood development, it would seem to be production subsidies rather than vouchers. Indeed, the key shortcoming of production subsidies—their concentration in spatially defined areas—becomes an advantage when it comes to neighborhood revitalization. Although vouchers increase demand and may well stimulate a supply response (including both new units and/or housing rehabilitation to meet minimum standards), their reliance upon individual decisionmaking limits their effectiveness in achieving spatially targeted goals. Individual voucher recipients choosing where to rent housing do not take into account the effect their choice will have on the surrounding neighborhood and thus are unlikely to choose the locations where external benefits are maximized. Housing agencies and community-based nonprofit organizations responsible for locating and implementing production programs, however, are more likely to consider the interests and needs of entire communities rather than just individual tenants.

It is unclear whether or not public officials and nonprofit developers do, in fact, successfully deploy production subsidies to create housing that generates positive spillover effects. As the remainder of this paper demonstrates, until recently, there has been little evidence that government housing programs generate positive spillover effects and successfully promote neighborhood revitalization. Nevertheless, our analysis of New York City's Ten-Year Capital Plan for Housing, specifically designed to revitalize neighborhoods devastated by years of abandonment, has yielded strong evidence that these spillover effects may be significant.

3. New York City's Ten-Year Capital Plan for Housing

The results of our research on the spillover effects of affordable housing investment differ substantially from those of earlier studies. To some extent, these differences derive from the particular circumstances and features of the programs composing the Ten-Year Plan. Thus, this section describes these programs, paying particular attention to those features that may have been especially important in driving spillover effects.

Throughout the twentieth century, New York City has been among the leading innovators in housing policy. In 1935, New York was the first city in the United States to build public housing. New York's Fair Housing Practices Act of 1957 was the first law to make illegal discrimination against racial minorities by private landlords. In addition, the Act's Mitchell-Lama Middle Income Housing Program became a model for Congress when it passed the first below-market interest rate programs, in the 1960s.

Thus, New York City Mayor Ed Koch's announcement of the Ten-Year Plan in 1985 was not entirely unprecedented. Indeed, many of the programs that would be encompassed in the plan were already in existence in 1985, albeit at substantially lower rates of activity. The rough contours of the plan were first announced in the Mayor's State of the City Speech (Koch 1985, p. 8). The goal was to renovate or build 252,000 units and make a financial commitment of $5.1 billion (City of New York 1988). To fund the program, Koch proposed using money from the World Trade Center to finance approximately $1 billion in bonds. Other revenues would come from the city's Housing Development Corporation and its capital budget.

Certainly, a principal objective of the Ten-Year Plan was to create additional housing opportunities for low- and moderate-income families as well as the homeless. In addition, a focus on neighborhood revitalization was evident from the beginning of the plan. According to the mayor, "first, we intend to undertake a major effort to rebuild entire neighborhoods of perhaps 15 to 25 square blocks throughout the City . . . it is anticipated that such concentrated revitalization would provide the hub for further development" (Koch 1985, p. 11). A 1989 report by the New York City Department of Housing Preservation and Development (HPD) made the point even more explicitly: "We're creating more than just apartments— we're re-creating neighborhoods. We're revitalizing parts of the city that over the past two decades had been decimated by disinvestment, abandonment, and arson."

In New York City's Ten-Year Plan, the location of housing investments was, to some extent, dictated by where the city owned property. During the late 1970s, the city had taken ownership of more than 100,000 vacant and occupied apartments as a result of tax foreclosure. This so-called *in rem* housing, named after the legal action that vested title in the city, would provide the raw material for the lion's share of the program.

Over time, HPD created a vast array of programs that enlisted a wide variety of actors. Because neighborhood

preservation and revitalization were important objectives of the plan, the city implemented programs that made community-based nonprofit organizations the major stakeholders in housing production. According to Felice Michetti, a former HPD commissioner and one of the principal architects of the plan, "when the Ten-Year Plan began, there were about twelve not-for-profits in the City of New York that were actively involved in housing . . . . By the time I left HPD, there were over a hundred not-for-profits involved in the Ten-Year Plan, and involved not in the traditional federal role of sponsoring projects, but actively involved [in development]" (New York City Department of Housing Preservation and Development 2000, p. 25). For-profit housing developers were also active participants, attracted by the development fees or the promise of long-term property value appreciation. Local financial institutions and intermediaries were active participants as well.

Over the course of the Ten-Year Plan, the city utilized at least 105 programs, many of which produced only a handful of units. Although the majority of these programs involved renovation of occupied housing, our focus in this paper is on the 66,147 *new* housing units created—through either new construction or the gut rehabilitation of formerly vacant buildings.[6] In most instances, the city's subsidy for housing was not limited to capital dollars. Most newly constructed or rehabilitated housing also qualified for property tax abatements and/or exemptions.[7] We divide these programs into four categories, based on whether they involved new

construction or gut rehabilitation and whether they were slated for homeownership or rental use. Table 1 shows the distribution of Ten-Year-Plan units across these four categories. The bulk of the units were rental, created from the gut rehabilitation of formerly vacant buildings.

4. Evidence of Spillover Effects: New York City and Elsewhere

Here, we review the results of our recent empirical work on the effect of the New York City's Ten-Year Capital Plan for Housing on property values in the city. We compare and contrast New York City's experiences with those of other cities to explain why New York was so successful as well as which aspects of its program might be successfully transplanted to other cities.

4.1 Evidence from New York City

Using a unique administrative data set, we have completed a series of studies on New York City's Ten-Year Capital Plan for Housing (Ellen, Schill, Susin, and Schwartz 2001; Schill, Ellen, Schwartz, and Voicu 2001; Ellen, Schill, Schwartz, and Voicu 2001). Although each of our studies has differed in focus, our core objective was to examine whether investments in place-based housing programs have an effect on the value of homes in surrounding neighborhoods and to derive estimates of the sign and significance (both substantive and statistical) of these effects. All three studies found evidence of positive and significant spillover effects.

Our first study explored the effects of the Nehemiah Plan and the New Homes Program of the New York City Partnership, both of which subsidize the development of affordable, owner-occupied homes in distressed urban neighborhoods (Ellen, Schill, Susin, and Schwartz 2001). In the second study, we expanded the analysis to consider the effects of a wider range of housing subsidized through the Ten-Year Plan; for instance, we analyzed the effects of rental and homeownership programs and renovation and rehabilitation as well as new construction programs (Schill, Ellen, Schwartz, and Voicu 2001). For the third study, we restricted our analysis to the effects of newly created units, investigated differences in spillover effects across types of housing programs, and provided some evidence to suggest how the magnitude of the spillover benefits generated by these units compared with their approximate costs (Ellen, Schill, Schwartz, and Voicu 2001).

Table 1

Distribution of Ten-Year-Plan New Housing Units by Program Class

Program Class	Units	
	Number	Percentage of Total
Owner-oriented programs		
Rehabilitation of vacant buildings	2,801	4.2
New construction	16,813	25.4
Total owner-oriented programs	19,614	29.7
Renter-oriented programs		
Rehabilitation of vacant buildings	41,484	62.7
New construction	5,049	7.6
Total renter-oriented programs	46,533	70.3
Total—all classes	66,147	100.0

Note: Figures include all Ten-Year-Plan new housing projects in the New York City Department of Housing Preservation and Development database.

For consistency with other analyses (which typically focus on new units) and for brevity, we mainly review the methods and results of our most recent study of newly created units. Our basic empirical strategy in all of these studies, however, was the same: we used a difference-in-difference model to compare the sales prices of properties within 500-foot rings of Ten-Year-Plan sites to the prices of comparable properties in the same census tracts (but outside the rings). We then compared the magnitude of this difference before and after the completion of a Ten-Year-Plan project to estimate the effect of the housing investment on property values.

More formally, we used a fixed-effects hedonic price model, adapted from Galster, Tatian, and Smith (1999), which controls for structural characteristics of the property. In this model, the fixed effects are specified as census tract, quarter-specific fixed effects.[8] In other words, we effectively included a separate dummy variable for each census tract for each of the seventy-nine quarters in our data.[9] This allowed us to control for neighborhood-specific price changes over our time period.

The core equation we estimated is shown below, where lnP_{ict} is the log of the sales price (per unit) of property i in census tract c in quarter t; X_{it} is a vector of property-related characteristics, including age and structural characteristics (square footage, lot size, garage); and Z_{it} is a vector of locational attributes—specifically, a set of what we call "ring" variables: whether a sale is within 500 feet of a Ten-Year-Plan site, whether any units are completed within this distance, and, if so, the number and mix of the completed units. Finally, I_{ct} are a series of dummy variables indicating the quarter and census tract of the sale.[10]

(1) $$lnP_{ict} = \alpha + \beta X_{it} + \gamma Z_{it} + \Sigma\rho_{ct}I_{ct} + \varepsilon_{it}.$$

To help explain our identification strategy, Table 2 provides a list of ring variables. First, we include a series of in-ring dummy variables, which indicate whether a property sold is within 500 feet of a particular type of Ten-Year-Plan project, whether completed or not. Because different kinds of projects

Table 2
Main Ring Variables

Variable	Definition
In ring, new units, owner but not renter	
1-100 units	1 if the property sold is within 500 feet of 1-100 homeownership new units, whether completed or not, but not of rental new units; 0 otherwise
101+ units	1 if the property sold is within 500 feet of more than 100 homeownership new units, whether completed or not, but not of rental new units; 0 otherwise
In ring, new units, renter but not owner	
1-100 units	1 if the property sold is within 500 feet of 1-100 rental new units, whether completed or not, but not of homeownership new units; 0 otherwise
101+ units	1 if the property sold is within 500 feet of more than 100 rental new units, whether completed or not, but not of rental new units; 0 otherwise
In ring, new units, owner and renter	
1-100 units	1 if the property sold is within 500 feet of 1-100 homeownership and rental new units, whether completed or not, but not of rental new units; 0 otherwise
101+ units	1 if the property sold is within 500 feet of more than 100 homeownership and rental new units, whether completed or not, but not of rental new units; 0 otherwise
Post ring, new units	1 if the property sold is within 500 feet of any completed new units; 0 otherwise
Number of new units at time of sale	Number of completed new units within 500 feet of the property sold
(Number of new units at time of sale)^2	Squared number of new units at time of sale
Share of multifamily new units at time of sale	Share of completed new units within 500 feet of the property sold that are in multifamily buildings
Share of rental new units at time of sale	Share of completed new units within 500 feet of the property sold that are rentals
Share of new construction units at time of sale	Share of completed new units within 500 feet of the property sold that are in newly constructed buildings
Tpost, new units	Years since earliest completion of new units within 500 feet of the property sold; 0 if no new units were completed before sale
Tpost*(number of new units at time of sale)	Interaction term

Note: "New units" is defined as newly constructed units and rehabilitated (formerly) vacant units.

may have been located in different kinds of neighborhoods, we defined six mutually exclusive in-ring variables—properties within 500 feet of large homeownership projects, small homeownership projects, large rental projects, and so on. Second, we included a post-ring variable that indicates if there are any *completed* units within 500 feet of the sale. The coefficient on this variable indicates the extent to which, after the completion of a development of any size, sales prices rise in the vicinity relative to the average increase in the larger census tract. Third, we controlled for the number of completed units within this distance and the share of completed units that were in multifamily structures, were rentals, and were in newly constructed buildings. Finally, we include *Tpost*, which indicates the years since completion, and *Tpost* interacted with number of completed units to see if the effect changed over time and whether this change was shaped by the size of the project.

To estimate this model, we used a combination of three geocoded administrative data sets. First, we used detailed data on the location (down to the block level) of all housing built or renovated through the Ten-Year Plan. Second, through an arrangement with the New York City Department of Finance, we obtained a database that contains sales transaction prices for all apartment buildings, condominium apartments, and single-family homes over the 1980s and 1990s.[11] We used GIS techniques to measure the distance from each sale to all Ten-Year-Plan sites. Our final sample in the three studies ranges from 234,000 to 294,000 property sales, a very large sample size compared with much of the literature.

Third, we supplemented these transaction data with building characteristics from an administrative data set gathered for the purpose of assessing property taxes (the RPAD file). The RPAD data contain information about buildings but do not contain much information about the characteristics of individual units in apartment buildings (except for condominiums). Nonetheless, these building characteristics explain variations in prices surprisingly well (our final R^2s exceeded 0.87), suggesting that the data are rich enough for estimating hedonic price equations.

Our results consistently show that the completion of new housing units under the Ten-Year Plan was associated with increased sales prices of nearby properties. For example, Charts 1 and 2 show the regression-adjusted percentage difference between prices in the ring and prices in the larger census tract, before and after the completion of a project. Specifically, Chart 1 shows how prices in the ring changed after completion of a Ten-Year-Plan homeownership project of three different sizes. The first set of bars shows that before the completion of a ten-unit homeownership project, the sales

price of a property located within 500 feet of a future site was on average 6.8 percent lower than the price of a comparable property sold in the same quarter in the same census tract. After completion, the gap shrunk so that prices in the ring were only 3.1 percent lower than prices in the larger census tract.

As can be seen from Chart 1, the impact appears to be greater for larger projects. The second set of bars shows that, before completion of a project with 100 homeownership units, the sales price of a property located within 500 feet of the future site was, on average, 6.8 percent lower than the price of a comparable property sold in the same quarter in the same census tract.[12] After completion, prices in the ring actually ended up higher than those in the surrounding census tract. Similarly, for properties within 500 feet of homeownership sites with 200 units, the ring/census tract gap shifted from an 8.4 percent shortfall in the ring to a 3.9 percent "premium" after completion.

For properties within 500 feet of renter-oriented Ten-Year-Plan projects, we obtained very similar results (Chart 2). The one key difference is the very large price gap for properties located within 500 feet of a site that will ultimately hold 200 rental units. We estimated that before completion, prices of properties near such large rental project sites were a full 17 percent *lower* on average than prices of comparable properties located outside the ring, but in the same census tract. After completion, the gap decreased by more than 12 percentage points.

There are several points to highlight here. First, in all cases, quality-controlled property values were lower for properties

Percentage Price Differences in 500-Foot Ring and Surrounding Tracts, by Number of Units Built
Rings with Homeownership Units Only

Price relative to rest of tract
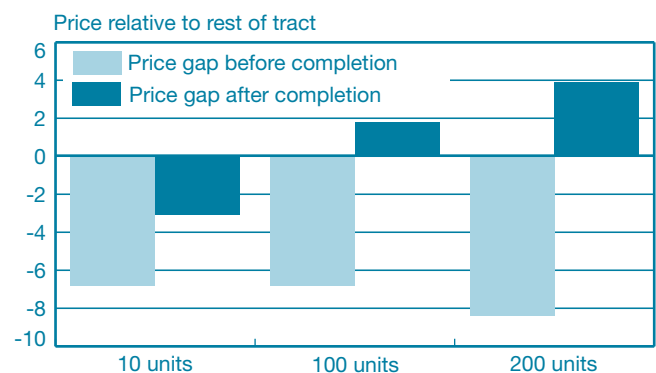
Note: Price gaps are for before and after the completion of Ten-Year-Plan new units.

CHART 2
Percentage Price Differences in 500-Foot Ring and Surrounding Tracts, by Number of Units Built
Rings with Rental Units Only

Price relative to rest of tract
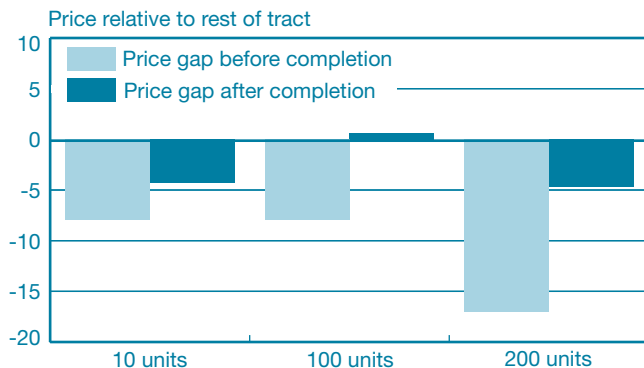
Note: Price gaps are for before and after the completion of Ten-Year-Plan new units.

located within 500 feet of Ten-Year-Plan sites than for comparable properties located beyond this distance but in the same census tract. Ten-Year-Plan housing, in other words, was typically located in the most distressed micro-neighborhoods within a census tract. Furthermore, the larger the project, the more that distressed property values tended to be in the vicinity, and rental projects appear to have been sited in even more distressed neighborhoods than homeownership projects. These projects, in other words, were not randomly located, emphasizing the need to control for these baseline conditions when estimating effects.

In addition, the value of properties near Ten-Year-Plan sites typically rose significantly relative to prices in their census tract after completion of a project, and this increase was sustained over time. (The coefficient on the post-completion time trend in the ring was statistically insignificant.[13]) A final, notable point is that the greater the number of units, the greater the effect. With this said, we found a relatively large, positive "fixed" effect common to projects of all sizes. One inter-pretation of this result is that much of the positive spillover effect may derive from the elimination of existing blight; the scale or size of the project is less important than the fact that at least some units were built.

Consistent with this interpretation, we found that the type of project made little difference in determining effects. We found no statistically different effects between rental and ownership projects, or between units created through the rehabilitation of vacant buildings and those built through new construction. Structure type was also irrelevant—the magnitude of the spillover effect was unchanged whether the

project was made up of one-to-four-unit buildings or multifamily apartment buildings.

In summary, we found that the units created through the Ten-Year Plan generated significant and sustained positive spillover effects on neighboring properties, indeed, benefits that were quite large relative to city subsidies (Ellen, Schill, Schwartz, and Voicu 2001). We next review evidence from other cities, then speculate as to whether our positive results might be unique to New York City and the particular efforts made under the Ten-Year Plan.

4.2 Evidence on the Effects of Other Supply-Side Programs

Although several studies have attempted to quantify the spillover effects of place-based subsidized housing, few have found statistically significant effects. Some studies have found small, positive effects (De Salvo 1974; Rabiega, Lin, and Robinson 1984), yet the general conclusion has been that the development of subsidized housing has had little or no effect on surrounding neighborhoods (Nourse 1963; Schafer 1972; see Matulef [1988] and Goetz, Lam, and Heitlinger [1996] for a review of the literature). Indeed, attempts to quantify the effect of housing quality more generally on the value of neighboring properties have largely yielded insignificant results. As Mills and Hamilton (1994) write, researchers "have almost uniformly failed to find significant and consistent effects of neighboring activities on property values." Although economists have not rejected the possibility of spillover effects, they speculate that such effects operate mainly in high-density neighborhoods, are probably highly localized, and only matter when housing is badly deteriorated or abandoned (Mills and Hamilton 1994).

During the 1990s, three studies were published suggesting that proximity to subsidized housing can affect neighboring property values, but the effects were typically negative, at least in the case of federally subsidized rental developments (Lyons and Loveridge 1993; Goetz, Lam, and Heitlinger 1996; Lee, Culhane, and Wachter 1999). Other recent studies have suggested no significant effect (Briggs, Darden, and Aidala 1999; Cummings, DiPasquale, and Kahn 2001).

One recent paper comes to a more hopeful conclusion about place-based subsidies. Santiago, Galster, and Tatian (2001) used a hedonic model with localized fixed effects to study whether the purchase and renovation of property by the Denver Housing Authority, and its conversion into subsidized housing, influenced the subsequent sales prices of surrounding

single-family homes. The authors found that proximity to dispersed public housing units was, on average, associated with a modest increase in the prices of single-family homes. But they found that these positive benefits were weakest in the poorest areas. Indeed, the effects were consistently negative in substantially black neighborhoods. This contrasts sharply with our research on New York City, which found substantial positive effects in the city's poorest neighborhoods.

4.3 Why Are New York City's Results Stronger?

We have several hypotheses for why our results suggest larger and more positive spillover effects: differences in data and methods, more favorable housing market conditions, a more favorable mix of housing, a greater level of municipal commitment, and a greater focus on neighborhood revitalization. Note that another possible difference is timing—most prior research examined large-scale federal housing programs from an earlier era. There may be common macroeconomic, sociological, or political explanations for different outcomes in those earlier periods. Thus, when comparing our results with those for other cities, we pay particular attention to six studies that have focused on more recent housing programs: Lyons and Loveridge (1993), Goetz, Lam, and Heitlinger (1996), Lee, Culhane, and Wachter

(1999), Briggs, Darden, and Aidala (1999), Cummings, DiPasquale, and Kahn (2001), and Santiago, Galster, and Tatian (2001). Table 3 provides summary information on these studies.

Data and Methods

It is possible that the differences in results are rooted in differences in data and methods. Our study is based on an extraordinarily rich data set. The large number and variety of housing units built, the long time frame, and the large volume of sales data allow us to employ a data-intensive methodology that incorporates many of the best features of previous studies.

The most important methodological challenge in estimating the effect of subsidized housing is identifying the appropriate counterfactual. One approach is to compare price levels in areas receiving subsidized housing with comparable properties that have no subsidized housing. This yields an unbiased estimate of the effect if the only difference between the areas is the housing investment—which is difficult to determine. If the prices of homes tend to be lower near subsidized housing sites, is this because the development of subsidized housing depressed housing values or because the subsidized housing was located in a more distressed area? A second approach compares property values before and after housing investment, which yields an unbiased estimate of the effect if there is no

TABLE 3

Projects and Units in the Analyses of Assisted Housing Effects

Author	Housing Program	City	Number of Subsidized Units	Number of Projects/ Developments	Study Period	Number of Home Sales/ Residential Properties
Briggs et al. (1999)	Dispersed	Yonkers, New York	200	7	1985-96	3,101
Santiago et al. (2001)	Dispersed	Denver	118[a]	92	1987:1-1997:3	43,361
Cummings et al. (2000)	Homeownership	Philadelphia	311	2	1986-97	146,053
Lyons and Loveridge (1993)	Multiple federally assisted	Ramsey County, Minneapolis	12,864	120	1991	26,503[b]
Goetz et al. (1996)	Nonprofit developed	Minneapolis	476	23	1994	22,156
Lee et al. (1999)	Multiple federally assisted	Philadelphia	NA[c]		1989-91	18,062

[a]This is an estimate based on average number of households per site reported in the authors' Table 1, "Selected Characteristics of 1989-1997 Vintage Dispersed Housing Sites" (p. 75).

[b]This is a 25 percent sample of the 128,010 nonsubsidized residential units in Ramsey County.

[c]The authors do not report total number of units; however, they do include dummy variables for large and high-rise public housing developments. "Large" is not defined.

other force shaping the growth in property values at the same time as the housing investment. But again, there may be other forces affecting the target neighborhood that coincide with development of subsidized housing, complicating the effort to disentangle the specific effect of subsidized housing. Finally, effects can be investigated by constructing and estimating an econometric model that fully specifies the determinants of property values, including the neighborhood characteristics and housing investments. Here, unbiased impact estimates can only be obtained if the model includes all relevant neighborhood characteristics—a formidable challenge. (See Galster, Tatian, and Smith [1999] for a fuller discussion of alternative approaches to estimating impacts of subsidized housing.)

Using more detailed data and a clever methodology, Santiago, Galster, and Tatian (2001) are able to sort out causality more persuasively than the other studies, and therefore we place more weight on their results. They use a hedonic model with localized fixed effects and, in contrast to earlier research, they also control for past trends in housing prices in the immediate vicinity of a project. That is, they control for both past levels and trends in housing prices in the baseline neighborhood and therefore control for any tendency of the housing authority to develop housing in neighborhoods where prices were already rising.

We adapt their methodology in our approach, and our results are, in some sense, most comparable to theirs. As noted earlier, we estimate effects based upon the assumption that in the absence of the Ten-Year-Plan units, properties within 500 feet of the sites would have appreciated in value at the same rate as comparable properties in the same census tract, but outside of the 500-foot ring. That seems particularly reasonable given the small size of these rings. Put differently, our estimates are identified as the difference in the growth in property values before and after the housing investment relative to the growth in prices in a comparable area—outside the ring but in the same census tract. Thus, our methodology combines the best of the alternative strategies described above and, as a result, our findings are less likely to be biased. (Our estimates will be biased only if there was some force affecting property values differentially inside and outside the ring at the same time as the housing investment.)

Equally important, our analyses are based on a rich data set including information on an extraordinarily large number of transactions and an enormous number of units. As shown in Table 3, earlier studies typically examined the effect of several hundred subsidized units, spread across a number of projects. By contrast, we examined the effect of approximately 66,000 new subsidized units, developed at different times over several years, in a wide range of neighborhoods. Thus, it is harder to believe that some other contemporaneous phenomenon was responsible for lifting property values in the proximity of the Ten-Year-Plan units while leaving properties outside the ring but in the same neighborhood unaffected. One would have to believe that this phenomenon occurred at different times in different neighborhoods at the same time as the housing investment.

Note that the small number of subsidized units examined in many of the other earlier studies has made it difficult to form sharp estimates. Although estimated effects may have been positive, standard errors are large. Briggs, Darden, and Aidala (1999) and Cummings, DiPasquale, and Kahn (2001), for instance, found that subsidized housing had a positive but statistically insignificant effect on surrounding property values. It may be that a larger number of projects would have yielded smaller standard errors and found positive and statistically significant effects. (It is also possible, of course, that expanding the number of projects would have revealed negative and significant effects.)

Housing Market Conditions

A second possible explanation for the difference in findings is that housing market conditions were simply more propitious in New York City than elsewhere. During this time, the city was gaining population largely fueled by enormous waves of immigration, in sharp contrast to Philadelphia (where two of these earlier studies were undertaken), which lost 4 percent of its residents between 1990 and 2000. Vacancy rates were also quite low in New York City during this time—the rental vacancy rate in the city fell to 3.2 percent in 1999 (Daniels and Schill 2001). Vacancy rates in the Philadelphia metropolitan area were, by comparison, more than 8 percent—and undoubtedly higher still in the city itself. As noted above, place-based housing programs are likely to be most effective in tight housing markets, where they can help to meet growing demand. Thus, the difference in findings may reflect what common sense (and economics) suggests. In cities like Philadelphia in the 1990s, with a shrinking population and high vacancy rates, housing investment is likely to have (at best) little effect on values of neighboring properties—an infusion of new housing was probably not what the city's distressed neighborhoods needed. Indeed, additional housing may have promoted filtering and the removal of buildings from the housing stock. In growing New York City, with very little vacant housing and a preponderance of structural barriers that inhibit construction of affordable, private housing (Salama,

Schill, and Stark 1999), public housing investment may have been a highly effective spur to neighborhood economic development.

Alternatively, New York's extraordinarily high density may also have contributed to the larger effects. Clearly, we would expect spillover effects to be larger in neighborhoods with higher densities. In 1990, population density was more than twice as high in New York City than in Philadelphia and three and a half times as high as it was in Minneapolis—the site of three of our comparison studies.

Mix of Housing

A third possible explanation for New York's difference concerns the type of housing built by the city. That is, the mix of housing built in New York may have been disproportionately composed of the type that would generate larger neighborhood spillover effects. Although plausible, this explanation is undermined to some extent by the fact that our research found no differences in spillover effects across different types of housing. In addition, New York's focus on income mixing may have made a difference. Rather than concentrating the very poorest households in particular neighborhoods or projects, the city generally aimed to create housing with a mix of incomes.

Level of Commitment

New York City's Ten-Year Plan may have had a greater effect than initiatives of other cities because of New York's level of commitment. Mayor Koch, in announcing the Ten-Year Plan, placed his prestige and that of his housing agency on the line in committing the city to an effort of unprecedented magnitude and scope. This commitment, together with the quality of the staff assembled at the housing agency, may have generated confidence on the part of neighborhood residents, financial institutions, and investors, encouraging them to contribute their own resources and time to revitalization activities.

Focus on Neighborhood Revitalization

Finally, the explanation may lie in New York City's explicit emphasis on neighborhood revitalization. As noted above, one of the key objectives of the Ten-Year Plan (if not *the* key objective) was to reclaim parts of the city that had been destroyed by arson and disinvestment during the 1970s. In the

programs evaluated in other cities, this aim was far less central. In the scattered-site public housing initiatives, for instance, the goal was to offer housing opportunities to poor families in lower poverty communities (Briggs, Darden, and Aidala 1999; Santiago, Galster, and Tatian 2001). Therefore, it is perhaps not surprising that New York appears to have been more successful in developing housing that benefited the surrounding communities.[14]

Furthermore, New York City chose sites (either buildings or vacant land) that were extremely blighted, so that even modest improvements may have been able to generate dramatic improvements in the blocks surrounding them. Many of the cities examined by other researchers were unlikely to have faced such pockets of abandonment. If they did, the studies may not have so explicitly targeted them. Indeed, in Denver and in Yonkers, New York, the aim was to select sites in middle-class neighborhoods. These were hardly areas characterized by the same devastation as the neighborhoods studied in New York City.

4.4 Evidence on the Effects of Demand-Oriented Subsidies

Ideally, we would like to obtain estimates of the spillover effects of tenant-based vouchers to compare with the housing built under the Ten-Year Plan. Unfortunately, such estimates are unavailable. Nevertheless, for the reasons discussed above (for example, tenants are likely to be dispersed and the aim of voucher programs is typically not to revitalize neighborhoods), it is unlikely that vouchers would deliver spillover effects of the magnitude we found generated by the Ten-Year Plan.

This expectation is modestly supported by other research. Galster, Tatian, and Santiago (1999), for example, examine the effects of Section 8 tenants on neighboring properties in the suburbs surrounding Baltimore. They find, in general, that proximity to a small number of Section 8 tenants is linked to positive changes in property values. But closer inspection showed that these small positive effects were limited to properties within 500 feet of no more than six voucher holders. For properties close to larger numbers, the net effect proved to be negative, and these negative effects were quite substantial for the largest concentrations of tenants (more than fifty tenants). Moreover, when looking across different types of neighborhoods, the authors find that the positive effects were in fact limited to high-value, largely white neighborhoods, as was the case in their analysis of scattered-site public housing in Denver.

In short, the authors conclude that Section 8 demand-side subsidies can be used to generate neighborhood externalities,

but only in higher valued, appreciating, largely white communities. The irony, of course, is that these are hardly the sorts of neighborhoods where we are likely to be very concerned about improving neighborhood quality.

Two other studies examine the effect of voucher households on property values: Lyons and Loveridge (1993) find no effect on surrounding property values and Lee, Culhane, and Wachter (1999) uncover slight negative effects on surrounding property values. In short, prior research provides little support for the notion that vouchers are likely to lead to the same large, positive spillover effects on surrounding properties that we estimate were generated by the Ten-Year Plan.

5. CONCLUSION

Since the mid-1970s, the central debate among housing policy analysts and government officials has revolved around the relative advantages and disadvantages of housing vouchers versus supply-oriented subsidies. Study after study demonstrated the comparative advantage of vouchers on a variety of grounds—ranging from their lower cost to the better neighborhoods they enable their recipients to live in. Economic theory has suggested that production programs might do better than housing vouchers in generating positive spillovers and neighborhood revitalization, but empirical studies have never quite supported this theory.

New York City's Ten-Year Capital Plan for Housing provides advocates of production programs with more optimistic results. Our findings suggest that New York's unprecedented expenditure of $5.1 billion on housing production programs has generated substantial positive spillovers and contributed to neighborhood revitalization. The rebuilding of extraordinarily depressed neighborhoods in the South Bronx, Central Harlem, and Central Brooklyn seems to have been achieved not just as a result of a booming economy and a growing population, but also because of an innovative and massive investment of public dollars.

Although our research on the utility of production programs as a neighborhood revitalization tool in New York provides some evidence of the contributions that production programs can make in distressed neighborhoods, more research is needed. First, our study did not directly compare the spillovers generated by production programs with those that might accompany housing vouchers. Second, whether the success in New York City can be replicated elsewhere remains very much an open question. Third, production programs such as those utilized by New York City are extremely costly. Our research suggests that the benefits achieved in terms of increased property values may outweigh the costs of the subsidies, yet much more work remains to be done before that conclusion can be stated with any level of assurance.

1. For an overview of the theoretical and empirical evidence on the relative cost-effectiveness of housing vouchers and certificates, see Schill (1993). One recent article has made a counterargument (McClure 1998); Shroder and Reiger (2000) have challenged McClure's methodology.

2. According to the report, these estimates of the cost differential between voucher and production programs were conservative. They did not include the value of tax abatements granted by localities for new construction, nor did they include funding of capital reserves. The authors estimated that including these costs would have increased the differences between the two types of subsidy programs by about 10 percent.

3. For a summary of the literature on the neighborhood effects of concentrated poverty, see Ellen and Turner (1997).

4. A recent paper by Bahchieva and Hosier (2001) indicates that between October 1999 and June 2000, 2,263 vouchers issued by the New York City Housing Authority for nonemergency reasons were picked up by applicants. Only 1,339 applicants successfully rented a unit with their vouchers; 1,124 failed to obtain a unit before expiration of their vouchers.

5. Recent evidence suggests that black and Latino homeseekers encounter unfavorable treatment approximately half of the time they transact in the housing market (Ondrich et al. 1999).

6. In this paper, units built or rehabilitated under the Ten-Year Plan are defined to include only projects completed between January 1987 and June 2000. The January 1987 beginning date was selected because of the long lag time associated with housing construction. It is likely that buildings completed in 1986 were planned and financed long before the announcement of the plan. In addition, when we count units produced through the plan, we do not include housing units built under federal programs such as public housing, Section 8, and Section 202 housing. In certain respects, our definition of the Ten-Year Plan is therefore both under- and overinclusive. Federal housing programs that made use of city resources such as city-owned land would not be included in our totals. In addition, it is possible that completions after 1986 would be included even though planning may

have begun and funding commitments for the developments may have been made before the announcement of the plan in 1985.

7. For more details on financing, see Schill, Ellen, Schwartz, and Voicu (2001).

8. Note that Galster, Tatian, and Smith (1999) include census-tract fixed effects instead, which assumes neighborhood fixed effects are constant over time—an assumption that seems unrealistic over a time period as long as ours.

9. Ellen, Schill, Susin, and Schwartz (2001) used ZIP code fixed effects.

10. In Ellen, Schill, Susin, and Schwartz (2001), we also estimate a number of alternative specifications (for instance, providing year-by-year estimates of post-completion effects), but all rely on the same fundamental difference-in-difference approach.

11. Because sales of cooperative apartments are not considered sales of real property, they are not recorded and were thus not included in our analyses. We should also note that most of the apartment buildings in our sample are rent-stabilized. Given that legally allowable rents are typically *above* market rents outside of affluent neighborhoods in Manhattan and Brooklyn, we do not think that their inclusion biased our results (see Pollakowski [1997]).

12. Our specification allowed the precompletion price gap to differ only for projects above and below 100 units.

13. In our first paper, we found that the impact of Partnership and Nehemiah homes declined over time within the 500-foot ring. Effects on properties somewhat more distant from the subsidized homes were persistent, however, suggesting that impacts may have diffused outward over time.

14. Interestingly, Goetz, Lam, and Heitlinger (1996) found that housing developed by community-based nonprofits had positive spillover effects, while that developed by the housing authority had negative effects. This may be because the community-based nonprofits they examined in Minneapolis were more sensitive to community effects.

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Effects of Homeownership on Children: The Role of Neighborhood Characteristics and Family Income

1. Introduction

A recent press release from the U.S. Department of Housing and Urban Development (HUD) captures the wide-ranging benefits increasingly being attributed to homeownership: "Homeowners accumulate wealth as the investment in their homes grows, enjoy better living conditions, are often more involved in their communities, and have children who tend on average to do better in school and are less likely to become involved with crime. Communities benefit from real estate taxes homeowners pay, and from stable neighborhoods homeowners create" (U.S. Department of Housing and Urban Development 2000). This credo undergirds the last decade's push to extend homeownership to all Americans, particularly low-income families and racial minorities. Because it is believed to strengthen not only families but communities, homeownership is being promoted as an important strategy for regenerating distressed urban neighborhoods.

Enormous amounts of money, both public and private, are being invested in increasing the homeownership rate. From the $2 trillion "American Dream Commitment" of Fannie Mae, to the multimillion-dollar homeownership programs of the Enterprise Foundation, the Local Initiatives Support Corporation, and the Neighborhood Reinvestment

Corporation, to the millions of dollars of programs and incentives under HUD's control, a consistent view of homeownership as a "silver bullet" has emerged. Incentives for homeownership even appear in the welfare reform plans of a number of states.

Despite this significant investment, there is remarkably little known about the real effects of homeownership on either homeowners, their children, or their communities. This paper focuses on one aspect of homeownership: its potential long-term effects on children. Several recent studies have found that growing up in a homeowning family exerts positive effects on children's development and outcomes (Green and White 1997; Aaronson 2000; Boehm and Schlottman 1999; Haurin, Parcel, and Haurin 2000). But what accounts for these positive effects, and whether other features may either strengthen or weaken them, is unclear. One such feature is the neighborhood. Since many families who will become new homeowners under current policies promoting homeownership for the poor will purchase homes in areas traditionally thought of as troubled or distressed, it is important to understand whether neighborhood characteristics play a role in the effects of homeownership on children's outcomes.

To our knowledge, only Aaronson (2000) has explored this link. He finds that parental homeownership in low-income census tracts has a more positive effect on high-school

graduation than it does in high-income census tracts. This intriguing result suggests that homeownership may buffer children against the damaging effects of growing up in distressed neighborhoods. But Aaronson also finds that neighborhood residential stability enhances the positive effects of homeownership on high-school graduation, which suggests that at least some of the positive effects of homeownership found in other studies may be attributed to the greater residential stability of the neighborhoods where homeowners live.

Very different policy recommendations emerge from these two results. According to the first, homeownership should be promoted even—or especially—in very low-income neighborhoods. According to the second, neighborhoods that are residentially stable are preferred, and efforts to stabilize distressed neighborhoods by encouraging low-income families to purchase homes there may carry significant risks for the "pioneers," the first homeowners in a distressed area.

Another neighborhood feature that may play a role is the homeownership rate, which has largely been ignored in the sizable and growing body of research on the effects of distressed neighborhoods on the life chances of children (see reviews by Jencks and Mayer [1990], Haveman and Wolfe [1995], Gephart [1997], Ellen and Turner [1998], and Moffitt [2001]).[1] But if the silver-bullet view of homeownership benefiting not only the immediate homeowning family but also the surrounding community is correct, then the positive effects of homeownership on children's outcomes may be attributed to the tendency for homeowning families to live in neighborhoods of homeowners—not to the family's homeownership status, per se.

This scenario also raises important policy concerns. As with neighborhood residential stability, if the homeownership rate in a neighborhood is responsible for the improved outcomes of children who live there, then policies encouraging poor families to purchase homes in areas where there are few homeowners may be good for the neighborhood but bad for the individual family. Since moving a neighborhood from a low to a high rate of homeownership is likely to be a long-term process, the early "pioneer" homeowners would derive few or no benefits and, in fact, may bear considerable costs such as low property values, high crime rates, poor schools, and, perhaps most importantly, the inability to move elsewhere easily (that is, selling a home is much more difficult than breaking a lease).

A second feature that may alter the effects of homeownership on children is family income. Interest in this topic is also motivated by policy concerns, since most homeownership promotion policies target low-income families. Previous research has examined this question only indirectly, and results are conflicting. For example, Green and White (1997) report estimates from one data set showing that family income matters more for children of renters than for children of homeowners. They interpret this to mean that the positive effects of homeownership on children erode with higher incomes. But using another data set, Green and White find that ownership of a more expensive home is more beneficial to children, consistent with Aaronson's (2000) finding that greater home equity is associated with better outcomes. Since higher income families tend to both live in more expensive housing and have more equity in their homes, these results suggest that homeownership primarily benefits children of higher income families.

This exploratory paper first tests whether homeownership has equally positive effects for children of low-income and higher income families. Focusing on the low-income group, it then examines whether, and how, these homeownership effects are influenced by neighborhood attributes. The next section reviews theories of the ways in which homeownership could benefit children and how these benefits could be modified by neighborhood characteristics. We then describe our data, methods, and results. A discussion of the findings and their policy implications follows.

2. Background

There are three broad sets of explanations for the effects of homeownership on children's outcomes. According to the first, there is a direct link between family homeownership and children's outcomes. The second set, in contrast, posits that differences in neighborhoods, not family homeownership, explain why children of homeowners have better outcomes. The third set speculates that neither homeownership nor neighborhoods by themselves are the key explanatory factors, but rather that homeownership is associated with more favorable outcomes *only under certain neighborhood characteristics*. We refer to these as direct, indirect, and interactive homeownership effects, respectively.

2.1 Direct Homeownership Effects

The literature suggests four paths through which parental homeownership could affect children's outcomes: 1) parenting practices, 2) physical environment, 3) residential mobility, and 4) wealth.

Haurin, Parcel, and Haurin (2000) find that homeowning parents provide a more stimulating and emotionally supportive environment for their children, which significantly

improves cognitive ability and reduces behavioral problems. They attribute the improved parenting of homeowners to either their greater investment in their properties or residential stability, both of which are explored below. Another explanation, supported by some empirical evidence, is that homeownership produces greater life satisfaction or self-esteem for adults, which, in turn, provides a more positive home environment for children (Balfour and Smith 1996; Rossi and Weber 1996; Rohe and Basolo 1997; Rohe and Stegman 1994b). Sherraden (1991) argues that the psychological benefits of homeownership for adults derive from its function as an asset. Green and White (1997) offer several wide-ranging hypotheses of the potential links between homeownership and children's outcomes, including the possibility that experience with contractors and repair personnel may improve homeowning parents' interpersonal and management skills, which may transfer to their children.

Except for gross, health-threatening inadequacies, little is known about how children are affected by their dwellings' conditions.[2] But it is plausible that the physical features of owned versus rental housing may also affect children's development. More than four-fifths of owned homes are single-family, detached structures, compared with less than one-fourth of rental properties.[3] These environments may be better for children because, for example, they are likely to be more spacious and private. Owned homes are also likely to be in better physical condition because owner occupants are more likely to invest in the quality of their dwellings (Galster 1987; Mayer 1981; Spivack 1991). Since higher quality housing is generally more expensive, the previously cited findings of Green and White (1997) and Aaronson (2000)—that more expensive housing has favorable long-term effects on children—lend support to the view that the physical quality of housing matters. But their findings also suggest that the lower quality housing affordable to low-income homebuyers may not benefit their children significantly.

Several studies demonstrate that moving can harm children's educational outcomes (Haveman, Wolfe, and Spaulding 1991; Astone and McLanahan 1994; Jordan et al. 1996; Hanushek, Kain, and Rivkin 1999), and there is substantial evidence that homeowners move far less often than renters (Barrett, Oropes, and Kanan 1994; Hanushek and Quigley 1978; Newman and Duncan 1979; Quigley and Weinberg 1977). Included here are recent studies that detect a causal, not merely correlational, impact of homeownership on a reduced likelihood of moving (Ioannides and Kan 1996; Kan 2000). Aaronson (2000) investigates this issue, and finds that much of the positive effect of homeownership on childhood outcomes can be attributed to its impact on residential stability.

Home equity is the most significant asset held by most American families, and for many, their only asset. One function of assets is that they can be leveraged during times of need, which could benefit children. For example, homeowning parents can borrow money against the equity in their home to finance a child's college education. In addition, inheritable wealth constitutes a child's claim on the future, enabling long-term planning and higher expectations (Conley 1999). Empirical evidence suggests a link between home value or equity and favorable youth outcomes (Aaronson 2000; Boehm and Schlottman 1999; Conley 1999), such as the likelihood of acquiring a college education. However, these estimates could be biased upward because they are likely to be picking up at least some of the impact of neighborhood characteristics, which are not controlled for in these studies. In addition, homeownership as an asset-building tool could fail to benefit poor children if the down payment and ongoing maintenance costs absorb resources that might otherwise be invested in children's development. The tax advantages of homeownership are also disproportionately reaped by the more affluent, which could lead to better outcomes for their children.

2.2 Indirect Homeownership Effects

A second perspective is that the findings of previous studies on the benefits of homeownership are spurious because it is the better neighborhoods and schools experienced by children of homeowners—not growing up in an owned home—that account for their better outcomes.[4] Because homeowners generally live in communities characterized by higher incomes, higher rates of homeownership, and greater residential stability, their children will benefit from these positive neighborhood externalities.

Homeownership may generate positive neighborhood externalities through its effect on either physical or social capital. As noted, owner-occupied houses appear to be better maintained than rental properties (Galster 1987; Mayer 1981; Spivack 1991), providing one form of neighborhood amenity that may benefit children. But theory also suggests that because homeowners' financial stake in their properties is illiquid and not easily extracted, homeowners will be more active in maintaining or improving the quality of their neighborhoods, not just their own houses.

A substantial body of research suggests that homeowners are more attached to their communities and more active in community affairs (Rossi and Weber 1996; DiPasquale and Glaeser 1999; Blum and Kingston 1984; Austin and Baba 1990).

Greater community involvement could plausibly lead to greater community social capital. Sampson et al. (1997) provide strong evidence to support this link. These researchers show that homeownership, in conjunction with residential stability, generates social capital in the form of "collective efficacy," which may produce better outcomes for children.

However, residential stability has also been shown to be an important determinant of community involvement (Kasarda and Janowitz 1974; Sampson 1988). A question raised by this body of evidence is whether homeownership itself—or the residential stability it is correlated with—is more responsible for the positive effects of homeownership on community participation. DiPasquale and Glaeser (1999) explore this issue, and find that length of residence is more important than homeownership across several key measures of community involvement. Because residentially stable neighborhoods of renters may be as beneficial to children as neighborhoods of homeowners, it is critical to distinguish analytically between a neighborhood's homeownership rate and its residential stability.

2.3 Interactive Homeownership Effects

Finally, a third view is that the effects of homeownership on children's outcomes vary depending on the type of neighborhood. Homeownership could buffer the effects of a distressed neighborhood if, for example, homeowning parents more aggressively monitor their children's activities, have higher expectations for their children, or have more social capital to draw on. But the child-rearing practices of homeowners living in more prosperous neighborhoods may differ little from those of neighboring renters. This buffering hypothesis is consistent with Aaronson's (2000) finding that growing up in a homeowning family in a low-income neighborhood has a stronger positive effect on the probability of graduating from high school than homeownership in a high-income neighborhood.

Alternatively, children of homeowners might be more, not less, affected by the conditions in their neighborhoods than renter children because of homeowners' relatively greater residential stability. Greater residential stability reduces or eliminates the need to change schools and increases the opportunity to develop closer ties to neighbors. As a result, the characteristics of their neighborhoods—both good and bad—could exert a particularly strong influence.[5] Aaronson's (2000) finding that homeownership has more positive effects on high-school graduation in residentially stable neighborhoods is consistent with this speculation.

3. Data and Methods

This study extends and refines previous work on the effects of homeownership on children's outcomes in several ways. Earlier investigations have focused on educational attainment effects (Green and White 1997; Aaronson 2000; Boehm and Schlottman 1999).[6] We extend the set of outcomes to include teen unwed births, idleness, wage rates, and welfare receipt. Examining multiple outcomes is important because the effects of homeownership may vary by outcome. Children of homeowners may attend higher quality schools than children of renters, for example, so that identical educational attainment by the two groups may not translate into identical earnings or welfare receipt.

Second, the analysis compares results for low-income and higher income families, with "low-income" defined as having parental earnings below 150 percent of the federal poverty line.[7] Although all previous studies on the effects of homeownership have controlled for income, none has explicitly tested for different effects of homeownership between low-income and higher income groups. An analytical focus on low-income families is appropriate because they are the primary target of homeownership promotion policies, and pooling low-income with higher income families could produce misleading results.[8]

The third way in which this paper differs from previous work is that we examine the effects of neighborhood characteristics both as independent factors and as factors that may change the way homeownership influences outcomes. Since homeowners and renters may live in very different kinds of neighborhoods, and children's outcomes may be affected by these different neighborhoods, the failure to control for them could produce estimates that mistakenly attribute neighborhood effects to homeownership.[9]

We test for the simultaneous effects of three measures of neighborhood characteristics: the poverty rate, the homeownership rate, and residential stability. We include the poverty rate because we are interested in the effects of homeownership in distressed neighborhoods on children's outcomes, and the poverty rate is a widely used indicator of neighborhood distress. The neighborhood poverty rate is also almost perfectly correlated (negatively) with neighborhood median income, which ensures comparability with the results of Aaronson (2000). We include the homeownership rate to distinguish between the effects of homeownership by a child's parents from the homeownership level of the neighborhood. Finally, we control for neighborhood residential stability because a neighborhood's homeownership rate is plausibly linked to residential stability (Rohe and Stewart 1996), and we

want to determine whether it is neighborhood homeownership or neighborhood stability that is responsible for neighborhood effects on children's outcomes.

3.1 Sample

The analysis uses data from the 1968-93 waves of the geocoded Panel Study of Income Dynamics (PSID). Begun in 1968, the PSID is an ongoing longitudinal survey of U.S. households conducted by the Survey Research Center at the University of Michigan. All original household members have been followed over time. Recent research confirms that despite considerable attrition, the PSID remains representative of the population (Fitzgerald, Gottschalk, and Moffitt 1998a, 1998b; Zabel 1998).

The analysis is performed on a sample of individuals with PSID family data available each year between ages eleven and fifteen, born between 1957 and 1973. Results are first compared for two samples: 1) a low-income sample of children from families with parental earnings below 150 percent of the federal poverty threshold for at least three of the five years between ages eleven and fifteen and 2) a higher income sample comprised of the children not in the low-income sample.[10] We then shift the analysis to focus exclusively on the low-income group and further restrict the sample to children whose parents were either always homeowners or always renters when the child was between ages eleven and fifteen. This latter restriction, which eliminates about 20 percent of cases, enables us to derive meaningful coefficients on the effects of homeownership while testing interactions between tenure status and neighborhood characteristics (see Appendix A for further discussion of the methodology).

3.2 Approach

We examine the effects of living in an owned home as a child on seven outcomes: 1) giving birth as an unmarried teenager (women only), 2) idleness (not working, attending school, or caring for children) at age twenty, 3) years of education at age twenty, 4) high-school completion at age twenty, 5) acquisition of post-secondary education at age twenty, 6) average hourly wage rates between ages twenty-four and twenty-eight, and 7) receipt of welfare—Aid to Families with Dependent Children (AFDC), food stamps, or other cash assistance—between ages twenty-four and twenty-eight.[11]

We estimate three sets of models, corresponding to the three broad conceptualizations of homeownership effects outlined earlier. The first set of models tests for the direct effects of homeownership on children's outcomes without controls for neighborhood features. Estimates are obtained separately and compared for low-income and higher income groups. Next, we test for indirect effects by adding controls for average neighborhood characteristics experienced between ages eleven and fifteen using the low-income sample. If neighborhood differences between homeowners and renters account for a substantial portion of the beneficial effects of homeownership, the homeownership effect estimates produced by these models should be much smaller than those produced by the direct effect models. The third set of models tests for the interaction of tenure status and neighborhood characteristics by specifying interaction terms between tenure status and each of the three neighborhood characteristics (stability, homeownership rate, and poverty rate), also performed on the low-income sample only.

The analysis uses ordinary least squares to estimate the effect of homeownership on years of education and wage rates. The models for the effects of homeownership on high-school completion, acquisition of post-secondary education, idleness, and welfare receipt, which are binary (that is, whether high school was completed or not), use probit.[12]

A major difficulty in identifying the effects of homeownership and neighborhoods on children is that they may be associated with parental characteristics that are not measured in the data and, therefore, cannot be controlled for in statistical models. The standard technique for dealing with such unmeasured variable problems is to use "instruments," variables that are correlated with the key analytical variables (homeownership and neighborhood characteristics, in this paper) but are independent of the unmeasured characteristics. However, while finding plausible instruments for homeownership is possible and has been done in other studies (Green and White 1997; Haurin, Parcel, and Haurin 2000; Aaronson 2000; Harkness and Newman 2002), it is difficult to identify credible instruments for the three neighborhood indicators tested here (Duncan, Connell, and Klebanov 1997; Duncan and Raudenbusch 1998; Moffitt 1999). Because this paper focuses on homeownership and neighborhoods, results based on instrumenting for homeownership alone would not be interpretable. In discussing the results, however, we argue that conclusions would be unlikely to change if controls for unmeasured family characteristics were added.

3.3 Policy Variables

The measure of homeownership is whether a child always lived in an owned home between ages eleven and fifteen. Three neighborhood features are included: the poverty rate, the percentage of families owning their home, and residential stability, the last being measured as the percentage of families living in the same housing unit for five or more years.[13] Interactive effects between housing tenure and neighborhood are obtained by multiplying the homeownership variable by each of the neighborhood variables. In the interaction model, the neighborhood variables are specified in mean-deviation form.[14] This implies that the coefficient on homeownership in these models can be readily interpreted as the effect of homeownership in the average sample neighborhood.

3.4 Control Variables

All models control for the following characteristics: 1) race, 2) gender, 3) year born, 4) age of mother when born, 5) educational attainment of household head, 6) number of children in family, 7) years in a two-parent family, 8) average annual earnings, 9) whether there is any, and the amount of, parental income (not including public assistance) in excess of earnings (average annual), 10) number of years the family relied on AFDC, food stamps, or other cash assistance (excluding Supplemental Security Income), 11) years in a city of 500,000 or more, 12) years in a city of 100,000 to 500,000, and 13) the child's primary state of residence.[15]

For educational outcomes, about 25 percent of cases are missing data on grades completed at age twenty, but have data on grades completed at some other age. In these cases, we substituted educational attainment in the closest year after age twenty, if available, and in the closest year before age twenty otherwise. Because educational attainment is affected by age, the models also include a control variable for the age to which the educational attainment measure applies. Monetary values are expressed in 1997 dollars using the CPI-U, the consumer price index for all urban consumers. City sizes come from the PSID census geocode.[16]

Each of these variables is plausibly related to one or more outcomes examined here, and most have been used extensively in other research on determinants of children's outcomes. The exceptions are controls for wealth other than home equity, and city size. Based on Conley's (1999) finding that parental wealth has significant effects on children's outcomes, we control for wealth by including a measure of income that is neither earned

nor obtained through public assistance.[17] We control for city size because Page and Solon (1999) have demonstrated "the importance of being urban" on adult earnings. State dummy variables are included to account for the fact that unmeasured features of states, such as quality of education or labor market conditions, may affect outcomes (Moffitt 1994).

Although children's outcomes may be affected by a family's home equity and residential mobility, as described earlier, we did not include controls for these factors in the initial models because both are also likely to be affected by whether a family owns its home, as well as neighborhood characteristics. Consequently, the estimates for the effects of homeownership and neighborhoods will include the effects that operate through home equity and residential moves, and they should be interpreted accordingly. After reviewing the main results, we conduct a supplementary analysis using these excluded variables.

4. Sample Characteristics

Table 1 shows the mean differences in outcomes, neighborhood characteristics, and family background characteristics between children of homeowners and those of renters. The differences are stark. Relative to homeowner children, renter children are 40 percent more likely to give birth as an unmarried teenager, and they are nearly twice as likely to be idle at age twenty and to rely on welfare as an adult. Their high-school graduation rate is 19 percent lower than that of homeowner children, they are only half as likely to acquire some post-secondary education, and their average hourly wage is a dollar less. These differences are all statistically significant.

Differences in the family backgrounds of renter and owner children are also dramatic. The parental income of renter children is half that of owner children, and renter children are twice as likely to grow up in a single-parent household or be on welfare. They experience an average neighborhood poverty rate of 24 percent, compared with 18 percent for owner children, and a substantially lower neighborhood homeownership rate (56 percent versus 72 percent, respectively). Surprisingly, there is little difference in the residential stability of the neighborhoods of these two groups. In renter neighborhoods, 57 percent of families had lived in the same residence for five years or more, compared with 58 percent in homeowner neighborhoods. The neighborhood poverty and home-ownership rates experienced by the sample children are somewhat negatively correlated ($r=-.45$), but the correlation

Sample Means for Renters and Homeowners

	Renters	Homeowners	*p*-value
Outcomes			
Gave birth as unwed teen (women only)	0.14	0.10	*
Idle at age twenty	0.25	0.14	***
Years of education at age twenty	11.30	12.0	***
Graduated from high school by age twenty	0.57	0.70	***
Obtained some post-secondary education by age twenty	0.12	0.23	***
Average hourly wage, ages twenty-four to twenty-eight	9.16	10.35	
Received any welfare, ages twenty-four to twenty-eight	0.34	0.18	***
Neighborhood conditions			
Mean neighborhood poverty rate	23.9	17.9	***
Mean neighborhood homeownership rate	56.0	72.2	***
Mean neighborhood percentage did not move in five or more years	56.7	58.0	***
Individual and family background features			
Female	0.52	0.52	
Black	0.44	0.21	***
Year born	1966	1966	*
Mother's age when born	25.2	26.8	***
Whether income is greater than earnings plus transfers	0.55	0.81	***
Parental earnings	11,080	20,920	***
Mean amount of family income is greater than earnings plus transfers	2,380	8,070	***
Years in two-parent family	2.25	3.65	***
Mean number of children in family	3.64	3.45	
Years receiving AFDC, food stamps, or "other" cash welfare	0.62	0.22	***
Household head graduated from high school	0.36	0.49	
Household head had some post-secondary education	0.18	0.30	**
Fraction of years in a city of 100,000-500,000	1.12	0.73	***
Years in a city of more than 500,000	1.31	0.53	***
Number of observations	1,495	1,081	

Source: Panel Study of Income Dynamics (PSID), 1968-93.

Notes: Monetary figures are expressed in 1997 dollars. Statistical significance indicators refer to one-tailed *t*-test results for differences in means, unequal variances assumed. Values are weighted using age fifteen PSID individual weights. AFDC is Aid to Families with Dependent Children.

* Value is less than .05.
** Value is less than .01.
*** Value is less than .0001.

between neighborhood residential stability and homeownership rates is surprisingly weak ($r=.25$), as is the correlation between residential stability and poverty rates ($r=.11$).[18]

5. Regression Results

5.1 Direct Effects: Low-Income and Higher Income Samples

Estimates from the direct effects models performed on the low-income and higher income samples are presented in Table 2. With the low-income sample, homeownership has statistically significant benefits for all outcomes except for teen unwed childbearing, where homeownership has a favorable but not significant effect. In contrast, with the higher income sample, homeownership has positive, statistically significant effects only on the acquisition of post-secondary education and total years of education. These results indicate that the benefits of homeownership for children are reaped primarily by the less affluent. For this reason, and because policy interest centers on the low-income group, the remainder of this paper focuses on the low-income sample alone.[19]

5.2 Models with Controls for Neighborhood Features

Table 2 also presents estimates for the policy variables obtained from the indirect effects models, which control for neighborhood features. The inclusion of neighborhood controls has modest effects on some model estimates, but overall, there is little effect. Even with neighborhood controls, homeownership has strong, favorable effects on most outcomes. Thus, the beneficial effects of homeownership on children's long-term outcomes appear to be only marginally, if at all, attributable to the better neighborhood characteristics experienced by children of homeowners. The estimates for educational outcomes and welfare receipt are particularly strong. In the direct effects models, children of homeowners are estimated to complete almost half a year more of education, have a high-school graduation rate that is 13 percentage points higher, a likelihood of acquiring post-secondary education that is 6 percentage points greater, and a chance of receiving welfare between ages twenty-four and twenty-eight that is 9 percentage

Table 2
Effects of Homeownership on Early Adult Outcomes

	Age Twenty Outcomes					Age Twenty-Four to Twenty-Eight Outcomes	
	Teen Unwed Birth (Probit)	Idle (Probit)	Years of Schooling (Ordinary Least Squares)	High-School Graduate (Probit)	Any Post-Secondary Education (Probit)	Wage Rate (Ordinary Least Squares)	Received Welfare (Probit)
Direct effects							
No controls for neighborhood features							
Homeowner family, ages eleven to fifteen, income below 150 percent of poverty	-0.030 (0.285)	-0.066 (0.038)	0.417 (0.000)	0.131 (0.000)	0.058 (0.002)	0.698 (0.018)	-0.091 (0.009)
Homeowner family, ages eleven to fifteen, income above 150 percent of poverty	0.011 (0.237)	-0.011 (0.583)	0.209 (0.030)	0.015 (0.564)	0.101 (0.003)	0.767 (0.124)	-0.020 (0.416)
Indirect effects							
With controls for neighborhood features							
Homeowner family, ages eleven to fifteen	-0.037 (0.198)	-0.045 (0.153)	0.039 (0.000)	0.124 (0.000)	0.052 (0.006)	0.514 (0.090)	-0.095 (0.008)
Neighborhood poverty rate	0.002 (0.878)	0.005 (0.715)	-0.048 (0.164)	-0.016 (0.176)	-0.007 (0.365)	-0.172 (0.133)	0.023 (0.072)
Neighborhood homeownership rate	0.010 (0.324)	-0.017 (0.145)	-0.003 (0.913)	-0.005 (0.672)	0.000 (0.960)	0.072 (0.525)	0.016 (0.191)
Neighborhood percentage staying five or more years	-0.025 (0.035)	-0.005 (0.737)	0.040 (0.254)	0.020 (0.122)	0.012 (0.115)	0.227 (0.098)	-0.006 (0.664)
Joint significance of neighborhood features (p-value of f-test)	0.151	0.238	0.327	0.298	0.300	0.106	0.295
Number of observations	844	1,364	2,404	2,397	2,391	1,240	1,902

Source: Panel Study of Income Dynamics, 1968-93.

Notes: In all probit estimates, the coefficient is transformed to indicate marginal effects with all independent variables set to their means. Wage rates are in 1997 dollars. Huber-White standard errors are used to account for nonindependence of sibling observations. Neighborhood coefficients show the effects of a 10-percentage-point change in neighborhood conditions. *p*-values are in parentheses.

points lower. All of these estimates are highly statistically significant ($p = .01$), and they decline only slightly, if at all, when controls for neighborhood features are added.

The estimated effects of homeownership on children's subsequent idleness and wage rates are also favorable, but somewhat less impressive. In the direct effects models, idleness at age twenty among children of homeowners is reduced by 7 percentage points, and their average wage rates between ages twenty-four and twenty-eight increase by $0.70 relative to children of renters. Both of these estimates are statistically significant ($p < .05$), but when controls for neighborhood features are added, they decline by about 30 percent and are of only moderate statistical significance ($p = .15$ for idleness and

$p = .09$ for wage rates). The estimates for the effects of homeownership on teen out-of-wedlock childbearing are also favorable, but weak ($p = .29$) in the direct effects estimate.

The smaller samples used to estimate homeownership effects on idleness, wage rates, and teen unwed childbearing partially explain the weaker results for these outcomes.[20] There may also be greater measurement error for these outcomes, which could produce a downward bias, compared with education or welfare receipt.[21] Thus, it would be hazardous to conclude that the effects of homeownership on education and welfare receipt are, in reality, stronger than they are for the other outcomes examined. Instead, homeownership appears to be associated with positive effects across-the-board, although

these effects are statistically significant at conventional levels only for outcomes that are precisely measured and tested using the largest samples.

The estimated effects of neighborhood characteristics are weak.[22] Only in the model for wage rates do they jointly attain a moderate level of statistical significance ($p=.11$). The estimated effects of neighborhood residential stability and poverty, but not the homeownership rate, have the expected sign for virtually all outcomes. Neighborhood residential stability exhibits the strongest effects, with a statistically significant ($p<.05$) impact on reduced teen out-of-wedlock childbearing and modestly significant ($p<.13$) positive effects of high-school graduation, acquisition of post-secondary education, and wage rates. Neighborhood poverty is a weaker determinant of long-term outcomes, with a moderate ($p<.10$) effect on increased probability of welfare receipt and some weak, deleterious effects on other outcomes. Estimates for the effects of neighborhood homeownership are inconsistent and weak. For four of the seven outcomes, it has an unexpected sign, suggesting deleterious effects, and it is not statistically significant for any outcome. Contrary to expectations, these results indicate that there are no spillover benefits of homeownership to the neighborhood beyond the immediate homeowning family. Instead, they suggest that residential stability may foster a neighborhood's social capital, with beneficial effects on children.[23]

The finding that the beneficial effects of homeownership cannot be attributed to the better neighborhood characteristics of homeowners may be surprising. It arises because residential stability—the neighborhood characteristic that matters most for children's outcomes—is nearly identical for homeowners and renters in this sample, as shown in Table 1. Differences in the neighborhood poverty rate, which also appears to affect outcomes, are also fairly modest, at 6 percentage points on average. Only the neighborhood homeownership rate differs substantially between owner and renter families, but this feature has virtually no effect on children's outcomes. Thus, on the dimensions that matter most for children's outcomes, the neighborhood characteristics of owner and renter families are very similar, and they differ substantially only on the dimension that matters least, at least in this sample.

5.3 Models with Tenure/ Neighborhood Interactions

Table 3 shows the results for models testing the interaction of tenure status and neighborhoods.[24] The indirect effects models

imposed the assumption that neighborhood characteristics have identical effects on children of homeowners and renters. In the present results, this assumption is relaxed; that is, in the interaction models, the effects of homeownership are allowed to depend upon characteristics of the neighborhood.

The key result of these models is that homeownership does not buffer children against the deleterious effects of bad neighborhoods. If anything, the pattern of results points in the opposite direction—toward an amplification effect. Homeowner children appear to be more adversely affected by neighborhood poverty than renter children, and to benefit more from neighborhood homeownership and residential stability. Effects of neighborhood residential stability, in particular, appear to be better for children of homeowners than for children of renters.

The first row of coefficients in Table 3 shows that in a neighborhood with average sample characteristics (27 percent poverty, 59 percent homeownership, and 57 percent residential stability), the estimated effects of homeownership are nearly the same as in the direct and indirect effects models. Subsequent rows in the table show how these average effects are modified by neighborhood characteristics. For example, the coefficient on homeownership (first row) in the wage rate model is $0.397. A 10-percentage-point increase in the poverty rate of the neighborhood where the child lived between ages eleven and fifteen is estimated to reduce the early adult wage rate of homeowner children by $0.322 and of renter children by $0.102, with a net difference of $0.22. Thus, homeownership in a neighborhood with a 37 percent poverty rate, rather than the sample mean of 27 percent, would raise a child's early adult wage rate by $0.177 ($0.397 minus $0.22), rather than $0.397.

Comparing coefficients in this way indicates that neighborhood poverty generally has worse effects on the outcomes of homeowner children than on renter children, and neighborhood homeownership and residential stability generally have better effects. But none of the differences between the estimated effects of neighborhoods on children of homeowners and renters are highly statistically significant. In the strongest case, a 10-percentage-point increase in neighborhood residential stability is associated with a statistically significant $0.43 increase in the wage rates of homeowner children ($p<.05$), but it has no effect on the wage rates of renter children. However, the difference between these two estimates is statistically significant at only a moderate level ($p=.10$). In another case, the difference between owner and renter children in the impact of neighborhood residential stability on teen out-of-wedlock childbearing is modest ($p=.16$). None of the other differences is statistically distinguishable at even this weak level.

Despite this lack of statistical significance in differences, however, the pattern of homeowner children being more adversely affected by neighborhood poverty and more favorably affected by neighborhood stability and homeownership is consistent. Although the statistical evidence to support the neighborhood amplification effect of homeownership is modest, the underlying theory (that is, that children of homeowners may develop closer ties with other community members and, therefore, be more affected by them) is consistent with the data used here, where renter children experienced 40 percent greater variability in neighborhood characteristic than children of homeowners.

If there was truly no difference in the impacts of neighborhoods on homeowner and renter children, we would expect a more random pattern of results. In addition, tests of an additive (admittedly crude) neighborhood quality index[25] reveal that on three of the seven outcomes (high-school graduation, acquisition of post-secondary education, and wage rates), the difference between the estimated effects on homeowner and renter children is moderately significant ($p<.10$). On balance, these results suggest that neighborhood characteristics may have different effects on owner and renter children, but these differences are weak and require further exploration.

TABLE 3

Results of Housing Tenure/Neighborhood Interaction Models

	Age Twenty Outcomes					Age Twenty-Four to Twenty-Eight Outcomes	
	Teen Unwed Birth (Probit)	Idle (Probit)	Years of Schooling (Ordinary Least Squares)	High-School Graduate (Probit)	Any Post-Secondary Education (Probit)	Wage Rate (Ordinary Least Squares)	Received Welfare (Probit)
Homeowner family, ages eleven to fifteen	-0.041 (0.190)	-0.041 (0.210)	0.369 (0.000)	0.11 (0.001)	0.045 (0.023)	0.397 (0.209)	-0.086 (0.022)
Neighborhood poverty rate							
Homeowners	-0.002 (0.926)	-0.003 (0.895)	-0.092 (0.111)	-0.034 (0.072)	-0.015 (0.192)	-0.322 (0.051)	0.019 (0.352)
Renters	-0.004 (0.761)	0.010 (0.492)	-0.026 (0.502)	-0.010 (0.466)	-0.003 (0.734)	-0.102 (0.478)	0.027 (0.068)
Neighborhood homeownership rate							
Homeowners	0.014 (0.345)	-0.024 (0.190)	-0.006 (0.893)	0.001 (0.942)	0.003 (0.787)	0.094 (0.564)	0.002 (0.929)
Renters	0.008 (0.517)	-0.011 (0.365)	-0.001 (0.973)	-0.008 (0.548)	-0.003 (0.761)	0.038 (0.770)	0.023 -0.085
Neighborhood stability rate							
Homeowners	-0.041 (0.011)	-0.013 (0.574)	0.065 (0.239)	0.037 (0.052)	0.019 (0.052)	0.431 (0.012)	-0.001 (0.952)
Renters	-0.010 (0.545)	0.001 (0.971)	0.023 (0.594)	0.009 (0.596)	0.005 (0.652)	0.039 (0.835)	-0.007 (0.678)
Tests for equality of neighborhood coefficients							
Poverty rate	0.886	0.605	0.303	0.274	0.355	0.277	0.729
Homeownership rate	0.742	0.521	0.925	0.626	0.647	0.759	0.303
Stability rate	0.155	0.619	0.517	0.227	0.274	0.097	0.816

Source: Panel Study of Income Dynamics, 1968-93.

Notes: In all probit estimates, the coefficient is transformed to indicate marginal effects with all indepencent variables set to their means. Wage rates are in 1997 dollars. Huber-White standard errors are used to account for nonindependence of sibling observations. Neighborhood coefficients show the effect of a 10-percentage-point change in neighborhood conditions. *p*-values are in parentheses.

6. Discussion

6.1 Unmeasured Variable Bias

As discussed earlier, the results presented here could be erroneous if the unmeasured characteristics of families that choose different tenure and neighborhood combinations were driving them. In particular, the concern here is that the homeownership coefficients may have much larger upward biases than the neighborhood coefficients. If so, the findings of the preceding analysis would be spurious. However, previous research indicates that estimates for the effects of homeownership and neighborhoods have roughly the same upward bias. Using instrumental variable techniques, Green and White (1997), Haurin, Parcel, and Haurin (2000), and Aaronson (2000) all find a modest upward bias in homeownership effect estimates, while sibling difference analyses and other attempts to gauge the extent of bias associated with neighborhood effect estimates (Aaronson 1997; Duncan, Connell, and Klebanov 1997) also find a modest upward bias associated with neighborhood poverty. These results suggest that conclusions drawn from the uninstrumented results will be qualitatively

correct, although the point estimates may be overstated. In contrast to other studies of homeownership effects, Harkness and Newman (2002) find that homeownership coefficients are biased downward for children of low-income families; that is, the effects of homeownership are even larger than estimates provided by the uninstrumented models.

6.2 Policy Implications

One possible implication of this analysis is that under certain adverse neighborhood characteristics, homeownership could result in worse, not better, outcomes for children, compared with renting. To gain a sense of what these conditions might be, we used the coefficients from the interaction model results to calculate the effects of homeownership if the three neighborhood characteristics considered here were worsened by one standard deviation from their means, both individually and simultaneously, with the results presented in Table 4.[26] With one exception—the effect of reduced neighborhood residential stability on earnings—all of the estimated effects of homeownership remain favorable. For educational outcomes and welfare receipt, many of these effects remain statistically significant

Table 4

Effects of Homeownership on Early Adult Outcomes under Different Neighborhood Conditions

	Age Twenty Outcomes					Age Twenty-Four to Twenty-Eight Outcomes	
	Teen Unwed Birth (Probit)	Idle (Probit)	Years of Schooling (Ordinary Least Squares)	High-School Graduate (Probit)	Any Post-Secondary Education (Probit)	Wage Rate (Ordinary Least Squares)	Received Welfare (Probit)
Poverty rate, increase of one standard deviation	-0.037 (0.374)	-0.059 (0.248)	0.273 (0.054)	0.076 (0.103)	0.027 (0.351)	0.079 (0.850)	-0.097 (0.062)
Homeownership rate, decrease of one standard deviation	-0.052 (0.335)	-0.015 (0.779)	0.379 (0.014)	0.092 (0.092)	0.035 (0.270)	0.284 (0.610)	-0.043 (0.485)
Residential stability, decrease of one standard deviation	-0.005 (0.876)	-0.026 (0.562)	0.320 (0.006)	0.078 (0.066)	0.028 (0.270)	-0.049 (0.903)	-0.092 (0.040)
Worsen all neighborhood features by one standard deviation	-0.013 (0.800)	-0.018 (0.774)	0.235 (0.170)	0.026 (0.660)	0.001 (0.998)	-0.480 (0.412)	-0.061 (0.357)

Source: Panel Study of Income Dynamics, 1968-93.

Notes: The table uses the coefficients from the interaction models (in Table 3) to show the estimated effects of homeownership when the neighborhood measures are worsened by one standard deviation from their mean values, both individually and simultaneously. In all probit estimates, the coefficient is transformed to indicate marginal effects with all independent variables set to their means. Wage rates are in 1997 dollars. Huber-White standard errors are used to account for nonindependence of sibling observations. *p*-values are in parentheses.

near conventional levels when individual neighborhood features are worsened. None remain significant when all neighborhood features are simultaneously worsened by one standard deviation, but these sorts of neighborhood characteristics—a poverty rate of 42 percent, a homeownership rate of 39 percent, and only 46 percent of residents remaining in their dwellings for five years or more—roughly represent the worst quintile of neighborhoods in the sample. It is noteworthy that even with these extremely poor neighborhood characteristics, and under the assumption that owner children are, in fact, more adversely affected by these conditions than renter children, effects of homeownership on children's outcomes tend to be positive.

6.3   Comparison with the Results of Aaronson (2000)

Because this paper uses a different approach than Aaronson (2000) to examine the role of neighborhood in homeownership effects, it is important to compare results. Although both analyses find that neighborhood residential stability enhances the positive effect of homeownership on children's outcomes, findings on the effect of neighborhood poverty disagree. Aaronson finds that homeownership has a more positive effect on high-school graduation in low-income neighborhoods; we find that neighborhood poverty reduces the positive effect of homeownership on high-school graduation and other outcomes.[27]

When we attempt to replicate Aaronson's results using a sample unrestricted by income, our results are consistent with his: homeownership in a high-poverty neighborhood has a significantly more positive effect on high-school graduation than homeownership in a low-poverty neighborhood. Aaronson's result therefore appears to be attributable to the inclusion of higher income families in the sample. In our results using the low-income sample, homeownership is estimated to increase the probability of high-school graduation by about 10 percentage points, roughly equal in magnitude to the effect Aaronson finds in low-income neighborhoods. Because the families living in low-income neighborhoods in Aaronson's sample probably have low incomes themselves and, therefore, roughly match the sample we use, our results are consistent with his. Excluded from our sample are the wealthier families who live in the most affluent neighborhoods and for whom homeownership has no effect on children's high-school graduation, according to Aaronson's results. Thus, the difference Aaronson finds in high- versus low-income

neighborhoods may, in fact, be attributable to differences in the type of families that live in such neighborhoods, not the neighborhoods themselves.

6.4   Supplementary Models

Measures of home equity and the family's history of residential mobility were not included in the foregoing models because they could be affected by homeownership or neighborhood characteristics, as discussed earlier. However, when supplementary models that include these measures were tested, the effects of home equity were not statistically significant for any outcome except wage rates. A history of frequent residential moves was associated with the most adverse effects for outcomes, and these effects were statistically significant for all educational outcomes and for wage rates. Like Aaronson (2000), we find the positive effects of homeownership to be weaker when residential moves are added to the model, which suggests that these effects can be partially attributed to the reduced residential mobility of homeowners. But even after we controlled for residential moves, homeownership continued to exhibit statistically significant ($p<.05$) favorable effects on all three educational outcomes and on reduced welfare usage. It thus appears that the impacts of homeownership on other features, not simply residential stability, need to be examined in order to explain the beneficial effects of homeownership on children.

7.   Conclusions

The key finding of this paper is that homeownership is beneficial to children's outcomes in almost any neighborhood. However, because better neighborhoods are associated with better outcomes for homeowner children, homeownership in better neighborhoods is an even stronger combination. Residentially stable neighborhoods are particularly beneficial to homeowner children, and low neighborhood poverty also increases the benefits of homeownership. Interestingly, however, the neighborhood homeownership rate has no effect.

Are better neighborhoods also better for renter children? The answer appears to be "no." One possible explanation is that because renter families move more often, renter children do not develop close ties with others in their community and consequently are influenced less by them. The one compensation

is that distressed neighborhoods may also be less deleterious for them, since renters' children appear to be influenced less by their neighborhoods—good or bad.

These provocative findings imply that the children of most low-income renters would be better served by programs that help their families become homeowners in their current neighborhoods instead of helping them move to better neighborhoods but remain renters. The best evidence to date on the effects of neighborhoods on renter children comes from the Moving-to-Opportunity (MTO) demonstration program. In the program, one group of families living in public housing in highly distressed neighborhoods was offered a Section 8 certificate, counseling, and assistance to help them move out of public housing and into rental housing in very low-poverty neighborhoods. Another group was offered a Section 8 certificate, but no additional assistance, to move as they chose. This latter group generally moved to somewhat better neighborhoods than those of their former public housing residence, but much worse than the experimental group that received assistance in moving to very low-poverty neighborhoods. The early MTO results demonstrate a variety of benefits to both groups of families moving out of public housing. But it is not yet evident whether the children whose families moved to low-poverty neighborhoods are faring much better than those whose families generally remained in fairly

distressed neighborhoods. For example, Ludwig, Duncan, and Ladd (2001) report significant gains in reading scores for both Section 8 mover groups, whether they moved to a low-poverty neighborhood or not. Thus, while it seems clear that helping families to move out of public housing in highly distressed neighborhoods is beneficial, the MTO research has not yet demonstrated that neighborhoods matter significantly for children of renters.[28]

The research reported here is only an initial strep toward understanding the role of neighborhood characteristics in the effects of homeownership on children. But the research is limited by its small sample size and methodological issues—including the likelihood of upwardly biased estimates because of failure to control for important family characteristics—that render the results of this analysis extremely tenuous. Further research, preferably using an experimental design, is therefore necessary to measure solidly the relative benefits of homeowning and renting for children with a variety of neighborhood characteristics.

Finally, homeownership may generate broader social benefits beyond its favorable effects on children, such as a more active and informed citizenry (DiPasquale and Glaeser 1999) and more residentially stable neighborhoods. The case for greater investment in homeownership must take this full range of potential benefits into account.

Suppose we want to estimate how the neighborhood poverty rate differentially affects children of homeowners and renters. Some children are always homeowners between ages eleven and fifteen, some are always renters, and some experienced both forms of tenure. One solution might be to specify homeownership as years in a homeowning family and multiplicatively interact this variable with the average neighborhood poverty rate experienced over the period. But for those with mixed tenure, the average neighborhood poverty rate comprises both the neighborhood poverty rate while renting and the neighborhood poverty rate while owning, which are two quantities whose effects we want to estimate separately.

Another solution might be to specify separately the average neighborhood poverty rate/level experienced while owning and the average neighborhood poverty rate experienced while renting. The problem here is that average neighborhood poverty rate while owning (renting) is undefined for renters (owners). To correct for this problem, we can set the average neighborhood poverty rate while owning (renting) to zero for renters (owners) and introduce a dummy variable to control for the fact that this substitution has been made. But the dummy variables introduced also act as indicators of zero and five years of homeownership between ages eleven and fifteen,

which means that the model estimates for the effects of homeownership rely solely upon the relatively few cases with mixed tenure status over the period.

The most likely effect of eliminating from the sample children of mixed tenure status between ages eleven and fifteen would be to overestimate the favorable effects of homeownership on children's outcomes because homeownership is generally indicative of better household conditions, and families that did not become homeowners until their children were age eleven or older are more likely to have been worse off in financial and other ways compared with families that became homeowners earlier. Likewise, families that were already homeowners and became renters after their children were age eleven or older are likely to be undergoing serious difficulties, such as job loss or divorce. (The question of whether homeownership is good for children in families undergoing serious stress is an important one, but it is not examined here.) Thus, the estimates obtained by eliminating families of mixed tenure status should produce the most favorable picture of homeownership effects on children's outcomes. Tests of basic models (that is, those without tenure/neighborhood interactions) using the full low-income sample support this expectation.

Appendix B: Data

For intercensus years, we interpolated using the values from the two bracketing decennial censuses; for census years and for cases where the data from only one of the bracketing censuses were available, we used values from a single census. (From 1986 on, the Panel Study of Income Dynamics geocode match provided data from the 1990 census only.) Data from two censuses were used in 79 percent of the cases; one census was used for 21 percent of the cases.

Approximately 68 percent of the two-census interpolations were obtained from tract data alone, 10 percent used ZIP code data alone, and 4 percent used a combination of tract and ZIP code measures. In the remaining 18 percent of the two-census cases, data at the tract or ZIP code level were available for only one of the bracketing censuses. For these, we used the value at the tract or ZIP code level that was available relative to the minor civil division (MCD) value for that census to impute a tract or ZIP code value for the missing census based on its MCD value. That is, we imputed $z1 = Z1 * z2 / Z2$, where $z1$ is the missing ZIP code or tract level datum from census year 1, $z2$ is the available ZIP code or tract level datum from census year 2, and $Z1$ and $Z2$ are the MCD level values. (The MCD corresponds roughly to a township or a quarter of a county. Values for the MCD, or something conceptually similar to it, were available for all years.) About 0.4 percent of two-census interpolations used MCD values for both bracketing census years. Of the single-census cases, 73 percent used tract level data, 21 percent used ZIP code level data, and 6 percent used MCD level values.

Alternative Probit Estimates for Indirect Effects Model

	Teen Unwed Birth (Probit)	Idle (Probit)	High-School Graduate (Probit)	Any Post-Secondary Education (Probit)	Received Welfare (Probit)
Unfavorable family background					
Homeowner family, ages eleven to fifteen	-0.057 (0.176)	-0.056 (0.145)	0.128 (0.000)	0.029 (0.029)	-0.101 (0.007)
Neighborhood poverty rate	-0.003 (0.879)	0.006 (0.715)	-0.017 (0.178)	-0.004 (0.378)	0.024 (0.070)
Neighborhood homeownership rate	0.016 (0.324)	-0.020 (0.142)	-0.005 (0.672)	0.000 (0.960)	0.017 (0.192)
Neighborhood percentage staying five or more years	-0.038 (0.041)	-0.006 (0.737)	0.020 (0.122)	0.007 (0.132)	-0.006 (0.665)
Favorable family background					
Homeowner family, ages eleven to fifteen	-0.016 (0.403)	-0.014 (0.373)	0.076 (0.010)	0.096 (0.006)	-0.072 (0.038)
Neighborhood poverty rate	-0.001 (0.878)	0.001 (0.727)	-0.010 (0.216)	-0.013 (0.363)	0.017 (0.103)
Neighborhood homeownership rate	0.004 (0.443)	-0.005 (0.362)	-0.003 (0.672)	-0.001 (0.960)	0.012 (0.218)
Neighborhood percentage staying five or more years	-0.011 (0.340)	-0.001 (0.739)	0.012 (0.151)	0.023 (0.122)	-0.004 (0.666)

Source: Panel Study of Income Dynamics, 1968-93.

Notes: In all probit estimates, the coefficients were transformed to indicate marginal effects with all variables set to their means. The table shows how these estimates remain stable with different choices for the values of the independent variables. For the "unfavorable family background" estimates, maternal age at birth was set to fifteen, parental earnings to zero, parental education to no high school, years of childhood welfare usage to 100 percent, and asset income to zero. For the "favorable family background" estimates, maternal age at birth was set to thirty, parental earnings to $30,000 annually, parental education to college, years of childhood welfare usage to zero, and asset income to $1,000 annually. Variables other than those mentioned were set to their means. Wage rates are in 1997 dollars. Huber-White standard errors are used to account for nonindependence of sibling observations. p-values are in parentheses.

Endnotes

1. Distressed neighborhoods are typically defined as those with high rates of poverty, unemployment, and dependence on public assistance, though researchers differ in their specific operationalizations. Some analysts use an index of factors (for example, the Ricketts-Sawhill definition of underclass neighborhoods) or factor analysis scores (for example, the papers collected in Brooks-Gunn, Duncan, and Aber [1997]). Others rely primarily on the poverty rate, though the cutoff point for "distress" varies from 20 percent (used by the census to define poverty areas) to 40 percent. These different definitions are substantively quite similar, because the factors that characterize distressed neighborhoods are highly interrelated. Most researchers rely on census tracts as proxies for neighborhoods.

2. See Sandel et al. (1998) for a discussion of health-threatening conditions in substandard housing. We are aware of only one study that investigates the effects of milder forms of physical deprivation on children's development. Using the National Longitudinal Survey of Youth (NLSY) child data set, Mayer (1997) constructs a "housing environment" index, based on whether the interviewer observed the respondent's home to be "dark and perceptually monotonous," "minimally cluttered," or "reasonably clean." She found almost no effect of this index on young children's cognitive test scores or behavioral problems.

3. Data were tabulated from the 1999 American Housing Survey.

4. The better socioeconomic features of homeowning families may be another factor explaining the improved outcomes of homeowner children, but all previous studies control for income and other family features.

5. This speculation follows from the collective socialization and epidemic models of neighborhood effects (Jencks and Mayer 1990).

6. Green and White (1997) also examine the effect of homeownership on teen unwed childbearing in one of the three data sets they consider. Boehm and Schlottman (1999) simulate the indirect effect of homeownership on lifetime earnings via its impact on educational attainment, and they also test whether children of homeowners are more likely to become homeowners themselves.

7. For a four-person, two-child family, 150 percent of the 2001 poverty line was $26,940.

8. Chow tests confirm structural differences between model estimates obtained from samples of children from families with incomes below and above 150 percent of the poverty line, indicating that it is not appropriate to pool the two samples.

9. Green and White (1997) and Haurin, Parcel, and Haurin (2000) include some rough proxies for neighborhood characteristics in their models, but acknowledge weaknesses in these proxies. Aaronson (2000) examines the interaction effects of homeownership by retesting models on samples split by residence in high- versus low-income neighborhoods and in high- versus low-stability neighborhoods. But this technique could produce misleading results for the interactive effect of homeownership and neighborhood characteristics if the difference in neighborhood characteristics experienced by homeowners and renters was unequally distributed in the split samples.

10. We also experimented with defining low income as having parental earnings below the regional median for at least two-thirds of observed years, using the four census-defined regions. This definition has the advantage of providing a more geographically balanced sample. It is also more consistent with definitions of low-income families used in other housing studies, which are usually based on the median income of the metropolitan area. However, it does not adjust for family size as does the poverty formula. The two definitions produce almost identical results.

11. Two other outcomes—whether there are any, and number of, hours employed between ages twenty-four and twenty-eight—were also tested and found to be unaffected by parental homeownership. Results on these two outcomes are not reported below. Hourly wage rates were constructed by dividing total earnings by work hours. Six outliers with calculated wage rates of more than $40 an hour and less than 300 average annual hours of work were excluded from the wage rate model.

12. Huber-White standard errors are used because the data include siblings, which may not be independent.

13. Each of these measures was extracted from the PSID census geocode and averaged over observed years. Census tract level measures were available for roughly 70 percent of cases, and ZIP code areas were available for the remainder. Direct census measures were only obtained for decennial census years. For intercensus years, we linearly interpolated between the two closest decennial censuses. For example, for 1975, we interpolated between the 1970 and 1980 census values for the tract (or ZIP code area). (Appendix B provides more detail on the construction of neighborhood measures.)

14. That is, each neighborhood variable is transformed by subtracting off its sample mean.

15. A variety of nonlinear specifications for several of these variables (such as parental earnings, maternal age when born) were tested and found to have no impact on the key results, and diagnostics for colinearity problems with these variables using the techniques of Belsley, Kuh, and Welsch (1980) revealed no such evidence.

16. Annual city size values were obtained by logarithmically interpolating between place size values in the two closest decennial census years.

17. The PSID did not begin collecting detailed data on assets until 1984.

18. Diagnostics revealed no colinearity problems with these neighborhood variables and the other control variables.

19. Harkness and Newman (2002) find that the positive effects of homeownership on the educational outcomes of the higher income group are not sustained when instrumental variable techniques are used to account for unmeasured family background variables. In contrast, positive effects of homeownership are sustained in the low-income sample.

20. The smaller sample for teen unwed births is attributable to missing data and the restriction of the sample to women. A substantial portion of the data needed to construct the idleness measure is also missing. The sample used for the wage rate model is smaller because there are fewer cohorts with data for ages twenty-four to twenty-eight, when wage rates were measured, and also because it is restricted to cases with nonzero work hours. (Six cases with fewer than 300 annual average work hours and wage rates above $40 per hour were also excluded from the wage rate sample.)

21. An individual's average wage rate between ages twenty-four and twenty-eight is likely to be difficult to measure accurately because earnings and work hours (from which we constructed the wage rate variable) can be quite volatile from month to month (Duncan 1988), and it may be difficult for individuals to recall accurately their wage rates when surveyed annually (as in the PSID). The variables for teen unwed childbearing and idleness were also constructed from other, more basic variables in the PSID, which could also introduce measurement error.

22. For expository purposes, the coefficients on the neighborhood variables are scaled to represent the effect of a 10-percentage-point change.

23. It may be that, by fostering greater residential stability, home-ownership could play an indirect role in creating neighborhood characteristics beneficial to children's development. This role appears to be weak, however. In supplementary models that exclude neighbor-hood residential stability, the estimated effects of neighborhood homeownership are only slightly more favorable than those shown in Table 2.

24. In these results, all interactions were tested simultaneously, not in separate models or entered in the same model sequentially.

25. This index was formed by adding the homeownership and residential stability rates and subtracting the poverty rate.

26. These standard deviations are 14, 20, and 11 percentage points for the poverty rate, homeownership rate, and residential stability rate, respectively.

27. These findings can be compared because neighborhood poverty and income are almost perfectly negatively correlated.

28. Complete documentation of the MTO research to date can be found at <http://www.mtoresearch.org>.

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Frank Braconi

Commentary

The paper by Joseph Harkness and Sandra Newman combines two important issues in community development research: the questions of "neighborhood effects" and of "homeowner effects." It is interesting that researchers widely accept the notion that neighborhood characteristics influence the outcomes of children and adolescents, although the empirical evidence of such effects remains spotty (Ginther, Haveman, and Wolfe 2000; Evans, Oates, and Schwab 1992). However, there is widespread skepticism that homeownership effects are real, although the statistical evidence for them is fairly robust. The Harkness and Newman paper is one of the first to explore those hypothesized influences in combination, an avenue of inquiry that can potentially have significant policy implications.

1. Trade-Offs in Research Design

A number of researchers have found that parental home-ownership is associated with substantially improved outcomes for children (Green and White 1997; Aaronson 2000). Of course, it is natural and prudent for researchers to question whether the improved outcomes are due to homeownership per se, or to unobservable characteristics of the parents that cause them to both self-select into homeownership and to rear more successful kids. The standard techniques for dealing with the problem are to seek a more complete set of parental control variables, or to instrument for homeownership. As might be expected, when this is done, the simple estimated effects of homeownership tend to diminish somewhat, but heretofore have remained stubbornly positive and significant. Harkness and Newman choose to deal with this issue in a related paper, presenting a thorough analysis of how instrumentation changes, or does not change, their basic conclusions. In the present paper, they assume that the interaction of homeownership effects and neighborhood effects should be relatively unbiased in single-equation probit models. That appears to be a sensible approach, given that the alternatives would be methodologically complex and might risk obscuring the policy implications.

Of course, all statistical studies also involve database choice and sample selection trade-offs, and it would be useful here to note some of those implicit in the Harkness and Newman paper. The data are drawn from the Panel Study of Income Dynamics (PSID), which provides unparalleled information on family structure and living arrangements throughout the individual's childhood and adolescence. That provides an excellent set of parental and, with the PSID geocoding, neighborhood control variables. Unfortunately, one trade-off that is inevitable is sample size. Apparently because of sample size considerations, Harkness and Newman have combined

males and females in most of their basic regressions, with a dummy variable to indicate gender. However, I generally prefer the segregation of the sexes, at least in statistical samples. My own research indicates that homeownership, as well as other characteristics of a family's housing and neighborhood situation, have differential effects on young men and women. This is intuitively plausible, insofar as the socialization and expectations of adolescent males and females are so different. A thorough understanding of neighborhood and homeownership effects, I am convinced, will require separate investigations of their effects on boys' and girls' development.

Harkness and Newman also make an effort to analyze homeownership and neighborhood effects on a variety of child outcomes. Much of the research so far, including my own, has focused more narrowly on the effects on high-school graduation or on teenage or out-of-wedlock births. Expanding the inquiry to include a number of other outcome variables is a useful step at this stage in the game. This broadening of the agenda also involves trade-offs, however. In particular, different characteristics of neighborhoods may influence child development in different ways, requiring a proliferation of neighborhood control variables that may be highly correlated with one another. One of the pioneering papers in the field (Case and Katz 1991) suggests that families and neighborhoods influence youths along like dimensions; for instance, a youth's likelihood of completing high school will be most directly influenced by family and peer propensities toward school completion. The neighborhood variables Harkness and Newman test may not be specific enough to capture all of the particular neighborhood effects on each of their outcome variables, and hence omitted variable bias may be present. It would be interesting to know what other neighborhood variables the authors tested.

2. Implications for Ownership Programs

With the methodological caveats duly considered, the research of Harkness and Newman addresses pressing questions in community development policy. Promotion of home-ownership opportunities has been a favorite policy prescription of government officials, private financial leaders, and policy analysts for a number of years, especially since the large-scale rental production programs, typified by public housing, fell into disfavor. By facilitating, even encouraging, low-income families' purchases of homes in distressed areas, are we doing them, and their children, harm? Those families

are probably among the more capable and motivated, and left to their own devices, might well migrate toward more stable communities. Do we do them a disservice by anchoring them to troubled neighborhoods with homeowner incentives?

The intriguing result obtained by Harkness and Newman is that neighborhoods do appear to affect the children of homeowners and renters differently. They find that children of homeowners appear to be more adversely affected by neighborhood poverty and more favorably affected by neighborhood stability and homeownership rates. While the authors' estimates indicate that, even in distressed neighborhoods, the net effect of homeownership on children is positive, their findings should not be taken too casually. Many of the New York neighborhoods in which homeownership projects have been completed are actually much worse than the worst case estimated by Harkness and Newman. For example, in some of the Bronx neighborhoods in which affordable homes were built in the early 1990s, the poverty rates exceeded 50 percent and the homeownership rate was less than 5 percent. Moreover, the more telling comparison might not be with renter children in the same neighborhood, but with renter children in the neighborhood the family lived in prior to becoming homeowners, or in the neighborhood they might have moved to if left to their own devices.

These concerns should be mitigated, to an extent, if homeownership projects are undertaken on a large scale. In the South Bronx between 1988 and 1997, more than 3,200 units in one- and two-family homes were built, often in large clusters, through the New York City Partnership and Nehemiah programs. Inner-city homeownership development on that scale can change the character of the neighborhoods themselves, possibly diluting the effects of bad neighborhoods on the children of the homeowners. A more disturbing policy conclusion could be drawn, however, if the homeowner effect turned out to be illusory. If the measured gains to children's outcomes are actually due to unobservable characteristics of homeowner parents themselves, public policies that facilitate ownership would actually contribute nothing to the children's outcomes, and could harm them if the ownership opportunities are in more adverse neighborhood environments than the families would otherwise choose.

3. Broader Policy Implications

Harkness and Newman add to a growing body of literature relating to the most fundamental question in housing policy: Is the issue of affordable housing simply a question of rent

burdens? If so, it may be better addressed through income policies, such as minimum wages or earned income tax credits. Conventional economic models suggest that, if given the equivalent income supplements, most low-income families would not spend as much on housing as housing programs would implicitly have them spend. So, skewing the consumption of the poor toward housing, through affordable housing programs, can only be justified if there are societal benefits that are not apparent to the beneficiaries themselves. If housing conditions affect health, educational attainment, and other important outcomes in subtle and sometimes imperceptible ways, then a justification exists for giving the poor more housing than they would otherwise choose to purchase.

Homeownership and neighborhood effects each can be used to justify government programs that give the poor more housing, or more stable neighborhoods, rather than an equivalent amount of money. But much more research needs to be done to target housing programs effectively. What produces the homeownership effect and what characteristics of neighborhoods promote good outcomes for children? Harkness and Newman further this effort by exploring the interaction between housing tenure and neighborhood context.

The authors note that, as they move from simple to more complete specifications, "the inclusion of neighborhood controls has modest effects on some model estimates, but overall, there is little effect. Even with neighborhood controls, homeownership has strong, favorable effects on most outcomes." Those results are consistent with my own research findings on housing conditions and high-school completion. In fact, approaching it from the other direction, I first tested a model with only parental and neighborhood controls, then one that added housing variables such as homeownership, mobility, overcrowding, and maintenance condition. I found that the housing variables actually dominate the neighborhood variables. That finding has led me to wonder if some of the neighborhood effects commonly reported are not, in fact, actually due to missing housing variables for which the neighborhood variables are proxying. At the least, I believe that more research is needed to understand the effects of the physical aspects of the home environment on children, some of which could affect kids' educational attainment through their health and school attendance.

Researchers have found that residential mobility can adversely affect the educational attainment of children (Haveman, Wolfe, and Spaulding 1991), and that the housing stability that usually accompanies homeownership may account for some, though probably not all, of the positive effect that homeownership seems to have (Aaronson 2000). There are other housing conditions that may plausibly affect children's outcomes that have received less research attention. Overcrowding was thought by early housing reformers to have adverse effects on children, but there is surprisingly little research into the issue. Poor maintenance conditions, including insufficient heat, inoperable plumbing, or rodent infestation, could also adversely affect the health or study habits of children. The effects of such physical deficiencies on children's development and behavior need to be investigated more thoroughly. A better understanding of which housing and neighborhood conditions maximize children's chances for success would assist in formulating public programs that not only improve housing conditions, but contribute to solving other social problems as well.

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John Goering

THE IMPACTS OF NEW NEIGHBORHOODS ON POOR FAMILIES: EVALUATING THE POLICY IMPLICATIONS OF THE MOVING TO OPPORTUNITY DEMONSTRATION

1. INTRODUCTION

The U.S. Department of Housing and Urban Development's (HUD) Moving to Opportunity for Fair Housing Demonstration, or MTO, is a large, federally funded social experiment designed to test whether improved neighborhood opportunities may significantly affect the life chances of low-income public housing residents. This paper provides the first systematic overview of the design of the MTO and describes its key features. The paper also offers the first cross-site analysis of research findings and explores the MTO's relevance to social science research concerning housing and neighborhood effects.

We begin with the social science background to MTO and discuss the purposes of the demonstration. We then describe the key features of the demonstration and how its experimental design addresses methodological issues that have long limited

neighborhood effects research. The implementation of the demonstration and how that implementation shapes and limits the research is discussed next, followed by a description of the major research results from a number of MTO studies. We conclude with a discussion of future research needs and policy issues.

1.1 Research Background

Research over the last decade has shown that poverty in the United States has become increasingly concentrated in "high-poverty" neighborhoods, and that such concentrations appear to have a range of detrimental effects on the well-being and future opportunities of residents of those areas (Jargowsky 1997; Wilson 1987, 1996; Brooks-Gunn, Duncan, Klebanov,

and Saland 1993; Aneshensel and Sucoff 1996; Sampson 2000; Morenoff, Sampson, and Raudenbush 2001; Catsambis and Beveridge 2001). The harmful effects of high-poverty areas are thought to be especially severe for children; their behavior, choices, and prospects may be particularly susceptible to neighborhood-based events and characteristics, such as peer group influence, school quality, and the level of violent crime (Galster and Killen 1995; Ellen and Turner 1997; Leventhal and Brooks-Gunn 2001).

Social scientists have also focused recently on the possible theoretical causes of both the positive and negative effects of neighborhoods (Manski 1993, 2000; Galster and Killen 1995; Galster, Quercia, and Cortes 2000; Leventhal and Brooks-Gunn forthcoming). The core question is whether there are clear, independent effects from a neighborhood. If so, then social science must next attempt to identify the causes and processes through which such effects appear in the lives of children, adolescents, or adults. While there has long been social science evidence of the harmful effects of living in concentrated-poverty neighborhoods, evidence and discussion about how neighborhood environments may exert positive influences on behavior and life chances are more recent (Brooks-Gunn, Duncan, and Aber 1997; Sampson, Morenoff, and Gannon-Rowley 2002).

Galster and Killen (1995) have noted the complexity of the causal influences linking metropolitan and neighborhood-based opportunities; they point out the dynamic nature of opportunities, and the critical issue of residents' willingness and ability to take advantage of contextually positioned resources. Ellen and Turner's (1997) summary of the literature in this area suggests various mechanisms by which middle-class (often predominantly white) neighborhoods shape, or reshape, the lives of residents. The effects of neighborhood appear to be more pronounced for children rather than for adults. Leventhal and Brooks-Gunn (2001) offer evidence that neighborhood influences on achievement measures—such as IQ—are most important below five years of age.

Despite considerable progress over the last decade, researchers have only a limited understanding of which neighborhood effects are most likely to appear first, in what types of households or family members they may appear, under what circumstances, and with what durability or persistence. This paper provides evidence that there are such effects, that they are clearest for children and teenagers, and that there is little evidence of positive neighborhood effects on adults to date.

We also do not know whether there are effective policy tools for improving the life chances of those who move into better-off neighborhoods. Among the research issues that have received minimal attention is whether public housing or other

forms of federal housing assistance for the poor can alter the present or future opportunities of program participants (Newman and Harkness 2002). Interest is relatively recent concerning whether moving families from heavily racially and poverty-concentrated neighborhoods can generate positive changes in attitudes and subsequent behavior (Rubinowitz and Rosenbaum 2000; U.S. Department of Housing and Urban Development 2000; Goetz 2001). And there has been a notable absence of experimentally designed research to address persistent policy and research questions about the positive or negative effects of concentrations of assisted housing (Galster and Daniell 1996).

Following the Experimental Housing Allowance Program begun in 1970, MTO was the first attempt to design and operate a random-assignment program aimed at testing the effects of HUD's major current forms of housing assistance—public housing and tenant-based Section 8 rental assistance—compared with an economically based, deconcentrated form of rental assistance (U.S. Department of Housing and Urban Development 2000). Specifically, MTO is the first systematic test of whether shifting to tenant-based assistance and altering the neighborhood may noticeably improve the life chances of low-income residents who formerly lived in distressed, inner-city public-housing developments.

The first research suggestion that housing mobility or deconcentration may have important social and educational effects appeared in the late 1980s, prompted by a federal court-ordered racial desegregation program in Chicago. Under the name of tenant-activist Dorothy Gautreaux, applicants and residents of Chicago public housing brought a class-action housing segregation lawsuit against HUD and the Chicago Housing Authority (CHA) in 1966 (Davis 1993; Rubinowitz and Rosenbaum 2000). After years of litigation, which went all the way to the Supreme Court, the courts ordered HUD and the local CHA to remedy the extreme racial segregation that they had imposed on public-housing applicants and residents. Starting in the late 1970s, these agencies had to provide (among other remedies) a housing mobility option throughout the Chicago region for about 7,100 black families.

The Gautreaux program took shape as a result of the Court's ruling. "Gautreaux families," as they became known, were helped to move out of racially isolated areas through the (then-new) tenant-based Section 8 program. Families chosen for the Gautreaux program received Section 8 certificates that required them to move to either predominantly white or racially mixed neighborhoods. They also received assistance from housing counselors to make these moves. Roughly three-quarters of all the families were required to move to predominantly white (usually suburban) areas, while about one-quarter were allowed to move to more racially mixed city

neighborhoods. Families unwilling to make these moves did not receive the housing subsidy. While the eligibility criteria, as well as the forms of housing counseling offered participants, varied somewhat over the roughly twenty years of the program's operation, the required move to a nonsegregated neighborhood persisted until the completion of the program in 1998 (Rubinowitz and Rosenbaum 2000).

Beginning in the late 1980s, research on the Gautreaux program suggested that the moves to less segregated suburban locations were associated with measurable improvements in the lives of participating children. Changes were reported for small samples of children who had been living in less segregated neighborhoods for periods of seven to ten years. Such children were less likely to drop out of school and were more likely to take college-track classes than their peers (in a comparison group) who moved within the City of Chicago rather than to suburban areas. The city neighborhoods were poorer and more racially segregated than the suburban locations. After graduating from high school, the Gautreaux children were also more likely than their city peers to attend a four-year college or to become employed full-time (Rubinowitz and Rosenbaum 2000).

1.2 MTO's Purpose

The promising Gautreaux results, as well as increasing concern about the high levels of racial and economic isolation of many public housing families (Hirsch 1983; Newman and Schnare 1997), led Congress to initiate a demonstration program aimed at offering better neighborhood opportunities to public-housing residents living in distressed inner-city areas. Dimond (2000, p. 259) outlines the antipoverty argument for MTO:

> Isolating poor persons in inner-city ghettos and barrios does not help them connect to the rising demand for more workers throughout the local regional labor markets. . . . Thus federal, state, and local governments act irresponsibly and waste taxpayer dollars whenever they limit housing and job-training subsidies to particular projects or places—public or private—rather than putting such subsidies directly in the hands of poor families so they can choose for themselves where best to live and learn in order to find new and better jobs.

In 1992, these factors—the concentration and persistence of urban poverty and the awareness of the Gautreaux program findings—led a coalition of Democratic and Republican policymakers to propose offering public-housing residents the chance to move to private rental housing in

more affluent communities by means of a housing voucher. The demonstration they envisioned would test whether HUD's main tenant-based housing program, the Section 8 rental assistance program, could be used effectively to assist poor, largely minority families in successful relocation to private rental housing in working-class or middle-class neighborhoods—in which landlords were unaccustomed to renting to poor families.

MTO is a planned social experiment making use of HUD's Section 8 rental subsidy program to facilitate the residential mobility of families out of inner-city public-housing developments in five cities across the country. The MTO demonstration was authorized by the Housing and Community Development Act of 1992 to "assist very low-income families with children who reside in public housing or housing receiving project-based assistance under Section 8 of the Housing and Community Development Act of 1937 to move out of areas with high concentrations of persons living in poverty to areas with low concentrations of such persons." *High concentrations of poverty* were defined as census tracts where 40 percent or more of the residents were poor in 1990. *Low-poverty areas* were defined as census tracts where less than 10 percent of the population lived in poverty in 1990. The 40 percent threshold follows a social science standard for defining deeply poor ("underclass") neighborhoods (Jargowsky 1997; Brooks-Gunn, Duncan, and Leventhal 1997). The 10 percent threshold for "low poverty" corresponds to the median tract-level poverty rate across the United States in 1990.

Congress appropriated $20 million in Section 8 rental assistance for fiscal year 1992 and another $50 million for fiscal year 1993 for MTO. Congress also stipulated that HUD should conduct evaluations of the demonstration to determine short- and long-term impacts. HUD decided that the most effective means for reliably answering questions about such impacts was to establish a social experiment, including a random-assignment process that would allocate, by a computerized lottery, families who volunteered into different treatment groups.

2. MTO's Design

2.1 Methodological Shortcomings of Prior Research

The problem of selection bias has been recognized by social scientists for over a decade as a crucial limitation on the

Gautreaux research and most other research on neighborhood effects (Mayer and Jencks 1989; Crane 1991; Case and Katz 1991; Lehman and Smeeding 1997, p. 262). Jencks and Mayer (1990, p. 119) caution:

> The most fundamental problem confronting anyone who wants to estimate neighborhood's effects on children is distinguishing between neighborhood effects and family effects. This means that children who grow up in rich neighborhoods would differ to some extent from children who grow up in poor neighborhoods even if neighborhoods had no effect whatever.

People typically select their neighborhoods to match their needs and resources. Therefore, researchers restricted to cross-sectional, nonexperimental evidence must try to separate the impact of personal factors affecting choice of neighborhood from the effects of the neighborhood. But it is difficult—if not impossible—to measure all these socioeconomic, personal, and local characteristics well enough to distinguish their effects. The answers sought are often hidden in unmeasured factors and unexplained variations.

Issues of selection bias notably limited the credibility of the findings from the Gautreaux research. First, there was evidence that families self-selected to participate in the program. There was also evidence that the program screened participants for suitability to particular neighborhoods or communities. In the early years of Gautreaux, for example, program managers and counselors identified the families with the potential to succeed in the suburbs, and matched them with landlords and communities there. Other families, judged to be less suitable for suburban locations, were not placed by the program or were placed in city neighborhoods. Second, because of the limited information gathered and kept about the families who joined Gautreaux but did not move, the differences in families' demographic or personal characteristics that affected success in moving could not be investigated. Third, some evidence of positive mobility effects in the Gautreaux program is based upon small, nonrepresentative fractions of the families enrolled—those who could be found a number of years later (Popkin, Buron, Levy, and Cunningham 2000).

The direct solution to the problem of selectivity bias is to remove people's ability to select their neighborhoods by randomly assigning them to a community. This detaches the individual's personal characteristics and preferences from the neighborhoods' potential impacts (Brooks-Gunn, Duncan, Leventhal, and Aber 1997, p. 286). Jencks and Mayer (1990, p. 119) describe this requirement:

> From a scientific perspective, the best way to estimate neighborhood effects would be to conduct controlled experiments in which we assigned families randomly to different neighborhoods, persuaded each family to remain in its assigned neighborhood for a protracted period, and then measured each neighborhood's effects on the children involved.

However, until MTO, there had never been an initiative to design and implement this type of controlled experiment.

2.2 MTO's Experimental Design

From September 1994 to July 1998, public- and assisted-housing families, who volunteered and were found to be eligible, were randomly assigned to one of three groups:

1. The MTO treatment group, which received Section 8 certificates or vouchers usable only in areas of less than 10 percent poverty. Families in this group were also provided counseling assistance from a local nonprofit organization in finding a private rental unit.

2. A Section 8 comparison group, which received regular Section 8 certificates or vouchers with no special geographic restrictions or counseling.

3. An in-place control group, which continued to receive its current project-based assistance.

The Section 8 comparison group was established in order to allow measurement of the extent to which the routine operation of the Section 8 program generates changes in location and in family outcomes that can be compared with changes for the treatment-group population. The in-place control group was created to measure the behavioral outcomes for children and adults who remained in public-housing developments in deeply poor communities to permit comparison of their outcomes with the other two groups. Although MTO was targeted to a specific population (very low-income families with children, living in public or assisted housing in concentrated-poverty areas), its participants share many characteristics with families who have worst-case housing needs, families excluded from the economic mainstream, and families in poverty (U.S. Department of Housing and Urban Development 2001).

The random-assignment design embedded in the MTO demonstration program seeks to test the effects of neighborhood experimentally and avoid selection bias. MTO uses a carefully designed and strictly implemented random-assignment process to ensure that nothing about an individual or family could influence the group assignment. Assignment of families among the three groups was carried out under uniform procedures across the five sites, with thorough monitoring and

recordkeeping. As a result, the research findings concerning MTO address whether willing poor families with children—given the opportunity to improve their neighborhood conditions—may benefit significantly from an atypical change in residential location.

The experimental design of MTO not only permits analyses of impacts in a variety of domains (such as child educational achievement, adult employment and earnings, youth risk-taking, and the physical and mental health of family members) but also permits multiple-method or tiered assessments of cross-cutting questions that will help verify or enhance what has been learned about neighborhood impacts on families, adults, and children. Answering these questions is possible because MTO is an ongoing, longitudinal research project designed to address some questions that only the passage of time can answer.

2.3 MTO's Research Hypothesis

MTO's design includes three phases of evaluation. The first phase, conducted by seven teams of social scientists operating in single MTO sites and with their own research strategies, constitutes the bulk of the evidence synthesized in this paper. The second stage is a major cross-site evaluation, currently in the field, from which results are expected by 2003. The third and final stage of MTO research will occur approximately six years from now—a final impact evaluation of the demonstration.

MTO's research value is rooted in the fact that it is the first experimentally designed panel study aimed at understanding the effects that neighborhoods may have upon low-income residents of public and assisted housing. The experiment has been designed to show whether the negative impacts of distressed neighborhoods on families can be reversed by offering public-housing families the choice to volunteer to move to more affluent neighborhoods. The core hypothesis is that MTO will have positive and statistically significant effects on the lives of the experimental-group families when compared with the lives of the in-place control-group members. Contrasts with any effects experienced by the Section 8 comparison group will reveal whether tenant-based rental assistance—without any geographical restriction—can achieve similar results. The MTO hypothesis is that the offer of a move from a poor to a nonpoor neighborhood will significantly improve the neighborhood conditions of the families, and will affect their longer run prospects in areas such as education, health, risky behavior, and criminal activity.

MTO provides an estimate of the effectiveness of the *offer* of the experimental treatment in improving the lives of public-housing residents *as a group*. The intent-to-treat (ITT) estimates reported in this paper recognize that some members of the target group did not use the Section 8 subsidy. The measured ITT effects include the outcomes not only for those who moved, but also for those who were randomly assigned to receive the treatment but did not relocate. However, even if the ITT effects are statistically significant, the larger the proportion of those who fail to move then the less effective a program like MTO would be in improving the lives of additional public-housing families.

Next, we describe the results of the implementation stage of the demonstration and discuss the characteristics of the MTO volunteers. We then present the research results on the effects of the experiment on the children, teenagers, and adults who participated, focusing essentially on ITT effects.

3. MTO Implementation— Characteristics and Limitations

In this section, we turn to the specifics of how the MTO demonstration was conducted. These details provide information on demonstration selection criteria and on some of the characteristics of the programs design that affect the interpretation of the research findings reported in the next section.

3.1 Initial Implementation

MTO implementation began with HUD's issuance of a notice of funding availability (NOFA) in September 1993 soliciting sites for the demonstration. The NOFA laid out the statutory criteria for MTO site selection and the general outline of program operations. In March 1994, HUD selected five local public-housing authorities (PHAs) to participate in running the MTO demonstration. The sites selected were Baltimore, Boston, Chicago, Los Angeles, and New York. In its application, each PHA identified the public-housing and Section 8 project-based developments in high-poverty census tracts from which it would recruit families with children under eighteen. The PHAs also named a partner nonprofit agency to counsel the families assigned to the MTO treatment group.

The selected PHAs and nonprofit agencies were required to follow a general set of uniform rules and procedures for the

management of most key aspects of the demonstration—particularly research requirements. The core administrative responsibilities for implementing MTO were:

- outreach to landlords and families,
- enrollment of families and creation of waiting lists,
- determination of family eligibility,
- random assignment, and
- counseling assistance for treatment-group families.

The PHAs and counseling agencies also helped implement MTO's experimental design—including the collection of data on the participants and the program. Based on their prior experience and on the availability of local funding to supplement HUD's grants, the counseling agencies varied the form and amount of counseling assistance offered to clients (Feins et al. 1997). This variation in treatment constitutes one of the limitations of MTO implementation.

The PHAs began MTO operations by informing all eligible residents of the targeted public- and assisted-housing projects in high-poverty census tracts about what MTO offered and how to apply. In most instances, there were meetings of groups of tenants to explain the program and answer questions. Waiting lists of applicants were then established in each city, and small groups of applicants (working down from the top of the lists) were invited to orientation sessions. At these sessions, the applicants were informed about the experiment: that they would be randomly (or by lottery) assigned to one of three groups; that they had a chance of being offered Section 8 by joining; and that—if they were chosen by lottery for the treatment group—they would be provided training, counseling, and housing search assistance in order to move to a low-poverty area in the city or suburbs. Families were also informed that they were only required to remain in the low-poverty area for the length of their first one-year lease; after that, they were permitted to move to any area under regular Section 8 rules.

The applicants were also informed of the screening criteria established by the PHA, including the fact that all tenants had to be current in their rent payments and that there could be no criminal record for any family member. Families who enrolled agreed in writing to cooperate with the information gathering and research needed for the demonstration, and they filled out a lengthy baseline survey. Random assignment occurred only after the eligibility checking, screening, and initial data collection were finished.

3.2 Implementation Results[1]

Intake

In MTO, among the families eligible to apply, about one-quarter chose to do so; roughly 5,300 families volunteered in the five cities. The families were then screened for eligibility with respect to: 1) having a child under eighteen in the family, 2) being tenants in good standing (up-to-date in rent payments), 3) having all family members on the current lease, and 4) being without criminal background or history, as required (with some variation) by the local Section 8 program rules. In total, across the five sites, 4,608 families were found eligible and randomly assigned. With approximately 285 vouchers for HUD to allocate per site, this was a sufficient number of volunteers for the demonstration.

Fear of crime and the experience of criminal victimization were the major factors in families' decisions to participate in the MTO demonstration. When applicants were asked during their baseline interviews why they wanted to move away from the public-housing developments in which they lived, more than half (54.8 percent) identified the fear of crime, gangs, and drugs as the principal motivation.

In answer to whether those who volunteered for the MTO demonstration were typical of other residents from their public-housing developments, we learned that MTO households, compared with public-housing families who chose to remain, were somewhat different. They were younger (with heads of household thirty-five versus forty-one years old), more often female-headed (93 versus 78 percent), and less likely to be Hispanic (39 versus 45 percent). They were also slightly poorer (with an $8,200 versus $8,600 median income).

Lease-Up

Prior research has shown that not all Section 8 certificate and voucher holders have been able to use their housing assistance, and that successful lease-up is influenced by applicant characteristics, market features, and market conditions (U.S. Department of Housing and Urban Development 2000; Finkel and Buron 2001). Lease-up success rates also vary over time and among cities. For MTO, the lease-up rate for families in the demonstration's Section 8 comparison group was roughly 60 percent, while the rate for MTO treatment-group families across the five cities was 47 percent. Rates varied from a high of

more than 61 percent in Los Angeles to a low of only 34 percent in Chicago.

There are a number of possible explanations for these lower rates, including the fact that families in MTO were already securely housed with project-based housing subsidies. They were much less needy than emergency applicants and significantly less burdened by housing costs than were other low-income renters without subsidies. Therefore, despite the high levels of crime reported by MTO families, the incentive to lease-up through MTO was apparently lower than that of the typical Section 8 applicant. The lower lease-up rates achieved with MTO clearly will affect any future replicability of the demonstration.

Understanding the characteristics and motivations of families that succeeded in renting an apartment through the MTO demonstration can also help researchers to generalize from MTO to the larger universe of public-housing families. For all five sites, Shroder (2002) shows that success in leasing-up in MTO was positively associated both with families' dissatisfaction with their original neighborhoods, and with their degree of confidence (at baseline) about finding a new unit. The level of housing counseling received by the treatment families also helped in achieving lease-up.

Would MTO Families Remain in Low-Poverty Areas?

Did the families who moved out of public housing to low-poverty areas remain there, or did they move back into more familiar, higher poverty communities after the one-year requirement was fulfilled? The answer to this question matters because the potential benefits of moves to communities of opportunity may take years to accrue. Social science literature suggests that positive effects on child development, educational outcomes, and adult prospects (compared with continued life in public housing in deeply poor areas) might occur in a five-to-ten-year time frame, *but only if* the families remained in distinctly different neighborhoods (Leventhal and Brooks-Gunn 2001).

An examination of data from a 1997 HUD-funded survey of all the MTO families who joined the program from 1994 to 1996 shows that more than a third (34.5 percent) of the MTO treatment group—but just 10.6 percent of the comparison group, and less than 3 percent of the in-place group—was living in low-poverty neighborhoods. Although roughly 45 percent of the treatment group was living in high-poverty areas, those tenants were largely the nonmovers (those who remained in their initial public-housing developments),

compared with 38 percent of the Section 8 comparison group and 74 percent of the control group.

4. MTO Research Findings to Date: First-Stage Research

Research results concerning MTO to date derive from studies conducted by seven HUD-commissioned teams of social scientists; each team worked in one of the five MTO locations. These teams used a number of different data sources, including HUD administrative data; baseline survey data; data from follow-up surveys of enrolled families; some qualitative interviews; and some administrative data on juvenile crime, labor-market outcomes, and school performance. The initial studies covered various topics, used differing approaches, and were carried out by researchers from a range of disciplines.

As each team made use of differing analytic and methodological strategies, the resulting lack of comparability across sites is a limitation of MTO research to date. Further, initial research projects focused on establishing whether any early effects would appear soon after the transitions from inner-city projects. They did not focus on which institutions or processes caused improvement in the lives of children or adults (Sampson, Morenoff, and Gannon-Rowley 2002).

A number of statistically significant ITT results, for the groups as assigned, have been found in the early research undertaken on MTO families. Tables 1-3 present findings from different single-site research projects that have tested for statistically significant differences between the two treatment groups and the control group. The tables provide an overview of research results for three sets of issues: Table 1 presents findings on neighborhoods, Table 2 on outcomes for children, and Table 3 on outcomes for adults.

The focus here is on ITT effects, which are measured by considering the difference between the average outcome for the entire MTO treatment group, or the entire Section 8 comparison group, and the outcome for the control group. For example, the average poverty rate for census tracts occupied by members of the treatment group was 32.3 percent in 1997. The intent-to-treat effect is the difference between that rate and the control group's average poverty rate (48.1 percent); thus, the ITT effect is 15.8 percent. The treatment-on-treated (TOT) effect—that is, the estimated effect on those persons who successfully leased up under MTO—is generally higher, as it is measured for only those participants who actually took up the treatments (that is, moved with Section 8). In the analysis

below, we mainly focus on intent-to-treat effects, noting that whenever ITT effects are statistically significant, TOT effects are typically significant and stronger.

4.1 Neighborhood and School Characteristics

Table 1 reports differences in the neighborhood and school characteristics of the areas in which MTO participants live. Three critical outcomes follow from this research.

MTO Families Live in More Economically and Racially Mixed Communities

The 1997 survey of families at all five MTO sites enables us to examine whether residential locations differed significantly among the randomly assigned groups. After their initial moves and one-year leases, treatment-group families were no longer constrained to live in low-poverty areas. Despite this, one to three years after random assignment, treatment-group families lived in significantly more affluent and more racially mixed

Table 1 header

TABLE 1

Early Evidence of MTO Impacts: Differences in Characteristics of Neighborhoods and Schools Where MTO Participants Live

Type of Impact	MTO Site	Population	MTO Treatment Group	Section 8 Comparison Group	In-Place Control Group
Differences in neighborhood after one to three years[a]	All sites	All households in MTO as of 12/31/96			
Poverty percentage of current location			32.3**	33.4**	48.1
Median income of current location			$24,075**	$21,246**	$13,920
Percentage black population of current location			38.2**	40.3	48.6
Differences in total crime rate per 100,000 population in census tract[b]	Los Angeles	Households in MTO as of 12/18/96	6,137.25**	5,984.21**	8,018.40
Differences in average test scores for schools attended by MTO children in 1997[c]	Boston	Households in MTO as of 5/96			
School's percentile, reading test score			15.9**	10.9	8.3
School's percentile, math test score			16.0**	12.6	9.9
Differences in resources and characteristics scores for schools attended by MTO children after random assignment and initial relocation[d]	Baltimore	School-age children of all households in MTO			
Percentage children receiving free lunch			66.82**	80.82*	84.82
Fifth-grade raw reading test pass rate			11.84**	7.84**	5.84
Fifth-grade raw math test pass rate			18.40**	15.40**	12.40
Differences in perceived safety of current neighborhood[e]	Baltimore	Adults in MTO as of 9/4/97			
Percentage reporting neighborhood has drug and crime problems			27.8**	60.8	—
Differences in perceived safety of current neighborhood[f]	Los Angeles	Adults in MTO as of 12/18/96			
Percentage reporting very safe neighborhood			27.5*	6.7	10.1

Notes: MTO is the Moving to Opportunity for Fair Housing Demonstration. Differences reported are based on intent-to-treat comparisons (full group) rather than adjusted treatment-on-treated results.

[a]Source: Feins (2000, Exhibit 9).
[b]Source: Hanratty, McLanahan, and Pettit (2001, Table 6).
[c]Source: Katz, Kling, and Liebman (2001, Table 4).
[d]Source: Ludwig and Ladd (forthcoming, Table 9).
[e]Source: Norris and Bembry (2001, Table 16).
[f]Source: Hanratty, McLanahan, Pettit (2001, Table 7).

  *Statistically significant difference from in-place control group (intent-to-treat effect) at *p* less than the .10 level.

  **Statistically significant difference from in-place control group (intent-to-treat effect) at *p* less than the .05 level.

communities than either the Section 8 comparison-group or the in-place control-group families.

Late in 1997, the average poverty rate of residential locations for the MTO treatment-group families and the Section 8 comparison-group families was significantly lower (by 15 to 16 percentage points) than the poverty rates of areas in which in-place control-group families lived. Moreover, median incomes in the treatment-group families' neighborhoods were 73 percent higher than median incomes in the control-group neighborhoods and they were 53 percent higher in the Section 8-only group locations compared with the controls.

There were also significant differences in the racial composition of the areas. In each of the five metropolitan sites in 1997, the MTO treatment-group families lived in less segregated neighborhoods than either the Section 8 comparison-group families or those who remained in place. Using the percentage black population as an indicator, there was a statistically significant 10-percentage-point reduction in black population in the treatment-group families' locations— compared with the locations of control-group families. But there was no significant difference for Section 8-only families (Feins forthcoming). Future analyses will make use of census 2000 tract-level data to examine how much the new neighborhoods have changed since 1990.

MTO Families Live in Areas with Lower Crime Rates

Measured at the census-tract level, in total crimes per 100,000 population, the places where MTO treatment-group families and Section 8 comparison-group families were living had significantly fewer crimes in Los Angeles. The reduction was 23 percent for the former and 25 percent for the latter group. The fact that regular Section 8 families benefited from moves from high-poverty projects is an important finding mirrored in some other early outcomes.

Schools Currently Attended by MTO Children Are Better

Research teams in both Boston and Baltimore demonstrated that schoolwide reading and math scores or pass rates were significantly better in treatment-group children's schools relative to the schools attended by children of in-place control-group families. In Baltimore, these indicators were also significantly better for the schools of children from Section 8-only families.

Families' Views of Their Neighborhoods Have Improved

The early MTO research has also demonstrated significant betterment in families' views of their neighborhoods. These views contrast with the higher levels of fear and dissatisfaction expressed by MTO applicants at baseline.

MTO Families Have Become Less Fearful

As noted earlier, many families enrolled in MTO because of their fear of the crime conditions surrounding them in their public-housing or Section 8 project-based developments. Most of the MTO research teams reported that freedom from this fear is among the earliest, clearest outcomes.

As shown in Table 1, significantly fewer Baltimore families in the treatment group reported neighborhood problems with drugs and crime, compared with reports from the Section 8 comparison group. A significantly higher proportion of MTO treatment-group members in Los Angeles reported very safe neighborhoods at follow-up, compared with those in the control group, but the difference between the Section 8 comparison group and the in-place control group was not found to be significant. In Chicago, MTO mothers were asked about the risks and opportunities their current locations offered to teenagers. Those in the MTO treatment group reported significantly reduced risks in comparison with their old locations, but those in the Section 8 comparison group did not.

4.2 Outcomes for Children

Turning to early evidence of MTO impacts on individuals in the demonstration, we present in Table 2 findings on children's behavior, health, and educational achievement, as well as results concerning youth involvement in violent crime.

The Boston research team found that there were significantly fewer behavior problems among boys in both the MTO treatment and the regular Section 8 groups relative to boys in the in-place group. A significantly higher proportion of girls in both treatment groups reported at least one close friend in the neighborhood. Treatment-group children were also less likely to be injured or to have an asthma attack. In fact, among children with asthma in Boston, there was a substantial reduction in the number of attacks requiring medical attention over the prior six-month period.

There Have Been Educational Improvements

In addition to the signs indicating that the children are attending better schools (Table 1), Ludwig, Ladd, and Duncan (2001) report direct evidence of the effect of MTO in Baltimore upon the school performance of individual children. The researchers used standardized reading and math scores (obtained from schools) for a sample of Baltimore children and matched them to identifying information for the MTO subjects. Despite data limitations, the results revealed statistically significant improvements for the treatment group. However, in the early research, no direct educational testing of children in MTO families was conducted. Such testing is now under way, and results should become available in 2004.

There Have Been Declines in Juvenile Crime

In another Baltimore study, researchers using outcome measures from juvenile arrest records taken from administrative (police and court) data reported that providing families with the opportunity to move to lower poverty neighborhoods reduced arrests for violent criminal behavior by teenagers in those families. They showed that one to one-and-a-half years after random assignment, arrests for violent crime of male juveniles in the treatment group declined relative to those in the control group. But the difference for boys from the Section 8-only group was not statistically significant. Reductions in robbery accounted for about half of this decline. The research also examined whether teens in the treatment

TABLE 2

Early Evidence of MTO Impacts—Outcomes for MTO Children

Type of Impact	MTO Site	Population	MTO Treatment Group	Section 8 Comparison Group	In-Place Control Group
Differences in child behavior[a]	Boston	Children ages six to fifteen in households in MTO as of 5/96			
Percentage with seven behavior problems, boys			23.6**	21.3**	32.6
Percentage with seven behavior problems, girls			17.0	14.3	19.3
Percentage with at least one close friend in neighborhood, boys			73.8	72.8	74.7
Percentage with at least one close friend in neighborhood, girls			67.7**	63.3**	82.3
Differences in child health[a]	Boston	Children ages six to fifteen in households in MTO as of 5/96			
Percentage with any asthma attack requiring medical attention in past six months			4.7*	9.4	9.8
Percentage with any accident or injury requiring medical attention in past six months			4.6*	6.8	10.5
Differences in number of arrests per 100 juveniles ages eleven to sixteen[b]	Baltimore	Children ages eleven to sixteen in all MTO households			
Arrests for violent crimes			1.4**	1.6*	3.0
Differences in school test scores[c]	Baltimore	Children ages five to twelve in all MTO households			
Elementary school CTBS percentile reading scores			32.47**	31.52**	25.13
Elementary school CTBS percentile math scores			36.25**	30.25	28.77

Notes: MTO is the Moving to Opportunity for Fair Housing Demonstration; CTBS is the Comprehensive Test of Basic Skills. Differences reported are based on intent-to-treat comparisons (full group) rather than adjusted treatment-on-treated results.

[a]Source: Katz, Kling, and Liebman (2001, Table 6).
[b]Source: Ludwig, Duncan, and Hirschfield (2001, Table 3).
[c]Source: Ludwig, Ladd, and Duncan (2000, Table 6).

  *Statistically significant difference from in-place control group (intent-to-treat effect) at p less than the .10 level.
**Statistically significant difference from in-place control group (intent-to-treat effect) at p less than the .05 level.

group had higher rates of property-crime arrests relative to the control group. The result was not statistically significant once differences in preprogram characteristics were controlled. The issue of whether or not property crime increases in receiving neighborhoods has been raised repeatedly by opponents of mobility programs (see, for example, Husock [2000]), and it is an ongoing research issue for MTO.

4.3 Outcomes for Adults in MTO Families

There are also some significant early impact findings on the well-being of MTO adults (Table 3).

Early Evidence of MTO Impacts—Outcomes for MTO Adults

	MTO Site	Population	MTO Treatment Group	Section 8 Comparison Group	In-Place Control Group
Health effects					
Differences in depressive behaviors[a]	New York	All mothers in MTO through 12/31/98			
Percentage unhappy, sad, or depressed			33.0**	46.2	50.6
Differences in adult health[b]	Boston	Adults in MTO as of 5/96			
Percentage reporting overall health is good or better			69.3**	74.0**	57.8
Welfare and labor market effects					
Differences in welfare and labor market effects for household heads[c]	All sites	Adults in MTO surveyed via 1997 long-form canvass[d]			
Average percentage on welfare			58.0	58.0	57.0
Average percentage employed			35.0	34.0	37.0
Average number of weekly hours worked			33.3	31.5	33.9
Differences in rate of welfare receipt[e]	Baltimore	Adults in all MTO households			
Average percentage of household heads on welfare during thirteen quarters after random assignment			38.0**	41.0	44.0
Differences in weekly hours worked[f]	Los Angeles	Adults in MTO as of 12/18/96	33.1*	37.2*	26.8
Differences in adult economic outcomes[g]	Boston	Adults in MTO as of 5/96			
Percentage adults receiving public assistance seven to nine quarters after random assignment			49.9	46.0	49.5
Percentage adults with employment earnings seven to nine quarters after random assignment			44.4	46.3	43.4

Notes: MTO is the Moving to Opportunity for Fair Housing Demonstration. Differences reported are based on intent-to-treat comparisons (full group) rather than adjusted treatment-on-treated results.

[a]Source: Leventhal and Brooks-Gunn (forthcoming, Table 6).
[b]Source: Katz, Kling, and Liebman (2001, Table 9).
[c]Source: Goering, Feins, and Richardson (2002).
[d]The long form was administered to households participating in the MTO under the original random-assignment ratio.
[e]Source: Ludwig, Duncan, and Pinkston (2000).
[f]Source: Hanratty, McLanahan, and Pettit (2001, Table 8).
[g]Source: Katz, Kling, and Liebman (2001, Table 7).

*Statistically significant difference from in-place control group (intent-to-treat effect) at p less than the .10 level.
**Statistically significant difference from in-place control group (intent-to-treat effect) at p less than the .05 level.

Adults Have Experienced Improved Physical and Mental Health

In New York, parents in the MTO treatment group reported significantly better health and emotional well-being than those in the control group, while Section 8 comparison-group parents enjoyed more modest improvements. Treatment-group mothers were much less likely to report being depressed or feeling tense. Treatment-group parents also provided more structure for their children and were less restrictive in parenting. These effects were measured using standard batteries of interview questions, developed and tested in previous child and family research. Improvements in adult health were found in Boston, too. There adults in both the treatment and regular Section 8 groups were more likely to report that their overall health was good or better. There were also indications of reduced stress.

Changes in Welfare Status and Wages

When MTO was designed, it was expected that moving from a high-poverty community to a low-poverty community would have a gradual positive effect on employment for adults, since social science evidence suggests that a complicated set of factors is involved in improving the work situations and wages of inner-city minority families. Job discrimination in new communities, poor access to jobs by public or private transportation, and limited human capital (skills) all could be involved in constraining the possibility of a poor person's obtaining a better paying job (O'Regan and Quigley 1999, p. 458). Simply relocating families to a community whose residents are employed at good jobs will not necessarily, or quickly, translate into increased human capital for newcomers. Nor did the Gautreaux research suggest that poor families from public housing could be easily or quickly absorbed into local labor markets, particularly given the decline in the 1980s of well-paid jobs available to persons with limited education and skills (Duncan and Rodgers 1991, p. 549).

When MTO was authorized, there was also little expectation for major reform of welfare laws. However, following the end of the Aid to Families with Dependent Children program, and the inception of the Temporary Assistance for Needy Families program, the number of families on welfare nationwide dropped by roughly half, at least partially as a result of the enactment of new welfare statutes (Schoeni and Blank 2000; Weaver 2000). In 1994, 5.5 percent of the total U.S. population was receiving welfare, while by 1999 the proportion had declined to 2.3 percent (Kaushal and Kaestner 2000).

Before MTO began, only 44 percent of single mothers nationwide were employed; by 1999, the proportion had increased to 65 percent. This transformation is the subject of several major research projects that are investigating whether former welfare recipients, like most of the MTO family heads, are leaving welfare for work (Kaushal and Kaestner 2000, pp. 2-3). And this transformation may have affected participants in MTO across all three randomly assigned groups.

Have MTO mothers experienced any changes in their welfare and economic situation? Research on the wage growth of low-income workers suggests that only modest changes can be expected. Low-wage workers typically earn wage increases of only 4 to 6 percent for a year of full-time employment, and such increases are often less for both black men and women (Gladden and Taber 2000, p. 189).

MTO researchers at two sites have examined these issues (Table 3). Researchers in Baltimore used state unemployment insurance records to learn whether MTO families there had experienced any detectable change in welfare status or earnings. Their data covered the period from 1985 to 1999, or an average of 3.8 years of post-program information on the MTO families. The researchers found that the number of treatment-group families on welfare during the post-program period was 6 percentage points lower than the number for the in-place control group. In addition, the Section 8 comparison group's rate of welfare receipt was 5 percentage points lower than that of the in-place control group in the first program year. This latter margin dissipated in subsequent years, while the gap between the treatment and control groups grew to nearly 10 percentage points by the third year. That is, assignment to the treatment group reduced welfare receipt relative to controls—but assignment to the Section 8 group had little effect beyond the first year.

The researchers did not, however, find any significant change in either employment or earnings. This was somewhat unexpected, since the treatment group reported in interviews that there were better job and training opportunities in their new neighborhoods (Ludwig, Duncan, and Pinkston 2000, p. 31). The authors conclude that "these differences in welfare-to-work transitions are . . . not reflected in quarterly earnings data from the state UI [unemployment insurance] system, because many of the jobs and earnings changes are not captured by the UI data" (p. 29).

In Boston, the receipt of public assistance by MTO families dropped by half, and employment for all groups increased by more than half. Employment rates for the full MTO population increased from 27 percent at the time of baseline interview to 43 percent one to three years later. However, the MTO treatment had no significant impact on the employment or

earnings of household heads, as revealed in Massachusetts administrative earnings data on household heads. Nor did MTO treatment affect welfare receipt in the three years after random assignment up through December 1998.

Multisite data from the 1997 MTO canvass also serve as a test of short-term impacts of MTO on employment, public assistance, hours worked, and weekly wages for heads of household. The data show that an average of 2.4 years after random assignment, substantially more heads of household across the sites were employed, and many fewer were receiving public assistance. Employment rates for MTO heads of household rose 14 percentage points in that interval, while public assistance rates fell 16 percentage points. However, Table 3 shows that despite (or perhaps because of) these dramatic changes in employment and welfare rates, there was no significant difference between the three groups in terms of employment rates, hours worked per week, or use of public assistance at the time of the 1997 canvass.

5. Current Research Limitations and Future Research Needs

There are a number of limitations to the MTO design and research that need to be kept in mind in evaluating the study results reported earlier in this paper. The families who volunteered to join MTO were somewhat different from others in the same public-housing developments that chose not to join. In addition, PHA screening requirements may have caused some families to decide against applying, thus eliminating a number of other families during eligibility determination. Moreover, the relatively low lease-up rates achieved for both of the random-assignment groups receiving Section 8 certificates or vouchers are important because ITT effects are measured across entire groups. The effects of better neighborhoods can only be experienced by families who move and—for the group as a whole—such effects are "diluted" by the portion of the group that does not move. Thus, the lease-up rates are also central to the detection of program effects.

There are also limitations to a demonstration program that delivers benefits to only half the families who join. The regular Section 8 lease-up rate for MTO families was only 60 percent, considerably lower than the rate in the overall program in the same cities at that time. The lease-up rate for the MTO experimental group was lower still. Comparing just the experimental and regular Section 8 groups, Shroder (2002) estimates that for the MTO demonstration as a whole, the locational constraint—even with effective counseling—

reduced the probability of lease-up by roughly 14 percentage points.

Also, in the period of MTO enrollment, particularly 1994-95, central-city crime rates were quite high. Drive-by shootings, gang wars, and drug-related violence were a common feature of life in the neighborhoods where MTO families were living. These phenomena likely affected the motivation to join MTO and may well have made people more interested in joining the demonstration than they might otherwise have been.

Another consequence of MTO's mid-decade timing was that the census data used to identify high-poverty areas (from which to recruit families) and low-poverty areas (to which experimental group families could move) were outdated. MTO housing counselors in MTO sites frequently raised questions about the suitability of certain census tracts that technically met the low-poverty definition. Use of the poverty rate as the sole criterion for identifying opportunity areas also has limitations, and this may have been particularly misleading at mid-decade. When census 2000 tract-level data become fully available in 2002, it may turn out that some of the areas chosen by experimental-group families were not actually low-poverty communities.

As noted earlier, because each of the initial MTO research studies was based upon a unique design, results are often applicable to only one MTO site, and sample sizes are quite small. As tests of statistical significance are strongly affected by sample sizes, it is possible that different conclusions would be reached in MTO research if the tests could be conducted on larger, multisite samples.

Certain other aspects of the demonstration's implementation also limit the ability to generalize from MTO results. In MTO, the treatment received by families assigned to the experimental group included both a location-restricted housing voucher and some form of counseling to assist in leasing-up. The services provided by the nonprofit counseling organizations to the treatment-group families varied in breadth, depth, and intensity across the sites (Feins et al. 1997), a factor that might lead to some differences in program impacts. For example, differences in counseling affected lease-up rates (Feins et al. 1997; Shroder 2002) and perhaps also affected how well families in the treatment group adapted to their new neighborhoods and how long they remained in low-poverty areas. In three sites, a single nonprofit provided counseling throughout the demonstration period. The effects of any distinctive practices at these three agencies could easily be confounded with the effects of the site-specific housing market and other factors.

Finally, while considerable evidence has been gathered from the work of the early research teams about what changes have

occurred as a result of participation in MTO, little is known about *why* and *how* these changes took place. That is, there is currently a dearth of information about the neighborhood processes related to reported outcomes.

Yet larger samples and a clearer understanding of causality are not sufficient for MTO to be counted among the small number of successful policy experiments. Crane (1998, pp. 1-2) lists the criteria he judges relevant in deciding whether a new social program has been successful. These include "unusually convincing evidence that the program delivers substantial benefits regardless of cost . . . convincing evidence of long-term effects; and new hope of making progress to solve a seemingly intractable social problem." He also includes measures of the program's cost-benefit relationships as another central concern.[2]

For MTO to be counted a clear policy success, it must demonstrate major long-term impacts achieved in a cost-effective manner. MTO's average counseling costs of roughly $3,000 per family (those who leased-up a unit) would need to be offset by evidence concerning reductions in such expenditures as health care costs, unemployment, welfare enrollment, crime reduction, improvements in educational attainment and labor force engagement, and other measurable impacts. MTO's long-term research plan, as it is currently configured, has the capability to generate the evidence necessary to assess how well the program works.

5.1 The Next Stage in the Evaluation of MTO's Effects

Before discussing the specific issues and questions that appear to warrant further inquiry, it is helpful for the reader to appreciate that MTO was designed with a research plan consisting of a number of stages of interconnected data collection and analysis. Each stage is oriented toward the completion of a final impact evaluation and data release. The first stages have either been completed or have received funding from HUD and other agencies. Design and implementation, including random-assignment procedures, were completed by 1998. The results from the small-grant research projects at each of the five MTO locations are reported in this paper. Two waves of regular surveys of MTO families to determine their current location have already been conducted.

Recently, a multimillion-dollar midterm evaluation has been funded and is under way. The only remaining portion of the MTO research plan is the final, longer term impact assessment. In the following section, we briefly outline suggestions as to the key research and evaluation issues that

emerge from the first set of analyses of the outcomes from the MTO experiment.

For Which Social Outcomes Are There Comparable, Statistically Powerful Results?

Persevering to make full use of the longitudinal character of MTO's panel design will permit, for the first time, the answering of questions about the power and role of neighborhoods in affecting the lives of deeply poor families across all five MTO sites. The next stage of research will make use of standardized, common instruments—rather than the unique research plans and instruments that were used in the first stage of MTO research. The full MTO sample can be used to learn whether statistically meaningful effects occur across all sites and what those effects are. This analysis will permit an understanding of whether there are major differences between types of families and the sites in the ways in which families respond to the MTO treatment.

Are the Changes in Parents' and Children's Lives Long-Lasting or Reversible?

Time will also permit us to understand the extent to which any positive effects persist, diminish, or grow in strength. It is unclear whether we can confidently predict that once a child or parent has achieved some degree of positive improvement in, say, employment, health, or education, that these changes will continue. Are parents' and children's lives permanently and irreversibly altered by MTO, or is there some degree of reversal or "backsliding"? Do treatment-group children's futures dramatically improve as they move on to college and better paying jobs compared with their control-group colleagues? Or does the appeal of low-poverty areas wear thin? And do families retreat to their former, more familiar communities? Do the appeal and benefits of more affluent neighborhoods become depleted if parents' isolation and loneliness overwhelm them?

Will Parents as Well as Children Benefit from, or Be Harmed by, MTO?

The bulk of the research reported in this collection suggests that children's and teenagers' behavior and health have more likely benefited from MTO than have their parents' behavior

and health. Although many mothers feel better and appear more positive about their futures, we still do not know if previously unemployed adults' employment situations and wages will improve. The absence of any experimental change in labor-market outcomes is an area where more time might result in learning whether this crucial outcome is amenable to MTO-driven change. Perhaps MTO was not the right, or sufficient, demonstration to improve the employment potential and incomes of deeply poor mothers because we know from studies of labor-market programs that there are a host of complicated interventions that might be required before we can legitimately expect to see major improvements in the job situations of low-income adults from poor communities (Haveman 1994; O'Regan and Quigley 1999, pp. 458-9).

The opposite of these questions is clear: will MTO prove harmful to significant numbers of adults or children? Will mothers or grandmothers who moved from their former neighborhood find themselves lonely and isolated in a community without friends, religious groups, or other familiar ties that they spent decades acquiring? Will teenagers be subjected to more police scrutiny and risk as a result of moving to areas unaccustomed or resistant to their presence? Will landlords in the new communities treat their new Section 8 tenants with indifference, or worse? What, if any, harm has been caused to families who moved, how severe is it, and how long-lasting might the effects be?

Why Have Changes Occurred?

For many of the statistical and quantitative statements in this collection, we have only a limited sense of why they have happened. Quantitative measures of school, health, and criminal outcomes do not tell us the reasons for positive change and personal transformation. Why have teenagers in Baltimore stopped committing as much violent crime? Why has there been a decline in asthma cases in Boston? How did younger children in the treatment group achieve such improvements in their reading tests? Ellen and Turner (1997) are also curious about what has caused families' lives to change, and to what degree their neighborhoods are the cause. Qualitative or ethnographic research is one tool needed to look inside the "black box" of experimental effects to understand better those institutions, networks, and processes that have leveraged change in adults, children, or both.

Will There Be Any Significant Negative Impacts on the Surrounding Neighborhood?

Galster (forthcoming), among a number of social scientists, asks whether MTO families might affect the overall rate of problematic behavior in both the sending and the receiving neighborhoods. He assumes that moving those families will not have a major impact, but wonders whether the move of a low-income family from one neighborhood to another will result in a corresponding shift of problematic behavior from sending to destination neighborhoods. Are changes in socially problematic behavior "capitalized" into corresponding changes in neighborhood property values, and thus indirectly measurable through these means? Is there a neighborhood concentration "threshold," he asks, of low-income families, after which rates of problematic behavior increase (Turner, Popkin, and Cunningham 2000)?

Has MTO done any measurable harm to the communities into which MTO families have moved that can be causally attributed to the demonstration? Can an impact on the tiny scale of the MTO movers, roughly 285 families in each of the five sites, be detected reasonably amidst the welter of other social, economic, racial, and attitudinal alterations that normally occur in the life-course of any neighborhood?

It is essential for future researchers to develop measures of actual or perceived impacts to address how the receiving communities or neighborhoods react to small numbers of low-income, largely minority, public-housing families. We may learn that the receiving community neighbors and neighborhood organizations are not all alike (Guhathakurta and Mushkatel 2002). They might well have different thresholds of tolerance and acceptance for children and adults of varying racial and ethnic groups, depending on their own racial and ethnic composition, their perceived vulnerability or susceptibility to other changes, and their access to social resources and programs that might be useful to new families.

5.2 Understanding the Costs and Benefits

One potential result of future research will be a clearer understanding of the net costs of an MTO program, including an appreciation of savings that result from improved outcomes for treatment-group families. How does the cost of MTO counseling compare with other social and economic costs and benefits to families? Are improved test scores, lower levels of welfare use, and lower violent crime rates common across all sites? If so, what do these improvements "save" government agencies compared with the higher costs for treatment-group families (Johnson, Ladd, and Ludwig 2001)?

At the end of this research, it will likely be important to recall that experimental research projects will almost certainly have problems of external validity. Manski (2000, p. 126) has cautioned, "the groups whose interactions are observed are formed artificially for the sake of the experiment. This raises obvious questions about extrapolating findings from experimental settings to populations of interest." Higher levels of attention by PHAs to tenants during the recruitment stage of a demonstration such as MTO may result in attracting families unlike those not involved. There is some risk, therefore, that results that emerge from MTO may not readily translate into a national program for remaining families. "It may be hazardous to generalize from the treatment effects on members of the experimental sample to some larger population" (Shroder 2000, p. 256).

6. Policy Issues and Concerns

One response to this paper's positive results might be to build the MTO model into something closer to a national program to link intensive housing counseling to geographically limited housing vouchers. To others, the improved level of employment reported for *all* MTO families may reflect the impact that macroeconomic improvements can have on the lives of most Americans, suggesting that overall economic improvement is a policy priority (Haveman 1994, p. 440; Danziger 2002). Yet some may find the single-site results reported within this collection unpersuasive. Should MTO, then, be abandoned as a policy option, or is there enough relevant information to warrant proposing that MTO be adopted on a more permanent basis as a tool for local housing agencies?

An important predicate for attempting to answer these questions is to appreciate the fact that HUD was implementing alternative opportunities for public-housing families at the same time that MTO was being implemented. Among the key alternative policy options was, and is, the Hope VI program.

6.1 The Option to Stay: Rebuilding Inner-City Projects

A necessary part of the context for appreciating MTO's design and implementation was the fact that it was not "the only game in town" for public-housing families in 1994. One of the

parallel programs whose purpose and implementation directly, if inadvertently, affected MTO was an initiative demolishing many of the worst public-housing projects in larger cities—the very projects from which some MTO families would be enabled to move. The new program was Hope VI.[3] The program's goal was to enable families to relocate, using Section 8 so that some proportion of them would return to their old communities after their public-housing buildings had been fully refurbished.

With congressional backing, HUD provided funding for Hope VI to demolish the most troubled urban public-housing projects and replace them with rebuilt mixed-income communities. The initial goal was to tear down roughly 100,000 units (U.S. Department of Housing and Urban Development 1996). Such rebuilding efforts, however, encountered problems in regenerating their communities. In part, this was because the communities remained troubled with crime and gangs, relocation efforts were sometimes badly managed, and some tenants resisted efforts to move them from their familiar neighborhoods (Popkin 2000, pp. 181-90).

In several cities that were selected for MTO, families had the choice of remaining or returning to a remodeled public-housing development. MTO-eligible families, beginning in 1994, frequently knew that they had the choice to stay and wait for better housing or to relocate. Families in Boston, for example, had seen the drawings of their soon-to-be-refurbished public-housing development and often opted to remain because the refurbished housing appeared attractive. In Baltimore, several family housing projects near the downtown core of the city were being demolished and replaced with mixed-income housing as MTO began tenant selection. Some families told us they preferred to remain and see what would result.

MTO was not designed to be the "silver bullet" to end ghetto poverty, nor was it intended to be the only choice available to public-housing residents. It was but one of a set of choices that public-housing applicants and residents could and should be offered, including the right to stay in place and the option to move into nonpoor neighborhoods (Brown and Richman 1997; Downs 1994, pp. 112-4). Whether the outcomes of Hope VI will result in a net advantage for former residents is yet to be determined (Salama 1999; Goetz 2000; Dimond 2000, p. 260). Perhaps Hope VI and MTO will only work best in aiding residents when larger policies and economic forces—including welfare reform and a strong economy—provide simultaneous reinforcement (Weisberg 2000). Only time and carefully conducted research will provide answers to the question of what mix of rebuilding and mobility is right for particular cities and families.

6.2 Going "to Scale"?

Perhaps the most frequently asked question when MTO is discussed among social scientists and policy analysts is what might "bringing MTO to scale" be like? Thompson (1999, p. 126), for example, appears certain that MTO could not become a general, large-scale program—at least in the New York area. "Given the fierce resistance," he argues, "to even modest public-housing development in nearby Yonkers, the notion that significant portions of the NYCPHA [New York City Public Housing Authority] population could be integrated into Long Island and Westchester is fanciful. Political problems aside, HUD's entire $70 million national MTO budget would have only a minor impact on deconcentrating public housing in New York City."

Political opposition and costs have been familiar obstacles to prior HUD efforts to promote either economic or racial mobility. Heclo (1994, p. 422) also reminds us of this: "dealing in any realistic way with this socioeconomic catastrophe (poverty) is going to be costly and will demand a long-term commitment to people whom many Americans would not want as neighbors. This is the dirty little secret buried in the shelves of social science poverty studies."

Another potential obstacle to the future of a demonstration like MTO is what future the Section 8 program will have. Husock (2000), a frequent critic, states that "in the blue-collar and middle-class neighborhoods where voucher holders increasingly live, longtime residents hate the program. It undermines and destabilizes their communities by importing social problems into their midst. . . ." Part of his solution is to leave families in conventional public-housing projects fixed so that residents would be both time-limited and required to get "instruction in parenting." If this does not work, he argues, "no system at all would be better than Section 8 vouchers." Such criticism, however, now appears to be marginal to the mainstream public policy debate over federal housing policy.

There are, however, fairly constant complaints about undue concentration of voucher recipients. There is the growing sense that the Section 8 program, left to its own devices, will create submarkets or niches within which Section 8 families will be served—just as project-based housing has done (Stegman 2000, p. 93). If, and as, the Section 8 program continues to grow, it may be subject to increasing criticism for contributing to such concentrations of poverty. The program seems likely to need a new generation of policy tools to help families who wish to move to communities with lower levels of poverty.

In addition, some worry that the regular Section 8 program already has too high a level of failure in moving families into private rental apartments. Even the fact that only 80 to 85 percent of families can lease-up under the regular program appears a cause for concern. Stegman (2000, p. 93), for example, argues that "because a voucher can be a ticket out of a ghetto into a middle-class neighborhood, with better schools and services, we should be concerned about the 15 percent of families who cannot use their voucher to find acceptable housing in the private sector." How to promote access to better neighborhoods and to also increase lease-up rates is a major part of the ongoing policy conundrum for which MTO does not provide an answer. Lease-up rates of roughly 50 to 60 percent are not the solution to moving large numbers of families promptly into the rental market.

There is then an explicit policy trade-off between getting needy families into private rental housing quickly at a high lease-up rate versus getting them access to low-poverty areas at a lower success rate. If, for example, a family with average characteristics in a city like Los Angeles can receive regular Section 8 assistance with no counseling services, it has a lease-up probability of roughly 70 percent based upon MTO evidence. If, however, another MTO family receives the highest intensity counseling services and is required to lease-up in a low-poverty area, its lease-up probability is roughly 50 percent—a 20-percentage-point reduction. This appears to be a considerable cost. Whatever positive results are traded off against it, the decisions about MTO's future will not be simple. Some families will rightly be unwilling to voluntarily cede their ability to locate in higher poverty areas except on the same basis that they did in MTO; that is, they would otherwise have no access to a Section 8 subsidy.

To address the policy question of whether the lease-up rates in MTO were "too low," current evidence is needed about how well the general Section 8 program succeeds in leasing-up families without any restrictions or counseling assistance. How well does the regular program succeed in cities such as New York and Los Angeles? A recent report suggests interestingly that there has been a notable overall drop in the ability of families to make use of their rental vouchers (Finkel and Buron 2001). Lease-up rates declined from more than 80 percent in 1993, just as MTO was being planned, to only 69 percent in 2000. The report notes that, "PHAs generally attribute the decline in success rates between 1993 and 2000 to a tightening of rental markets during the intervening years" (Finkel and Buron 2001, p. 1). While the national rate was roughly 70 percent, lease-ups in New York and Los Angeles occurred at, again, a reduced rate. In New York, only 57 percent of families, and in Los Angeles, only 47 percent, were able to find and lease a rental unit. The MTO lease-up rate in Los Angeles (averaged over several years), surprisingly, was higher, at 61 percent, for the treatment group, while in New York it was somewhat lower, at 45 percent.

Finkel and Buron (2001) also explore the types of program activities that occurred alongside tightening markets. Local agencies that required tenant screening and counseling typically achieved higher rates of lease-ups compared with those that did not (Finkel and Buron 2001, pp. 3-19). It appears clear from this evidence that lease-up rates are constrained by larger market forces but are also, within some margin, malleable. Programmatic tools and interventions appear relevant and reasonable for assisting tenant clients to find a rental unit in a timely manner. The MTO intervention appears less anomalous and boutique-like under tightened market circumstances.

An additional part of the answer to whether lower lease-up rates are an acceptable cost of administering an MTO-like extension will rest on clear research evidence of the effects that lower poverty neighborhoods will have on Section 8 families' futures. If it should turn out in the 2000 census that the neighborhoods to which many regular Section 8 families moved are in deep poverty and distressed, and we become reasonably certain that the long-term prospects for these families are not good, the option to expand MTO will become more attractive. That those tenants may be slightly better off than they would be in public housing will mean little, since their opportunities for positive change are seriously constrained. Thus, there would be little self-sufficiency gained from such higher lease-up rates.

If MTO treatment-group families are shown to still be living largely in low-poverty locations that now look notably better than those into which regular Section 8 families moved, and if positive outcomes continue, there should be less opposition to allowing local jurisdictions to offer an MTO-like counseling effort—with some restrictions on vouchers to move into low-poverty areas. Should treatment-group families look much better off than in-place public-housing families, the arguments in favor of an MTO-like expansion could appear even more appealing.

Researchers will also need to debate which of several possible administrative agencies are best suited to deliver MTO-like Section 8 assistance. Some will argue that the 1930s-era PHAs are outmoded and ineffective mechanisms for responding to interwoven housing and employment needs on a regional basis. Housing programs, such as Section 8, need not be managed by funding the traditional 3,000 or more PHAs. Set-asides of funding could be awarded competitively to those communities that can create effective sets of administrative tools that will permit cost-effective options for regionwide housing mobility as part of their programming.

Better delivery of programs, for example, might be accomplished by linking real estate brokerage services to nonprofit counseling agencies. PHAs might offer income verification and housing inspections if they do so consistently, efficiently, and promptly. Some local PHAs have already recognized the advantages of linking information and services across their wider region, using their annual and five-year plans to assess how to best offer a regionwide, diverse range of neighborhood choices to their clients (Tegler, Hanley, and Liben 1995). State and local PHAs, as well as other program providers, could be offered incentives to make affordable regional housing markets materialize and function at a controlled scale so that the PHAs, local landlords, and neighborhood associations all become comfortable with their role in managing a "fair" share of the city's poor, assisted families (Katz and Turner 2001). Such policy transitions may take a decade or more in communities resistant to the poor and public housing, but they may move more quickly if private organizations, nonprofit groups, and PHAs throughout the region combine their skills and resources.

There need not, then, be one-size-fits-all programming. Funds could be allocated for a three-to-ten-year period with periodic verification required of how well families were provided options for housing mobility out of ghetto projects. Hope VI redevelopment options could be included as part of the mix of choice offered to families, so that options did not remain narrowly limited. Housing policies must be capable of managing multiple program options to meet the needs of local families, since in the past fifty years, one-size-fits-all markets have often proved ruinously inflexible and inept (Haveman 1994, p. 444; Downs 1994, p. 99).

MTO evidence to date suggests that only when a range of choices is available to the inner-city poor can agencies begin to effectively undo the damage to those living in concentrated poverty. Subsequently, when careful observation and data collection tell us who chose what action, why, and with what result, we will be more confident that going to scale is a necessary and even cost-effective program option. How might MTO be extended to other cities or expanded to a somewhat larger scale? A few preliminary policy suggestions to support the decision to increase the size and scale of an MTO-like set of program requirements and restrictions follow.

Do It Slowly and with Greater Public Involvement

Among the lessons from neighborhood opposition to MTO in one Baltimore suburb in 1994 (Ihlanfeldt 1999) is the sense that with better notice to the affected communities, and at a slower pace, opposition might have been lessened if not altogether mollified. The hurry to implement the demonstration meant that the normal caution that might be expected to accompany

a racial and class integration program was not taken by either HUD or the local administering agencies. The explicit and up-front exclusion of areas that did not have 10 percent or less poverty should have been announced and publicized more clearly, because a nontrivial number of protestors came from areas that were not eligible sites for MTO family relocation.

Explain It Better

The imbroglio in Baltimore County in the first months of MTO's existence suggests that HUD and local PHAs could do a better job of explaining the potential links between any large-scale public-housing demolition programs, such as Hope VI, and MTO housing mobility. Housing mobility options should not become the political patsy for badly administered tenant-relocation programs tied to Hope VI. This may well mean that MTO-like options cannot be implemented concurrently with inner-city demolition programs, or not until the public throughout the region understands and accepts the role that screening and counseling will play in allocating families to their communities. Addressing the complex intersection of race and class will have to be undertaken by multiple levels of government, and on a sustained basis, with MTO-like evidence offering relevant input.

MTO Does Not Appear Appropriate for All, but Can Assist Additional Families

MTO appears not to be suited for everyone. It has attracted certain types of families with specific characteristics and levels of motivation. Motivation helps set movers apart from those who failed to move and appears to be a key to MTO's future (Popkin and Cunningham 2000). Those who volunteered for MTO and then found a private-market apartment are somewhat different from other poor public-housing residents still living in deeply poor neighborhoods. Additional research may help us appreciate the full extent to which MTO families differ from others. This is true for the movers, whose moti-vations and opportunities enabled them to move to a new neighborhood either as part of the experimental or Section 8 control group. To whom do the positive outcomes found in the research reported in this paper best apply? To what universe of public-housing families do they generalize?

Although MTO does not appear to be a relevant option for all public-housing residents, the fact that thousands of families

volunteered for MTO in five cities suggests that they are not alone in their fear of crime and desire to move out of the projects. MTO could be expanded into a program of modest size, offered in a wider range of metropolitan areas and over multiple years, to ensure that the operation of regional counseling and restricted vouchers remains effective.

It is also possible, as MTO's results become more widely established and accepted, that the differences between "volunteers" for any future program and those remaining behind may narrow. Agencies may learn to explain and motivate families better in the sending as well as the receiving communities. This is of course a fundamental, treacherous assumption at the heart of "normalizing" MTO. It is also subject to at least two qualifications:

- Crime rates and interest in MTO: Given the critical importance of fear of crime as a root source for families' interest in MTO, will the apparent decline in urban crime rates since the mid-1990s mean that fewer families will be impelled to seek to get out through an MTO-like program (Blumstein 2000; Fountain 2001)? Or will crime rates return to higher levels and sustain interest in the option to move out?

- Hope VI and enrollments: To what extent will inner-city revitalization programs, such as Hope VI, result in more families wanting to return to their old neighborhoods in newly refurbished housing units? Will the presence of more viable inner-city choices reduce interest in housing options that send families far from their old neighbors?

It May Not Be Relevant for Every City

There is suggestive evidence in MTO site-based research that MTO has worked slightly differently in various regions. For example, an MTO option may appear to be of far greater benefit to families in Baltimore than in Boston. Site differences may prove of interest and importance in subsequent program implementation.

Whether MTO is relevant for a specific metropolitan area may depend on whether the rental housing market includes enough landlords willing to rent to low-income, former public-housing families. In looser markets, more landlords appear available and willing to wait while the local PHA completes paperwork and inspections. In tighter markets, it is clear that Section 8 in general, and more likely MTO, will find it difficult to achieve reasonable rates of lease-up. Analysis of the causes of variation in demonstration effects between sites may help in appreciating the scale and reasons for cross-site variation.

Counseling Appears to Help

Although it is not statistically certain whether the restricted vouchers or counseling had a greater effect in achieving the effects shown to date, housing counseling (Shroder 2002; Finkel and Buron 2001) has benefits in promoting lease-ups in low-poverty areas. Unlike many PHAs, such as New York's, which provide "almost no assistance to tenants in the housing search" (Kamber 2000, pp. 6, 30), an extended MTO option would require that poor families receive help in searching widely enough to make dispersed housing choices possible and meaningful to the family.

Restrictions and the Meaning of Opportunity

There are both pros and cons associated with restricting the use of Section 8 rental assistance to low-poverty communities. Galster's (2002) comments offer reason for policymakers to examine the precise percentages of poverty and affluence that might best facilitate the least harmful process for selecting receiving neighborhoods to ensure that there will never be too many Section 8 families allocated into any one vulnerable area.

It is also important to ensure that 10 percent poor does not remain the sole definition of an area of opportunity. Future expansion of MTO could include labor market and school characteristics as among the variables that can assist in selecting a set of neighborhoods for MTO-like counseling.

Balancing limits or temporary quotas with the principle that Section 8 families should have the freedom to choose whatever neighborhood they would like will require a new generation of policy thinking within both HUD and Congress, especially as long as the Section 8 program continues to serve as "the only (housing) game in town" (Quigley 2000).

Make Timely Use of the Analysis of Costs and Benefits

When future research provides a clearer understanding of the total costs and the social and economic benefits of MTO, policymakers will likely find it easier to justify the cost of funding for additional housing mobility vouchers and counseling. Until that time, improvements in reading scores and reductions in childhood asthma appear to offer adequate justification for allowing PHAs to offer such a choice without waiting. If, in a clinical medical experiment, patients were found to benefit from a trial medication in the way that MTO has allowed, there would likely be justification for permitting other lives to be aided. There remain ample reasons for caution, but the chance that some children's lives can be substantially improved by the choice of a different neighborhood suggests that additional families should be offered this choice and allowed to decide for themselves.

7. Concluding Observations

Based upon the research reported in this paper, it is possible to draw one clear policy conclusion and one provisional, although important, research conclusion. First, MTO's operations demonstrate that it is possible for HUD and local PHAs to operate successfully an economic and racial desegregation program using Section 8 rental assistance in differing metropolitan markets. It has shown that, on a small scale, you can reverse the historical practice of concentrating poor minority households in poor minority neighborhoods, limiting their housing choices, and exacerbating problems of economic and racial isolation. It is, however, important to note, as the research by Feins (forthcoming) points out, that the low-poverty neighborhoods into which experimental-group families moved were often heavily minority. MTO was successful in providing a "mixed-income" neighborhood rather than offering communities that are predominantly white. MTO families who moved live in less racially segregated communities than in-place control-group families but, then, the latter live in neighborhoods that are among the most racially and economically segregated in the United States.

Second, preliminary research on MTO's effects on families demonstrates that beneficial, statistically significant changes have occurred in families' lives within two to four years of their participation in MTO. The first phase of MTO research reveals that households in the treatment group, as well as some Section 8 comparison-group families, have experienced improvements in multiple measures of well-being relative to the in-place control group. This has included better health for adults and fewer behavior problems among boys. Treatment-group family members experienced declines in depression and asthma following their moves from public housing, and male children were much less likely to pose disciplinary problems.

In the area of education, despite the potential difficulties of making the transition out of poor neighborhoods and their schools, there is evidence of improvements in one MTO site. Treatment-group children ages five through twelve have experienced substantial gains in academic achievement as measured by standardized test scores, compared with children in the control group. If these results are borne out in subsequent research, the demonstration will have achieved major educational benefits for younger children much earlier

than anticipated. The unclear effects for older children compel further research as part of the cross-site MTO evaluations. Qualitative research conducted in 2001 suggests that a number of parents in that sample did not move their children to new schools, but kept them in the schools serving their original high-poverty neighborhoods (Popkin, Harris, and Cunningham 2002). The extent to which families have made moves into low-poverty communities but not taken advantage of "local" resources and institutions represents a crucial question for the next stage in MTO research.

MTO not only provides a clearer understanding of how residential mobility programs can operate, but has clarified the temporally sequenced, quantifiable effects that this change in neighborhood has on the lives of parents and children who would likely otherwise remain in "ghetto" neighborhoods. These changes appear to have occurred in some areas of social and economic life more clearly than in others; and in some cities, more surely than in others.

Achieving improvements in education performance, reductions in criminal behavior, improvements in adults' mental and physical health, as well as a reduction in welfare dependence, is a nontrivial initial policy and research contribution. MTO's ability to document the conditions under which large numbers of poor families' lives may be improved as a result of a change in their neighborhood is potentially among the most significant social science and policy legacies that HUD will have for the next decade or more.

There are, nonetheless, a critical number of important research and policy issues that need to be addressed by future research aimed at clearer appreciation of the consequences of life in high-poverty public-housing developments compared with life in less concentrated Section 8 comparison- and treatment-group neighborhoods. Such research should also help establish the conditions under which a programmatic extension of the MTO program might best be developed. Knowing in which communities and neighborhoods, and for which types of families, such a program may work best will greatly aid in offering alternatives to life within high-rise, high-poverty communities. If Downs (1999, p. 967) is correct in observing that most efforts to revitalize deeply poor communities through community development have "almost universally failed," then some form of regional housing mobility effort such as MTO is a necessary accompaniment to other development strategies (Katz and Turner 2001).

Some neighborhoods, families, and policy analysts will continue to oppose agencies such as HUD and its Section 8 program to protect what they feel is theirs from perceived or actual threats (Husock 2000). Such opposition can, however, be better managed to reduce its occurrence or effects. The worst consequence of acquiescing fully to such opposition would be to leave in place public housing as a "federally funded, physically permanent institution for the isolation of black families by race and class" (Massey and Kanaiaupuni 1993, p. 120). Heclo (1994, p. 427) sagely reminds us of additional obstacles to expanding MTO: "Full-scale attacks on ghetto poverty will inevitably mean targeting resources disproportionately on minorities. Whether such efforts are seen as pro-black preferences or an act of solidarity with the country's children and its future will depend heavily on how political leaders help educate the public." Few political leaders of either party have done, or have been able to do, much to address this concern. MTO offers policymakers, for the first time, necessary if not yet sufficient evidence that children's lives have been notably benefited and that parts of the "ghetto" poverty problem can be redressed.

1. For additional details, see Goering, Feins, and Richardson (2002).

2. Regarding the latter, he notes: "Determining the cost-benefit relationship is easier said than done. Although the costs are usually easy enough to measure, determining the monetary value of the benefits is often difficult" (Crane 1998, p. 3). See also Brooks-Gunn, Berlin, Leventhal, and Fuligni (2000).

3. A National Commission on Severely Distressed Public Housing had, in 1989, recommended a strategy for the elimination of the worst projects in forty of the country's largest cities. The program derived from this recommendation, Hope VI, was enacted at the same time as MTO. Congress allocated $1.6 billion for this program from 1993 to 1995 (U.S. Department of Housing and Urban Development 1996).

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Commentary

John Goering does an excellent job summarizing the early results of the Moving to Opportunity for Fair Housing Demonstration (MTO). His paper serves as an excellent reference for anyone interested in learning about the motivation, design, and preliminary outcomes of MTO. The findings summarized by Goering also settle and raise a number of important policy-related questions. In this commentary, I place the MTO experiment in the context of housing policy as well as summarize some of the lessons learned and the remaining questions relevant to affordable housing policy.

The MTO experiment is significant not only because of the lessons it offers on how neighborhoods affect individuals but also because it represents a major effort to use social science to inform housing policy. Compared with many other policy domains, such as health or welfare, housing has been somewhat of a laggard in using social science to inform policy. Politics, ideology, and the latest fads have often carried the day instead. This is not to say that politics can or should be removed from policymaking. Rather, social science can inform such decisions, but in order to do that, rigorous social science evidence of the type provided by the MTO experiment is required. Without such evidence, we are left with only ideology to guide us. Thus, MTO may represent the advent of social science playing an important role in the crafting of housing policy. This would certainly be welcome.

The MTO experiment is also significant, of course, for its lessons on neighborhood effects. The quasi-experimental evidence thus far is consistent in showing that neighborhoods do in fact affect a number of behavioral outcomes. MTO's results represent the strongest findings to date that neighborhoods do indeed matter. Living in a high-poverty neighborhood seems to inhibit upward mobility. The question of whether neighborhoods matter is certainly closer to becoming questions of how, and now what do we do, as a result of the evidence produced by MTO.

The mechanisms through which neighborhoods exert their effects still remain something of a black box, although there are a number of plausible theories. The evidence from the qualitative analyses of the MTO demonstration suggests that the positive examples set by residents of low-poverty neighborhoods and the better schools available in these neighborhoods may be the primary mechanisms through which program participants in low-poverty neighborhoods achieve improved outcomes (Popkin, Harris, and Cunningham 2002). More in-depth qualitative research is necessary before we can draw any definitive conclusions on the "how" of neighborhood effects.

MTO's findings also force us more than ever to confront the implications of neighborhood effects and housing policy. Affordable housing policy in the United States has been predicated on the notion that it improves the physical characteristics of recipients' housing, increases affordability, and, implicitly at least, enhances the neighborhood environment. To date, however, our policy has failed on the

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last account. Indeed, the evidence suggests that in some respects, housing assistance has worsened neighborhood conditions, at least in terms of living in concentrated-poverty neighborhoods (Newman and Schnare 1997). The early results of the MTO demonstration show that neighborhood environment is indeed important. As others have suggested, neighborhoods help shape the opportunity structure confronting individuals (Galster and Killen 1995). These results suggest that when we craft affordable housing policy, we should take neighborhood quality into account.

Before acting on this, however, we need to consider the following questions:

- When designing housing policy, are the magnitudes of the observed effects large enough to warrant taking into consideration neighborhood effects?

- Assuming the impacts are substantial and long-lasting, how might the findings of MTO inform affordable housing policy?

- Should integration of all the poor—either through dispersal or mixed-income revitalization—be a goal?

- Should neighborhood quality, like physical housing conditions, be a standard for housing assistance eligibility?

- Might we expect neighborhood effects to work in reverse? That is, will mixed-income housing in neighborhoods undergoing revitalization produce similar benefits for the poor? HOPE VI is predicated on the assumption that this is indeed the case. But neighborhood effects may operate differently for poor households who do not seek out more affluent neighbors. This is certainly an area worthy of further study.

The MTO demonstration cannot, of course, provide the answers to these questions. But it increasingly moves policy debates in the direction of addressing these issues. To continue to ignore them in the face of convincing evidence of the importance of neighborhood effects would not only be intellectually dishonest but morally bankrupt as well.

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Denise DiPasquale, Dennis Fricke, and Daniel Garcia-Diaz

Comparing the Costs of Federal Housing Assistance Programs

1. Introduction

For more than sixty years, the federal government has provided assistance to improve the condition and reduce the cost of rental housing for low- and very low-income households.[1] The focus of federal assistance has changed over time, as illustrated by the major policy reviews of the last four decades—the Kaiser Committee in 1968, the President's Commission on Housing in 1982, and the National Housing Task Force of 1988. The focus of these reviews shifted from increasing the physical quality of the housing stock in the Kaiser Committee, to increasing housing affordability in the President's Commission on Housing, to addressing housing availability and affordability in the National Housing Task Force.[2] Production programs dominated federal housing policy until the early 1980s. Since then, the voucher program has been one of the fastest growing federal housing assistance programs.

Although there is little debate that vouchers will remain a dominant form of housing assistance, there is still considerable debate concerning the appropriate role for production programs. A major concern with production programs is their cost, particularly when compared with vouchers. Much of the housing cost literature cited in this debate is more than twenty years old and evaluates production programs that are no longer active. In this paper, we describe the housing provided by vouchers and five active federal production programs, and

estimate the total costs of each program. In addition, we examine who pays the costs of each program.

Today, six active federal housing programs continue to increase the number of households assisted. These programs include the Housing Choice Voucher program (housing vouchers)—the largest source of federal funds for housing assistance—and five production programs, which currently receive federal funds to construct or substantially rehabilitate units. In this paper, we examine the characteristics of the housing provided and the total costs of providing that housing under these six active programs:[3]

- Housing vouchers (produced about 1.6 million households) supplement tenants' rental payments in privately owned, moderately priced apartments chosen by the tenants.

- Low-income housing tax credits (produced about 700,000 units) provide tax incentives for private equity investment and are often used in conjunction with other federal, state, and local government and private subsidies in the production of new and rehabilitated affordable housing units consistent with state-determined housing priorities.

- HOPE VI (produced about 65,000 units) provides grants—coupled with funds from other federal, state, local, and private sources—to revitalize severely distressed public housing, support community and social services, and promote mixed-income communities.[4]

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- Section 202 (produced about 66,000 units) provides grants to develop supportive housing for the elderly and project-based rental assistance.[5]
- Section 811 (produced about 18,000 units) provides grants to develop supportive housing for persons with disabilities and project-based rental assistance.
- Section 515 (produced about 485,000 units) provides below-market loans to support the development of housing for families and the elderly in rural areas and project-based rental assistance through the Section 521 program.

The housing provided under the six active federal programs can be quite diverse, varying in age, type, size, and in level of services and amenities provided. We find that for units of the same size and in the same general location, the total costs of production programs are greater than the total costs of vouchers, but the difference in costs is smaller than suggested in earlier literature. In addition, these cost differences generally diminish as unit size increases.

Compared with vouchers, we estimate that the average total thirty-year costs of one-bedroom units in metropolitan areas range from 8 percent more under the Section 811 program to 19 percent more under the tax credit program. For three-bedroom units in metropolitan areas, tax credit units cost an average of just 4 percent more than vouchers. HOPE VI is the most expensive production program; we estimate that HOPE VI units exceed voucher costs by 36 percent. With the exception of HOPE VI, total costs are generally similar among the production programs. The federal government pays the largest share of total costs for all of the housing programs, except for tax credits, in which the tenants pay the largest share. We also find that the production programs are more expensive than housing vouchers for the federal government.

Our work raises a number of housing policy issues. All federal housing programs provide benefits beyond housing people with low and very low incomes. For example, vouchers can increase household mobility while production programs can be important components of community development strategies. These benefits must be weighed when assessing program costs. Analysis of the full costs and benefits of federal housing programs require comprehensive, consistent data that are not readily available. For example, there is no centralized national database that includes information on costs for tax credits—the largest housing production program.

In this paper, we first provide background information on program expenditures and a brief review of the literature. Next, we describe the housing provided under each program and our methodology for estimating costs. We then present our total cost estimates along with estimates of the share of those costs paid by the various actors in the programs. We conclude with a discussion of the policy issues raised by our work.

2. Background

Of the approximately 5.2 million renter households assisted by the federal government in 1999, about 2.7 million were assisted by programs that no longer receive appropriations to produce additional units. We refer to these programs as "inactive." Appropriations are, however, provided to fund project-based rental assistance, interest reduction payments, and operating subsidies for the units developed under these programs in previous years. The remaining 2.5 million units are subsidized under the six active programs that receive appropriations both to add new units and to subsidize units funded in previous years. This figure accounts for units that receive subsidies from more than one program. More than 10 percent of the total units (2.9 million) under the active programs benefit from overlapping subsidies. For the tax credit program alone, nearly 40 percent of the units receive overlapping subsidies from various Section 8 rental assistance programs.

In fiscal year 1999, the federal government spent about $28.7 billion, including $3.5 billion in tax credits, for both the active and inactive housing programs. Of this combined amount, about $15.1 billion supported units funded under the inactive programs, and about $13.6 billion in budgetary outlays and tax credits supported the active programs. Less than one-third of the total expenditures went toward the construction, rehabilitation, or modernization of affordable housing. As shown in Chart 1, the voucher program is the largest of the active programs, accounting for about 52 percent of federal funding for them. The tax credit program accounts for about 26 percent of the federal funding for active programs, the HOME program about 10 percent, the Section 202 and Section 811 programs together about 5 percent, the Section 515 program about 5 percent,[6] and the HOPE VI program about 2 percent.

Previous studies on the relative costs of housing programs have generally found that vouchers are less expensive and more cost-effective than production programs. Weicher (1990)[7] reviews the housing cost literature and finds that production programs are more expensive than vouchers. Using data provided in Wallace et al. (1981),[8] Weicher estimates that the Section 8 New Construction program was 40 percent to 50 percent more expensive than the Section 8 Existing Housing program. Olsen (2000, 2001)[9] also reviews the housing cost literature but uses a different approach: he evaluates cost-effectiveness of housing

Chart 1

Budgetary Outlays and Tax Expenditures for Active and Inactive Housing Assistance Programs

Fiscal Year 1999, in Millions of Dollars
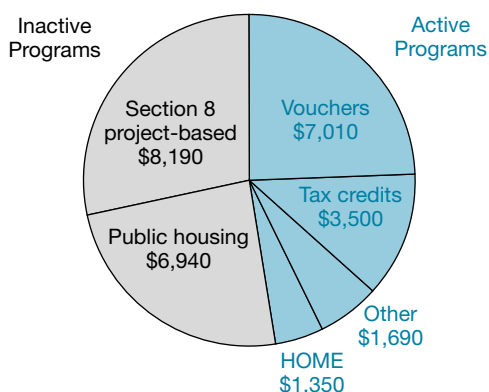
Notes: The total equals $28.7 billion in budgetary outlays and tax expenditures. Outlays for Section 8 project-based include new construction/substantial rehabilitation, loan management set-aside, property disposition, Section 236, and rent supplement. Outlays for "Other" include Section 202, Section 811, Section 515, Section 521, and HOPE VI. HOME is the Home Investment Partnerships program.

programs by comparing their total cost of providing assisted housing and their estimated market value. Olsen (2001) finds that the studies reviewed unanimously conclude that vouchers are more cost-effective than production programs such as Public Housing, Section 8 New Construction, and Section 236.[10] His review concludes, "whether there are any market conditions under which construction programs are more cost-effective than vouchers is surely one of the most important unanswered questions in housing policy analysis." The reviews by Weicher and Olsen illustrate that much of the housing cost literature is more than twenty years old, and, as a result, focuses on older production programs that are no longer active. Little recent work has been done to compare costs across current programs, in part because of the lack of consistent, detailed cost data across these programs, as we will discuss. A goal of this paper is to begin to fill that void.

3. Housing Characteristics of Federal Housing Programs

Housing vouchers are used almost exclusively in existing properties whose median age nationwide is about thirty-five years, ranging from about sixty-five years in the Northeast to about thirty years in the West. According to U.S. Department of Housing and Urban Development (HUD) data, about three-

quarters of vouchers are used in multifamily dwellings, and the remainder is used in single-family homes. Production program properties are either newly constructed or substantially rehabilitated. For example, the HOPE VI program replaces or renovates severely distressed public housing developments as part of a broader community revitalization strategy. The new or rehabilitated properties often include special design features that are intended to integrate the public housing community with the neighborhood. HOPE VI properties, which have an average of nearly 300 units, span the full range of building types, from detached homes to row houses to elevator buildings.
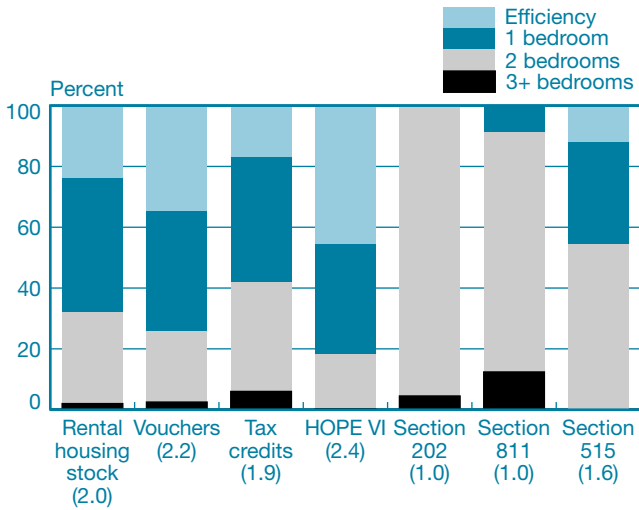
The tax credit and Section 811 programs also provide newly constructed and substantially rehabilitated properties. Most tax credit properties are multifamily buildings, including single-room-occupancy dwellings, walk-up apartments, town houses and row houses, and elevator buildings, and have an average of seventy-five units.[11] Section 811 properties are predominantly of two types—independent living projects and group homes. Independent living projects generally provide separate apartments with individual kitchens and bathrooms, while group homes typically include a bedroom for each resident and a common kitchen, dining, and living area. Section 811 properties range from single-family dwellings to walk-up apartments and have an average of about twelve units. Section 811 group homes normally do not house more than six persons.

Finally, the Section 202 and Section 515 programs primarily provide newly constructed properties. Section 202 properties are generally mid- and high-rise buildings with elevators, averaging forty-five units nationwide, whereas most Section 515 properties are walk-up apartments and often consist of no more than twenty-four units, which is a size consistent with the lower population densities of rural areas.

Across the six active programs, units vary in their average size (as measured by the number of bedrooms) and distribution across size, as shown in Chart 2. The average number of bedrooms ranges from 1.0 for the Section 202 and Section 811 programs to 2.4 for the HOPE VI program. Vouchers and tax credits provide higher percentages of larger family units, while the Section 515 program includes a combination of larger units for families and smaller units for the elderly.

Most assisted housing is in metropolitan areas but the location of properties varies somewhat by program. As Chart 3 indicates, all HOPE VI units are in metropolitan areas, with about 90 percent in central cities. In addition, about 94 percent of tax credit units[12] and about 80 percent of voucher, Section 202, and Section 811 units are in metropolitan areas. For all of these programs, the majority of the metropolitan area

CHART 2

Distribution and Average Size of Units in the Six Active Housing Programs

Efficiency
1 bedroom
2 bedrooms
3+ bedrooms

Percent

Rental housing stock (2.0) | Vouchers (2.2) | Tax credits (1.9) | HOPE VI (2.4) | Section 202 (1.0) | Section 811 (1.0) | Section 515 (1.6)
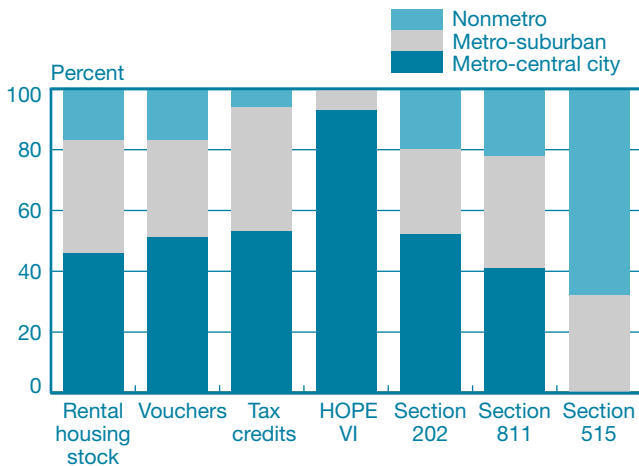
Note: The average number of bedrooms appears in parentheses.

units are in central cities. By contrast, nearly 70 percent of Section 515 units are in rural nonmetropolitan areas, with the balance in the rural parts of metropolitan areas.

The neighborhoods where assisted housing is located also vary. The census tracts where HOPE VI units are found are poorer than the census tracts where other program units are located. HOPE VI census tracts also have higher percentages of minority households and lower percentages of homeowners. In general, the demographic characteristics of the census tracts
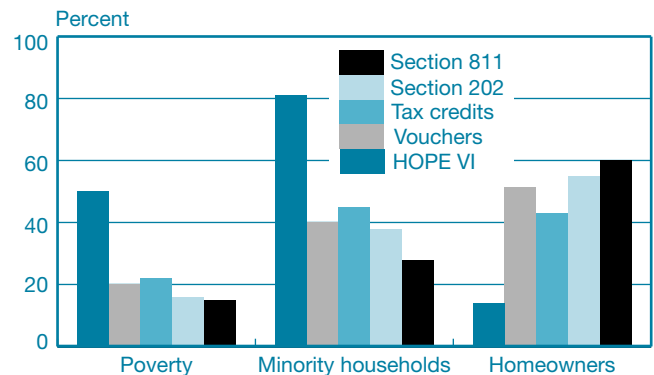
CHART 3

General Location of Units in the Six Active Housing Programs

Nonmetro
Metro-suburban
Metro-central city

Percent

Rental housing stock | Vouchers | Tax credits | HOPE VI | Section 202 | Section 811 | Section 515

where other program properties are located are fairly similar, as shown in Chart 4.

In addition to providing a range of property types with units of different sizes in different locations, the six active programs vary in the extent to which they make supportive services and amenities available to assisted households. In general, supportive services are not an integral part of the voucher, tax credit, and Section 515 programs. However, when individual tax credit and Section 515 properties serve households with special needs, such as the elderly or persons with disabilities, they may provide services and amenities similar to those provided in Section 202 and Section 811 properties. Section 202 properties typically include congregate dining facilities, and both Section 202 and Section 811 properties include common rooms and may make transportation, housekeeping, and health care services available. The HOPE VI program emphasizes services, allowing up to 15 percent of the HOPE VI grant to be used for community and supportive services. For example, HOPE VI developments often include employment or job training centers as well as facilities for children. Production program units are more likely to have modern amenities, whereas voucher units typically have amenities characteristic of older rental properties. In addition, although it is expected that new units under the production programs start out in better condition than the older units under the voucher program, over time, the condition of these new units, as well as of existing units, depends on the level of maintenance and reinvestment.

CHART 4

Demographic Characteristics of Neighborhoods Where Assisted Housing Is Located

Percent

Section 811
Section 202
Tax credits
Vouchers
HOPE VI

Poverty | Minority households | Homeowners

Notes: The data for poverty indicate the percentage of neighborhood households with incomes below a certain threshold adjusted for family size as determined by the U.S. Bureau of the Census. The chart excludes data for Section 515 units because the addresses of Section 515 properties were not readily available.

4. Methodology for Comparing Program Costs

For this analysis, we constructed the total costs of a unit under each program, regardless of who bears the costs. In the private rental housing market, rents cover the total costs of providing a housing unit. The total costs include operating expenses (for example, administrative expenses, utilities, routine maintenance, and property taxes), debt service, deposits to a replacement reserve for major capital improvements over time, and a market return to equity investors. We defined the total costs of vouchers as the present discounted value (PDV) of the total rent paid by both the federal government and the assisted household plus the fee paid by HUD to the local housing authority to administer the program:

total voucher costs = PDV (rents + administrative fee).

For production programs, costs are more complicated because an asset with a long useful life is produced. In the private housing market, the value of the housing equals the PDV of the net rental income stream over the useful life:[13]

value = PDV (net rental income).

The rental income stream must cover the total costs:[14]

PDV (rental income) = total costs = total development costs + PDV (operating costs).

In the private market, if the PDV of market rents does not cover total costs, the housing development will not be built. Federal production programs generally provide housing at below-market rents or provide housing in locations where market rents would be insufficient to cover costs. In either case, the difference between total rents paid and total costs is covered by development subsidies. Therefore, for production programs:

total production program costs = PDV (rental income) + PDV (development subsidies).

For both vouchers and the production programs, our estimates of total costs recognize that rents are paid over many years and development subsidies are paid either up front or over many years. Vouchers are short-term commitments to provide housing assistance, while production programs provide units with certain restrictions to ensure that the units will remain affordable in the future, often more than thirty years. To account for differences in the timing of investments under the various programs, we estimated their thirty-year life-cycle costs. Longer time frames for the life cycle tend to favor production programs in terms of costs because of the impact of rent inflation over time.[15]

Vouchers and the production programs are subject to and insulated from different cost risks over time. Whereas vouchers are vulnerable to inflation in market rents, the production programs are less vulnerable because of federal regulations or limits on rents associated with development subsidies. However, the production programs can pose substantial cost risks if capital reserves are underfunded, as they often have been in the past. Vouchers pose no such risk because the federal government has no commitment to specific units.

Both the voucher and the production programs are subject to cost-containment guidelines. For the voucher program, HUD sets payment standards that are based on fair market rents for more than 2,700 market areas, taking into account unit size (by number of bedrooms). These payment standards are intended to give assisted households a selection of units and neighborhoods while containing costs. Public housing authorities can ask HUD to increase the payment standard if they believe increases are warranted. For the production programs, the cost-containment guidelines are designed to provide properties of modest design. These guidelines may establish cost limits that vary by location, type of building (for example, elevator or garden-style), and unit size, or they may simply require assurances that the costs of proposed properties are reasonable.

Table 1 presents the average total development costs for the production programs by general location and for seven metropolitan areas. Information on housing vouchers does not appear in the table because the program relies on existing housing. Nationally and in most metropolitan areas, the total development costs are considerably higher for HOPE VI than for the other production programs. It is important to note that HOPE VI is a small program with few projects per metropolitan area; the HOPE VI figures for most of our seven metropolitan areas incorporate data for only two developments. As a result, the average for a particular metropolitan area can be skewed by the presence of large projects with high or low development costs. In the New York City metropolitan area, for example, one very large HOPE VI development involved rehabilitation, which can cost much less than new construction, and, consequently, the average HOPE VI development cost for New York City is unusually low. At the same time, three HOPE VI properties in the Baltimore metropolitan area involving new construction had development costs very similar to each other.

For some programs, the entire development cost is subsidized with up-front grants, while for others, it is subsidized over time with tax credits or below-market interest-rate loans. Table 2 shows our estimates of the present

TABLE 1

Average Total Development Costs per Unit by General Location and for Seven Metropolitan Areas
In 1999 Dollars

Location	Tax Credits	HOPE VI[a] Housing-Related	HOPE VI[a] All Costs	Section 202	Section 811	Section 515
Nation	73,590	117,920	143,450	73,510	70,430	58,280
Metro	75,690	117,920	143,450	75,430	73,020	[b]
Nonmetro	62,010	[b]	[b]	60,270	63,120	58,280
Seven metro areas						
Baltimore	77,360	166,380	221,210	80,250	69,420	[b]
Boston	116,710	197,000	261,610	94,160	96,000	[b]
Chicago	79,340	102,470	108,950	75,020	71,370	[b]
Dallas-Fort Worth	60,100	78,920	96,460	52,390	66,710	[b]
Denver	72,650	102,170	126,440	72,160	74,640	
Los Angeles	104,750	113,060	154,310	94,360	97,520	[b]
New York City	111,580	76,710	107,010	101,730	116,180	[b]

[a] The total development costs for HOPE VI reflect mostly planned figures. Housing-related costs *exclude* the costs of remediation, demolition, the construction of housing and community facilities, relocation, and community-based planning and participation, most of which are not applicable to the other housing programs. These other expenses are included in the "All Costs" column.

[b] The program generally does not build units in these areas.

TABLE 2

Average Present Discounted Value of Development Subsidies per Unit by General Location and for Seven Metropolitan Areas
In 1999 Dollars

Location	Tax Credits	HOPE VI[a] Housing-Related	HOPE VI[a] All Costs	Section 202[a]	Section 811[a]	Section 515
Nation	50,350	117,920	143,450	73,510	70,430	41,730
Metro	52,790	117,920	143,450	75,430	73,020	[b]
Nonmetro	44,690	[b]	[b]	60,270	63,120	41,730
Seven metro areas						
Baltimore	51,780	166,380	221,210	80,250	69,420	[b]
Boston	50,630	197,000	261,610	94,160	96,000	[b]
Chicago	62,190	102,470	108,950	75,020	71,370	[b]
Dallas-Fort Worth	31,470	78,920	96,460	52,390	66,710	[b]
Denver	29,080	102,170	126,440	72,160	74,640	[b]
Los Angeles	81,380	113,060	154,310	94,360	97,520	[b]
New York City	111,780	76,710	107,010	101,730	116,180	[b]

[a] For the HOPE VI, Section 202, and Section 811 programs, total costs are paid entirely up front and no debt service payments are made for these units. As a result, the total development subsidies equal the total development costs.

[b] The program generally does not build units in these areas.

discounted value of the average development subsidies per unit in 1999 for the five production programs, both for the nation and for seven metropolitan areas. For HOPE VI, Section 202, and Section 811, the federal government pays the total development costs up front with grants; as a result, the development subsidies are equal to the total development costs. Section 515 provides below-market fixed-rate loans of 1 percent with fifty-year terms. To estimate the value of the subsidy provided through a below-market interest-rate loan, we took the present discounted value of the difference in the interest payments over thirty years between the rate on the constant-maturity treasuries—which is a very conservative indicator of market interest rates—and the actual loan. We assumed the project would be sold in year thirty. For tax credits, the federal government provides investors with a flow of tax credits over ten years. In addition, state and local governments or private entities may provide grants or below-market loans. For tax credits, the present discounted value of the development subsidies is the sum of the present discounted value of the flow of the tax credits, any grants provided, and the present discounted value of the flow of the interest subsidies on any below-market loans.[16]

As shown in Table 2, the development subsidies for the tax credit and Section 515 programs are generally lower than for the HOPE VI, Section 202, and Section 811 programs, whose total development costs are covered by federal grants. However, the development subsidies for tax credit properties in the New York City metropolitan area are quite high. In New York City, the city government provides all first mortgages on tax credit projects at steep discounts, substantially increasing the level of development subsidies. In the Los Angeles metropolitan area, state and local governments have given priority to tax credit proposals for single-room-occupancy developments and have provided substantial subsidies.

The development subsidies provided with production programs have resulted in below-market rents. Although deeper development subsidies can cover the cost of building in certain markets or of additional amenities, deeper development subsidies can also lower rents, making units affordable for lower income tenants. For the HOPE VI, Section 202, and Section 811 programs, rents need only cover operating costs and replacement reserves, since up-front federal grants pay the total development costs. For the tax credit and Section 515 programs, under which rents must cover debt service payments for the portion of the development costs that are financed, rents are somewhat higher than for the other production programs but are still generally below market rents. As shown in Table 3, voucher rents, which include both the tenant and federal contributions, are higher than rents for the five housing production programs.

TABLE 3

Average Monthly Rents by General Location and for Seven Metropolitan Areas
In 1999 Dollars

Location	Housing Vouchers[a]	Production Program				
		Tax Credits	HOPE VI[b]	Section 202	Section 811	Section 515
Nation	610	540	430	340	320	380
Metro	650	530	430	350	340	[d]
Nonmetro	440	450	[c]	300	280	380
Seven metro areas						
Baltimore	630	510	[c]	380	250	[d]
Boston	880	820	[c]	420	470	[d]
Chicago	640	500	[c]	470	450	[d]
Dallas-Fort Worth	650	670	[c]	310	310	[d]
Denver	710	700	[c]	290	350	[d]
Los Angeles	730	440	[c]	380	440	[d]
New York City	750	430	[c]	490	550	[d]

[a] For vouchers, the average rent does not include a monthly administrative fee, which, at the national level, averages about $48 per unit and, in the seven metropolitan areas, ranges from $42 per unit in Denver to $61 per unit in Los Angeles.

[b] Our estimate of HOPE VI rent is based on the national average operating subsidy plus tenant contribution.

[c] For individual metropolitan areas, reliable cost data were not available.

[d] Because Section 515 units are located in rural areas, rent data are presented for nonmetropolitan areas only.

Unlike the production program rents, which have been reduced by development subsidies, the voucher rents are consistent with market rents. The size of the voucher subsidy is determined generally by the difference between the unit's rent—generally not to exceed the fair market rent (FMR)—and 30 percent of tenant income. FMRs are set by HUD for local markets countrywide to reflect the rent for modest housing. They represent the 40th percentile of the distribution of rents paid by recent movers for units of a given size. For example, in 1999, the FMR for a two-bedroom unit in Chicago was $735; rents for units occupied by voucher recipients averaged about $605 for a two-bedroom unit in Chicago, 18 percent below the FMR.

5. Total Costs of Production Programs and Vouchers

In both metropolitan and nonmetropolitan areas, the average total per-unit cost of each of the production programs exceeds the cost of providing a voucher for a unit with the same number of bedrooms. To control the impact of unit size on costs, we compared the costs of units with the same number of bedrooms across programs. We focused on one- and two-bedroom units because they are provided under most of the programs and generally account for more than 60 percent of each program's units. (We could not include HOPE VI, the program with the largest average unit size, in this analysis because data were not available to present total cost by unit size.) As shown in Chart 5, in metropolitan areas, the total

Chart 5

Estimated Total Thirty-Year Costs of One-Bedroom Units by General Location
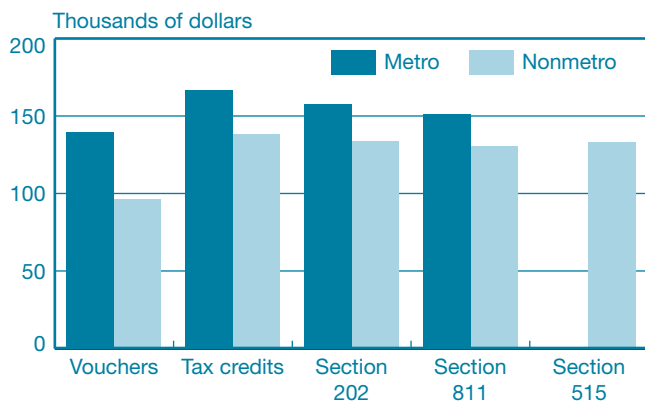
Note: Because Section 515 is a rural program, we present our cost estimate of Section 515 for nonmetropolitan areas only.

thirty-year life-cycle costs range from $139,520 for vouchers to $166,610 for tax credits. Compared with vouchers, the production programs cost from 8 percent more for Section 811 units to 19 percent more for tax credit units. In nonmetropolitan areas, the life-cycle costs range from $95,890 for vouchers to $138,060 for tax credits, and, compared with vouchers, the production programs cost from 35 percent more for Section 811 units to 44 percent more for tax credit units.[17]

The drop in total cost from metropolitan to nonmetropolitan areas for one-bedroom units is greatest for the voucher program. Vouchers in nonmetropolitan areas cost 31 percent less than vouchers in metropolitan areas. For the production programs, nonmetropolitan units cost from 14 percent less than metropolitan units under Section 811 to 17 percent less under tax credits.

As shown in Chart 6, examining the costs of two-bedroom units yields similar results. In metropolitan areas, the total thirty-year life-cycle costs range from $161,650 for the voucher program to $184,130 for the tax credit program. Compared with vouchers, the production programs cost from 6 percent more for Section 811 units to 14 percent more for tax credit units. In nonmetropolitan areas, the production programs cost from 20 percent more for Section 515 units to 38 percent more for tax credit units. Again, the drop in total costs from metropolitan to nonmetropolitan areas for two-bedroom units is greatest for the voucher program.

For units with more than two bedrooms, cost data were available for two programs—tax credits and vouchers. We estimate that the total cost of three-bedroom units in metropolitan areas is about $203,510 for tax credits and

Chart 6

### Estimated Total Thirty-Year Costs of Two-Bedroom Units by General Location
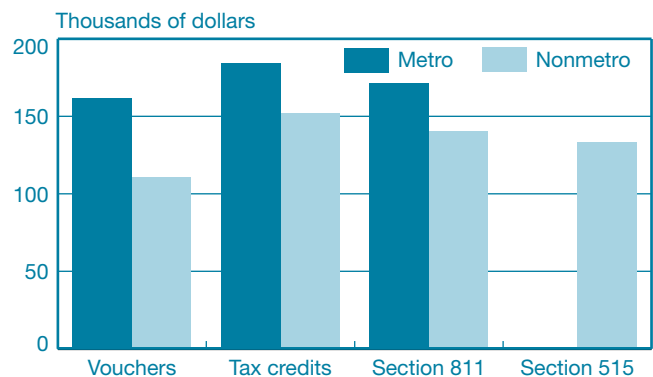
Notes: Section 202 is not included in this analysis because it produces mainly efficiencies and one-bedroom units. Because Section 515 is a rural program, we present our cost estimate of Section 515 for nonmetropolitan areas only.

$196,470 for vouchers—a difference of about 4 percent. In nonmetropolitan areas, the total cost is about $179,400 for tax credits and $131,580 for vouchers—a difference of about 36 percent.

In the seven metropolitan areas we reviewed, one- and two-bedroom production program units are also more expensive than one- and two-bedroom voucher units, respectively. However, as Chart 7 shows, there is considerable variation across metropolitan areas. In Boston, for example, the differences in costs between vouchers and production programs are small; the costs of one-bedroom tax credit units, on average, are 7 percent greater than the costs for one-bedroom voucher units. In contrast, in Denver, tax credit units are nearly 40 percent more costly than voucher units. Across production programs, total costs are quite similar in Baltimore and Boston. In Denver and Los Angeles, however, the variation in production program costs is considerably greater.

We could not include the HOPE VI program in Charts 5-7 because data were not available to present total costs by unit size. However, the total cost of an average HOPE VI unit, with 2.4 bedrooms, is $223,190, which includes only housing-related construction costs. We estimate that the average voucher cost of a 2.4-bedroom voucher unit is $175,577.[18] According to these estimates, the HOPE VI program is about 27 percent more expensive than the voucher program. If the cost of remediation, demolition, construction of housing and community facilities, relocation, and community-based planning and participation—in addition to housing-related construction costs—were included, the total thirty-year cost of the program would be $248,720, or 42 percent more expensive than vouchers.

Estimated Total Thirty-Year Costs of One-Bedroom Units for Seven Metropolitan Areas

Thousands of dollars
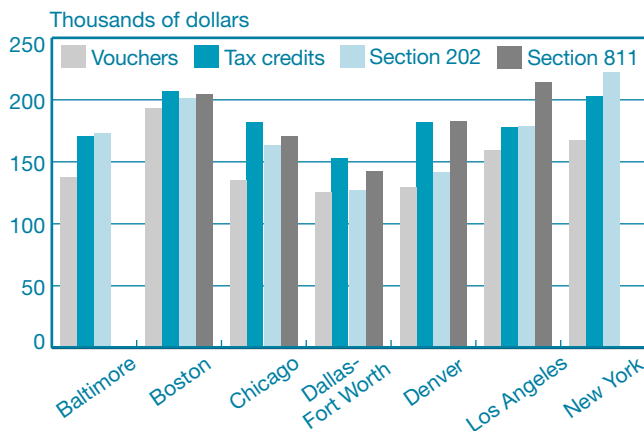
With the exception of HOPE VI, the average total costs are very similar across production programs. For one-bedroom units in metropolitan areas, the average thirty-year cost of the most expensive program (tax credits) is 10 percent greater than that of the least expensive one (Section 811). In nonmetropolitan areas, the difference in the average total cost for one-bedroom units between the most expensive program (tax credits) and the least expensive one (Section 811) is even smaller—only 6 percent. The average total costs of two-bedroom units are also similar across production programs in metropolitan and nonmetropolitan areas.

The total cost of HOPE VI, however, varied greatly from the other production programs. When we estimated only housing-related construction costs, the average total cost for all units under the HOPE VI program was about 35 percent greater than a two-bedroom tax credit unit and 10 percent greater than a three-bedroom tax credit unit. If all other construction costs were included, it would increase the spread in total cost between HOPE VI and tax credits by roughly 15 percentage points.

Total per-unit costs of the voucher and production programs vary across individual properties, even within the same metropolitan area. This is primarily because of variations in the rents charged for the voucher program and the development costs for the production programs.[19] For example, in the Boston metropolitan area, the market rents for two-bedroom voucher units range from about $540 to $1,300 per month, and the average total development costs of two-bedroom tax credit units range from about $44,800 to $293,340 per unit.

Neighborhood characteristics may influence market rents and total development costs (in particular, the value of land). Under the voucher program, variations in market rents within a metropolitan area for similar-sized units may be influenced by neighborhood differences such as quality of schools, crime rates, pollution, and proximity to jobs and shopping centers.[20] Market rents may also be influenced by the quality of the property and the amenities and services offered. Under the production programs, variations in total development costs within a metropolitan area reflect not only differences in neighborhoods but also in property and unit amenities, project sponsors, program requirements, and a host of other factors.[21]

For HOPE VI and tax credits, we find high-cost properties located in very low-income neighborhoods where market rents would be insufficient to generate new construction. Often, production programs, by design, build housing in neighborhoods where the market would not. There may be additional costs of building in these neighborhoods. Additional costs may also result from compliance with federal wage and hiring regulations. According to HUD, all HOPE VI

developments must follow these federal regulations, including the Davis-Bacon Act and Section 3 requirements to hire small and minority contractors. In addition, HOPE VI must follow resident participation requirements. For example, in an interview with the authors, HOPE VI program officials report that Davis-Bacon alone, which requires construction workers to receive locally prevailing wages and fringe benefits, can increase construction costs by as much as 25 percent, depending on the local construction labor market. Finally, higher costs can result from participation of less experienced developers, such as housing authorities or neighborhood groups that may be less efficient than larger developers who have better construction management capacity.[22] For example, HOPE VI officials recognized that, unlike private-sector developers, many housing authorities hire program managers and construction managers to oversee HOPE VI developments, which can increase costs. Nonetheless, it is doubtful that these factors alone account for the high costs of the most expensive projects in our database, some of which exceed $200,000 per unit.

Actual total costs for the production programs are somewhat higher than our estimates because our estimates do not reflect the value of abated property taxes or shortfalls in capital reserves. Under each production program, some properties receive tax abatements, and, historically, sufficient reserves for capital replacements and improvements have not been set aside.[23] Although data were not available to estimate the additional costs of property tax abatements and capital reserve shortfalls for individual properties, we estimated, on the basis of industry averages, that under a worst-case scenario (for example, full tax abatements and no payments to reserves), the thirty-year total costs would be understated by nearly 15 percent.[24] This scenario is most applicable to the HOPE VI program, in which full property taxes are not paid and capital reserves are not fully funded. Under the other four production programs, many properties fund capital reserves and pay full property taxes. For these programs, our cost estimates are likely to be understated by less than 15 percent.

Overall, our cost comparisons show the voucher program to be less expensive than production programs, a result consistent with the previous literature. However, in general, our results show a smaller gap between voucher costs and production costs than in many of the previous studies. This difference may be due, at least in part, to differences in methodology. Many of the earlier studies compared costs in the first year rather than over the life cycle. For example, Mayo (1980) estimated that the costs of new construction programs exceeded existing housing by 82 percent, a figure often cited. This estimate is based on first-year costs. However, that study also provides forty-year life-cycle estimates that show production costs ranging from

29 percent to 46 percent more than existing housing.[25] In addition, the production programs examined in previous studies are very different from those included in this analysis. Today's production programs may be more efficient than previous production programs.

6. The Federal Government and Tenants Pay the Largest Shares of Total Costs

The federal government pays most of the total costs for all of the programs with the exception of tax credits, for which tenants pay the largest share of total costs. As Chart 8 shows, the federal share, as a percentage of total thirty-year costs, is about 65 percent for vouchers; 60 percent for Section 515; and 70 percent for HOPE VI, Section 202, and Section 811. The federal share is the smallest for tax credits—about 40 percent.

As Chart 8 also shows, tenants contribute between 21 percent (HOPE VI) and 54 percent (tax credits) of the total housing costs over a period of thirty years. The tenant share for each of the programs is dependent on the average income of the households served and the average portion of this income paid for rent. The more the assisted households pay, the less the federal government needs to contribute.

CHART 8

Shares of Total Thirty-Year Costs of One-Bedroom Units Paid by the Federal Government, Tenants, and Others
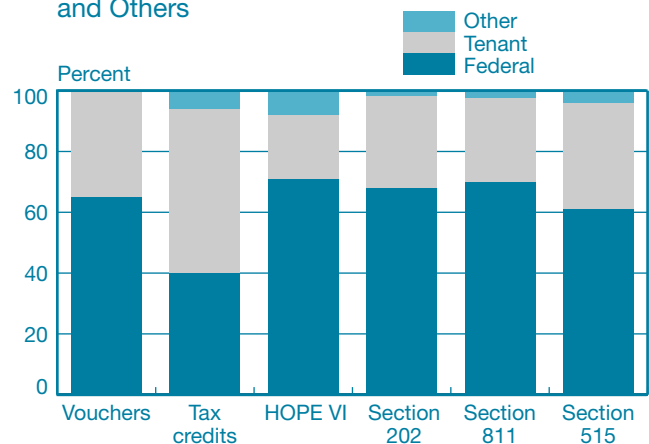
Notes: The cost shares for HOPE VI are for all units, not one-bedroom units, because the program does not break out costs by the number of bedrooms. The chart presents data on average cost shares for the nation, which are similar to those for metropolitan and nonmetropolitan areas. "Other" includes state, local, and private funding sources.

As Chart 9 indicates, compared with the other programs, tax credit households have the highest average income, about $14,150 (in 1999 dollars),[26] and pay the largest portion of their income for rent—about 35 percent overall—compared with about 30 percent for most of the households assisted through the other programs.[27] As a result, the tenant share of total costs is the largest for the tax credit program. The other active housing programs target households with lower average incomes, and, therefore, tenants in these programs pay a smaller share of the average total per-unit costs. Most of these households receive rental assistance and generally pay about 30 percent of their income for rent, leaving the federal government and, to a far lesser extent other subsidy providers, to cover the remaining costs. Chart 9 displays the average incomes of the households assisted through the six active programs.

If we assume that voucher households have incomes equal to those in the tax credit program[28] and if both groups of tenants pay the same percentage of their income for rent, it would cost the federal government about 30 percent more for the tax credit program than for housing vouchers for a one-bedroom unit in metropolitan areas (Chart 10). Similarly, if the average incomes of the other production programs and voucher households are equal and if both groups of tenants pay the same percentage of their income for rent, it would cost the federal government, in metropolitan areas, from 7 percent more for Section 811 to 16 percent more for Section 202 for one-bedroom units over thirty years. For two-bedroom units, it costs the federal government, in metropolitan areas,

2 percent more for Section 811 and 15 percent more for tax credits. The federal cost of an average-size HOPE VI unit (2.4 bedrooms) is 24 percent more than vouchers, and if all costs including housing-related expenses were considered, the federal cost of HOPE VI would be 43 percent more.[29] We also estimated the federal cost of three-bedroom units, where data were available, and found that tax credit units in metropolitan areas cost the federal government 3 percent less than vouchers.

In nonmetropolitan areas, the differences in the comparative federal cost of vouchers and production programs are greater. For example, the federal cost of one-bedroom tax credit units is about 180 percent more than the federal cost of vouchers in nonmetropolitan areas, compared with about 30 percent more in metropolitan areas (Chart 11). The thirty-year federal costs for the other production programs are from 57 percent (Section 811) to 67 percent (Section 202) greater than for vouchers in nonmetropolitan areas. For two-bedroom units, it costs the federal government, in nonmetropolitan areas, 103 percent more for tax credits. For the other programs, the federal costs in nonmetropolitan areas are 28 percent greater for Section 811 and 39 percent greater for Section 515. Finally, the federal cost of three-bedroom tax credit units in nonmetropolitan areas is 102 percent more than vouchers.

Contributions from state, local, and private sources, as shown in Chart 8, cover a small share of the total costs of the production programs.[30] At the national level, these contri-

Average Annual Incomes of Households Served under the Six Active Programs

Thousands of dollars
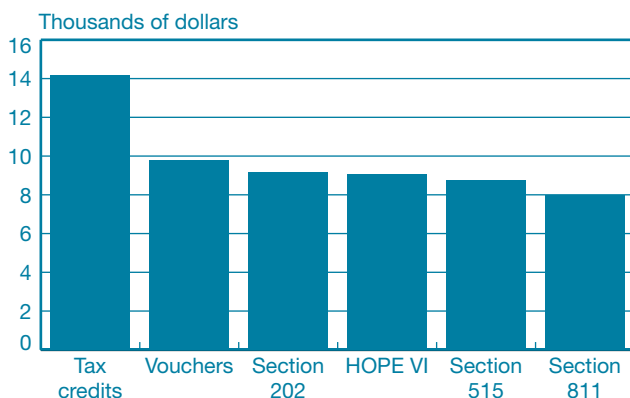
Sources: U.S. Department of Housing and Urban Development, Multifamily Tenant Characteristics System and *A Picture of Subsidized Households*; Rural Housing Service agency officials; GAO/GGD/RCED-97-55.

Chart 10

Comparison of Federal Cost of One-Bedroom Units in Metro Areas
Production Programs versus Vouchers Adjusted for Household Income and Rent Burden

Thousands of dollars
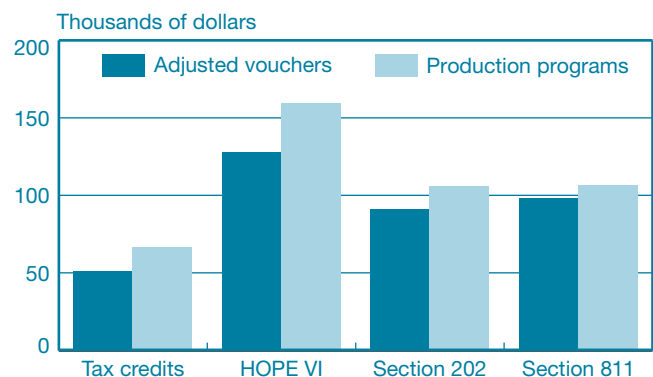
Notes: Because Section 515 properties are located in rural areas, they are not included in this chart. Due to data limitations, HOPE VI cost data reflect the average for all units, not one-bedroom units. It is not appropriate to compare across production programs because the assumed tenant rental contribution for housing vouchers is different for each production program.

CHART 11

Comparison of Federal Cost of One-Bedroom Units in Nonmetro Areas
Production Programs versus Vouchers Adjusted for Household Income and Rent Burden

Thousands of dollars
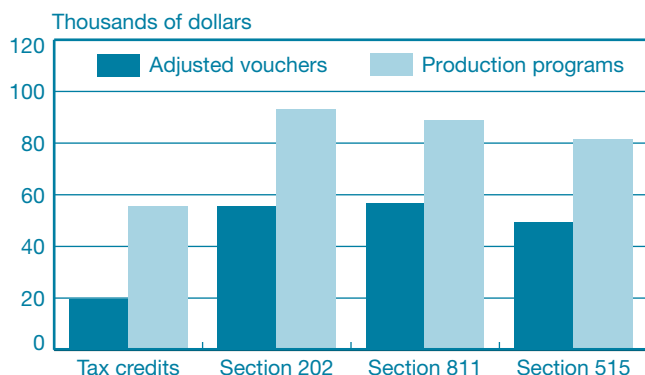
Note: Because HOPE VI properties are located exclusively in metro areas, they are not included in this chart. It is not appropriate to compare across production programs because the assumed tenant rental contribution for housing vouchers is different for each production program.

butions do not exceed, on average, 7 percent over thirty years. This percentage, however, would be somewhat higher if data were available to account for the impact of property tax abatements, as previously discussed in this paper.

Even though the share of total costs paid by these sources is, on average, small, we identified state and local subsidies that, in certain locations, had a significant impact on rents or federal costs. For example, a comparison of the subsidies provided to properties in the New York City and Boston metropolitan areas demonstrates the impact of a significant nonfederal subsidy. As shown in Table 4, the average contribution from state, local, and private sources for a two-bedroom tax credit unit was more than five times greater in New York City than in Boston.

TABLE 4

Impact of Contributions from State, Local, and Private Sources on Thirty-Year Average Costs of Two-Bedroom Units for Tax Credit Properties
In Dollars

Location	Federal	State, Local, and Private	Tenant	Total
Boston	100,060	10,180	153,740	263,980
New York City	92,450	58,520	81,730	232,700

At the same time, both the total and federal per-unit costs were about the same for both cities. Because of the difference in subsidies from state, local, and private sources, the average monthly rent paid by a tax credit household was about $850 in Boston and about $450 in New York City—a difference of nearly 90 percent. The primary reason for the difference in tax credit rents is that New York City provides virtually all of the mortgages for tax credit properties, at rates averaging about 1 percent—a very significant subsidy. Conversely, in the Boston metropolitan area, the state provides about two-thirds of the mortgages at interest rates that are very close to market rates. In addition, rent reductions resulting from state and local subsidies present opportunities to lower the federal cost of providing rental assistance to these units.

Our data also allow us to compare the total government (federal, state, and local) costs of production programs and vouchers, while making the same assumptions concerning household income and rent burdens as in the federal cost comparisons.[31] Given the emphasis placed on "leveraging" different sources of funding by many of the production programs (including, most recently, Section 202), analyzing total government costs offers some perspective on public expenditures on affordable housing. Compared with vouchers, total government costs for a one-bedroom unit under the production programs in metropolitan areas are higher by 12 percent for Section 811, 20 percent for Section 202, and 53 percent for tax credits. The total government costs for an average-size unit under HOPE VI are 37 percent greater than the cost for vouchers. In nonmetropolitan areas, the total government costs for a one-bedroom unit under the production programs, compared with vouchers, are higher by 60 percent for Section 811, 67 percent for Section 202, 75 percent for Section 515, and 214 percent for tax credits. The differentials in total government costs are similar for two-bedroom units.

7. Housing Policy Issues

If costs were the only consideration, our estimates would suggest that the production programs should be replaced with vouchers. However, federal housing programs deliver additional benefits that must be taken into account when addressing costs. Voucher recipients can choose housing in neighborhoods that offer better educational and employment opportunities, or they can choose to remain in place while paying less for rent. In many markets, production programs are

the only sources of new affordable rental units, and restrictions on use will keep these units affordable for decades to come, limiting the impact of market forces. These units can be crucial, especially when housing markets are tight or landlords are unwilling to rent to voucher recipients. Certain housing authorities have found that the fair market rents in some metropolitan areas are too low, making it difficult for voucher recipients to find housing. As a result, vouchers are being returned to housing authorities. A 2001 HUD study found that, based on a sample of forty-eight metropolitan areas, about one-third of the households who received vouchers in 2000 were not able to lease a unit—a substantial increase from HUD's 1993 estimate of 19 percent.[32]

In addition, there are substantial differences in the housing and services provided under each of the production programs that must also be considered. For example, the Section 202 and Section 811 programs make available services that are not readily found in affordable housing in the private rental market. These services can be particularly important for frail, elderly residents or persons with disabilities for whom housing vouchers are probably not a reasonable alternative. As the nation's population ages, production programs for the elderly may become an even more important part of national housing policy. Finally, in many urban areas, the production programs have formed an integral part of an overall community development strategy. As a matter of public policy, the benefits of mobility, increasing the supply of affordable units,[33] providing additional services for special-needs populations, or revitalizing distressed communities must be weighed against the costs of these efforts.

As shown in this paper, the federal government and tenants cover the majority of costs for both the voucher and production programs. The share of costs covered by the federal government increases as tenant income declines. The bottom line is that housing very low-income households is expensive for the federal government under both the voucher and production programs because those tenants can shoulder only a very small portion of the costs. To shift more of the cost burden to tenants without creating an affordability problem, the programs would have to serve higher income households.

In some instances, increasing contributions from state and local sources may be an option for limiting federal expenditures for some of the production programs, as our discussion of New York City's mortgage interest subsidy indicates. Substantial subsidies from these sources could eliminate or reduce the need for federal rental assistance, freeing federal funds to assist other households. However, state and local governments vary in their ability and willingness to support affordable housing. Federal incentives, such as additional tax credit or grant awards for major financial commitments, might promote greater nonfederal participation.

Further research on the adherence of projects to cost-containment guidelines could identify opportunities for controlling development costs. Our data on the production programs show wide variation in the development costs of projects under the same program in the same metropolitan area. Although the higher costs of some units reflect the cost differential between new construction and rehabilitation or the premiums paid for special features, the reasons for the higher costs of other units are less obvious. Understanding the considerable variation in per-unit costs requires more research on the determinants of development costs and the effectiveness of current cost-containment guidelines. To the extent that a property's development costs can be contained and a production program's objectives still achieved, federal dollars can go further.

Further research on the adequacy of the production programs' capital replacement reserves would put the federal government in a better position to manage potential long-term cost risks. As we previously noted, the production programs could pose a cost risk to the federal government if capital reserves are underfunded. The experience with modernization programs for public housing and other production programs suggests that this cost risk can be large. It is still too early to tell whether tax credit properties will suffer from capital shortfalls as the properties age. However, even if there are shortfalls, the structure of the tax credit program may limit the risk to the federal government. The government does not own the units or hold the mortgages on most of them. As a result, it is not clear what the potential role of the federal government would be if these units were to need an infusion of capital. It is possible that, as the ownership of tax credit properties changes over time, new owners will apply for tax credits to rehabilitate the properties. However, their applications will have to be assessed by the relevant state agencies, which will have no statutory obligation to provide the credits.

Our analysis for this paper, which required detailed, consistent data on housing characteristics, services, and costs for the six active programs, relied on information collected and centralized by HUD and the Rural Housing Service but was hampered by gaps in the data for some programs. For example, HUD's centralized data on the Section 202 and Section 811 programs do not include information on the sources of funds other than the capital advance. For the HOPE VI program, data were available on total costs and on HUD's portion of the total costs, but information on tax credits and state, local, and private funds was limited.[34] To varying degrees, HUD and RHS have data on tenant characteristics and on property revenues

and expenses. Cooperation and coordination across federal agencies to establish standards for collecting data on housing programs would facilitate the development of information to further our understanding of federal housing programs.

For the tax credit program, no federal agency is responsible for collecting and centralizing data from the state and local housing finance agencies that administer the program. Although the Internal Revenue Service oversees compliance with the federal regulations for using tax credits, it does not oversee the program's impact on national housing policy, including its relationship to other federal housing programs. Recognizing the importance of the tax credit program, HUD established a limited national database on tax credit properties. This database has information, which the housing finance agencies have voluntarily reported to HUD, on the properties placed in service through 1998, including their location, number of units, number of bedrooms per unit, type of construction (new or rehabilitated), and type of sponsor (nonprofit or for-profit). However, HUD's database does not include information on tenant characteristics, project costs, and property operating revenues and expenses. These data, though generally available from the housing finance agencies, have not been centralized, making analysis and evaluation of the program difficult. As a result, for this paper, we relied on a database constructed by a private research firm.

Given the size of the tax credit program—soon to exceed $4 billion per year—it is important to monitor and evaluate the program's impact on national housing policy. However, no federal agency has been designated to perform this role, and no requirements have been established for state finance agencies to report data on project costs and households served. Accordingly, there is a need for a national, centralized database on the tax credit program to serve as the basis for evaluating the program's success in serving various populations, assessing how federal funds are being used, determining to what extent other sources of funding are being leveraged, gauging projects' compliance with cost-containment guidelines, and monitoring projects' ongoing and long-term financial viability. To develop this database, a federal agency would have to be explicitly designated as responsible for collecting the information and establishing reporting requirements for the housing finance agencies that manage the program. The costs and benefits of designating such an agency and requiring more detailed reporting by the housing finance agencies would have to be weighed before any action is taken.

Housing Vouchers

We obtained from the U.S. Department of Housing and Urban Development (HUD) data on gross rents, housing assistance payments, tenant contributions, and incomes for the housing voucher and certificate programs for about 1.4 million households participating in the programs in 2000 from the Multifamily Tenant Characteristics System. We also collected information from HUD and individual housing authorities on the average administrative fee paid to housing authorities.

Low-Income Housing Tax Credits

The tax credit program is decentralized by nature, which means there is no national database to evaluate the program's characteristics, including costs. Consequently, we relied extensively on rent and development cost data collected and analyzed by City Research, a private research firm in Boston. City Research assembled and analyzed detailed data on more than 2,500 tax credit properties, with more than 150,000 units, that were acquired by four national syndicators.[35] These units were estimated to represent about 25 percent to 27 percent of those generated under the program from 1987 through 1996.[36] City Research's data were supplemented with data we collected on tax credit properties placed in service in 1999 within the seven metropolitan areas.

HOPE VI

We obtained from HUD data on the total development costs for 130 planned and completed HOPE VI developments, which contained about 63,560 planned units as of 2000. Approximately 10 percent of these properties were either completed or substantially completed. HOPE VI properties use multiple sources of funding, but the data were not sufficiently detailed to break out funding by individual sources other than HUD. For properties in the seven metropolitan areas, we contacted public housing authorities and were able to obtain complete data on their sources of funds. For our national cost estimate, we based the distribution of costs paid by state, local, and private entities on the actual cost shares in our seven metropolitan areas. The

properties in the seven metropolitan areas constituted about 20 percent of the units in our HOPE VI inventory. The HOPE VI program also funds various types of activities (for example, property demolition, tenant relocation, and community services) in addition to housing-related construction. We estimated both housing-related and all costs for the HOPE VI program.

In general, HUD does not have public housing data on revenues and expenses on a property-by-property basis. This information is also not available for the HOPE VI program. Consequently, to estimate a national rent for the HOPE VI program, we obtained from HUD the average tenant rental contribution and operating subsidy paid by HUD for all public housing units. Together, these payments constitute an approximation of a traditional rental payment.

Section 202 and Section 811

HUD identified about 135 properties, comprising about 6,040 units that were placed in service nationwide in fiscal year 1998 under the Section 202 program, and about 115 properties, comprising about 1,420 units, under the Section 811 program. From the list provided, we contacted thirty-nine HUD field offices to get detailed data on the properties' total development costs and the sources of funds used to pay these costs. We also obtained data from the field offices on properties' rents. Most of the seven metropolitan areas did not have enough properties placed in service in 1998 for us to compute meaningful averages for development costs and rents. Consequently, we asked the field offices to identify the properties placed in service from 1996 to 1999 to ensure that we would have at least four properties under each program to compute such averages better.

Section 515

Rural Housing Service state offices identified 53 Section 515 properties, containing about 1,250 units, which were placed in service in fiscal year 1998. The state offices provided data on total development costs, including the sources and terms of funds used to finance these costs. The state offices also provided information on 1999 rents. We excluded Section 515 from our analysis of the seven metropolitan areas because it is a rural program.

1. Federal rental assistance programs define "low-income" households as those with incomes below 80 percent of the area median income and "very low-income" households as those with incomes below 50 percent of the area median income.

2. See Keyes and DiPasquale (1990).

3. This analysis does not treat the HOME Investment Partnerships program as a separate production program because HOME grants are often used in conjunction with other housing production programs. The HOME funds provided with the production programs discussed in this paper are included in our analyses of these programs' costs.

4. HOPE VI is actually a modernization program. In this paper, we classify HOPE VI as a production program because it is currently the only major construction effort in public housing. Since 1996, public housing has not received new appropriations to fund the development of new, incremental units.

5. The Section 202 Direct Loan program, which is no longer active, developed more than 200,000 units for elderly households and, to a lesser extent, for persons with disabilities. In 1990, Congress converted Section 202 to a grant program and established the Section 811 program to provide housing for persons with disabilities.

6. We include outlays for rental assistance provided to Section 515 units under the Section 521 program. Section 521 is a Rural Housing Service (RHS) program within the U.S. Department of Agriculture that provides rental assistance to nearly all units currently developed under Section 515.

7. See Weicher (1990).

8. See Wallace et al. (1981).

9. See Olsen (2000, 2001).

10. The studies reviewed include U.S. Department of Housing and Urban Development (1974), Mayo et al. (1980), Olsen and Barton (1983), and Wallace et al. (1981).

11. This average does not include tax credit properties with Section 515 mortgages. The average size of tax credit properties with Section 515 mortgages is thirty-three units. The average size of all tax credit properties is fifty-nine units.

12. This percentage excludes tax credit units in properties with Section 515 mortgages because we included these units in our calculations for the Section 515 program. If these units were included in our calculations for tax credits, the percentage of units in non-metropolitan areas would increase to about 22 percent from about 6 percent.

13. For all of the present value calculations, we assumed a discount rate of 6 percent, which was the government cost of funds according to 1999 data published by the Office of Management and Budget.

14. We did not include the costs incurred by federal agencies (HUD, the Rural Housing Service, and the Internal Revenue Service) to administer and monitor the programs, since these costs are not identified in sufficient detail in the agencies' records. However, we believe these costs to be extremely small relative to those costs that we have accounted for. In addition, we did not include the cost to the government in forgone taxes due to depreciation because the rationale for the depreciation deduction in tax law is to permit investors to realize the real costs associated with a structure's wearing out over time. However, to the extent that a building's tax life (27.5 years) is generally shorter than its economic life, some portion of the depreciation benefit may be viewed as a subsidy.

15. For this analysis, we assumed a 3 percent rate of annual rent inflation based on a ten-year average national rate for rental housing according to the consumer price index. Although we assumed the same annual rate of rent inflation for both production programs and vouchers, production program rents tend to be lower than voucher rents because of development subsidies (see Table 3). As a result, voucher costs rise more with rent inflation than production costs. With rent inflation, increasing the number of years for the analysis decreases the difference in total costs between production programs and vouchers.

16. We estimated the interest subsidies using the same procedure we used for Section 515 below-market loans.

17. As discussed in the previous section, these estimates assume annual rent inflation of 3 percent. In U.S. General Accounting Office (2002), we estimate program costs using different assumptions about the rate of rent inflation. Assuming a higher rate of rent inflation narrows the gap in costs between vouchers and the production programs; lower rent inflation widens the gap.

18. We took the actual voucher rents for two- and three-bedroom units and interpolated a rent consistent with the average bedroom size of 2.4 for the HOPE VI program.

19. For some of the programs reviewed, variances in the costs of individual properties in certain locations can also be due to their small sample sizes.

20. A detailed discussion of the impact of housing characteristics and public amenities on housing rents is found in DiPasquale and Wheaton (1996, chapters 3, 4, and 14).

21. For a discussion of the impact of property and neighborhood characteristics on total development costs for the tax credit program, see Cummings and DiPasquale (1999) and U.S. General Accounting Office (1999). For more information, HUD's Office of Policy Development and Research (1982) measured the differences in total development costs among the inactive housing production programs.

22. Also see Cummings and DiPasquale (1999, pp. 260-1).

23. One HUD study estimates that modernization needs of public housing are nearly $20,000 per unit. If these needs were met, the ongoing annual accrual needs of public housing are estimated at almost $1,700 per unit. See Finkel et al. (2000). However, given the unique nature of public housing, its history may not shed much light on the future of other current programs. Perhaps more relevant, another HUD study estimates that the annual accrual needs of Federal Housing Association (FHA)-insured multifamily properties are almost $1,100 per unit. In addition, see Finkel et al. (1998).

24. This percentage represents an increase of $35,220 to the total thirty-year cost of $223,190 for the HOPE VI program. Our estimate of this increase is based on the national average property tax rate of $11 per $1,000 of property value, according to the 1999 American Housing Survey (U.S. Census Bureau 1999), and an annual set-aside of $600 per unit. About 25 percent of this increase is attributable to shortfalls in capital reserves and 75 percent to property tax abatements. Interviews with industry officials indicate that annual set-asides for new construction under the tax credit program are about $300 per unit. HUD officials, however, argue that the history of public housing and other federal multifamily housing programs suggests that a set-aside of about $1,000 per unit is more appropriate. When an annual shortfall of $300 per unit is assumed and no changes are made to the property tax abatement estimates, our total thirty-year cost estimate increases by 14 percent. When $1,000 per unit is assumed, our total thirty-year cost estimate increases by 18 percent.

25. Life-cycle analysis narrows the gap between voucher costs and production costs because of the impact of rent inflation on voucher costs. The U.S. General Accounting Office (2002, p. 54) reported first-year and life-cycle costs for each of the programs by unit size. The total first-year costs for two-bedroom tax credit units in metro areas were 35 percent greater than the same costs for two-bedroom voucher units. The total thirty-year life-cycle costs for two-bedroom tax credit units were 20 percent more than the same costs for two-bedroom voucher units.

26. The tax credit program serves two distinct groups. The first group, which we estimate includes about 40 percent of tax credit households, has an average income of $8,350 (in 1999 dollars), comparable to the average incomes of households assisted through the other active programs. This group receives rental assistance and pays about 30 percent of its income for rent. The second group, however, has a larger average income of $17,750, does not receive rental assistance, and faces much higher rent burdens, sometimes exceeding 50 percent of its income. See U.S. General Accounting Office (1997).

27. According to the U.S. General Accounting Office (2000, pp. 6-7)— its most recent report on tax credits—about 57 percent of tax credit households paid 30 percent or less of their income for rent, about 21 percent paid between 31 and 40 percent, about 8 percent paid between 41 and 50 percent, about 8 percent paid more than 50 percent, and 5 percent paid an unknown percentage.

28. Since differences in household incomes and rent burdens can have a significant impact on federal costs, we adjusted the rent paid by the voucher household to equal the rent paid by the tax credit household. We also made similar adjustments for the comparisons between vouchers and the other production programs.

29. Because data for the HOPE VI program are not available by unit size, we followed the approach used in U.S. General Accounting Office (2001) to estimate the program's federal cost. For the other programs, we were able to compare costs across different unit sizes.

30. These contributions are not applicable to the voucher program.

31. Our estimate of total government costs may include private subsidies. However, these subsidies generally make up a very small fraction of the total cost of the programs.

32. See U.S. Department of Housing and Urban Development (2001).

33. A 1999 study measured the impact of subsidized housing for moderate-income households and for low-income households. It found that moderate-income, subsidized housing most likely adds little or nothing to the total housing stock. In contrast, low-income subsidized housing (public housing) has steadily added to the total stock of housing since its inception in 1935. See Murray (1999).

34. HOPE VI program officials, however, are revising their data collection procedures to provide more details on all sources of funds.

35. The four syndicators were Boston Capital Partners, Inc., Boston Financial, Enterprise Social Investment Corporation, and the National Equity Fund, Inc. Each of these syndicators has a national portfolio and has been active in the tax credit market throughout the tax credit program's history.

36. See City Research (1998) for results of its analysis of these data and Cummings and DiPasquale (1999). Comparisons of the City Research data with those collected by the U.S. General Accounting Office (1997) indicate that City Research's data are quite representative of the program nationally.

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Susan M. Wachter

Commentary

The paper by Denise DiPasquale, Dennis Fricke, and Daniel Garcia-Diaz addresses a central question for the future direction of federal housing policy: how do the costs of delivering housing assistance vary by program? Costs are now central to the debate on the future of federal housing programs for several reasons. First, there appears to be agreement among many policymakers and academics on the threshold issue of the rationale for federal housing programs.

Market forces alone cannot assure that household incomes are sufficient to deliver what society views as minimally adequate for low-income households—even when these households participate in the labor market as full-time workers. Moreover, there is, if anything, an increased sense of urgency to the need to address housing outcomes, since affordable housing problems appear to be worsening, as evidenced by recent trends. (In five of the past six years, housing price and rent increases have exceeded overall inflation rates.)

Second, although additional funding has been provided for housing subsidies in recent federal budgets, far from being an entitlement program, federal housing expenditures at current levels reach less than one-third of those who qualify, resulting in horizontal inequity in the delivery of federal housing subsidies.

Third, congressional leadership and the Office of Management and Budget increasingly focus on the cost-effectiveness of the delivery of all social programs. Housing is a major federal government expenditure, as it includes the approximately $30 billion Department of Housing and Urban Development budget and the $3.5 billion tax credit cost of the Low Income Housing Tax Credits (LIHTC) production program. The efficacy of delivery has increasingly become the center of policymakers' attention—thus, the importance of the authors' findings.

Despite the salience of the question, there has been no formal work done on this issue in the past twenty years. Indeed, the major conclusion of the literature of the 1980s—that vouchers are a less expensive way to deliver housing subsidies than production programs—is partly responsible for the cessation of the historical production programs on which these studies were based. A different tax-incentive-based production approach, LIHTC, was instituted in the mid-1980s. Thus, the void in the recent literature is not because the issue has been settled. Rather, surprisingly, there have been no public data available to evaluate the relative costs of new production programs and vouchers. Hence, a major contribution of this paper is its use of a private database that allows for the comparative analysis of these programs.

The authors make methodological strides and are exhaustive in the implementation of the necessarily complex process of comparing costs across very different programs. The task is daunting. In particular, they undertake the comparison of the ongoing rental costs of voucher programs with the

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construction costs (and ongoing subsidization) of production-based programs. The process requires the appropriate discounting and treatment of a number of cost streams associated with the different programs. The outcomes are subject to the discount rate chosen; there is no avoiding this.

Differences in the size and location of housing must also be accounted for by program, to the extent that the data allow. DiPasquale and her coauthors conclude that vouchers are less expensive than production-based delivery of housing subsidies, a result that is qualitatively similar to past findings. Nonetheless, they estimate a differential that is far lower than that found in earlier studies.

However, questions remain. First, while it is necessary to make key assumptions to carry out the analysis—and the paper has made its assumptions explicit with painstaking clarity—it would be useful to undertake and present an analysis of how sensitive the results are to the key assumptions. Besides the discount rate, the other major assumptions that will make a difference in outcomes are how local property taxes and set-asides for capital costs are treated. Second, there are puzzling geographic variations in the relative costs of programs. In particular, vouchers are far less expensive than production programs, as a group, in nonmetro areas as compared with metro areas, where they are only somewhat less costly.

Interestingly, in Boston, a very tight market, the difference between voucher costs and production program costs is very small. Third—and a key question—is why is there a difference in these results compared with earlier findings? Is it due to differences, over time, in the structure of programs or in market conditions, or are there methodological differences across studies that could account for differing results?

The intriguing regional differences suggest that the tightness of the market, and particularly whether rents have reached construction-feasible levels, may have important effects. But part of the explanation may lie in the evolution of the programs themselves. As noted, the major production program analyzed in this paper is LIHTC, which the literature suggests is both more efficient than past public housing production programs and is itself becoming more efficient over time. While these are questions for subsequent studies, the authors' empirical findings will contribute to the current debate over the future of housing policy.

William C. Apgar and Mark Duda

The Twenty-Fifth Anniversary of the Community Reinvestment Act: Past Accomplishments and Future Regulatory Challenges

1. Introduction and Summary[1]

The U.S. Congress passed the Community Reinvestment Act (CRA) in 1977 to encourage depository institutions to meet the credit needs of lower income neighborhoods. The CRA was built on the simple proposition that deposit-taking banking organizations have a special obligation to serve the credit needs of the communities in which they maintain branches. At the time of the CRA's passage, banks and thrifts originated the vast majority of home purchase loans. The CRA's initial focus on areas where CRA-regulated institutions maintained branches made sense because restrictions on interstate banking and branching activities were limiting the geographic scope of mortgage lending operations.

Today, the CRA continues to provide significant incentives for CRA-regulated institutions to expand the provision of credit to lower income and/or to minority communities where those institutions maintain deposit-taking operations. Yet in the quarter century since the act's passage, dramatic changes have transformed the financial services landscape, especially in home mortgage lending. These changes have combined to weaken the link between mortgage lending and the branch-based deposit gathering on which the CRA was based. Today, less than 30 percent of all home purchase loans are subject to intensive review under the CRA. In some metropolitan areas, this share is less than 10 percent.

With a substantial portion of home purchase lending no longer subject to detailed scrutiny under the CRA, the issue of how best to modernize the CRA has emerged as an important public policy challenge. Some argue that the CRA's costs exceed its benefits. Others advocate expanding regulatory oversight. Congress considered changes to the CRA in the debate leading up to the passage of the 1999 Gramm-Leach-Bliley Financial Modernization Act (GLBA), but in the end it

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did little to make the CRA conform to the realities of the financial services marketplace. Although the CRA continues to provide significant benefits to lower income households and communities, reform is needed for the act to encourage financial services providers to meet the continuing needs of the communities they serve.

1.1 Summary of Key Findings

This paper draws on a more extensive Joint Center for Housing Studies assessment of the CRA, funded by the Ford Foundation. The larger study not only assesses the impact of the CRA on home purchase and home refinance lending, it also presents commentary on the CRA's impact on small-business and multifamily lending, as well as on the provision of financial services more generally. In addition, the Ford Foundation study presents qualitative findings concerning the CRA's impact on the operation of banks and mortgage lenders as well as the impact on the relationship between mortgage lenders and community-based advocacy organizations.

Our paper focuses on the regulatory and legislative challenges that confront the act at age twenty-five. In addition to providing a brief review of the evolution of CRA regulations, we document the impact that the CRA has had on home mortgage lending to lower income people and communities and assess changes in industry structure. We conclude with a discussion of current legislative and regulatory challenges.

The CRA Has Expanded Access to Mortgage Capital

Working in combination with the Home Mortgage Disclosure Act (HMDA) and the closely related Fair Housing and Fair Lending Legislation, the CRA continues to expand access to capital for CRA-eligible borrowers. Here, CRA-eligible borrowers include those with an income of less than 80 percent of the area median income and/or those living in census tracts with a median income of less than 80 percent of the area median. CRA-regulated lenders refer to federally regulated banks and thrifts as well as their mortgage company and finance company affiliates.

- In both 1993 and 2000, CRA-regulated lenders operating in their assessment areas (areas where they maintain deposit-taking operations) had shares of conventional, conforming prime home purchase loans to CRA-eligible borrowers that exceeded the equivalent shares for out-of-area lenders or noncovered organizations.

- The CRA-eligible share of conventional prime lending to blacks is as much as 20 percentage points higher for CRA-regulated lenders operating in their assessment areas than for independent mortgage companies. For Hispanics, the equivalent gap is 16 percentage points.

The Changing Mortgage Industry Structure Reduces the CRA's Impact

Dramatic changes in the structure of the financial services industry—and particularly in mortgage banking—have combined to weaken the link between mortgage lending and the branch-based deposit gathering on which the CRA was based. Consequently, this may also be reducing the CRA's effect on the mortgage market.

- In 2000, the twenty-five largest lenders each made more than 25,000 home purchase loans and accounted for 52 percent of all home purchase loans made that year. In contrast, only fourteen organizations made more than 25,000 loans in 1993 and accounted for only 23.5 percent of all home purchase lending.

- Banking organizations operating out of their assessment areas have expanded rapidly and today constitute the fastest growing segment of the residential mortgage market. As a result, between 1993 and 2000, the number of home purchase loans made by CRA-regulated institutions in their assessment areas as a share of all home purchase loans fell from 36.1 percent to 29.5 percent.

- Assessment-area lending varies from one market area to the next. Of the 301 metropolitan areas examined in this study, the assessment-area share of lending varies from 6 percent in Denver, Colorado, to 74 percent in Dubuque, Iowa.

The CRA Fails to Keep Pace with the Changing Industry Structure

The changing industry structure, along with the fact that over time the CRA may have expanded the capacity of all industry players to serve lower income borrowers, has eroded CRA-regulated entities' lead in the conventional prime home purchase market. When Congress modernized financial services through the GLBA, it did little to bring the CRA into conformance with the rapidly evolving world of financial services. Reform could follow one or both of two distinct pathways:

- Reform could build on the CRA's traditional mortgage lending focus by expanding assessment areas to cover a larger share of lending by banking organizations subject to CRA and by extending the act to include independent mortgage companies and other newly emerging nonbank lenders.

- Retail banking services and community-development lending arguably remain most closely linked to the branch banking mechanism through which CRA obligations are defined and implemented. Reform could therefore build on the CRA's traditional branch banking focus and reposition the act to give greater emphasis to providing financial services to lower income people and to promoting the development of lower income communities.

Before turning to a more detailed discussion of these findings, we briefly review the methodology used to generate these results.

1.2 Methodology

The work presented here uses the Joint Center for Housing Studies Enhanced HMDA Database, which combines loan-level data on borrower and loan characteristics with data on lender characteristics and branch locations from the Board of Governors of the Federal Reserve System. The Federal Reserve's lender file contains information that facilitates aggregation of individual HMDA reporters into commonly owned or commonly controlled institutions that can be analyzed as integrated units. The Board's branch-location data are the source of assessment-area definitions used in the analyses presented here. For a reasonable approximation of true assessment areas, this report assumes that if a lending entity subject to the CRA has a branch office in a particular county, then that county is part of that entity's assessment area. Loans made in counties where the lending entity does not have a branch are assumed to fall outside of that entity's assessment area.

Other information on metropolitan area and neighborhood characteristics was linked to the HMDA loan-level data to assess the way economic, demographic, and housing market trends influence lending. These data included U.S. Department of Housing and Urban Development (HUD) data used to classify loans based on both the income of the applicant and the income of the census tract where the property is located. HUD was also the source for the annual listing of HMDA reporters specializing in subprime or manufactured-home lending.

In addition to quantitative analyses, this paper draws on qualitative information gathered during a series of discussion groups and in-depth interviews. In the spring of 2000, the Joint Center for Housing Studies held eleven discussion groups with more than 100 experts in four cities—three each in Atlanta, New York, and San Francisco, and two in Washington, D.C. (Belsky et al. 2000). The Joint Center also conducted in-depth interviews with more than 100 individuals in the Baltimore, Birmingham, Chicago, and Los Angeles metropolitan areas, as well as in rural Colorado. These interviews examined the CRA in the context of the changing organization of the mortgage industry, the growth of new affordable lending tools, and the resulting changes in the provision of credit to lower income borrowers.

1.3 HMDA Data Quality

This paper utilizes HMDA data to illustrate trends in mortgage lending. HMDA data have been collected since 1977, but because they were not reported at the loan level by nondepository lenders until 1993, the discussion focuses on the 1993-2000 period. Even over this period, however, HMDA data have a number of limitations. Perhaps most critical is the fact that the HMDA's coverage of the mortgage market changed over the 1993-2000 period. One source of this differential coverage is the fact that although nondepository lenders were first required to report in 1993, some subset either did not, or did so haphazardly for several years. Consequently, HMDA data are likely to overstate somewhat actual lending growth for the 1993-2000 period.

Potentially more serious is the fact that the change in reporting requirements may differ by lender type, based on the specialization of each lender. Therefore, some of the growth in lending to lower income households relative to that to higher income households could simply reflect differential reporting if lenders specializing in lower income lending increased the reliability of their reporting over the period.

Counterbalancing these limitations is the fact that the HMDA database is a large and fairly rich microlevel data source at the individual loan application level. No other data source affords the opportunity to analyze lending patterns and trends by borrower income, race/ethnicity, and gender in such detail. Further, HMDA loans are geocoded to census tracts, allowing a thorough exploration of the CRA's impact on lending in lower income, minority, or other historically underserved market areas. These strengths and limitations also suggest the importance of disaggregating the results by lender and borrower characteristics in an effort to control for reporting differentials across the various mortgage industry segments.

2. The Regulatory Environment

This section examines issues associated with the CRA and related legislation. We begin by discussing the early history and rationale of the act and then consider the evolution of the CRA and related legislation in the 1980s and 1990s. Despite numerous changes over its nearly twenty-five-year history, the CRA continues to focus on the presumed spatially determined link between retail deposit-gathering activities and a depository institution's obligation to meet community credit needs.

2.1 Early History and Rationale

The CRA directed federally insured depository institutions to help meet the credit needs of the communities in which they operate.[2] This focus on depository institutions reflected the fact that, at a time when intra- and interstate branching was largely proscribed, depositories were responsible for the majority of home mortgage and small-business lending in communities across the country.

The CRA directed bank regulators to evaluate the effectiveness of depository institutions in meeting the credit needs of their communities, including those of lower income borrowers and neighborhoods, consistent with safe and sound banking operations.[3] It also required depository institutions to post in their offices a CRA notice, and to maintain and make available upon request a public file that included specified information about the institution's CRA performance. Two of the act's provisions that later proved most important required regulators to allow public comment on the institution's community lending record and to consider an institution's CRA performance in evaluating consolidation and expansion applications.

Despite these lofty pronouncements, the act provided little guidance as to how bank regulators should evaluate bank performance in this regard and how often these examinations should take place. Moreover, it granted the regulators little direct enforcement authority, other than stipulating that a bank's CRA record can be used as a basis to deny the bank's application to expand operations.

2.2 The 1980s and a Renewed Focus on Fair Lending

After a decade, there was a growing sense among community advocates, and ultimately in the U.S. Congress, that the performance assessments and ratings specified in the initial legislation had done little to expand lending in underserved markets. In 1988, Senator William Proxmire, Senate Banking Committee Chair, held a highly visible hearing where he challenged the regulatory agencies to be more aggressive in their efforts to encourage banks to expand credit access to lower income borrowers. Despite the apparent rigor of the criteria, fully 97 percent of the institutions examined over the period received one of the two highest ratings (on a five-point scale). Indeed, testimony revealed that in some years in the 1980s, certain regulators conducted no CRA examinations at all (Matasar and Pavelka [1998], as reported by Zinman [2001]).

This is not to say that the CRA had no impact in the early years. Armed with a legislative mandate that a bank should serve the "the credit needs of its entire community, including low- and moderate-income (LMI) neighborhoods" and with Home Mortgage Disclosure Act data on lending patterns, community activists confronted banks and demanded that they expand lending (Bradford and Cincotta 1992). Not all banks responded, but some did engage with community groups and began to experiment with new loan underwriting criteria and with new mortgage products designed to expand access to credit in many underserved communities. Arrangements between community groups and lenders often were codified into formal commitments, or "CRA agreements," where banks pledged to meet specific lending or service delivery targets (Fishbein 1992).

Despite this progress, there could be little doubt that more needed to be done to expand credit access to lower income communities. This awareness was heightened by the publication in 1988 of the *Atlanta Journal-Constitution* Pulitzer Prize–winning "Color of Money" (Dedman 1988) series documenting the disparities in mortgage lending between blacks and whites in Atlanta. This not only generated discussion of the failure of banks to serve "community needs," but also linked CRA and fair lending in the public debate. The Fair Lending Act of 1968 prohibited discrimination in mortgage lending—a prohibition that was enhanced with the passage of the Equal Credit Opportunity Act of 1974 and the Community Reinvestment Act of 1977.[4] Stimulated in part by the continuing community activism around racial disparities in lending, Congress enacted the Fair Housing Amendments Act of 1988. This law, passed twenty-five years after the initial legislation, significantly expanded the scope of the initial legislation and strengthened its enforcement mechanism (Schill and Friedman 1999).

2.3 Changes in the Late 1980s and the Financial Institutions Reform, Recovery, and Enforcement Act

The failure of the Community Reinvestment Act to have a more pronounced effect on lower income lending lay largely in its failure to provide regulators with tools to punish poor performance or reward successful behavior. The CRA's strongest provision—the ability of regulators to condition or deny a merger—had little weight in an era of limited banking consolidation, and in any case was never implemented in the first decade following the act's passage. Furthermore, both lenders and advocates perceived the examination process as capricious. Lender accountability was limited because lenders were evaluated on the strength of their plans to serve lower income areas rather than on the outcome of these plans on improving conditions in lower income markets. Additionally, any reputational risk and public scrutiny faced by lenders for poor performance was minor because examiners' ratings were not made public. This was to change, as the combination of additional regulations and changing market conditions gave new bite to the CRA in the late 1980s and early 1990s.

In 1989, Congress strengthened both the HMDA and the CRA in several key ways through the Financial Institutions Reform, Recovery, and Enforcement Act (FIRREA). The act enhanced HMDA disclosure requirements to include the race, ethnicity, gender, and income of mortgage loan applicants, and the disposition of mortgage loan applications. These additional data—when combined with census data on the racial composition; median family income; and central-city, suburban, or rural location of the property—provided a greatly enhanced statistical basis for analyzing the geographic and demographic distribution of home mortgage loans. FIRREA also mandated public disclosure of each institution's CRA rating and performance evaluation, established a four-tiered descriptive rating system[5] to replace a numeric scale, and required banking regulators to prepare a detailed written evaluation of the institution's CRA record.

Heightened congressional concern over the effectiveness of CRA oversight also coincided with bank regulators' more aggressive use of authority. In 1989, the Federal Reserve denied on CRA grounds an application by the Continental Bank Corporation to acquire Grand Canyon Bank of Scottsdale. The Federal Reserve ruled that in light of inaccurate filings and a lack of significant efforts to ascertain the credit needs of its community or advertise its products—with no compensating activities—Continental Bank's commitments to improve its CRA performance did not absolve it for a weak CRA record. In an equally significant move and on the same day that it announced its decision regarding the Continental Bank

Corporation, the Federal Reserve released a policy statement outlining a more aggressive stance concerning the CRA, including a checklist of items that regulators should consider when deciding whether to approve an application to merge and a statement acknowledging the importance of public hearings and community input in the decision-making process.

The combination of the new policy statement and the fact that the Continental case marked the first time a merger was rejected on CRA grounds sent shock waves through the banking community. These events focused senior banking executives on the role of CRA compliance in an organization's competitive position, particularly in the consolidation-oriented environment surrounding the demise of many savings and loans at that time. It also awakened community advocates to the potential gains from focusing protests on consolidating institutions. The fact that CRA performance is a meaningful criterion in approvals of consolidation and expansion activity became even more important later in the decade as the pace of such activity accelerated after passage of the Riegle-Neal Interstate Branching and Efficiency Act of 1994.

The growing congressional concern about lending discrimination also prompted the U.S. Department of Justice to expand its fair lending enforcement activity (Galster 1999). In a high-profile case, the Justice Department accused Decatur Federal Savings and Loan Association of Decatur, Georgia, of redefining its market area to exclude African-Americans and of rarely advertising its products in African-American communities. The Justice Department also sued the Shawmut Mortgage Company of Boston, Massachusetts, in 1993, alleging discriminatory treatment in loan approval. In 1994, the Justice Department accused Chevy Chase Federal Savings Bank of Washington, D.C., of violating fair-lending laws by failing to extend services to African-American neighborhoods. The Justice Department prevailed in each of these high-visibility actions. Settlements ranged from requiring banks to give aggrieved borrowers specific relief, to requiring the banks to expand lending to minority borrowers by enhancing outreach and marketing, altering underwriting procedures, and creating special loan packages for lower income applicants.

2.4 Further CRA Changes in the 1990s

The changes in the CRA continued into the 1990s as the banking industry and community advocates complained that CRA evaluations still relied too heavily on efforts to meet the needs of their communities, rather than on results. In 1995, federal banking regulators refined CRA enforcement

procedures to focus explicitly on covered depository institutions' success in meeting their obligations under the CRA by examining actual performance in their assessment areas—the geographic areas where the institution has its main office, branches, and deposit-taking ATMs—and neighboring areas in which the institution originates or purchases substantial portions of its loans.

The 1995 regulations provided for specific tests for three different lender types, sizes, and businesses (large retail, small retail, and wholesale/limited-purpose institutions). The 1995 regulations went furthest toward standardizing, quantifying, and objectifying performance criteria for large retail depositories.[6] For these institutions, the CRA examination consists of three distinct tests: lending, investment, and service.

Lending is the most heavily weighted component in the overall rating equation and is most widely scrutinized by community advocates. Regardless of point values, no institution can receive a composite rating of "satisfactory" unless it receives a minimum rating of "low-satisfactory" on the lending test. Furthermore, an institution rated "outstanding" on the lending test is assured an overall "satisfactory" rating, even if it receives substantial noncompliance on the other two components. In addition to formal CRA examinations, public access to detailed mortgage loan data under the HMDA allows community organizations to monitor the activities of lenders.

Despite the effort to focus on quantitative results, the CRA examination remains largely subjective, as examiners are directed to apply the relevant test in the context of the particular institution and the market in which it operates. This "performance context" is defined to include information about the economic and demographic characteristics of the institution's assessment area; lending, investment, and service opportunities in that area; the institution's product offerings and business strategy; its capacity and constraints; its past performance and the performance of similarly situated lenders; information and public commentary contained in the institution's public CRA file; and any other information the regulator deems relevant. The new rules also attempted to reduce both paperwork and subjectivity. For all types of institutions, public comment is encouraged by requiring that each banking regulator publish a list of banks that are scheduled for CRA examinations in the upcoming quarter.

In a nod to the changing structure of the banking industry, the 1995 regulations also recognized that many banking organizations included both depository institutions and affiliated mortgage companies or subsidiaries. For example, the 1995 changes gave each institution the discretion to include or exclude the activities of affiliated mortgage companies in the

CRA examination for specific assessment areas. Recognizing that some mortgage company affiliates specialize in serving lower income markets, while others serve a broader market, this feature arguably weakened the CRA's inducement to expand lower income lending by allowing institutions to select the combination of reporting that will produce the most favorable lending record.

Interestingly, the revised lending test, which gives lenders credit for certain mortgage loans regardless of the characteristics of the areas in which the loans are made, represented a movement away from the initial spatial focus of the CRA. Similarly, small-business lending is evaluated primarily on the size of the loan and the applicant's business rather than on the income characteristics of the neighborhood. At the same time, the regulations continued to focus on assessment-area residential mortgage lending as well as the spatial distribution of the provision of banking services to assessment-area neighborhoods. As a result, more than two decades after enactment, the CRA still maintains a clear focus on the presumed spatially determined link between retail deposit-gathering activities and a depository institution's obligation to meet community credit needs.

2.5 CRA and the Gramm-Leach-Bliley Act of 1999

The most recent changes to the Community Reinvestment Act occurred with the Gramm-Leach-Bliley Financial Modernization Act of 1999. The GLBA mandates that depository institutions must have satisfactory CRA ratings before the institution, or its holding company, affiliates, or subsidiaries, can engage in any of the expanded financial activities permitted under the law. The GLBA's "sunshine" provision requires public disclosure of agreements entered into by depository institutions and community organizations or other entities in fulfillment of CRA obligations. The GLBA also changed the frequency of small banks' examinations to once every five years for institutions with an outstanding rating, every four years for those with a satisfactory rating, and as deemed necessary for institutions whose last rating was less than satisfactory. These small banks, however, also remain subject to CRA review at the time of any application for merger, to open or close a branch, or at the discretion of the regulators for reasonable cause at any time. Finally, the GLBA also raised important concerns about the privacy of borrowers and placed limits on the use of credit history reports for purposes other than credit scoring.

3. The Impact of the CRA on Residential Mortgage Lending

This section summarizes an analysis of the effect of the CRA on regulated lenders by comparing their home purchase lending record with that of other lenders. Since CRA-regulated lenders and other lenders were influenced by the same changes in the marketplace, the comparison has the potential to highlight the independent effects of the CRA on lending patterns. The analysis suggests that CRA-regulated entities continue to lead the market in the provision of prime, conventional residential mortgage loans to lower income people and neighborhoods, particularly in terms of their greater outreach to minority borrowers.

3.1 CRA Expands Access to Mortgage Credit

Chart 1 shows the share of all conventional, conforming prime loans made to CRA-eligible borrowers. Lenders are divided into three groups: CRA-regulated banking organizations lending in their assessment areas, CRA-regulated banking organizations lending outside their assessment areas, and non-CRA-regulated entities. Here, banking organizations include commercial banks and savings associations and their mortgage and finance company affiliates, while non-CRA-regulated organizations include independent mortgage companies and
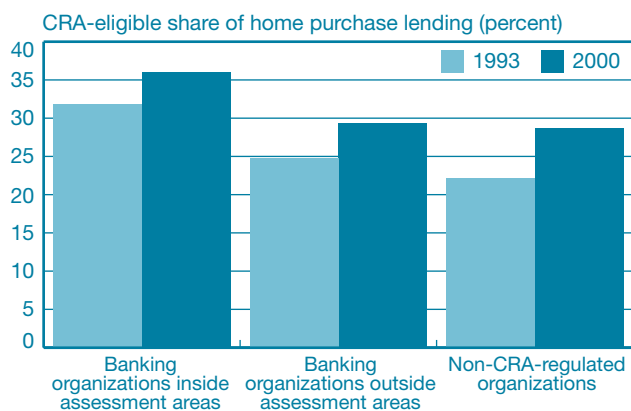
credit unions. Chart 1 excludes prime loans with government backing, including loans insured by the Federal Housing Administration (FHA), as this lending is mostly a pass-through operation, with loans largely originated by mortgage brokers and sold into the secondary market. Finally, limiting this assessment to conforming loans avoids giving undue weight to those lenders operating chiefly in the jumbo market.

The chart confirms that CRA-regulated entities operating in their assessment areas make a higher share of these conventional, conforming prime loans to CRA-eligible borrowers than do either CRA lenders outside their assessment areas or non-CRA lenders. It also shows that the gap across lender types is closing, possibly in response to an enhanced understanding of how to lend to these markets profitably through experience acquired by CRA-regulated lenders in response to CRA obligations.

Table 1 extends this analysis to examine racial and ethnic variations in lending patterns. It highlights the fact that loans to blacks and Hispanics are much more likely to be CRA-eligible, presumably because these groups have lower average incomes than whites and are more likely to live in lower income census tracts.

At the same time, it is important to note that in 2000, the CRA-eligible share of conventional prime lending to blacks and Hispanics by CRA-regulated entities operating in their assessment areas was higher than the lending to blacks and Hispanics by regulated entities operating outside the assessment area as well as the lending by non-CRA lenders. For whites, the difference is minimal, but for blacks, assessment-area lenders have CRA-eligible shares that are 17 percentage points (38 percent) higher than shares for lenders outside assessment areas and 20 percentage points (48 percent) higher than shares for non-CRA lenders. For Hispanics, the CRA-eligible share for assessment-area lenders is 13 percentage points (28 percent) higher than that for outside-assessment-area lenders and 16 percentage points (39 percent) higher than that for non-CRA lenders.

Even twenty-five years after its enactment, the CRA continues to encourage CRA-regulated entities to extend conventional prime lending to historically underserved segments of the market. Other lenders, and indeed CRA-regulated entities themselves, are increasingly using other loan products, including government-backed loans and subprime loans, to manage the increased risks inherent in serving these markets. But in addition to their growing use of alternative lending products, CRA-regulated entities continue to lead the market in extending prime conventional loans to lower income people and communities.

Chart 1
Assessment-Area Lenders Lead in the Provision of Conventional, Conforming Prime Loans

CRA-eligible share of home purchase lending (percent)

Source: Joint Center for Housing Studies Enhanced Home Mortgage Disclosure Act Database.

Note: CRA is the Community Reinvestment Act.

TABLE 1
CRA-Eligible Share Varies by Race, Loan, and Lender Type

| | Banking Organizations | | | | Non-CRA-Regulated Organizations | |
| | In Assessment Area | | Out of Assessment Area | | | |
	1993	2000	1993	2000	1993	2000
All prime lending						
Whites	29.6	30.9	28.3	30.4	26.7	31.2
Blacks	58.6	62.6	52.1	56.9	48.0	53.6
Hispanics	52.5	56.7	49.5	54.0	44.4	52.1
Other	29.1	27.2	27.8	27.6	24.6	28.1
All races	31.9	33.7	30.5	33.1	28.6	34.1
Conventional prime lending						
Whites	27.4	28.9	22.0	25.5	19.3	25.6
Blacks	59.2	60.6	42.4	43.7	29.4	40.9
Hispanics	51.1	54.4	38.9	42.6	31.6	38.8
Other	27.4	25.9	22.9	23.4	19.4	23.0
All races	29.7	31.4	23.1	26.4	20.0	26.3
Government						
Whites	43.3	50.1	41.5	48.8	41.1	45.4
Blacks	57.2	67.5	57.4	66.9	55.8	60.3
Hispanics	60.2	68.5	58.2	65.5	54.0	60.1
Other	40.7	45.0	39.0	44.8	36.7	40.7
All races	45.4	54.2	44.2	53.9	43.6	49.5

Source: Joint Center for Housing Studies Enhanced Home Mortgage Disclosure Act Database.

Notes: "Other" includes Asian, Native American, and all other groups, and loans where the applicant and co-applicant were of different races. CRA is the Community Reinvestment Act.

3.2 Multivariate Analyses Confirm CRA's Effect

Detailed econometric analyses discussed at length in the larger Ford Foundation study confirm that the CRA continues to have an important effect on mortgage lending. In particular, the act appears to have encouraged CRA-regulated lenders to originate a higher proportion of loans to lower income people and communities than they would have if the act did not exist. Moreover, CRA-regulated entities appear to have gained market share in the provision of loans to lower income people and communities, in effect crowding out lenders falling outside of the CRA's regulatory reach. Finally, lower income neighborhoods targeted by the CRA have had more rapid price increases and higher property turnover rates than other neighborhoods, a finding that is consistent with the proposition that the CRA has expanded the provision of credit in these neighborhoods.

These econometric studies also suggest that CRA-regulated entities respond both to the regulatory requirements set forth by the act as well as to pressure from community-based organizations that the act has enabled. As a result, the econometric models suggest that even controlling for other mortgage lending supply and demand factors, CRA-regulated entities originate a higher share of their loans to lower income people and communities in their assessment areas—the areas under the most intense CRA scrutiny. Moreover, lower income lending is greater in areas covered by agreements made with community groups that commit CRA-regulated entities to expand their outreach.

Interestingly, both effects seem to be waning. Just as the growth of large banking organizations has fostered rapid growth of nonassessment-area lending, so too has the growth of these organizations changed the ability of community organizations to extract concessions from lenders operating in their neighborhoods. As in the case of the simple descriptive

statistics presented earlier, the econometric analyses confirm that CRA-regulated lenders continue to outperform other lenders in the lower income lending arena, but the CRA effect appears to be on the decline. For example, the econometric models suggest that from 1993 to 2000, the act may have increased the share of loans to CRA-eligible borrowers by 2.1 percentage points (or from 30.3 to 32.4 percent). Estimates for individual years suggest, however, that the CRA impact has declined from 3.7 percentage points in 1993 to 1.6 percentage points in 2000.

4. The Changing Mortgage Industry Structure

The mortgage industry has witnessed a dramatic restructuring in the past decade. It has experienced an explosion of new forms of lending, the ascendancy of large lending organizations, the expanding share of loans originated through mortgage brokers and mortgage banking operations, the migration of some bank and thrift mortgage lending to separately incorporated affiliates, and the growth of secondary mortgage markets with its attendant reduction in the share of lending funded by bank deposits. This section summarizes these significant trends and assesses their implications for the evolution of mortgage markets.

4.1 The Growing Importance of Securitization and the Rise of Mortgage Banking

Historically, deposit-taking institutions (thrifts and commercial banks) dominated mortgage originations. As recently as 1980, nearly half of all one-to-four-family home mortgages were originated by thrift institutions. An additional 22 percent were originated by commercial banks (U.S. Department of Housing and Urban Development 1997). That same year, mortgage companies and other lenders accounted for the remaining 29 percent of all one-to-four-family mortgage loans. That distribution reflected the fact that deposits, and hence deposit-taking institutions (particularly thrifts), were the main source of funds for mortgage debt. Depository lenders held the loans they originated in portfolios because underwriting standards and mortgage documents varied considerably and third-party investors were reluctant to purchase mortgages that lacked adequate credit enhancements and standard features.

Over the subsequent two decades, this system changed dramatically. Although banks and thrifts continue to originate loans and hold some of them in portfolio, mortgage brokers and retail mortgage bankers now originate a majority of mortgage loans. In 1997 (the last year that HUD conducted its Survey of Mortgage Lending Activity), mortgage companies were the dominant (56 percent) originator of one-to-four-family mortgages loans. Their rise came at the expense of thrifts, which captured only 18 percent of loans in 1997, while commercial banks were up slightly, to a 25 percent share of all originations. Further marking the change in industry structure, 43 percent of originations by banks and thrifts flowed through their mortgage banking subsidiaries.

The rise to dominance of nondepository lenders has been facilitated by the rise of secondary-market institutions. The ability to package and sell loans in the secondary market reduces the need to hold deposits (or other sources of cash) to fund mortgage loans because investors in the mortgage-backed securities that the government-sponsored enterprises (GSEs) and private conduits issue replace deposits as the source of funds for these loans. Fannie Mae and Freddie Mac—by mandating the standardization of loan contracts and through their sheer scale—have played a role in streamlining and rationalizing the mortgage market role that extends beyond incorporating additional sources of funding within it.

In addition to Ginnie Mae, an organization created to securitize the government-insured portions of the market, private market entities are also now active in the securitization business. While the largest share of conventional conforming loans (those made at standard terms for amounts below the federally determined ceiling for GSE purchases) is typically sold to Fannie Mae and Freddie Mac, nonconforming mortgages (or "jumbos") are also commonly pooled and sold as private-label securities, mostly by Wall Street investment banks. Individual loans underlying both GSE and private-label issues that are made at high loan-to-value ratios carry private mortgage insurance, but issuers of jumbo packages tend to provide additional credit enhancements beyond those of the conventional conforming GSE issues.

Securitization has largely affected the market for prime mortgages—those made at the most favorable rates and terms to borrowers who present lenders and investors with small and manageable credit and collateral risks. Prior to the 1990s, subprime mortgages were chiefly extended by large finance companies, which financed them with secured and unsecured debt. Recently, however, securitization has also been aggressively extended into the subprime sector. Indeed, a joint report by the U.S. Department of the Treasury and the U.S. Department of Housing and Urban Development (2000) notes that the securitization of subprime loans

increased from $11 billion in 1994 to $83 billion in 1998, before easing back to $60 billion in 1999. Issuers of subprime mortgage-backed securities have tended to be private firms, because, until recently, Fannie Mae and Freddie Mac purchased only prime loans.

4.2 The Rise of Large Banking Organizations

Paralleling the rise of mortgage brokers and the securitization of mortgage loans has been the rise of large banking organizations and their affiliated mortgage lending organizations. A study by the Federal Reserve noted that from 1975 to 1997, the number of banking institutions dropped 40 percent as a result of industry consolidation and a substantial number of bank failures (Avery et al. 1999). Following the shakeout in the late 1980s and early 1990s, the number of liquidations slowed, but the number of mergers and acquisitions continued to rise, stimulated by the globalization of financial services and efforts to increase efficiency, reduce costs, or gain competitive advantages.

Regulatory changes also supported the consolidation of the financial services industry as most state-level restrictions in the 1980s on intrastate banking were removed or relaxed. At the federal level, interstate banking became a reality in the 1990s. This opened up opportunities for commercial banks to expand beyond boundaries that had been in place since the Depression and allowed larger organizations to enhance the scale and scope of their operations further through mergers and acquisitions. Federal Reserve System data indicate the scale of consolidation in the mid-1990s. From 1993 to 1997 alone, the number of banking institutions obtained in a merger or acquisition totaled 2,829, or 21 percent of the total. Over the same period, 431 new institutions were formed.

To understand the ongoing concentration in mortgage lending, it is necessary to understand trends within the mortgage sector and in the broader financial services industry (Avery et al. 1997). Among the various financial services provided by banks and related businesses, consumer and mortgage lending require extensive marketing, customer support, account management, and servicing operations. Large-scale operations are able to spread the high fixed costs associated with these tasks across a larger customer base. In addition to these classic "scale economies," larger organizations benefit from "scope economies" that allow them to use data and information gathered from a large customer base to develop and cross-sell specialized, and potentially more profitable, consumer products to mortgage customers. Similarly, the organizations can reduce the average costs of mortgage originations by capturing the mortgage activity of their other customers.

Finally, technological advances also spurred major changes in the structure of the mortgage industry. The link today between the location of the borrower and the location of the lender is less important than it was even a decade ago because loan origination systems increasingly started to operate via telephone, fax, and now the Internet. As a result, many banks have abandoned conducting some or all of their residential mortgage lending operations out of "sticks-and-bricks" branches, but instead have created or acquired large mortgage banking subsidiaries that utilize technology to operate from centralized locations that serve entire metropolitan areas or larger regions. Moreover, electronic loan processing and underwriting, including the growing use of automated credit scoring and automated appraisal and underwriting tools, have reduced the costs of loan origination and loan servicing and have allowed lenders to reduce costs by managing risk better.

For the most part, the new technology requires high fixed investment by firms, but once installed, it operates at extremely low marginal costs. As a result, increased technological sophistication in mortgage lending tends to favor larger lending organizations and has helped to foster consolidation in the mortgage business. At the same time, these trends have also supported the growth of mortgage brokers, who, working on a fee-for-service basis, handle the front end of the mortgage application process, a function that still may benefit from a presence in a local market area, and some face-to-face communication with loan applicants. Here, scale economies are decidedly less significant, and relatively small organizations continue to thrive as mortgage brokers.

In 2000, only twelve lending organizations made more than 50,000 home purchase loans, but these twelve accounted for 39 percent of all such loans made that year (Table 2). In 1993, only four organizations topped 50,000 loans, and they accounted for only 11 percent of all home purchase lending. The number of lenders making between 25,000 and 50,000 loans per year also increased, though their share of the overall market was flat. Together, the top twenty-five home purchase lenders originated fully 52 percent of all home purchase loans in 2000.

Table 2 divides the lending organizations into two categories: banking organizations (that is, commercial banks and savings associations with their mortgage and finance company affiliates) and other organizations (independent mortgage and finance companies and credit unions). The table indicates that banking organizations led the growth of large organizations. By 2000, home purchase lending for the ten largest banking organizations totaled more than 1.1 million loans, and the top twenty combined for a total of 1.5 million loans.

The emergence of large bank lending operations reflects, in large measure, forces that prompted dramatic consolidation of retail banking operations within and across individual

Large Banking Organizations Lead Mortgage Lending Growth

| | Banking Organizations | | | | Non-CRA-Regulated Organizations | | | |
| | Lenders | | Loans | | Lenders | | Loans | |
Number of Loans	1993	2000	1993	2000	1993	2000	1993	2000
More than 50,000	2	10	155,085	1,161,815	2	2	105,686	282,306
25,000 to 49,999	5	10	149,018	341,556	5	3	153,294	129,399
10,000 to 24,999	21	18	301,236	286,624	11	9	160,837	127,884
5,000 to 9,999	26	21	189,288	146,278	11	20	78,140	141,509
1,000 to 4,999	141	109	302,513	240,739	117	140	243,394	300,327
500 to 999	138	134	97,277	92,231	122	125	90,307	87,170
250 to 499	254	194	88,734	67,856	161	169	58,602	58,106
100 to 249	619	456	99,128	71,437	193	290	31,334	48,011
Fewer than 100	3,175	2,844	86,561	82,183	1,163	1,483	24,075	34,100
Total	4,381	3,796	1,468,840	2,490,719	1,785	2,241	945,669	1,208,812

Source: Joint Center for Housing Studies Enhanced Home Mortgage Disclosure Act Database.

Notes: Banking organizations include all commercial banks, savings associations, and their mortgage and finance company affiliates. Non-CRA-regulated organizations include mortgage companies and credit unions. CRA is the Community Reinvestment Act.

metropolitan market areas. Within-market consolidations reflect the increasing economies to scale of retail banking, and the trend for larger, more efficient banking operations to acquire smaller banks or otherwise increase their presence in a particular market. Growth of regional and even national banking operations also reflects the efforts of larger banks to capitalize on potential scale economies and name recognition as well as to reduce risk by diversifying across numerous spatially distinct market segments (Avery et al. 1999).

At the same time, several large independent mortgage and finance companies competed head to head against banking organizations in mortgage markets across the country. These included the two largest, Countrywide Home Loans and Cendant Mortgage, each of which made more than 50,000 home purchase loans in 2000. But many other independent mortgage banking operations either failed to grow over the period or merged with or were acquired by a large banking operation. This latter category includes such large operators as North American Mortgage, which was acquired by Dime Savings Bank, and Norwest Mortgage, which merged with Wells Fargo & Company.

At the other end of the spectrum, the data confirm that the number of banking organizations originating fewer than 100 loans shrank by 10 percent between 1993 and 2000. This category of lender also made slightly fewer loans in 2000 than in 1993. In contrast, the number of smaller independent mortgage companies and credit unions was on the rise.

For example, over the period, the number of independent mortgage companies and credit unions making fewer than 100 home purchase loans rose 28 percent (from 1,163 to 1,483) and the number of home loans made by these organizations rose 42 percent.

Consolidation among home refinance lenders was also strong, as the effect of technological advances and related developments that have reduced the costs of home purchase lending had an equally strong impact on the costs of providing home refinance loans. For example, lending institutions making more than 10,000 refinance loans in 2000 accounted for 57 percent of all home refinance loans, compared with only 51 percent in 1993, with much of the growth again concentrated among large banking institutions.

It remains to be seen whether the dominance of larger organizations helps or hinders the provision of affordable home loans. Many housing advocates argue that smaller, community-based institutions have an enhanced capacity to better understand and address the credit needs of the communities they serve (Immergluck and Smith 2001). Others argue that the efficiencies associated with large-scale operations, as well as the ability of larger organizations to offer a wider and more diverse product mix and to access low-cost funds on the world capital market, are advantages that more than neutralize any disadvantages. In any case, there seems to be little doubt that the trends of consolidation in the mortgage

industry and the declining importance of deposits as a source of mortgage capital have yet to run their course.

Continued technological change should further enhance the competitive advantage of larger players. New automated systems require substantial initial investments, and smaller companies unable to afford such investments are finding it increasingly difficult to remain competitive in the mortgage market. At the same time, since these technologies operate at low marginal or incremental costs, they foster fierce competition among those firms operating in the market. Going forward, the result will likely be both a continued consolidation of mortgage lending activities and a growing reliance on mortgage brokers to take loan applications. In addition, the continued evolution of better products, services, and pricing can be expected, as large firms seek to identify and exploit competitive advantage in their pursuit of customers in an increasingly competitive marketplace.

5. Industry Structure and Current Regulatory Issues

Changes in the structure of the financial services industry, particularly in mortgage banking, have combined to weaken the link between mortgage lending and the branch-based deposit-taking on which the Community Reinvestment Act was based. This section discusses these trends at the national level and their implication for the CRA's impact on lending to lower income borrowers and communities, as well as their implication for the variation in the act's regulatory reach across metropolitan areas and individual lenders.

### 5.1 The CRA and the Changing Industry Structure

The increasing share of loans by the mortgage banking subsidiaries or affiliates of bank holding companies and by independent mortgage companies has brought a concomitant decline in the share of mortgage loans originated by deposit-taking institutions in the assessment areas where they maintain branch banking operations. An increasing share of all loans is not subject to detailed CRA review because the act mandates the most extensive review of assessment-area lending. Between 1993 and 2000, the number of home purchase loans made by CRA-regulated institutions in their assessment areas as a share of all home purchase loans fell from 36.1 to 29.5 percent (Chart 2).

The fact that loans made by CRA-regulated institutions in their designated assessment areas as a percentage of all loans (or assessment-area share) has declined has several implications. First, a large and growing share of the mortgage lending industry (independent mortgage companies, finance companies, and credit unions) falls entirely outside the CRA's regulatory reach. Next, even among CRA-regulated institutions, the fastest growth has been in out-of-area lending, or lending that takes place outside the markets where these organizations maintain deposit-gathering branches, and hence is not subject to the most stringent aspects of the CRA examination process.

Equally noteworthy is the fact that each of these broad types of lending (in-assessment-area lending by CRA-regulated banking organizations; out-of-assessment-area lending by CRA-regulated banking organizations; and lending by noncovered organizations) differs in terms of its product mix and market orientation. As a result, the extent of detailed CRA examination of loans varies significantly by loan type, borrower type, and location. For example, in 2000, CRA-regulated depository institutions and affiliates operating in their assessment areas made 38 percent of all prime conventional home purchase loans. In contrast, in the rapidly growing subprime segment, only 3 percent of all loans were made by CRA-regulated organizations within their assessment areas. In addition, the vast majority of HMDA-reported manufactured-home lending was not subject to CRA assessment-area review.

Significant differences also appear in the home refinancing market, where assessment-area lending by CRA-regulated institutions captured 32 percent of all lending in 2000 and 42 percent of all conventional prime lending

Chart 2
Assessment-Area Lending Has Fallen Steadily
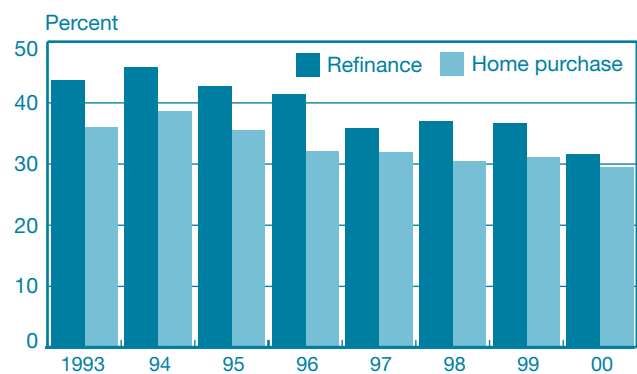
Source: Joint Center for Housing Studies Enhanced Home Mortgage Disclosure Act Database.

(indicating that depositories' branch networks remain advantageous in this market). Even so, the vast majority (96 percent) of all subprime refinance loans are made by independent mortgage companies and out-of-area lenders, and as a result fall largely outside the CRA's regulatory reach.

The relative importance of assessment-area lending by depository institutions covered by the CRA also varies by borrower and neighborhood income. For example, the CRA's regulatory reach is lowest for the nation's historically disadvantaged minority groups. In 2000, assessment-area lending accounted for only 23 percent of all home purchase loans to black households and 26 percent to Hispanic households, as opposed to 32 percent for whites. For home refinancing, the assessment-area share for blacks stands at 21 percent; the figure is higher for Hispanics (32 percent), but still trails the share of assessment-area lending for whites (36 percent).

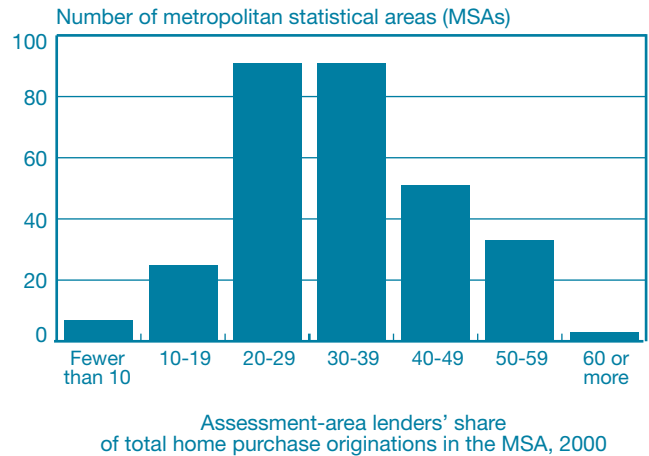## 5.2 Metropolitan-Area Variation in Assessment-Area Lending

Significant variation in assessment-area lending also exists across metropolitan statistical areas (MSAs). The demand for mortgage credit will depend in part on the relationship between home prices and incomes in a given area. In areas where housing costs are high relative to income, there may be little opportunity to lend to lower income families. Accompanying this housing market variability is equally significant metropolitan-area variation in banking and mortgage industry organization. These differences are a result of the long-term economic performance of the area, the strength and national ambitions of locally based lenders, demand for mortgage credit, and state-level banking regulations, among other factors.

In some MSAs, only a handful of loans are originated by CRA-regulated entities operating in their assessment areas, while in other MSAs, well over half are (Chart 3). From a CRA perspective, there are two important implications of metropolitan-area variation in housing and banking markets. First, CRA-eligible lending is significantly more challenging for lenders in some MSAs than in others. Second, vastly different shares of lending pass through the CRA-regulatory apparatus in more places than others. Consequently, the CRA's effect from one MSA to another varies substantially based on MSA characteristics and the MSA-specific structure of the mortgage industry there.

Table 3 extends this analysis and displays the ten metro areas with the lowest share and the ten metro areas with the highest share of assessment-area lending. At the extreme, the

The Assessment-Area Share of Home Purchase Originations Varies Widely

Number of metropolitan statistical areas (MSAs)

Assessment-area lenders' share
of total home purchase originations in the MSA, 2000

Source: Joint Center for Housing Studies Enhanced Home Mortgage Disclosure Act Database.

assessment-area share of lending varies from a low of 6 percent in Denver to a high of 74 percent in Dubuque. Although there is a slight tendency for smaller metropolitan areas to have somewhat higher assessment-area shares, at least one large MSA and a complement of medium and smaller ones are included in the list of MSAs with the highest and lowest shares. For example, San Francisco's 60 percent share is some ten times higher than Denver's share. Similarly, Brazoria, Texas, with one of the lowest shares, had a much smaller share of assessment-area lending than Lincoln, Nebraska, which is in the top ten, though the two MSAs had nearly identical numbers of home purchase originations in 2000.

This MSA variation also bears little relationship to the share of lending that is CRA-eligible. For instance, Denver, where only 6 percent of loans are made in assessment areas, has a relatively high CRA-eligible lending share of 40 percent. Conversely, San Francisco, where 60 percent of loans are made inside assessment areas, has the seventh-lowest CRA-eligible share, at just 21 percent.[7] These two markets present almost completely opposite characteristics with respect to their shares of lending that are CRA-eligible and the shares that are actually originated by a CRA-regulated entity.

Table 3 does suggest, however, that the variation in assessment-area shares may relate to state-level banking regulations and the idiosyncratic characteristics of the individual markets. All six of Colorado's MSAs are among the eleven MSAs with the lowest assessment-area shares in the country. Note that Colorado was one of the last states to deregulate its banking

TABLE 3

Top and Bottom Metropolitan Statistical Areas (MSAs) for Assessment-Area Home Purchase Lending Originations in 2000

MSA	Assessment-Area Share	Total Loans
Lowest shares		
Denver, CO	5.9	63,755
Greeley, CO	7.1	5,735
Boulder, CO	7.9	9,306
El Paso, TX	8.2	7,244
Colorado Springs, CO	8.6	12,699
Tucson, AZ	9.0	17,244
Lawton, OK	9.8	1,208
Brazoria, TX	10.2	4,276
Anchorage, AK	10.5	5,022
Pueblo, CO	11.9	2,212
Highest shares		
San Francisco, CA	59.6	22,228
Grand Forks, ND	60.1	639
Williamsport, PA	60.2	1,250
Pittsfield, MA	60.4	1,563
Wheeling, WV	60.5	1,379
Decatur, IL	64.7	1,748
Bloomington, IL	69.7	2,942
Lincoln, NE	70.6	4,278
Enid, OK	71.0	801
Dubuque, IA	73.9	1,063
Selected others		
Las Vegas, NV	14.4	37,035
Atlanta, GA	16.6	94,537
Baltimore, MD	20.3	44,343
Washington, D.C.	24.5	113,740
Birmingham, AL	25.8	14,861
Chicago, IL	30.4	146,434
San Diego, CA	32.6	54,357
Los Angeles, CA	36.7	114,254
New York, NY	45.7	59,118
San Jose, CA	54.8	27,565

Source: Joint Center for Housing Studies Enhanced Home Mortgage Disclosure Act Database.

industry, putting branch-based mortgage operators at a disadvantage relative to independent and affiliated mortgage companies. Moreover, a wrenching regional recession in the 1980s led to the collapse of many Denver-based banking operations. Today, Denver and other metropolitan areas in Colorado are experiencing explosive growth, but this growth is largely being served by national mortgage companies—both bank affiliates and independent mortgage companies.

5.3 The Diversity of Mortgage Lenders

Against these general trends stand the rich and varied stories of the rise of individual organizations. The twenty-five largest home purchase lenders depicted in Table 4 illustrate this substantial diversity. These are the organizations that made 52 percent (1.9 million loans) of all home purchase loans in 2000. With respect to mortgage lending, there are strikingly few similarities these organizations share. Among large independent mortgage companies, Countrywide Home Loans operates nationally and focuses on lending to lower income, first-time home buyers. In contrast, Cendant Mortgage serves customers with slightly higher incomes through a unique marketing approach that yields a mixture of applicants, while Conseco Finance specializes in funding subprime and manufactured-home loans for lower income borrowers. These different business models and plans translate into substantially different specializations. For instance, of the independent mortgage companies in Table 4, the share of refinancing loans ranges from 6 to 36 percent of total loans.

The banking organizations in Table 4 are equally diverse. Overall, the banking organizations in the top twenty-five originate about a quarter of their loans inside their CRA assessment areas. For refinancings, the share is 33 percent. In contrast, Bank of America, which has a nationwide network of branches, originated more than 80 percent of its more than 240,000 home purchase and refinancing loans in its CRA assessment areas. At the other end of the spectrum, J.P. Morgan Chase and Company, which originated nearly as many total loans, did so primarily through its mortgage banking subsidiary in counties where the company did not operate branches. Only 13 percent of Chase's home purchase loans and 10 percent of its refinancings took place in the bank's CRA assessment areas.

The top banking organizations also have significantly different home purchase and refinance lending shares. Chase is again extreme, with refinancing loans accounting for 18 percent of its loans. In contrast, Citigroup (55 percent) and Bank One Corporation (78 percent) made well over half of their originations through refinance lending, even in 2000's relatively high-interest-rate environment.

These comparisons illustrate just some of the distinct blends of mortgage banking and retail banking operations. Although physical location—sticks and bricks—within a particular community can boost a mortgage lending operation, it is not an essential feature. As a result, many mortgage companies that have emerged over the past several decades operate electronically through a network of brokers with limited physical presence in a given market area. IndyMac, a lender

that made more than 10,000 loans in 2000, is an interesting example of these trends. Once an independent mortgage company, IndyMac recently purchased a small thrift in the Los Angeles area and now operates with an organizational structure best described as an "inverted" mortgage company. Such a structure allows IndyMac to tap into traditional secondary-market sources, while also diversifying its funding by raising deposits in Los Angeles as well as in the national capital market through the Internet and other electronic channels.

Also contributing to the growing diversity of the industry are the mortgage banking subsidiaries of "nonbanks," including mortgage companies that operate as subsidiaries of large insurance companies and financial services companies. Similarly, mortgage banking subsidiaries of major home builders and manufactured-home producers are included in the top tier of mortgage lenders in the growth regions of the country (Kaufman & Broad Mortgage, NVR Mortgage Finance, Oakwood Acceptance Corp, and the Pulte Mortgage Company).

TABLE 4

Assessment-Area Lending Varies Significantly among the Top Mortgage Lenders in 2000

Organization	Total Home Purchase Loans	Total Home Refinance Loans	Assessment-Area Shares (Percent)		CRA-Eligible Loan Shares (Percent)	
			Home Purchase	Home Refinance	Home Purchase	Home Refinance
Wells Fargo and Co.	219,623	74,118	19.1	52.0	27.8	30.4
J.P. Morgan Chase and Co.	184,102	39,788	12.9	10.1	33.4	39.5
Countrywide Home Loans	173,531	53,578	0.0	0.0	32.7	45.4
Bank of America Corp.	152,810	91,053	83.0	80.6	40.6	41.7
National City Corp.	147,146	42,920	11.7	17.9	40.7	39.9
Cendant Mortgage	108,775	6,989	0.0	0.0	30.6	32.6
Washington Mutual Bank, FA	91,843	43,680	63.6	64.6	24.6	24.5
Standard Federal Bank	89,670	41,051	32.8	32.4	32.8	38.0
Dime Savings Bank of New York, FSB	76,579	25,396	4.5	4.6	34.6	35.8
World Savings Bank, FSB	75,927	28,679	71.7	77.1	20.2	25.9
Citigroup Inc.	72,015	88,671	15.9	6.6	49.2	56.2
Suntrust Banks Inc.	52,100	13,398	57.0	48.7	29.7	34.9
GMAC Mortgage	49,650	28,097	0.0	0.0	32.3	33.5
First Union Corp.	45,862	48,118	64.6	46.6	42.5	46.2
Greenpoint Financial Corp.	42,217	18,055	1.0	2.2	46.1	25.2
Old Kent Financial Corp.	41,886	18,094	15.9	45.2	39.4	37.7
Conseco Finance Servicing Corp.	40,573	15,641	0.0	0.0	68.0	44.9
CTX Mortgage Co.	39,176	12,376	0.0	0.0	39.5	64.2
Flagstar Bank, FSB	34,036	21,512	18.9	16.3	35.7	43.8
FleetBoston Financial Corp.	33,798	21,941	33.9	51.6	39.0	33.2
PNC Financial Services Group	32,918	22,624	38.0	65.5	30.4	25.0
Ohio Savings Bank	29,633	11,005	14.5	8.5	27.7	30.0
Bank One Corp.	28,775	102,462	10.0	19.2	33.9	37.6
California Federal Bank	27,147	9,800	70.4	71.7	22.0	24.4
Irwin Financial Corp.	25,284	7,051	7.2	2.8	50.4	36.8
Total for top lenders	1,915,076	886,097	25.7	32.6	34.8	38.9

Source: Joint Center for Housing Studies Enhanced Home Mortgage Disclosure Act Database.

Notes: Top lenders are the twenty-five organizations that made at least 25,000 home purchase loans in 2000 based on activity in metropolitan statistical areas (MSAs) included in this study. Lenders are aggregated at the holding company level. CRA-eligible loan shares include loans to borrowers earning less than 80 percent of the area median income and/or loans made on properties in census tracts to borrowers with incomes less than 80 percent of the MSA median as of 1990. CRA is the Community Reinvestment Act.

6. Regulatory Challenges

In recent years, Congress, through the Gramm-Leach-Bliley Act, has focused on financial services modernization, but little has been done to help the CRA conform to the rapidly evolving world of mortgage banking and financial services. During the debate on the GLBA, some sought to scale back the CRA, and called for, among other things, the creation of a "safe harbor" that would limit CRA challenges for banks with a satisfactory or better rating. Advocates pushed to expand the CRA by extending its reach to all segments of the financial services industry, including nonbanks that were involved in the provision of financial services. In the end, the GLBA left the CRA more or less where it had been, although discussion continues about the need to "modernize CRA" (Goldberg 2000).

6.1 CRA Assessment of Mortgage Loans Is Uneven and Often Ineffective

The growth of large and diverse lending organizations poses regulatory challenges to the CRA. In their Advanced Notice of Proposed Rulemaking (ANPR), issued in 2001, federal regulators requested comments on how best to improve the efficacy of the current regulations. One central issue is how best to define "assessment area," or otherwise determine which loans should be subject to detailed CRA review. At present, assessment areas are defined in terms of where a CRA-regulated entity maintains deposit-taking operations. These rules reflect the original CRA philosophy that financial institutions had an obligation to meet the mortgage credit needs of those areas where they gather deposits. At the time the CRA was enacted, this focus made sense because locally based depository institutions dominated mortgage lending.

Today, the assessment-area concept results in an unevenness of application of CRA oversight. Detailed CRA review is conducted on virtually all loans made by some smaller depository institutions operating in a single area, but scant review is applied to the fastest growing segment of home purchase lending, namely, those loans made outside areas where organizations maintain deposit-taking operations. Furthermore, no review of loans is made by the independent mortgage companies not covered by the act from the beginning. As noted earlier, under current rules, CRA oversight has declined steadily over time and varies significantly from one market area to the next.

The diversity of mortgage lending operations and the decline in the share of all loans made by CRA-regulated lenders in CRA assessment areas have spawned numerous proposals to alter the CRA focus on traditional deposit-taking entities operating from a network of branch locations. Some argue that the current definition of assessment areas makes little sense in a world of electronic banking and national-scale mortgage lending operations (Thomas 1998). The ANPR generated numerous proposals for expanding assessment areas for CRA-regulated institutions to include markets where regulated entities maintain deposit-gathering operations as well as all places where they conduct mortgage lending operations. For example, the National Association of Homebuilders (2001) advocates that assessment areas be defined as areas where CRA-regulated entities deliver retail banking services, whether or not they have physical deposit-gathering branches or ATMs in that locale. In a similar fashion, the National Community Reinvestment Coalition (2001) proposes expanding assessment areas to include those metropolitan areas where a lending institution accounts for at least one-half of 1 percent of all home purchase and/or refinancing loans.

Other proposals call for the extension of the CRA to all financial services organizations, including nondepositories. One commonly suggested approach is to extend CRA obligations to independent mortgage companies and consumer finance companies that currently fall entirely out of the regulatory reach of CRA (Campen 2001). These comments suggest that despite the multiyear congressional debate on how best to "modernize" the financial services industry, Congress should continue to assess critical aspects of the CRA, including the act's original focus on assessment areas linked to deposit-gathering activities.

6.2 One Size Doesn't Fit All

Much of the CRA examination process continues as if the examination is being applied to activity in a single neighborhood or community where a bank or thrift has branch activity. In this context, lending, investment, or service activity can reasonably be compared with the activity of others operating in the same area.

The growth of large and diverse lending organizations poses regulatory challenges to the CRA. Despite these differences in the scale of operations, current CRA regulations attempt to apply a relatively simple set of rules to a diverse set of depository institutions. Although the distinction between "small" and "large" banking organizations represents a nod toward developing separate rules for organizations of differing scale, the asset threshold (greater than $250 million) used to define "large banks" lumps together "small large banks," that often make fewer than 1,000 loans in a single assessment area,

with national-scale financial institutions making as many as 200,000 home purchase loans in assessment areas scattered across the country.

Faced with the challenge of evaluating entities with many distinct assessment areas, regulators have adopted a number of sampling concepts that select just a subset of areas for "full scope review." Since selection criteria appear to be weighted toward more densely populated assessment areas, these rules focus limited attention on smaller market areas, including rural areas. Moreover, for lenders with multiple assessment areas, current CRA practices "roll up" individual assessment-area scores into an overall average for operations in a given state. As a result, the current system permits an entity to obtain an overall satisfactory rating, even when the organization's performance in a particular assessment area was rated as "needs to improve."

Proposed modifications include the addition of criteria that would mandate "full scope reviews" in rural areas or assessment areas that are generally deemed to be "underserved." The National Training and Information Center (2001) calls for "localized CRA ratings," so that CRA-regulated institutions have an incentive to perform consistently well in all locations. Another approach would be to develop a multistage sampling procedure. This approach would first review HMDA and other readily available data to obtain an initial series of indicators of a given institution's performance in each assessment area. Then, "full scope reviews" would be conducted in all areas where these initial indicators suggest that the lender's performance may fall in the low range of satisfactory or below, while at the same time continuing to target for review a sample of other areas as well. Whatever method of selection is developed, other proposals call for specific penalties if a lender fails to obtain a rating of satisfactory or higher in any single assessment area that is reviewed.

6.3 Service Test

During the GLBA debate, numerous proposals surfaced about how to alter the CRA service test to account for the dramatic shifts in the provision of financial services (Goldberg 2000). By most accounts, the service test component of the examination is the least well developed of the three. Review of the CRA examinations for the banks interviewed for this study suggests that regulators in general spend little time on this element of the examination. In a typical CRA examination report, the service test gets a fraction of the space devoted to the lending test. The test focuses largely on the hours of operation and

equality of access to branches in lower—as compared with higher—income areas where the bank operates branches. It also focuses on the pattern of branch openings and closings according to neighborhood income since the previous examination.

Lenders clearly perceive the community-development services portion as onerous to document, if not comply with. For example, lenders are responsible for undertaking the highly subjective task of documenting the charitable activities of their employees as evidence of their service to the community. Lenders also must take on the somewhat tedious task of describing the location of ATMs and documenting decisions concerning bank branch closings. Yet, beyond possibly constraining their ability to close branches in lower income markets, the service test appears to have little impact on the provision of financial services to lower income individuals.

Despite the apparent weakness of the service test, the examination's component on retail banking services is arguably the most closely linked to the branch-banking mechanism through which CRA obligations are defined and operated. In contrast, mortgage lending is almost entirely decoupled from branch locations as underwriting decisions on the vast majority of loans are made by automated systems that can be located just about anywhere.

Meanwhile, many people in lower income areas frequently use check-cashing businesses, buy money orders at the post office, and get above-market-rate used-car loans from unscrupulous finance companies. Reacting to this situation, some have suggested that the CRA may provide an opportunity to encourage banks to meet the financial services needs of lower income people, who today are underserved with respect to many other financial services to a greater degree than they are with respect to mortgage lending (Stegman, Cochran, and Faris 2001).

6.4 Small-Business Lending

Prior to the 1995 changes to CRA regulations, limited data existed for tracking small-business lending. Although assessments of banks' mortgage lending benefited from relatively detailed information reported under HMDA, the assessment of small-business lending was subject to a lower level of scrutiny. Since 1996, small-business data reporting and public dissemination requirements for CRA lenders have improved the ability to track and evaluate lending patterns for this component of the examination, although small-business data remain less detailed and comprehensive than HMDA filings. In addition, the small-business data collected and distributed pursuant to the CRA include limited information

on business characteristics, failing in particular to report on the race and gender of business owners. These factors combine to limit the effectiveness of the CRA's oversight of small-business lending and limit its impact.

Among the weaknesses of current regulations is the fact that only institutions with assets greater than $250 million (those subject to the large bank examination) report small-business data. A greater proportion of mortgage lenders file HMDA reports because the asset threshold stands at a much lower $31 million. In addition, the HMDA mandates reporting by most nondepository residential mortgage lenders, but only depository lenders file small-business data. Also, unlike the HMDA, lenders report only on originated small-business loans, not ones that they reject. Furthermore, the "location" of a small business is ambiguous and could potentially be the owner's residence, mailing address, or location of management offices or other firm facilities. This ambiguity may enable potential borrowers to "game the system" by using an address on their loan application that is located in a CRA-eligible area in an effort to improve the chances of their loan being approved.

6.5 Regulatory Toughness

Focus on the effectiveness of the implementation of the small-business lending or the service-test portions of the CRA is part of a larger set of issues relating to the uniformity of CRA enforcement by the four regulatory agencies. The regulatory agencies do coordinate their activities through the Federal Financial Institutions Examination Council, but in practice there is wide variation in how the CRA is enforced. In 1995, a U.S. General Accounting Office study (1995) reviewed forty CRA evaluations and found general evidence of inconsistent grading from one examiner to another. Similarly, Thomas (1998) reviewed 1,407 CRA examinations and found significant variation both between and within regulatory agencies. Using data from the Thomas study, Zinman (2001) found not only that there was clear evidence of differing degrees of "regulator toughness" from one regulator to the next, but also from one geographical region to the next. Moreover, Zinman concluded that this variation in the degree of toughness mattered, in that banks with tougher regulators were more likely to expand the provision of small-business loans.

Findings such as these continue to fuel the ongoing debate as to how best to implement CRA provisions in the evolving world of financial services. Absent further regulatory reform, many bankers will continue to push for legislative relief, arguing that the CRA is "unfairly" administered. At the same time, housing advocates will counter by noting that when "properly implemented," the CRA does produce clear benefits and that there is significant room to extend the reach of the CRA beyond the world of residential mortgage lending. In short, the debate over how to implement the CRA effectively is likely to continue into the foreseeable future.

6.6 HMDA Data Collection

Closely related to the ongoing discussion of CRA enforcement is the discussion of HMDA data collection. The structure of the large-bank CRA examination formally makes the lending test as important as the investment and service tests combined. Anecdotal evidence suggests that of the three lending test components, mortgage lending carries the most weight. To the extent that this is true, it is a reflection of the fact that analysis of mortgage lending is supported by HMDA data, which, while imperfect, are more widely accessible, comprehensive, and available over a longer duration than data for small-business or community-development lending. It also reflects the large share of all lending in lower income market sectors that is devoted to housing.

HMDA data have also been the primary empirical tool used to complement street-level activism by community advocates. These groups have used the HMDA to evaluate and in some instances lodge protests with regulators about the performance of lenders in their communities. However, despite its important role in the struggles of the 1980s and the first half of the 1990s, HMDA's usefulness waned as reporting requirements failed to keep pace with the rapid restructuring of the mortgage lending industry. Among the key changes are the growth of subprime lending, the increased prominence of manufactured housing as a tenure choice for lower income people, and the growth of loans by consumer lending organizations.

The area where current HMDA data perhaps lagged the market most was in the HDMA's failure to collect data that would allow loans to be distinguished as being for manufactured housing or made at terms below the "A" rate. Current practice by many analysts supplements public HMDA data with a lender "specialization" list available from HUD that makes it possible to classify loans as being made by an institution that focuses on prime, subprime, or manufactured-housing lending. Given the diversity of products offered by large and even relatively small lenders, this constitutes a coarse method of sorting loans. Many subprime lending specialists also make prime loans, just as banks and mortgage lenders may make subprime or manufactured-home loans, although the bulk of their business may be in conventional prime lending.

Analysis of lending patterns for manufactured housing is hampered by a lack of information on property characteristics, making it impossible to determine whether a loan by a manufactured-housing specialist involved the acquisition of a unit placed on rented land or the purchase of a manufactured home and associated land. Because the potential financial outcome of the transaction for the typical owner of manufactured housing rests in large part on whether or not he or she owns the land, knowing the property characteristics would allow regulators to assess differentially banks' lending of each type during the examination. Although this information is known to the lender at the time the loan is made, many bankers argue that including this information in the HMDA would be prohibitively costly.

Subprime lending raises even thornier issues for regulators attempting to assess an institution's lower income mortgage lending performance. Currently, regulators can obtain information about the terms and pricing of mortgage contracts that goes beyond what appears in HMDA reports. But review of CRA evaluations suggests that most CRA examinations do not take advantage of this potential. As a result, most examinations merge all loans to lower income people and communities to produce an aggregate lending total. This results, for example, in equal credit being awarded in examinations for loans to lower income people and areas made at the "A" rate and the "B" or "C" rate, or for loans that do and do not reflect practices, such as inclusion of single-premium credit insurance, that are widely considered predatory. Meanwhile, the rise of new players in the home mortgage market, including independent consumer finance companies engaged in mortgage lending, has served to limit the share of all home lending covered by HMDA reporting.

Given the importance of understanding more fully the implications of the rapid expansion of mortgage product offerings—particularly as they relate to lower income households and communities—in January 2002, the Federal Reserve issued a rule to expand the number of nondepository institutions subject to HMDA reporting requirements. The rule also called for disclosing pricing data on higher cost loans and identifying loans on manufactured homes. In particular, the new rule extends HMDA coverage to nondepository institutions making more than $25 million in mortgage loans. Currently, nondepository lenders report under the HMDA only if their residential mortgage lending (including home purchase and refinance loans) during the previous year equaled or exceeded 10 percent of their total loan originations. In addition, the new rule requires lenders to identify whether the loan is "high-cost," as defined by the Home Ownership and Equity Protection Act, and to report the spread between the annual percentage rate and the yield on the comparable

Treasury security when this spread exceeds 3 percent for first-lien loans and exceeds 5 percentage points for subordinate-lien loans. Finally, the new regulation requires lenders to report whether the loan involves a manufactured home.

7. Conclusion

On this twenty-fifth anniversary of the Community Reinvestment Act's enactment, reform is needed to ensure that the act keeps pace with dramatic shifts in mortgage lending and the financial services industry. Reform could come either as a result of new rulemaking by federal regulators or new legislation. In either case, there appear to be two major pathways to reform: 1) reform could maintain and improve upon the CRA's historical focus on residential mortgage lending, or 2) reform could reposition the CRA to give more emphasis to community-development activities and the provision of banking services to lower income people and communities more generally.

Residential mortgage lending has been central to the CRA since its passage, yet the act's historical focus on assessment areas linked to deposit-taking activities makes little sense today. Limiting detailed CRA scrutiny to assessment-area loans arguably distorts the efficient operation of the marketplace. Minimally, it seems unfair for the CRA to mandate detailed scrutiny of a relatively large share of home loans made in some metropolitan areas and by some lenders, while at the same time devoting so little attention to the vast majority of loans made in other areas and by other lenders. In order to extend the CRA's legacy of expanding home-buying opportunities to lower income people and communities, federal regulators should consider expanding assessment-area definitions to include loans made by the CRA-regulated entities operating outside the areas where they maintain deposit-taking branches. In addition, Congress should also consider expanding the CRA to include the residential mortgage lending operations of a diverse set of nondepository organizations now playing an increasingly important role in lending to lower income people and communities.

Alternatively, if Congress and/or the federal regulators choose to focus the most extensive CRA-imposed obligations only on the CRA-regulated entities operating in assessment areas defined by the location of deposit-taking branches, then the CRA needs to be "repositioned" to better reflect what these organizations actually do. Given the growth of large banking organizations, many smaller banks and thrifts have abandoned their historical residential lending operations, focusing instead

on other forms of lending, including small-business and community-development lending. In this regard, retail banking services are arguably most closely linked to the branch-banking mechanism through which CRA obligations are defined and operated. Going forward, new CRA regulations could expand the CRA's focus on small-business and community-development lending and investment as well as the provision of banking services.

In any event, the Community Reinvestment Act must change. It is hoped that Congress, having finished work on the Gramm-Leach-Bliley Act, will continue to work with housing advocates, industry representatives, and regulators to craft a consensus on "CRA modernization" and how best to address the ongoing needs of lower income communities for improved access to credit and financial services.

Endnotes

1. This paper draws on research funded by the Ford Foundation and contained in the Joint Center for Housing Studies report, "The Twenty-Fifth Anniversary of the Community Reinvestment Act: Access to Capital in an Evolving Financial Services System." See also previous work completed by the Joint Center and the Brookings Institution for the U.S. Department of the Treasury (Litan et al. 2000, 2001). An earlier version of this paper, "The Evolution of CRA: Changing Industry Structure and CRA Regulations," was presented at the American Real Estate and Urban Economics Association Annual Meeting in January 2002.

2. Insured depository institutions include any bank or savings association, the deposits of which are insured by the Federal Deposit Insurance Corporation (FDIC). CRA does not apply to credit unions and independent mortgage companies.

3. The federal banking regulators responsible for administering the statute are the Office of the Comptroller of the Currency for national banks; the Board of Governors of the Federal Reserve System for state-chartered banks that are members of the Federal Reserve System and for bank holding companies; the Federal Deposit Insurance Corporation for state-chartered banks and savings banks that are not members of the Federal Reserve System and whose deposits are insured by the FDIC; and the Office of Thrift Supervision for savings associations whose deposits are insured by the FDIC and for savings association holding companies.

4. For an excellent collection of essays on the cause and extent of mortgage lending discrimination, see Goering and Wienk (1996).

5. The four-tiered rating system was: outstanding, satisfactory, needs to improve, substantial noncompliance.

6. Institutions are defined as those with $250 million or more in assets or those belonging to a holding company with $1 billion or more in assets.

7. The shares for Oakland and San Jose are 25 percent and 28 percent, respectively.

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Ronay Menschel

PRESERVATION FIRST

I would like to begin by thanking Christine Cumming and Michael Schill and their staffs for organizing this conference. It certainly has enhanced our understanding of the issues, and hopefully will lead to a more informed and therefore more effective policy to address the affordable housing needs of this city and the region.

A central theme of the presentations today is the need to learn from past mistakes as well as past successes. As Commissioner Perine observed, there have been many mistakes made in the past. She clearly is someone who is carefully learning from the past as she shapes how we move forward.

The key issue for New York City and the region is preservation of the existing affordable housing stock. Commissioner Perine mentioned how much of that stock has been lost in past years—how far behind we have gotten because we allowed so much of the old affordable housing stock to slip through our fingers in the 1970s and 1980s. Of course, new housing construction rates also have been far short of demand.

Housing advocates had hoped that the region's economic growth of the 1990s would continue, with associated rapid growth in tax revenues. In addition, we were all looking at excess revenues from the sale of the World Trade Center and from Battery Park City to provide additional resources to address affordable housing issues. Instead, we are now confronted with a very constrained economic environment.

My sense is that Mayor Bloomberg understands the importance of affordable housing in any economic development strategy, and that is significant. And it is noteworthy that Commissioner Perine reports to Daniel Doctoroff, Deputy Mayor for Economic Development. Affordable housing will therefore be well represented in the entire policy mix. Regrettably, we will not have as many resources as we once thought we would. As Assistant Secretary Bernardi noted, the federal budget is holding up reasonably well, and that is helpful—although affordable housing for some years has not been the funding priority at the federal level that it should be.

As we consider what needs to be preserved, we have to look at housing created with public-sector dollars and private dollars. And we have to be mindful that capital has to be available to property owners—capital that they can access even in more difficult times—so that their properties do not deteriorate further. We also have to look at the incentives given to those owners to maintain their buildings.

On the federal front, we have a large portfolio of what are called "older-assisted" properties. This is one of my favorite topics. Phipps Houses has two older-assisted properties, more than twenty-five years old, in need of capital renewal. These buildings receive very hard use, as do all older-assisted buildings, at least in New York. And they have been under-capitalized by HUD through the years. The question is how to put capital into those buildings.

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HUD's Mark-to-Market program does not offer a solution for many of the older-assisted properties because it is directed at newer, federally assisted properties with rents that exceed 120 percent of an area's fair market rent. Ironically, older-assisted properties generally have a lower rent scale, and while in greater need of capital repair, they do not qualify for the program. Mark-to-Market is directed more at reducing the federal government's Section 8 burden than putting up capital for renewal. Mark-up-to-Budget holds greater promise, in that properties with lower rents can qualify, but they must pursue a tortuous process to gain HUD's approval of increased subsidies to service increased debt. I listened with some envy when Assistant Secretary Bernardi said that some rules and regulations were put aside for a $700 million community development block grant to the city. Whatever the refinancing program, HUD's lending and grant-making process needs to be accelerated.

I know that the Millennial Commission is looking at revisions to the exit tax. That may provide some opportunities and incentives to investors of twenty-five years ago to transfer their properties to not-for-profits without suffering negative tax consequences. The recipient not-for-profits can protect the properties and bring to bear new financial resources. In addition, not-for-profits are usually vested in the community for the long term and have a broad, comprehensive agenda that includes community preservation.

During John Goering's presentation on the Moving to Opportunity Demonstration, I was interested to hear that some significant results were obtained. Of course, they were realized in very extreme situations in the Chicago Housing Authority, where you had people living in terrible conditions. My response to this strategy is that it can be exercised only on a relatively small scale—this is a point Lance Freeman also made. We cannot move everybody out. We have to make our low-income communities work. That is how leadership by not-for-profits has demonstrated positive results.

This is especially true of the affordable housing program in New York, where you have the involvement of not-for-profit community-development organizations. Investments by community-based organizations are comprehensive: the organizations are concerned about education, local health care, youth development, and public safety. Their leadership brings community residents together to advocate for themselves and for individuals to be mutually supportive. We have seen that homeownership, interspersed within these communities, has proved effective again in stabilizing neighborhoods and in improving both their physical condition and their social fabric.

An earlier presentation described the positive effects that investment in a property or in new construction has had—a certain "halo" effect. Likewise, studies presented today illustrated the impact of neighborhood conditions on public safety and on children. Children's development is affected by neighborhood conditions. And as Lance said, families need social support. That support has to accompany physical changes.

The City of New York, of course, has its own housing stock in need of preservation. First, the city-managed stock needs to be brought up to standards and fully utilized. We know that many city-owned and -managed buildings are only partially occupied. A priority is to make those buildings not only more habitable, but fully occupied.

I found Glynis Daniels' description of areas with high concentrations of HPD violations—which obviously mirror the high delinquency rates—to be very interesting. To me, it suggested where the city's priorities might lie in terms of future investment: low-interest loans to private owners for repairs, third-party transfers, and the use of tax credits to help finance improvements to buildings. In addition, these are communities for which city social service investments should be designed to complement brick-and-mortar investments so as to maximize the benefits of each. The current administration realizes that it has to coordinate the work of all agencies that affect housing. So you have Deputy Mayor Doctoroff, City Planning, the Department of Buildings, the Department of Finance, the Department of Housing Preservation and Development, and even the Human Resources Administration all concerned with housing. Recently, the Human Resources Administrator called together the leaders of each agency that has an impact on the homeless and on people who receive Temporary Assistance for Needy Families to discuss this particular population's housing needs. That is the type of coordinated approach that is required and is being pursued.

Finally, I would like to comment on the issue of vouchers and their effect on production, a topic that was addressed in some of the presentations. Vouchers have very limited, if any, effect on housing production in New York City, where it is hard to find an apartment to rent using a voucher. The voucher is given to the individual, not a developer. While there is a steady flow of voucher funding by HUD, this revenue stream cannot be used to finance new housing—a lost opportunity. We need to be able to obligate vouchers to rental properties in development, just as vouchers can now be used for first-time homeownership. Hopefully, this is something that can be examined in greater detail.

In short, in times of limited resources, we have to be more ingenious and learn from the past. It is paramount to preserve what we have and to achieve higher utilization from it. In today's world, we have to look to a mix of funding sources, blending subsidies, low-interest loans, and tax credits with market rate financing. Important too is identifying early trends

of tax delinquencies and multiple building code violations, and providing assistance (often modest dollars) before such deterioration overwhelms a community. Ultimately, New York City will have to devote a greater share of public resources to increase the inventory of affordable housing available to low- and middle-income people and families if it is to continue to be a city of growth and opportunity.

Richard Roberts

The Building Blocks for Private Investment in New York City's Underserved Communities

It is good to see everybody, and I trust you are having an informative day. First, I want to thank Christine Cumming and Michael Schill for inviting me to participate in this conference. I thought I would share with you briefly the perspective of someone who invests in the neighborhoods and communities that are the focus of today's discussions. We all bring different perspectives to this issue, either from government, the nonprofit sector, or the private sector. I think that I add an interesting view: that of someone who is focused on generating a fair, risk-adjusted return on the firm's capital.

Goldman Sachs' Urban Investment Group is an opportunity fund that specializes in making investments in a broad range of opportunities that we refer to as the urban emerging market. We invest in minority-owned businesses, which for the most part are located in or provide goods and services to core urban areas: generally low- and moderate-income areas. In addition, we are investors in urban real estate. We are a comprehensive real estate investor in the sense that we focus not only on housing but on other types of real estate as well.

There are, of course, more traditional sources of private-sector capital for these markets. First among them is the Community Reinvestment Act. As we heard earlier, and as many of us know firsthand, the act has had a dramatic effect in terms of directing private-sector resources into urban neighborhoods. The government-sponsored mortgage enterprises—Fannie Mae and Freddie Mac—are another traditional source. For many years, there has also been a host of tax-motivated incentives, such as the low-income housing tax credit and other types of tax partnerships. Quite frankly, the biggest of these tax-motivated sources has been the mortgage interest deduction, which encourages people to become homeowners no matter where they live. The deduction has had a strong effect on directing private-sector resources into urban neighborhoods, although its reach is limited to those capable of becoming homeowners.

One of the things we have found is that there has been tremendous pressure on corporate earnings over the past year or two, making it very difficult for us to invest our money. Even with the increases in the low-income housing tax credit, syndicators report that it has been very difficult to raise tax credit equity for projects. For those of us who historically have been developing these projects, we do not see that pressure. Now, you may see it in pricing and other areas, but it has been very tough to raise tax credit equity. That is just something to consider when you are heavily dependent upon these types of mechanisms to attract resources. That being said, all of this tends to be supplementary to the capital that the government and the not-for-profits and philanthropic organizations provide.

Richard Roberts is managing director of Goldman Sachs' Urban Investment Group.

These traditional private-sector sources of capital in combination with government have fueled tremendous investment and change in many of these neighborhoods and communities. More recently, opportunity funds have started to appear. These funds, which are separate and apart from distressed investors, look for dislocations or problems in the market, and there are always some. We are investors who believe that there is value in these markets and that in a fair and appropriate way it is possible to earn adequate risk-adjusted returns. Opportunity funds have emerged because of the increased number of people focusing on the commercial opportunities in these neighborhoods. For example, Porter began by focusing on the retail disallocation in low-income neighborhoods and how density in these neighborhoods might create real opportunities. With this success, others began to realize that, from an opportunity fund standpoint, investing in these neighborhoods might actually make sense.

From a housing standpoint, we are dependent upon several things. One is a vibrant for-sale market, because we tend not to focus on being a long-term holder. However, it should be noted that long-term investors in multifamily housing have not done so badly. That is probably one of the best performing asset classes over time. But when compared with other asset classes, it tends to represent a much longer hold on your money. In addition, there is an emphasis on, for obvious reasons, market rate opportunities because, as a general matter, we think we can do better with respect to our returns.

There are many different funds that have focused on similar investments. CPC now has a fund that focuses on opportunities here in New York. Both Jerry Salama and Magic Johnson have opportunity funds focused on the inner city. Magic's tends to be more focused on the commercial front while Jerry's is more of a multifamily, affordable housing fund. In addition, Fannie Mae has a very important and aggressive equity fund in this arena: the American Communities Fund. All of these examples represent people attracting institutional money with fair and very aggressive rates of return. That leads to some conclusions.

First, the money tends to be very expensive. We are not looking for 9 percent tax credit yields. If we could earn 9 percent in New York, we would be ecstatic. But as a general matter, we are looking for something much more aggressive. We are obviously willing to assume some real risks, which has not been the case with other investors. Why are we so willing? One reason is that we believe that these markets are strong. We have been looking at the research of Porter and others in terms of the underlying strength of the markets, and we believe that there is a good amount of value there.

Second, the quality-of-life improvements that have occurred in low- and moderate-income areas throughout the country have made the areas much more attractive candidates for investment. Third, we recognize the type of first-loss position that the government and not-for-profit sectors have assumed. The massive public investment that has occurred in places like Harlem and the South Bronx has created a platform for us to start looking at other potential investments.

The demographic trends are undeniable. When you look at the growth of immigrant communities and communities of color throughout the country, and the fact that they are disproportionately located in urban areas, you can conclude that there are strong investment opportunities not only in real estate, but also in a host of commercial activities ranging from cable television to radio to retail.

The prospect of attractive returns for investors like us is based on the strong likelihood of rising economic fortunes in these areas. But also, quite frankly, in tough economic times, pricing tends to come down—and the idea is to buy low and hopefully sell high. So if you believe the demographic trends and the density story, then do not worry about the fact that the macroeconomic environment is not ideal. Because if you can buy economically and invest economically, you ultimately will earn your returns.

From a policy standpoint, some things must occur for this trend of more aggressive investment to continue. I will focus on New York because it is the area I know best. For one, there needs to be continued emphasis on quality-of-life improvements. The favorable underlying trends, such as declining crime, have made these communities attractive places for investment. Should there be a reversal in these trends and crime rates start to rise again, these areas will quickly become much less attractive for what I call unassisted equity capital.

There also needs to be greater emphasis on regulatory reform and cost reduction. We have seen a number of projects where people come in and say, for instance, that the time is right for a hotel in a particular underserved community or market. The first thing we ask them is whether they have a site plan and whether the site is entitled. If the site is not entitled, it can take fifteen months or more just to determine whether the project can be built on a proposed site. By that time, all of the other things that we are looking at in terms of our economic and financial analysis will have changed. From the standpoint of committing capital, you have to be able to move with some degree of certainty and you have to be able to move relatively quickly. There are many opportunities to invest. Why wait on a particular project to be entitled when you can invest elsewhere and earn a fair and appropriate return?

That strategy applies not only to land-use planning and site designation, but also to the allocation of the particular groups with whom the government decides to work. We have seen a number of projects that were very worthwhile and appropriate. Because we can invest anywhere, we are going to invest with

people who we think can actually make the project take shape. But if the city or the state or some other governmental entity is wedded to a certain organization or group because of other considerations, it is very difficult for us to think about committing capital to that particular project.

People ask me why, as the former Housing Preservation and Development commissioner, did I decide to go to an opportunity fund? I often answer that we have been able to move an agenda of affordable housing and community development very far, and I feel very fortunate to have been a part of the most recent history of that agenda. Government has played a role in advancing that agenda, as have the nonprofits and the private sector. However, there needs to be a more wide-ranging discussion. That is to say, I do not think that opportunity funds or funds like the ones operated by Goldman Sachs are by any stretch of the imagination the complete answer or right for every project. But I do believe that people who willingly invest in low- and moderate-income areas, rather than in a range of other opportunities where capital can flow, need to be at the table to participate in the discussion. I say this because private capital can go a long way toward stretching the resources of the other players.