

Targeting Housing Production Subsidies

Literature Review



U. S. Department of Housing and Urban Development
Office of Policy Development and Research



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Prepared for:

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Chapter One

Introduction

This report examines the current literature on rental housing markets and on housing policies for low-income renters in an attempt to answer a fundamental question. The question is what constitutes the most effective use of government subsidies that are made available for the **production** of rental housing. This discussion is not intended to be a continuation of the debate over whether demand or supply-side subsidies generally represent a better policy. Rather it starts from the premise that production subsidies are *relatively* better used in some circumstances than in others. Our objective is to identify those circumstances more precisely, so that government policy-makers and others can make good decisions about how to use the resources of housing production programs for low-income renters.

To sharpen the question, the sponsor of this research, the Office of Policy Development and Research at HUD, has asked us to imagine that a new housing production program has just been created. How would we allocate that program's resources: spatially (to types of housing markets or neighborhoods) or by types housing needed by different types of households? This literature review will stop short of suggesting an allocation formula or a list of eligible uses of funds. A subsequent report will suggest such elements of the design of a hypothetical program. The purpose of this review of the literature is to take a first step in that direction—to cull through the existing theory and empirical studies for the principles that would guide the decisions on the design of a program.

The value of this examination of the best uses of production subsidies does not depend on the creation of a new housing production program. Resources to support the production of or reinvestment in affordable rental housing already exist, and decisions are being made every day about their use. State agencies are making decisions on how to allocate tax credits for the production of rental housing. City, county, and state agencies are making decisions on whether to use the HOME housing block grant for the production of rental housing and which projects to fund. State housing finance agencies are deciding whether to use their resources to provide new capital subsidies for particular housing developments built in the past with tax-exempt bonds. The federal government is making decisions about the future of housing developments for which long-term subsidy contracts are expiring. Public housing authorities are deciding whether and how to use the quota of demand-side vouchers that may be turned into supply-side, project-based subsidies. This report should help inform all of those decisions by laying out our current knowledge on when subsidies for the production of rental housing may be particularly valuable and when they should be avoided.

Exhibit 1. Glossary of Terms

FMR (fair market rent): Estimates of gross rent (including shelter rent plus the cost of utilities excluding telephones) set by HUD annually for metropolitan areas and non-metropolitan county FMR areas. FMRs are used to determine the eligibility of rental housing units for the Housing Choice Voucher program. For most areas, FMR is set at the 40th percentile of the rent distribution (of units occupied by recent movers and excluding public housing units and units less than two years old).

HAMFI (HUD-adjusted median family income): The area median family income of a metropolitan area or non-metropolitan county determined by HUD and adjusted for household size. Various percentages of HAMFI are used as income cutoffs for HUD rental programs. Households with incomes below 80 percent of HAMFI are defined as “low income,” those with incomes below 50 percent of HAMFI are “very low income,” and those with incomes below 30 percent of HAMFI are “extremely low income.”

PHAs (public housing authorities): Administer Housing Choice Vouchers; own and operate public housing developments. They are generally local agencies but in some cases are states.

Some of the literature that we review in the following pages is theoretical, but much of it provides evidence from current housing programs, because it assesses their costs or evaluates their impacts on households, the housing market, or neighborhoods. Therefore, Exhibit 2 presents basic facts about some of these programs, in order to help the reader understand later references to them.

Exhibit 2. Current Housing Programs

Housing Vouchers. The Housing Choice Voucher Program provides demand-side subsidies to low-income renters. Vouchers provide a rent subsidy that, generally speaking, is the difference between a “payment standard” set at the level of a typical private market rent in a local area and 30 percent of the household’s income. Units must meet minimum housing quality standards and be determined by the program administrator to be no more than the market value of the particular housing unit rented. Within limits, voucher holders can choose to pay above 30 percent of their income for more expensive units than those reached by the payment standard. The Housing Choice Voucher program combines and supersedes two earlier programs, Section 8 Housing Vouchers and Section 8 Housing Certificates. In this report, as in most of the literature, all three programs are treated as essentially the same program and called “vouchers.” Vouchers are administered by PHAs. About 1.6 million households use housing vouchers. Almost all have incomes below 50 percent of HAMFI (very low incomes), and about three quarters have incomes below 30 percent of median (extremely low incomes).

Public Housing is the oldest supply-side or production program for subsidized rental housing. Public housing developments (and, to a small extent, individual public housing units on scattered sites) are owned and operated by local PHAs. The federal government paid for the original capital costs of the developments and makes grants for their ongoing capital and operating costs. Public housing residents generally pay 30 percent of their income for rent, and this pays for a portion of the operating costs. Income levels of public housing residents are similar to income levels of households with vouchers. There are about 1.2 million occupied public housing units, most of which were built from the 1950s through the early 1980s.

Section 8 New Construction/Substantial Rehabilitation. This program made it possible for private producers to build or rehabilitate housing developments for occupancy by low-income households. The residents pay, generally, 30 percent of their income as their share of the rent, while a contract between the federal government and the owner pays the balance of the rent needed to amortize the debt associated with land and construction costs and to cover ongoing operating costs. Income levels are similar to income levels of public housing residents and households with vouchers. About 650,000 units were subsidized by this program, built between the mid 1970s and the early 1980s. There are additional privately owned assisted housing projects developed under earlier production programs (1960s through the early 1970s), originally with only capital subsidies. Section 8 rent subsidies have subsequently been attached to most of the units in most of these projects. Altogether, there are 1.4 million units in the various kinds of HUD-assisted, privately owned rental projects. Some of these units have left the assisted housing stock, after their owners decided not to renew Section 8 contracts that reached the expiration date.

HOPE VI is a housing production program active since the mid 1990s. It replaces public housing projects developed earlier, either by demolishing and rebuilding them or by substantially rehabilitating existing structures. HOPE VI has rebuilt, or is rebuilding, about 80,000 public housing units. Many of the units replaced were seriously deteriorated and vacant.

Exhibit 2. Current Housing Programs (*Continued*)

Section 202 produces new housing developments for the elderly. Incomes (adjusted for household size) are similar to those of voucher households and those living in public housing and Section 8 projects, and, as in those programs, residents pay 30 percent of income as their share of the rent. The federal government provides grants and operating subsidies to non-profit sponsors to build and manage these projects. The program superseded an earlier program with the same name,¹ in which the subsidy was a Section 8 New Construction rent subsidy rather than a grant plus an operating subsidy. From the standpoint of the effect on residents and the housing market, the old and new programs are the same. Together they have produced about 300,000 units.

Section 811 produces housing developments, generally small in size, for persons with disabilities, including those with developmental disabilities, chronic mental illness, and physical disabilities. The subsidy mechanism is the same as for the Section 202 program. The program has funded about 22,000 units.

The Low Income Housing Tax Credit (LIHTC) provides tax credits to private investors in return for equity investments in privately owned rental housing developments with restricted rents. The program produces newly constructed and substantially rehabilitated projects, with rents that do not vary with the actual incomes of residents but are limited to no more than a flat amount pegged to the local HAMFI. Most LIHTC projects are required to have rents at or below 18 percent of HAMFI.² Residents generally have incomes between 40 and 60 percent of median. Tax credits sometimes are used to rehabilitate Section 8 projects, and households with vouchers sometimes live in LIHTC developments. When tax credits are used in conjunction with another program, incomes of residents sometimes are substantially lower. This program has been active since the late 1980s and produces between 60,000 and 100,000 units per year.

The **HOME** program is a housing block grant to city, county, and state “participating jurisdictions” (PJs). PJs can choose to use funds for the production of rental housing developments or for other types of housing subsidies. Most PJs use at least some of their grant for rental housing production. Like LIHTC, HOME has “flat” rents within a maximum determined by program rules. Residents of HOME rental developments often have extremely low incomes and sometimes use vouchers. HOME produces between 25,000 and 30,000 rental units per year. HOME rental projects often are subsidized by other programs as well, particularly the Low Income Housing Tax Credit.

¹ An even earlier program, aimed at a somewhat higher income group of elderly, operated from 1961 to 1973 and funded about 45,000 units.

² An alternative rule applies to projects that have a small number of Tax Credit units in a larger development.

Exhibit 2. Current Housing Programs (*Continued*)

The Rural Housing Service (RHS) *Section 515* program provides direct loans to construct and maintain multifamily rental projects that serve low and very low-income families. Direct loans have a rate of 1 percent, and most projects receive rental assistance payments to make them affordable to very low-income tenants. The RHS has a portfolio of about 17,800 existing multifamily Section 515 projects, with about 400,000 units. Most of these projects were built in the 1980's.

This Report

The next chapter (Chapter 2) continues to prepare the reader for understanding the literature review by introducing the basic principles that govern rental housing markets and the way in which demand and supply subsidies affect them. We then turn, in Chapter 3, to the question of which renter households need government support for their housing consumption. This issue is central to how any housing subsidy program, demand or supply-side, should be allocated.

Chapters 4 and 5 approach the issue of where production subsidies can be used most effectively by reviewing the evidence on where vouchers are relatively *less* effective. Chapter 4 reviews the findings from studies of the voucher program on the types of households and types of housing markets for which “success rates,” the portion of those offered voucher assistance who are able to use it, are relatively low. Chapter 5 turns to the potential negative consequences of using vouchers to subsidize low-income renters.

Chapters 6 and 7 turn directly to the effects of production subsidies. Chapter 6 reviews the shortcomings of production subsidies. These include their relatively high cost compared with vouchers and the possibility that, instead of adding to the supply of affordable housing, production subsidies will simply substitute for rental housing that would have been produced by the private market without a subsidy.

Chapter 7 reviews the evidence on where production programs are effective. The chapter first returns to the evidence on the types of households that may be served better by production programs than by vouchers. The rest of the chapter deals with the potential positive “externalities” of production subsidies.

Chapter 8 draws on the earlier chapters to point out the areas in which our current knowledge is weak and identifies some priority areas for additional research. In this chapter, we also begin to “operationalize” the implications of our current knowledge by suggesting a thought

process for local planners for the use of housing production resources and by providing a preliminary list of indicators that might be used in an allocation formula for supply side housing subsidies.

Chapter Two

What Determines the Demand and Supply of Affordable Rental Housing?

This chapter contains a discussion of the basic economic principles that affect the demand and supply of affordable rental housing to provide a background for the discussion of policy issues and research findings in subsequent chapters.

In the rental housing market as in other markets, the dominant principle is that prices adjust until the quantity of units supplied equals the quantity of units demanded. Rents of housing units are most affected by close substitutes in terms of the type of property (units of different size, structure type, and quality) and its location. Units of similar quality tend to have similar rents, because some occupants are willing to move to take advantage of lower rents in similar units. To avoid vacant units that provide no revenue, landlords adjust their asking rent in line with similar units in the market.

An important issue is what constitutes a rental housing market, that is, within what group of properties are price adjustments made. Clearly, there is no single national rental housing market. Entire metropolitan areas (particularly the larger ones) also do not constitute single housing markets. Barriers that prevent households from moving across a metropolitan area in response to changes in rents can be created by job locations and commuting costs, by racial and ethnic residential patterns (which may or may not be the result of discrimination), and by the fiscal policies and differences in service quality of the separate political jurisdictions that make up the area. There also may be separate “sub-markets” for specialized types of housing—for example, housing with features needed by people with disabilities or housing suitable for large families.³

In addition to variations over space and by special types of housing, variations in supply and demand over time make the process of price adjustment complex. Disequilibrium, or the imbalance between supply and demand, is common in the short run, as movers vie for the available units in the local housing market (Fair, 1972). In the longer run, however, we expect housing prices to approach an equilibrium in which the quantity supplied matches the quantity demanded.

³ Our focus is on the rental housing stock as a primary source of affordable housing, but it is important to keep in mind that rental housing and owner-occupied housing are interchangeable to a degree. Some renters may have the alternative of becoming homeowners and ownership units can be converted to rental housing and vice versa.

In this chapter, we introduce the basic concepts that govern:

- Households as demanders of rental housing and the function of demand subsidies;
- Landlords and investors as suppliers of rental housing and the nature of supply responses;
- The filtering of the existing housing stock as a source of affordable rental housing; and
- The effect of government intervention on the supply side of the housing market.

Readers already familiar with the economic theory of these concepts may wish to proceed to Chapter 3.

Exhibit 3. Glossary of Terms

Capitalization rate (cap rate): The ratio of the rent (minus operating expenses) on a property to its market value.

Income elasticity of demand: The ratio of the percentage change in housing demand to the percentage change in income. For example, an elasticity of 0.8 means that, for each percentage point increase in income, the quantity of housing demanded increases by 0.8 percent.⁴ Thus, a 10 percent increase in income leads to an 8 percent increase in spending for housing services.

Price elasticity of demand: The ratio of the percentage change in the quantity of housing demanded to the percentage change in the price of housing.

Households as Demanders of Rental Housing

The housing market is closely connected to household income, which is determined primarily in labor markets.⁵ We assume households maximize their happiness (or utility) by consuming within the limitations of their household budget. Each household must decide on their preferred mix of housing and non-housing consumption. Generally, a household acts as a “price taker,” in that an individual household either accepts or rejects the rent set by the

⁴ DiPasquale and Wheaton (1996, p. 219) estimate the income elasticity of demand to be 0.78 in the case of 25-34 year olds, with smaller values for higher age groups. Ihlanfeldt (1982) found income elasticity for low-income households to be between 0.14 and 0.62, compared to a range of 0.72 to 1.10 for high-income households.

⁵ At the same time, renters search for employment to provide more income, recognizing that there is a cost to commuting, so the housing market can affect the labor market.

landlord. To get a different rent, the household must choose a different unit, usually of different quality or location. Renters will search for a housing unit that gives them higher utility as long as the expected benefit from additional search exceeds the cost of that search.

Thus, the quantity of rental housing demanded by the households in a particular housing market depends on the following factors:

- Population changes, including migration
- Household formation
- Income, net wealth, and tenure choice
- The quality of housing units, including local amenities or neighborhood effects
- Prices of housing units

At base, people need a place to live, so the more people the greater the demand for housing units. The number of people in need of housing is a combination of native population (birth and death rates) and net migration. The number and type of housing units demanded also depends on how the population is subdivided into households—and this, in turn, depends not only on family size and composition, but also on income. Low-income persons may share units and divide the rent.

We are primarily interested in rental units, but an important aspect of the demand for these units is how many households choose to own their units. In general, low cost and low quality units are rentals. Higher income households have the option to rent or own and can choose higher quality units. This means lower income households choose rental housing from the units left over after higher-income households choose where to live.⁶

The **quality of a housing unit** is not just based on the size and architectural features of the unit or building, but also depends on the **location and amenities in the neighborhood**. Areas near parks, shops or bodies of water are usually preferred over areas near airports, highways, or industrial centers. One reason that incomes tend to be homogeneous within a neighborhood is that higher-income households pick the best places to live. Furthermore, over time, high-income households protect their chosen properties with zoning regulations that create obstacles for low-cost housing.

⁶ Homeownership is not necessarily more expensive on a monthly basis, but the down payment requirement is generally smaller for renting (two months rent versus five percent of the house value). Transaction costs are much higher for owners, so that people who intend to move in the near future prefer renting. See, for example, Hendershott and Shilling (1982).

A useful way of measuring the responsiveness of housing demand to a change in household income is the **income elasticity of demand**. The elasticity is the ratio of the percentage change in housing demand to the percentage change in income. Income elasticity is normally expected to be less than one because housing is a necessity. As a family gets more income, they can afford to buy other goods and services, which usually means spending proportionally less on housing. While higher income households consume more housing, both in quality and quantity, than low-income households, housing as a share of total income is smaller for high-income families.⁷

Another important relationship is the **price elasticity of demand**, which measures the responsiveness of the quantity of housing demanded to changes in the housing price or rent. An increase in rent may cause a household to demand less housing, i.e., to move to a unit with less floor space and fewer amenities. Renters usually have a choice of units and relatively low costs of moving. If their current unit has an increase in rent, the family can move to a cheaper apartment of similar quality. However, if rents are going up throughout the city, the renter may have fewer choices. The alternative to staying put and paying the higher rent is consuming less housing by moving to a lower quality unit or doubling up with another family.

Estimates for price elasticity are in the range of -0.75 to -1.20 (Ellwood and Polinski, 1979), with the average estimate slightly inelastic or less than 1.0 in absolute value. (The price elasticity is negative to indicate that the demand for housing goes down as housing prices or rents go up.) Thus, a 10 percent increase in rent decreases the quantity of housing demanded by less than 10 percent. Therefore, the total expenditure on housing (the product of price and quantity) goes up by a small amount when prices increase.

The **mobility of renters** reflects both the income and price elasticity of demand. We know from analysis of American Housing Survey (AHS) data that about one-third of all renters and nearly half of renters aged 25-34 years old move each year. The most common reasons for moving are to get a better unit in terms of quality relative to rent and to make the transition to homeownership.⁸

The high rate of mobility for renters has an impact on landlord choices. Realizing how willing renters are to move, landlords have to be careful not to set rents too high and risk

⁷ However, the income elasticity of demand for high-income households is higher than it is for low-income households. For example, Ihlanfeldt (1982) found income elasticity for low-income households to be between 0.14 and 0.62, compared to a range of 0.72 to 1.10 for high-income households. Part of the higher income elasticity for high-income households is likely due to the increased use of housing as an investment rather than an increase in housing consumption.

⁸ Other reasons for moving include those related to employment (such as to take a job or shorten the commute), a change in family status, or health reasons.

losing their tenants. To some degree landlords can retain better tenants by keeping rents relatively low.

The high rate of renter mobility also affects neighborhood composition. Tenants frequently move as soon as their income allows them to find a better place. Particularly in older neighborhoods, the out-migration of middle-income renters can leave the neighborhood with a concentration of low-income renters (Bier, 2001). Without in-migration to these poor neighborhoods, vacancy leads to abandonment and legitimate businesses are replaced by illegitimate ones (Jargowsky, 1997). To avoid the urban blight of concentrated poverty, middle and upper-income households would need to be attracted to the area by newer homes and shorter commutes to work.

Demand subsidies or housing vouchers alter the role of households as demanders in several ways. Because they add to the household's financial resources, they may increase the demand for housing and they may also increase the demand for goods other than housing (Sinai and Waldfogel, 2002). Voucher recipients who derive great utility from higher quality housing can purchase more housing with the voucher subsidy, while those who derive higher utility from other goods can use the voucher primarily as an income transfer. However, because vouchers have a housing quality standard, a voucher recipient may be forced to choose higher quality housing. Thus, the increase in housing demand depends on the quality of the household's existing housing unit, the size of the voucher, and the income elasticity of demand. Whether the increase in demand created by vouchers leads primarily to the consumption of more housing by voucher households or to an increase in the price of rental housing throughout the market (for unassisted renters as well as for those using vouchers) depends on the response by suppliers of rental housing.

Suppliers of Rental Housing (Landlords and Investors)

The primary source of rental housing supply in the U.S. is private owners or landlords. The investment demand for rental properties depends on the risk and return from the rentals compared to other assets, both real estate and financial assets. One measure of the return on a rental investment is based on the present discounted value of future rents and subsequent sale price relative to the initial purchase price. If the expected return is high relative to the other investments in the same risk category, investors will want to buy those rental assets and bid up the purchase price.

A second measure of return on an investment in rental property is the capitalization rate, or cap rate. This is essentially the ratio of the rent (minus operating expenses) on a property to its market value. The cap rate, therefore, represents the annual return on the rental property investment, and is the current yield that investors demand in order to hold real estate assets. The cap rate is influenced by long-term interest rates, the expected growth in rents, the

riskiness of the rental income stream, and the property's tax treatment (DiPasquale and Wheaton, 1996). Government programs that provide below-market interest rate loans increase the cap rate, as does favorable tax treatment.

Owners of rental housing are assumed to act like businesses, attempting to maximize their rental revenue relative to costs. Landlords can change the rent, number of units, or quality of units to maximize their profits. If an investment provides low returns, the landlord can try to boost returns in the short run by reducing expenditures on services or maintenance. In the longer run, this strategy reduces the quality of the housing unit and will result in a loss of tenants to competing landlords. Ultimately, the landlord will try to keep units filled by lowering rents relative to inflation.

Because the future is uncertain, a landlord has to weigh the expected risks against expected returns for each investment choice. One source of risk that is difficult for the landlord to control is the change in neighborhood composition. Landlords can upgrade their units to attract households willing to pay higher rents, but if the neighborhood is generally declining, it may be very hard to attract tenants willing to pay the higher rent. Thus, landlords uncertain about the future income mix of a neighborhood generally are reluctant to invest in upgrading their property. Fear of decline becomes self-fulfilling, as the lack of new investment practically ensures the gradual deterioration of properties throughout the neighborhood.

Construction of new rental housing usually has a higher risk than maintenance of existing rental units, because of the greater uncertainty in predicting demand for units that have not already been occupied. So, to a lesser extent, does major renovation. Both are expensive operations that make a bet on the future demand for housing services. In addition to greater uncertainty in the demand for their units, developers also face more choices about their project than existing landlords. Developers may be able to choose between multifamily housing and a shopping mall, for example. On the other hand, landlords are limited to more marginal decisions (at least in the short run) such as whether to reduce expenditures on maintenance (thus allowing the property to depreciate) or to modestly improve the quality of their units. Therefore, developers and owners of new or substantially rehabilitated rental housing are more likely than owners of existing rental housing to behave as profit maximizers. They are more likely to respond to movements in capital markets.

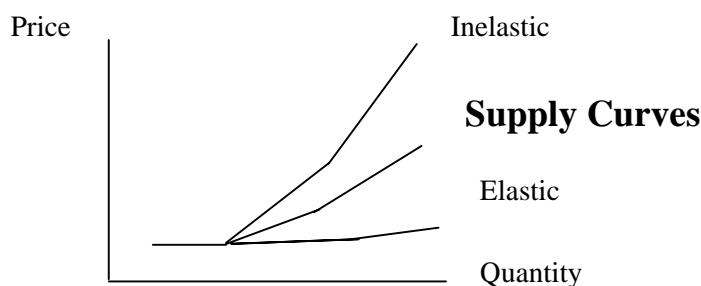
Thus, the quantity of rental housing supplied to a particular housing market is a function of the following factors (De Leeuw and Ekanem, 1971):

- Housing unit prices;
- Land values;
- Construction costs;
- Maintenance costs;

- Vacancy rates;
- Cost of capital (interest rates); and
- Return on investment in rental housing.

If the price of a rental unit (the expected value of rental payments minus operating expenses) is greater than the land value plus construction and maintenance costs, this is a signal to producers to supply more units. Increases in house prices stimulate production, while increases in land value or construction or maintenance costs reduce supply. The land value is determined by competition from other housing developers and from non-residential uses. Construction costs are largely driven by labor costs and, to a lesser extent, by material costs. Once constructed, the building must be maintained through a combination of management costs, utilities and repairs. All of these factors affect the return on an investment in rental housing. This rate of return can be compared with the return on other, non-housing, types of investments. If the return on rental housing is higher than the return on another investment of equal risk (in the stock market, for example), then more capital will be supplied for producing rental housing.

The **price elasticity of housing supply** is a critical measure of the responsiveness of housing supply to changes in housing prices or rents. Normally economists assume an upward-sloping supply curve, in which the quantity of housing supplied increases for higher rents. If the supply curve is relatively flat or elastic, this indicates that developers are quick to respond with more housing for even small increases in rents. Developers will increase supply through additional construction, which in turn moderates rent increases. On the other hand, if the supply curve is steep or inelastic, developers are slow to respond to rent increases. Rents would have to increase substantially before developers began new construction. Inelastic supply usually means there are obstacles to new development such as regulatory constraints. Rents increase much more when supply is inelastic.



Markets that are tight, meaning they have low vacancy rates and a relative shortage of housing, sometimes have a low elasticity of housing supply, although the two do not always go together. Market tightness is a measure of the relative demand and supply of housing at a single point in time, whereas housing supply elasticity describes the long-run tendency of suppliers in a market to respond to changes in price. Markets with low supply elasticity are more likely to be tight than those with high elasticity. However, markets with high supply elasticity may temporarily be tight because suppliers have not yet had time to respond to a sudden increase in housing prices.

Likewise, because construction or conversion takes time to plan and execute, the short run supply elasticity is less than the long run elasticity (Malpezzi and MacLennan, 2001).

The underlying assumption is that either the housing market is at equilibrium or, alternatively, changes in price and vacancies are leading supply responses back to equilibrium.⁹ A low vacancy rate signals a strong demand relative to available supply, and this encourages more supply. Normally rents would also increase while new units are constructed, but this depends on the elasticity of supply. If developers are very responsive to the low vacancy rate signal, i.e., the supply is elastic, rents will not increase much before new construction occurs. With inelastic supply, vacancy rates may be low and rents increase substantially before new construction brings the market back into balance.¹⁰

Filtering: Quality and Rent Changes in the Existing Housing Stock

Filtering starts with the idea that housing units vary widely in quality and that quality corresponds to a level of rent. Generally, only new construction or substantial rehabilitation can create high quality housing, and gradually new, high quality units deteriorate into lower quality levels as the building ages. If maintenance is relatively inexpensive, then landlords will maintain units at a high level and slow the rate of deterioration. However, if construction is relatively inexpensive compared to maintenance, landlords will build and replace with very little maintenance in between, and units will **filter down**, becoming more affordable for low-income renters (Sweeney 1974; Rothenberg et al. 1991; O’Flaherty 1995, 1996).

⁹ Even in an equilibrium market, some vacancies are unavoidable as households move and property managers repair units for new tenants (Wheaton, 1990).

¹⁰ Long-term contracts may restrict movement in rents, so that short run disequilibrium shows up in a low vacancy rate instead of increased rents. Similarly, in a soft rental market, vacancies may rise while rents are “sticky” downward. Landlords are reluctant to lower rents on the few empty units for fear that other tenants will demand price concessions and the revenue will fall for many units rather than just the empty ones. Eventually landlords may have to discount the rent on vacant units or convert them to other uses. Therefore, vacancies signal excess supply and could lead to rent reductions, but normally they simply reduce the growth rate in new supply.

Newly constructed units in the private sector typically are built at a high rent level. At each additional level of quality, housing is increasingly more expensive, both to build and to maintain. Below the level of rent that makes new construction feasible, rents may not be high enough to profitably maintain the units at a good-as-new quality level. The rents are enough to cover operating costs and some maintenance. Gradually the building deteriorates in quality as the building ages, and the rents commanded are smaller. The units become affordable for households at a lower income level from those for whom they were originally built. This can occur throughout a neighborhood, as the highest income households move to newer properties and are replaced by lower income households. Rents on the older properties would not have to fall, but rather increase at a lower rate than the new properties. Eventually, the quality of the units may fall low enough that the rents do not cover even the minimal operating and administrative costs. Renovation may not be feasible given the costs involved and the expected rents for that neighborhood, so the property is abandoned.

The theory of downward filtering as a source of low-cost housing takes a very long view. Units and properties gradually wear out and the rent commanded by a unit declines in relative terms. This long run pattern is not inconsistent with short run rent increases when strong demand drives up rents. However, during those tight markets, rents for new properties are likely to increase even more than rents for old properties. Once construction creates new supply to meet the demand, then the long term trend of downward filtering can resume.

Filtering or downward filtering usually refers to a relative decline in rents associated with the aging and physical deterioration of a property. However, empirical tests of the filtering concept focus on the change in rents. The finding of rent increases is called **upward filtering**. However, an increase in rent does not necessarily mean that the property has been renovated and therefore the quality has improved. When demand for housing becomes strong because of local economic conditions, landlords may be able to make purely cosmetic improvements to the property and raise rents substantially. The increase in demand and rents can create a cascading effect, in which higher income households outbid lower income renters who get pushed to the lowest quality units in the least desirable parts of town. If the influx in income or people exceeds the ability of suppliers to respond, or perhaps a political decision is made to restrict additional housing, then rents can increase throughout the quality hierarchy.

Government Intervention and Supply Responses (Regulatory Constraints and Production Subsidies)

Government actions can affect the supply of housing by increasing (or reducing) costs and, therefore, increasing (or reducing) the rent level needed to produce a supply response.

Regulatory constraints that increase costs can take many forms. Some affect costs directly

and others indirectly. Licensing and inspection fees are forms of direct costs. Zoning, land use restrictions, and building codes are often indirect costs. They affect the type of building constructed as well as the density of units on the lot. Developers can attempt to change the restrictions or get exceptions, but this entails costs to lawyers and lobbyists and, most importantly, delay.

Although land use restrictions often limit development, they are intended to make a community more livable and efficient. Positive externalities, such as cleaner air, less noise and safer construction, channel development of new structures and can increase the value of existing buildings. At the same time, because land use restrictions both limit supply and increase demand, they generally lead to higher rents (Glaeser and Gyourko 2002). It is a matter of continuing debate whether these rent increases primarily reflect increased demand for the positive externalities or decreased supply from the added costs (Nelson *et al.*, 2002).

As a practical matter, the effect of strict building codes is generally to raise rents because they increase the initial construction cost. On a quality-adjusted basis, the effect of building codes on rents is more ambiguous because they also tend to increase the quality of units. The higher initial construction costs can be offset to some degree by factors such as lower insurance costs or higher resale value. For older buildings, codes can affect the point of demolition or rate of conversion to other uses.

Government subsidized production is based on the premise that, for the subsidized housing units, market-determined rents are not expected to cover all construction and maintenance costs. Instead, either the government guarantees a certain level of rent through a subsidy,¹¹ or a subsidy is used to reduce costs and make rent restrictions feasible. The theory is that, in addition to benefiting some low-income households directly from programmatic restrictions on rents or from rent subsidies, the subsidized production will benefit other low-income households indirectly. The indirect benefit occurs because the additional units supplied by a new construction program promote the downward filtering of older, somewhat lower quality units. The increase in supply relative to demand will keep down rents throughout the low quality market (Apgar, 1990).

Thus, because government production subsidies reduce the cost of production or guarantee a given level of rent, they increase the supply of rental housing, at least initially. However, the subsidies can “**crowd out**” or substitute for the unsubsidized production of additional units. The increase in stock from subsidized production can soak up demand, limiting expected rent growth enough that private producers choose other investments. The long run net effect on housing supply is less than the number of subsidized units (Murray 1983,1999; Sinai and

¹¹ This is the subsidy approach used in the Section 8 New Construction and Substantial Rehabilitation programs.

Waldfoegel, 2002). The positive, short run effect of subsidies on supply gradually attenuates over time as private producers adjust their production.

On the other hand, government production subsidies can have **positive externalities**. In some market circumstances, subsidized production could have a demonstration effect. Subsidized production can show private producers that a better market exists than private developers perceived. For example, a mixed-income development can show that moderate-income tenants can be attracted to the project and developers can make a profit. Government production subsidies can also be used to create or reinvest in affordable units in relatively high quality neighborhoods, counteracting the tendency in private markets for rents to converge by neighborhood. Or subsidized production may be intended to create higher quality units in low-income neighborhoods in order to create a general increase in the quality and property values of those neighborhoods. Much more about subsidies and neighborhood effects will be presented in the following chapters. The point here is that secondary impacts can be as important as the primary impact on the size of the rental housing stock.

Chapter Three

Where are the Most Acute Housing Needs?

This chapter examines the issue of which renter households need government support for their housing consumption. This question is relatively easy to answer, because a series of reports by HUD provides a thorough examination of the nation's acute rental housing needs. These worst-case needs reports are submitted to Congress periodically as new data, primarily from the American Housing Survey (AHS), become available. HUD defines households having worst-case needs as unassisted very low-income renters who either pay more than half their income for rent or live in severely substandard housing. Very low income is defined as households with incomes below 50 percent of the local HAMFI. Several other studies, by Nelson (1994 and 2002) and the Joint Center for Housing Studies (1992-2002), also document the people and places that face the nation's most severe housing needs.

Chapter 3 Highlights

People and places with a high proportion of worst-case needs:

- Poor households
- West and Northeast regions
- Metropolitan areas
- Households including a person with disabilities
- Households headed by an elderly person

Many very-low income renters do not receive housing assistance, and a large portion of those who are not assisted have severe rent burdens. Over the past decade, HUD's worst-case needs reports have consistently shown that a severe rent burden is the overwhelming type of worst-case need. In the most recent report, HUD found that 94 percent of renters with worst-case problems paid more than half their income for rent, while only 11 percent lived in severely inadequate housing (HUD, 2001). Although overcrowding is not considered a worst-case need, the incidence of this type of housing problem has also declined slightly. By 1995, 7.9 percent of all very low-income renters experienced overcrowding (HUD, 1998), down from about 10 percent in 1991 (HUD, 1994).¹² The primary problem to be addressed by a production subsidy, therefore, is high housing costs facing very low-income renters, and not inadequate housing.

¹² A unit is considered crowded if it has more than one person per room.

The most acute housing needs are concentrated among extremely low-income households.¹³ In addition, metropolitan areas have more acute housing needs than non-metropolitan areas, and housing problems are more acute in the Northeast and West census regions than elsewhere in the country. Households that include a person with a disability and households headed by an elderly person also have higher incidence of worst-case needs than other household types. Each of these areas of worst-case needs is discussed in more detail below.

The Poor

Given the fact that the problem generating worst-case needs is high rents compared with low incomes, it is not surprising that households with the lowest incomes are most likely to have worst-case needs. HUD's reports document the fact that acute housing needs are concentrated among households with extremely low incomes. In both 1997 and 1999, 77 percent of the renters with worst-case needs had extremely low incomes (HUD, 2001 and HUD, 2000).

Several other studies also conclude that households with the lowest incomes have the most acute housing needs. Nelson (1994) examined 1979 and 1989 AHS data to determine whether there was a mismatch between the number of units affordable to renters in various income categories and the number of households in each income category. She found that shortages of units were most severe at rents affordable to renters with incomes below 20 percent of HAMFI.¹⁴ There were about 2 million units affordable to the 3.6 million renters in this income range. For the 3.5 million renters with incomes at 20 to 30 percent of HAMFI, there were 2.3 million units.

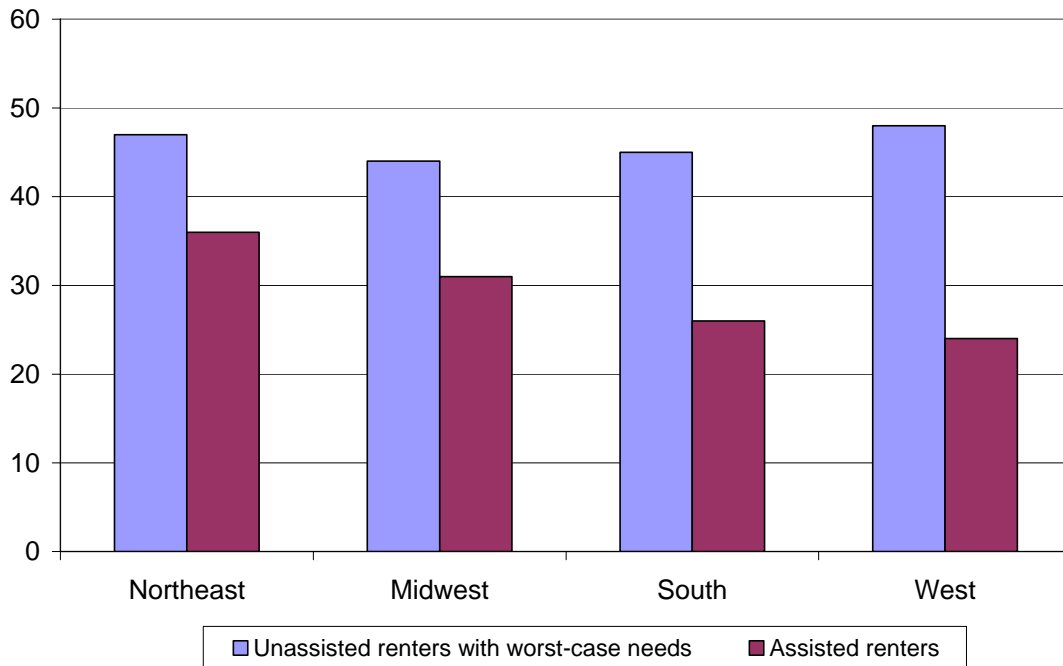
The West and Northeast

The incidence of worst-case needs is not spread evenly over geographic areas, nor is the availability of housing assistance. HUD's worst-case needs reports find that, among the four Census regions, very low-income renters are most likely to have worst-case problems in the West, where they are also least likely to receive assistance. Worst-case needs are also more concentrated in the Northeast than in the South and Midwest (HUD, 2000 and HUD, 2001). A comparison of worst-case needs with the proportion of assisted renters is presented in Exhibit 4.

¹³ Extremely low income is defined as households with income below 30 percent of HAMFI.

¹⁴ The national average HAMFI in 1989 was \$34,800.

Exhibit 4
Percent of Very Low Income Renters, 1999



Source: HUD (2001).

Nelson’s (1994) study supports these findings. She determined that the West and the Northeast had worse shortages of units affordable to extremely low-income renters than the Midwest and South. She found that in the Northeast, there were 61 affordable units for every 100 extremely low-income renter households; in the West, there were 42 units. In comparison, there were 69 units in the South and 66 units in the Midwest for every 100 extremely low-income renter households.

Metropolitan Areas

HUD’s worst-case needs reports demonstrate that very low-income renters in the suburbs and in central cities are more likely to have worst-case needs than those in non-metropolitan areas. At the same time, very low-income renters in non-metropolitan areas are most likely to receive some type of housing assistance (HUD, 2000 and HUD, 2001). Among metropolitan areas, central cities in the Northeast and West census regions had the greatest proportion of unassisted renters with worst-case needs, close to 50 percent in both cases (HUD, 2001).

The Abt Associates study of voucher success rates in rural areas supports HUD's findings that metropolitan areas have more acute housing needs than rural areas. The study examined five relatively large¹⁵ rural PHAs and found that waiting lists were consistently shorter than expected. In addition, four of the five PHAs reported declines in the number of applicants (Pistilli, 2001).

The reduction in need for housing assistance in non-metropolitan areas may result from the decline in population in these areas. In 1970, 30.4 percent of the total U.S. population lived in non-metropolitan areas. By 1998, people living in non-metropolitan areas represented only 21.4 percent of the population. However, between 1974 and 1998, at least 20 percent (and up to 25 percent) of assisted housing program *funds* (representing a larger share of *units*) were set aside for non-metro areas (Pistilli, 2001).¹⁶

In contrast to the short and declining wait times in rural areas found in the Abt study, a HUD report found that the largest cities and PHAs (those with 10,000-29,999 vouchers) had the longest waiting lists and the longest wait times. In addition, HUD found that wait times at the largest PHAs had risen by 50 percent between 1996 and 1998, from 22 to 33 months (HUD, 1999).

It is important to note that there is wide variation in severity of worst-case needs across metropolitan areas. The studies reviewed above do not examine individual MSAs and therefore offer insights only at the broadest geographic levels. Nelson's (2002) study is an exception in that it examines housing needs for 45 individual metropolitan areas. Using AHS data from 1994 to 1998, she found that the share of very low-income renters with worst-case needs ranged from 30 percent in Denver to 51 percent in San Jose. The share of worst-case needs renters with only a severe rent burden also varied widely, from 69 percent in Los Angeles to 88 percent in Denver. Fully 25 percent of very low-income renters in Los Angeles occupied crowded housing.

Household Types

Unsurprisingly, some household types are also more likely than others to face acute housing problems. HUD's most recent worst-case needs report shows that very low-income unassisted households that include persons with disabilities were most likely to have worst-case needs (60 percent), followed by elderly households (51 percent) and families with

¹⁵ Sites were selected from among non-metropolitan PHAs that had a minimum stock of 400 vouchers.

¹⁶ The non-metro set-aside did not include the Section 515 and Section 521 programs administered by the U.S. Department of Agriculture. The set-aside was established by Section 213 (d) of the Housing and Community Development Act of 1974. It was eliminated by the Quality Housing and Work Responsibility Act of 1998.

children (42 percent). In comparison, 36 percent of nonelderly households with related family members but no children had worst-case needs (HUD, 2001).

Lessons Learned

These studies provide a good overview of the nation's needs for rental housing assistance, and their findings are relevant for how overall rental housing subsidies (both production and vouchers) should be allocated. For example, we know that worst-case needs are concentrated among:

- Extremely low-income renters;
- The West and Northeast census regions;
- Metropolitan areas (central cities and suburbs); and
- Very low-income households with disabled or elderly members.

From data sets produced for HUD by the US Census (the 1990 and 2000 CHAS data), we can estimate worst-case needs (or a close equivalent) at the metropolitan and sub-metropolitan levels, and those estimates will be presented in a subsequent report.

However, these overall estimates of housing need do not identify market failures or other problems that would be addressed most effectively by a production program, but rather the failure of the government to provide high overall levels of housing assistance that are well matched to need. Is building subsidized affordable housing needed to alleviate these needs, or could they be solved with the use of additional vouchers? The next section begins to answer these questions by reviewing studies that indicate the types of places or groups of people for whom vouchers may not address worst-case needs.

Chapter Four

Places and Household Types With Low Voucher Success Rates

There are several places and groups of people for whom demand subsidies do not seem to work as well as for others. In this chapter, we assess the findings from studies on voucher success rates. These studies show that there are places and groups of people that have relatively low success in using vouchers. Although the studies provide no evidence about how well the people and places with low voucher success would be served using production subsidies, they are prime candidates for consideration of the suitability of production subsidies.

Chapter 4 Highlights

People and places with low voucher success:

- Large households
- Households in urban markets headed by an elderly person
- Tight housing markets
- Jurisdictions that do not have laws barring discrimination on the basis of source of income

Voucher Success Studies

An Abt Associates study of voucher success in metropolitan areas identifies several types of places and households that may have lower-than-average success in using vouchers (Finkel and Buron, 2001).^{17,18} Finkel and Buron examined the factors related to voucher success rates in two ways. First, voucher success rates were calculated for various categories of voucher holders, including those with different demographic characteristics and in different types of housing markets. Second, the effect of various factors thought to affect the probability of success was estimated using a statistical model (Finkel and Buron 2001). The findings of the study are described in more detail below.

¹⁷ Finkel and Buron also found that the PHA's practices and procedures play an important role in voucher success. For example, landlord outreach and information provided to households were found to be associated with the probability of success.

¹⁸ The study was based on a representative sample of voucher holders in metropolitan PHAs that administer programs with more than 800 units.

Household Size

Households with five or more people were found to have a lower likelihood of success in using vouchers than the average household. This finding provides support for the often-repeated observation that the private market does not supply adequate numbers of large rental units. Households with three or four people had the highest success rates among household sizes, with success rates of 72 percent. Households with five or more people had a lower than average probability of success (Exhibit 5).¹⁹ Estimates from the statistical model (not shown) were that being in this group reduced the probability of success by about seven percentage points (Finkel and Buron, 2001).

Households consisting of a single non-elderly, non-disabled member have even lower success in using vouchers than large households. Members of this group are much more likely than members of other household types to have moved up the waiting list based on a preference for homeless and to live in New York City. Many of these households may consist of single men. Being in this group reduced the probability of success by about 11 percentage points (Finkel and Buron, 2001).

Exhibit 5. Voucher Success Rate by Household Size and Disability

Household Size	Success Rate
1 person not elderly, not disabled	56%
1 person elderly, not disabled	63%
1 person elderly and disabled	54%
1 person not elderly but disabled	74%
2 people	69%
3-4 people	72%
5+ people	67%
National average	69% ²⁰

Source: Finkel and Buron, 2001.

Age of Head of Household

Finkel and Buron found that the elderly have the lowest probability of success in using vouchers of any household type and suggested this may be the result of difficulties they face in searching for units.²¹ At the mean success rate, being in a household headed by an elderly

¹⁹ These findings may not be surprising, given that only about 7 percent of rental apartment units have three or more bedrooms (*Quick Facts: Apartment Stock*, National Multi Housing Council website, www.nmhc.org).

²⁰ The national average success rate has declined from the previous voucher success rate study, which found that in 1993, 81 percent of households who received vouchers from large metropolitan PHAs succeeded in using them (Finkel and Buron, 2001).

²¹ This result is a reversal from earlier studies, which found that the elderly had higher than average success rates in using vouchers.

person reduced the probability of success by about 14 percentage points (Finkel and Buron, 2001). However, these findings do not appear to hold for all types of places. The study of voucher success in non-metropolitan areas described in the previous section found the opposite: all of the households headed by an elderly person were successful in using their voucher (although sample sizes were too small for statistically significant inferences). This was true in all areas, regardless of the perceived tightness of the housing market, the reported scarcity of one-bedroom units, and the reported difficulties facing elderly families forced to conduct their housing search without a car. Success rates for families headed by progressively younger persons had progressively lower success rates (Pistilli, 2001).

Tight Housing Markets

Not surprisingly, voucher enrollees also had lower success rates and longer search times in locations with tighter housing markets.²² The average success rate was 61 percent for households in very tight markets, 66 percent in tight markets, 73 percent in moderate markets, and 80 percent in loose markets. A statistical model controlling for demographic, PHA program, and other factors shows that having a voucher in a moderate market increased the likelihood of success by about 9 percentage points relative to a tight market, and having a voucher in a loose market increased the probability by about 14 percentage points (Finkel and Buron, 2001).

Another study, in this case focused on the ability of PHAs to use their full voucher allocations, provides support for this finding. Voucher “utilization,” the number of units leased as a percentage of the number of units available, was found to be higher among PHAs in loose housing markets. This result is as expected, because in tight housing markets, households will run out of time to find a unit to rent using their vouchers and return them to the PHA. Vouchers that are not in use because the voucher holders are in search of a housing unit reduce the PHA’s utilization rate (Finkel, *et al.*, 2002).²³

Jurisdictions with Laws Barring Income Discrimination

Last, voucher enrollees in jurisdictions with laws that bar discrimination based on source of income (for example, welfare payments rather than wages) were found to have a statistically significantly higher probability of success, more than 12 percentage points higher than in other jurisdictions. About 30 percent of jurisdictions had laws barring income discrimination (slightly less than half of these also bar discrimination on the basis of receipt of Section 8).

²² The tightness of a market was defined based on vacancy rates in the portion of the market available to voucher holders. Vacancy rates were estimated based on a survey of experts in each local market, including PHA staff, HUD area economists, local realtors, city community planning professionals, housing advocates, and real estate associations.

²³ The study found that some PHAs in tight markets deal with this problem by issuing a higher number of vouchers than they expect will be successfully used, resulting in a higher utilization rate.

Almost half (47 percent) have no laws against income discrimination (Finkel and Buron, 2001).²⁴ Areas without such laws may be areas where production subsidies are more effective than vouchers, but it seems wrong to reward jurisdictions for their failure to take measures to aid voucher recipients in using their vouchers. We note instead that prohibiting this kind of discrimination is a step jurisdictions could take to help address the housing burdens of their residents.

Households with Higher Voucher Success Rates

As discussed above, success in using vouchers was related to the age of the head of the household. Households headed by a person under age 25 had the highest success rates (73 percent), and success rates decreased as age increased. Households of varying race/ethnicity had equal success in using vouchers: 69 percent of white non-Hispanic enrollees succeeded in leasing units, compared with 68 percent of black non-Hispanic and Hispanic enrollees. Households consisting of a single person with a disability had high voucher success rates, at 73 percent. This finding is contrary to the expectation that a disability can be a barrier to searching for and finding suitable units to rent. Finkel and Buron speculated that the relatively high success rate for people with disabilities may be the result of special assistance they receive. As shown in Exhibit 5 above, single-person elderly households had low success rates, whether or not the person had a disability. When other factors were controlled, gender of the head of the household did not affect the probability of success using vouchers.

Voucher Success in Non-Metropolitan Areas

The PHAs studied in the non-metropolitan voucher success study had short and declining waiting lists and recent declines in the number of applicants; however, households awarded vouchers still had varied levels of success in actually using their vouchers.²⁵ Although the study's sample size was too small to draw any statistically significant inferences, as noted above, households headed by an elderly person had high success rates in the rural areas studied (Pistilli, 2001).

Proximity to a college or university or military base seemed to affect voucher success rates in non-metropolitan areas. Staff at two PHAs with relatively low voucher success rates²⁶ believed that proximity to colleges and universities hurt voucher holders' ability to compete

²⁴ About 22 percent of voucher holders in the Abt study were in PHAs where the existence of anti-discrimination laws was not known.

²⁵ The PHA with the lowest voucher success rate, 35 percent, covered southern Iowa. PHA staff attributed this low success to families who receive vouchers but do not persevere in looking for units because of changes in their family or employment circumstances. The PHA has a very short waiting list, and the search time for voucher holders who succeed in leasing a unit is relatively short.

²⁶ Success rates at the two PHAs, covering Bradford/Tioga, Pennsylvania and South Central Alabama, were 70 percent and 60 percent.

for available rental units. In contrast, staff at two PHAs with high voucher success rates²⁷ believed that proximity to military bases stimulated the production of high-quality rental housing, which had a positive effect for voucher holders searching for units (Pistilli, 2001).

Lessons Learned

As a starting point, we assume that the types of places and people that have low success using vouchers may be reasonable targets for the use of production subsidies. In this section, we reviewed the evidence on what types of people and places have relatively low success, and found that voucher success rates are lower:

- For households with five or more people;
- For single, non-elderly, non-disabled households;
- In tight housing markets; and
- In jurisdictions that do not have laws barring discrimination on the basis of source of income.

The evidence on households headed by an elderly person (over age 62) is mixed. In the quantitative study of metropolitan areas, these households had low success rates. In the qualitative study of rural areas, elderly households had high success rates. In comparing the weight of the evidence, the quantitative study of metropolitan areas seems more convincing to us, because of the large size and representative nature of the sample. It may be the case, however, that elderly households have different rates of success in rural areas compared with metropolitan areas.

On the other hand, households headed by younger people and persons with a disability had high success in using vouchers. The gender of the head of the household and the race/ethnicity had no influence on the probability of success.

Building on what we learned in Chapter 3 on worst-case needs, we now know that, although households with a disabled member have particularly acute worst-case needs, they are relatively well served with vouchers. On the other hand, elderly households, who also have high levels of worst-case needs, are not as well served with vouchers as the average voucher recipient. This puts them at the top of our list for reviewing the evidence on whether these households can be effectively served using production subsidies. Based on the limited evidence available, it is impossible to determine whether households in metropolitan areas

²⁷ The success rate for the Del Rio, Texas PHA was 96 percent; for the Great Falls, Montana, PHA it was 80 percent.

have higher or lower success in using vouchers than households in rural areas. However, based on their short and declining waiting lists as well as relatively lower severity of worst-case needs (discussed in Chapter 3), it does appear that non-metropolitan areas have more resources relative to the level of need than metropolitan areas. This suggests that metropolitan areas are in greater need of all subsidies, including production subsidies, than rural areas.

Studies of voucher success rates provide some help for suggesting where and for whom production subsidies might be more useful than vouchers. We continue our search for evidence that would be more useful for decisions on the precise targeting of production subsidies in the chapters that follow. The next chapter considers areas where households may actually be harmed through the use of demand subsidies as another way of determining places in which production subsidies should be used as an alternative.

Chapter Five

Where Do Demand Subsidies Have Negative Consequences?

Chapter 4 examined the groups of people and types of places where households issued rental vouchers have low success in using them. This chapter assesses the circumstances in which the successful use of demand subsidies to lease rental housing may have negative consequences, in order to suggest further where the use of production subsidies is more appropriate. First, for a housing market as a whole, demand subsidies may harm non-recipients (low-income households that do not have vouchers) by driving up the price of private, unsubsidized rental housing. This may result from lack of a supply response to the increased demand for housing generated by vouchers. Second, the sparse existing literature suggests that in some local circumstances vouchers may have modest negative effects on property values.

Chapter 5 Highlights

- Why does supply elasticity of housing matter?
- The effect of restrictive regulations on supply elasticity
- Vouchers may cause harm to voucher-eligible households in markets with inelastic housing supply
- Vouchers may have harmful effects on neighborhood quality

We first briefly revisit the concept of supply inelasticity and explain its implications for housing policy that provides subsidies to low-income renters. This section establishes a foundation for the following sections, the first of which examines factors that cause housing supply to be inelastic. Most of this literature deals with regulatory constraints, an important cause of inelastic supply because of their effect on the cost of producing housing. We then turn to evidence on the degree to which the additional demand created by vouchers drives up the price of housing because housing markets have inelastic supply. This is important because, as noted in Chapter 3, a majority of eligible households do not receive housing assistance. If vouchers drive up the price of housing, unassisted eligible households are adversely affected by those who do receive subsidies. Finally, we review the literature on the types of neighborhoods where vouchers can reduce the value of nearby properties.

Why Does Supply Elasticity of Housing Matter?

As explained in Chapter 2, the elasticity of housing supply describes the responsiveness of developers to price changes. Supply elasticity is important for properly targeting subsidized housing because government subsidies that increase demand (e.g., vouchers) do not work well unless they trigger a supply response. Under the assumed condition of elastic supply, demand subsidies increase rents only modestly before developers start adding to the supply of housing. Rent increases signal that there is a market for more housing, so the developers start building. Building is usually thought of as new housing units, but the amount of housing can be increased by quality as well as quantity changes. Renovations add to the quality of a housing unit and are a form of increased supply.

If, however, supply is inelastic, vouchers will increase demand and rents, but have little impact on the supply of housing. The increase in rents will provide more revenue to the existing landlords. At the same time, rents for units occupied by households that do not receive vouchers will also increase if the units are similar in quality. Most low-income renters do not receive housing subsidies, and the increase in rents hurts those renters. The net effect of the subsidy is a transfer from the government and renters who do not receive housing subsidies to the landlords.

Although this relationship is obviously very important in our understanding of how landlords respond to rent changes, data limitations have hampered research and the research findings have not been consistent (DiPasquale, 1999). The Appendix summarizes research on the elasticity of housing supply over the past 40 years. Most researchers, often using data for the entire nation, have concluded that supply is relatively elastic. That is, developers are responsive in providing new housing units when the price of housing increases. As the Appendix notes, the elasticity of supply is hard to measure precisely, and it is quite possible that it varies widely over time and place.

The empirical work conducted to date to measure supply elasticities does not provide us with much insight on the way in which supply elasticities vary from place to place (and over time for those places) and for types of housing produced for difficult population groups. These issues, however, are central to the purpose of this study, which is to discover the circumstances for which production subsidies are superior to demand subsidies. There has been extensive empirical work in recent years on one of the presumed causes of inelastic supply: regulatory constraints that increase the cost of supplying housing. Therefore, we do know something about the places in which supply elasticities appear to be low because of the regulation of housing production and its inputs, particularly land.

The Effect of Restrictive Regulations on Supply Elasticity

In this section, we review literature on the effects of zoning and other restrictive regulations on supply elasticity, and, by extension, housing affordability and the effectiveness of vouchers in a market.²⁸

A substantial body of literature addresses this topic, so we review recent articles that represent a range of research on the effects of restrictive regulations on single-family housing. We found no studies specifically addressing the effect of restrictive regulations on rental housing. First, we review two studies about the effect of regulatory constraints on the supply of housing. Mayer and Somerville (2000) demonstrate that regulatory constraints reduce the elasticity of supply. Mayer and Somerville also compare the effects of different types of regulation on housing supply and find that those that introduce delays in the development process have a larger effect than purely financial regulations. Glaeser and Gyourko (2002) provide evidence that markets with high house prices are more likely to be highly regulated than other markets. We then review a draft study by Green, *et al.* (2000), which attempts to estimate the effect of *other* characteristics of cities on supply elasticity, while controlling for the effect of regulation. Understanding these other factors would be very useful for determining the appropriate use of production subsidies. However, that study is undergoing revision and results so far are inconclusive.

Regulatory Restrictions Reduce Housing Supply

Mayer and Somerville (2000) demonstrate the connection between regulatory restrictions and housing supply, finding that regulation that causes delays and lengthens the construction process has a significant and permanent effect on housing supply, defined for this study as new building permits for single family houses. Regulations that do not affect the length of the development process, such as impact fees, have a much smaller effect on housing supply. This article is an important contribution, because it separates the negative effect of regulation on supply from the potentially positive impact on demand (presumably, regulations are in place because they provide benefits for local residents). In addition, unlike in most previous work, elasticity of supply is estimated at the MSA level.

New housing supply is modeled as a function of changes (as opposed to levels) in house prices, changes in the cost of capital, and changes in construction costs, as well as regulations that impose fees and those that delay or lengthen the development process. Three separate regulatory variables are used from the Wharton Urban Decentralization Project Data Set, which is based on surveys sent to local planners in a sample of MSAs. The first variable indicates the number of growth management techniques prevalent in the MSA and is based

²⁸ Schill (2001) provides some additional review of this literature, including zoning and land use regulation, impact fees, growth controls and urban growth boundaries, building codes, and the cumulative impact of various local development regulations on the cost of housing.

on the assumption that the more kinds of action that can be taken and the greater the number of groups that can act to control development, the more constrained is the regulatory environment. The second variable indicates the number of months to approve a subdivision; the third is an indicator for the use of development fees. Supply, represented by the number of new single family building permits issued in a particular quarter, is modeled separately for 44 metropolitan areas for each quarter from 1985 to 1996.

Mayer and Somerville find that both delay and growth controls have a negative effect on the long-run level of construction. An increase of one standard deviation²⁹ in the number of months it takes to receive subdivision approval reduces the number of permits obtained by between 20 and 25 percent. Similarly, each method available for growth control is correlated with a 7 percent decline in residential construction. The two types of regulation combined can have a large effect: the authors estimate that a metropolitan area with a 4.5 month delay in approval and two different types of growth control restrictions would have about 45 percent less construction than a metropolitan area with a 1.5 month delay and no growth management policy. The study also finds that regulations that increase delays in the development process will reduce the elasticity of new construction by about 20 percent, because they reduce builders' ability to respond quickly to demand shocks.

Impact fees are also found to reduce the level of new construction, but despite the fact that impact fees can be large (according to one survey, \$21,000 per housing unit in highly regulated jurisdictions), the effect is smaller than that of an additional two-month delay in obtaining subdivision approval. The authors attribute this result to the uncertainty the delay introduces (in terms of both outcome and the length of the process) into the development decision compared with predictable impact fees.

High Housing Prices are Correlated With Regulation

Glaeser and Gyourko (2002) examine the reasons for the high land prices that characterize some MSAs, and conclude that they are at least partly attributable to zoning restrictions. They find that, in many MSAs, the median home value is close to the cost of construction. They conclude that, in these MSAs, house prices are not driven by high land prices, the housing market is functioning well, and there is no need for government intervention on the supply side of the market. However, there are other MSAs where the price of housing is substantially different from the cost of new construction and house prices are largely driven by the high price of land. In such cases, the supply of housing, including rental housing, may not be able to respond to increases in demand.

The authors use data on construction costs in various metropolitan areas and 1989 and 1999 AHS data on home values to compare the differences among metropolitan areas between the

²⁹ A standard deviation is a statistical measurement of the amount of variation in a set of values; the probability of a particular value falling within plus or minus one standard deviation is 67 percent.

cost of new construction and existing home prices. For the nation as a whole, about half of units are priced close to or below the cost of new construction, indicating that, overall, land is relatively inexpensive and the housing market is functioning efficiently. The West had the largest percentage of units priced substantially above the cost of construction, and the Midwest had the smallest.

Glaeser and Gyourko also do this comparison for 37 cities and their suburbs and find that in two cities, Detroit and Kansas City, at least 30 percent of existing units were valued at less than 90 percent of the cost of new construction in both 1989 and 1999 (Exhibit 6 shows findings for 1999).³⁰ In a second group of places, costs were close to the cost of new construction in both 1989 and 1999. These places have robust growth on the edges of cities where land is relatively cheap (40 percent or less of the physical construction costs of an economy home).³¹ In a third group of places, a significant proportion of units were valued at substantially more than (more than 140 percent of) the cost of new construction in 1989 and 1999, indicating high land prices.

³⁰ None of the suburban areas had more than 30 percent of units valued at less than 90 percent of construction costs.

³¹ An “economy home” is the least expensive of the four categories of homes for the authors obtained construction cost estimates. The others are average, custom, and luxury.

Exhibit 6. House Price/Construction Cost Distribution City Areas, 1999

City	% of Units Valued at:	
	<90% of Construction Cost	>140% of Construction Cost
At least 50 percent of units above 1.4 times construction costs:		
Albuquerque	3%	83%
Anaheim	0%	93%
Austin	6%	71%
Denver	8%	86%
Greensboro	0%	69%
Los Angeles	4%	89%
Nashville-Davidson	5%	56%
New Orleans	3%	57%
New York City	11%	56%
Norfolk	2%	66%
Phoenix	5%	65%
Raleigh	2%	81%
Sacramento	3%	72%
San Diego	3%	93%
San Francisco	4%	96%
Seattle	2%	86%
Tucson	4%	61%
At least 50 percent of units 10 percent below construction costs:		
Detroit	54%	20%
Philadelphia	60%	16%
Majority of units near cost of construction:		
Baltimore	30%	27%
Columbus	12%	29%
Chicago	16%	44%
Dallas	13%	47%
El Paso	2%	28%
Fort Worth	26%	29%
Houston	25%	27%
Indianapolis	24%	22%
Jacksonville	11%	43%
Kansas City	40%	12%
Las Vegas	3%	45%
Little Rock	8%	40%
Milwaukee	27%	22%
Minneapolis	20%	30%
Oklahoma City	16%	41%
Omaha City	30%	21%
San Antonio	30%	26%
Tampa	13%	49%
Toledo	40%	23%
Tulsa	8%	38%
Wichita	13%	48%

Source: Glaeser and Gyorko (2002). Excludes suburban areas.

The authors present three pieces of evidence to test their hypothesis that zoning restrictions cause the high prices of housing (through the cost of land on which housing is sited) in the third group of cities and suburbs. First, they estimate the cost of land using two different methods. They find that land does not contribute much to the value of a home, which suggests that zoning restricts individuals from consuming less land (by subdividing his or her land and selling it).

Second, Glaeser and Gyourko examine population density in high-cost areas. If regulation is not important in areas with high-cost land, then density in these areas should be high because individuals would respond to the high price of land by consuming less. In fact, the study finds that there is little connection across areas between high land prices and density, suggesting that regulation forces individuals to consume large lots. Third, the authors correlate a measure of regulation³² with the value of housing prices, and find a strong connection between the two. They find that almost all of the very high cost areas are extremely regulated.

A draft study by Green *et al.* (2000) represents something of an exception to the nearly exclusive focus of the literature on regulation as the cause of low supply elasticity of housing. In addition to the stringency of regulation,³³ they also examine the effects of population of the MSA, population growth, average commuting time, population density, the house price level, the average property tax rate, and the average marginal tax rate. The authors of this study first estimate supply elasticities for 44 MSAs using data from the Census and the Fannie Mae single-family repeat sales index for each MSA.³⁴ They find wide variation, which they attempt to explain in the second stage of the analysis.

Green, *et al.*, find that all stringently regulated cities have low supply elasticities. This is not surprising. However, metropolitan areas that are lightly regulated had a wide range of supply elasticities, implying that regulation is not the only cause of low supply elasticity. Lightly regulated MSAs with high population growth tended to have high supply elasticities; lightly regulated, slow-growth MSAs tended to have a low elasticity of supply. The authors attribute the low supply elasticities in lightly regulated, slow-growth MSAs to a constant housing stock in the face of falling house prices. This suggests that not all MSAs with low elasticity of supply are appropriate targets for production subsidies. The coefficients on other

³² Their measure of regulation is 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 less than 50 units. This is taken from the Wharton Urban Decentralization Project, conducted in 1989.

³³ The measure of the stringency of regulation is an index of metropolitan regulation from Malpezzi (1996). Malpezzi's index is based on the Wharton Urban Decentralization Project. Other data are from the 1990 Census.

³⁴ The proxy used for the percentage change in the housing stock is the number of housing units for which building permits were issued, multiplied by 2.5, divided by population. This proxy does not take into account removals of units from the housing stock.

explanatory variables do not perform as expected, although revisions to the study may change these results (as well as the findings related to the regulatory environment). Because the study is not yet in final form, the results should be viewed with caution.

Vouchers May Cause Harm to Voucher-Eligible Households in Markets With Inelastic Supply of Housing

The use of vouchers in some types of markets could result in an increase in rents for non-recipients. As discussed in Chapter 2, production subsidies can have the opposite effect when they encourage previously unaffordable units to filter down and become affordable. For vouchers to cause rent increases, two conditions must be present. The vouchers would have to increase the demand for housing, and the supply of housing in the market would have to be inelastic. In markets that have both conditions, the net effect of the vouchers – the cost to taxpayers plus costs to non-recipients in the form of higher rents – may make production subsidies a less expensive solution than vouchers from the perspective of society.

In some circumstances, vouchers may result in little additional demand for housing, because households may simply use the subsidy to reduce their rent burdens. However, given that voucher recipients are required to live in housing that meets quality standards and has a number of rooms adequate for the household, it is likely that the program generates some increase in demand. It may also increase demand by encouraging new household formation (Sinai and Waldfoegel, 2002). For example, upon receiving a voucher, single mothers may move out of their parents' houses, or elderly households may move out of their children's houses. If supply is inelastic and no new units are constructed to accommodate this new, higher level of demand, higher rents could result. Few studies address the extent to which this combination of increased demand and inelastic supply actually occurs and the extent to which it drives up rents for non-participants. In this section, we review findings from the Housing Assistance Supply Experiment of the 1970s, Susin (2002), and Devine, *et al.*, (2002).

Findings From the Housing Assistance Supply Experiment

The earliest study addressing the affect of vouchers on housing supply was the Housing Assistance Supply Experiment conducted by the Rand Corporation from 1975 to 1980. This study was conducted in Brown County, Wisconsin (a metropolitan area for which the central city is Green Bay), and St. Joseph County, Indiana (for which the central city is South Bend). Brown County was selected in part because it had a tight housing market; St. Joseph County was selected for its excess supply of housing. During the experiment, all eligible households were invited to enroll in the program,³⁵ and those that enrolled were given cash assistance to

³⁵ Eligible households were those unable to afford the standard cost of adequate housing on the local market without spending more than a fourth of their adjusted gross incomes.

cover the difference between one-fourth of their income and the standard cost of adequate housing in the local market, provided that participants' housing met quality standards (Rand, 1977).

Rand Corporation analysts concluded that the Supply Experiment benefited participants but had little effect on anyone else. Over the period studied, rents in the two counties increased by about the same amount as rents nationwide (Lowry, 1983). Based on their results, Rand analysts further concluded that rents in an area served by a voucher program might initially increase by 2 or 3 percent, but this effect would diminish as the market supply responded to the change in demand induced by an allowance. Because housing supply was relatively elastic in the long run, the long-run effects on rents would be lower, with prices at the end of ten years being increased by only 1 or 2 percentage points. Apgar (1990) argues that this may be an underestimate of the increase in non-recipients' rents, because the Supply Experiment generated only small increases in market demand, in part because a high proportion of participants used the subsidy for their current unit. Overall participation in the experiment was low, and housing expenditures went up only 8 percent after three years (Apgar, 1990).

Recent Research on the Effect of Vouchers on Rents of Unassisted Units

Susin (2002) is the first study to address this topic directly in nearly 20 years. The study finds that low-income households in metropolitan areas with more vouchers per poor household experienced faster rent increases than those in areas with fewer vouchers. In the largest 90 metropolitan areas, Susin finds that vouchers have raised rents in the low-income rental market by 16 percent on average over the period 1974 to 1993. Susin concludes that vouchers caused an \$8.2 billion increase in the total rent paid by low-income non-recipient households in 1993, while providing a subsidy of only \$5.8 billion to recipients, resulting in a net loss to low-income households. The findings imply that the elasticity of supply in the low-income segment of the rental market is very low.

The study uses AHS national data for 1993 to study the effects of vouchers on rents in 108 MSAs.^{36,37} Data from the AHS on individual housing units are used to estimate a statistical model separately for each of the 108 MSAs that controls for unit characteristics to obtain the price of rental housing in each of three "treciles" in each MSA – the lower, middle, and upper portions of the rent distribution. An important premise of the study is that voucher holders rent units in the lower trecile of the housing market (because the stigma attached to vouchers "trumps" the ability of the voucher subsidy to make units in the middle trecile available), and that it is the lower trecile of the rental market in which voucher recipients

³⁶ Subsidized households are excluded from the analysis since they are insulated from market forces. The analysis thus estimates the effect of vouchers on rents for unassisted households.

³⁷ Data on the voucher stock in each MSA in 1995 are from HUD's Pictures of Subsidized Housing dataset.

may bid up rent.³⁸ A major weakness of these rent estimates is that the number of observations for each MSA is very small (ranging from 10 to 670, with the median MSA having 33 observations).

A cross-section model is used to test the effects of vouchers (per poor household) on rents obtained earlier in the three terciles in each MSA. Vouchers are represented in the model using two variables: vouchers per poor household (including discretionary and formula vouchers), and formula vouchers per poor household. Susin argues that formula vouchers are distributed by HUD based on the characteristics of an MSA, such as the share of poor households with high rent burdens, and therefore are included as a control variable and not to measure the effect of vouchers on MSA rents.^{39, 40} Discretionary vouchers are also not allocated randomly, but they appear to be less tied to MSA conditions than formula vouchers and, therefore, approach the ideal of random allocation more closely. The model yields the effect of vouchers on rents in each tercile.

In addition to the cross-section specification, the model is also estimated as a *change* in rent over time is estimated, rather than the rent *level* at one point in time. Because only one year of voucher stock data were available (for 1993), the change in voucher stock over time could only be obtained by starting from the year 1974. This is the year the voucher program started, and the voucher stock was zero in that year. All other explanatory variables are also defined as a 20-year difference. For example, the population variable becomes the population change from 1970 to 1990.

In the cross-section results, the coefficient for vouchers per poor household in the lower tercile equation is not statistically significant. In the model of change in rent, this coefficient is statistically significant and implies that vouchers increase rents for low-income units by 16 percent. In the middle and upper terciles, the coefficients on vouchers per poor household are close to zero. That is, vouchers do not affect rents in the middle and upper terciles.

³⁸ Susin bases this premise on analysis of the American Housing Survey Neighbor file on the types of neighborhoods voucher recipients occupy. He reports that 30 percent of voucher recipients have no private-market neighbors. The private-market neighbors of the remaining recipients have incomes very close to the average income of neighborhoods where lower-tercile renters live. However, because AHS questions in 1993 did not distinguish well between vouchers and project-based subsidies, the 30 percent of “voucher recipients” with no private-market neighbors could actually be residents of public housing or Section 8 projects.

³⁹ The number of vouchers in each MSA was available, but not the split between formula and discretionary vouchers. The share of formula vouchers allocated to each MSA was therefore calculated using census data based on HUD’s formula. Then the number of formula vouchers was calculated by assuming that one million formula vouchers had been allocated altogether.

⁴⁰ Whether the formula allocation method is endogenous is open to question. In practice, formula vouchers are essentially allocated vouchers proportionally to population (in this case, population in 1990).

Although Susin’s contribution to the literature about the effects of demand subsidies on rent is important, it has some weaknesses. First, as noted above, the number of observations available for the model used to estimate rents in each tercile in each MSA was small, with 33 observations for the median MSA. Second, the model used to predict tercile rents does not include controls for supply constraints. As a result, the rent increases attributed to vouchers could be caused by an omitted variable, such as restrictive regulation.⁴¹ Third, in the change-in-rent model, only the effect of vouchers per poor household in the lower rent tercile is statistically significant.

Devine, *et al.*, (2002) also explore whether vouchers result in higher rents for non-recipients as part of a larger study of voucher location patterns. The authors’ hypothesis is that concentrations of vouchers in particular neighborhoods might result in “bidding up” rents for units in those neighborhoods. The authors find no evidence that this is the case. However, their analysis controls for only one neighborhood characteristic (the concentration of voucher recipients)⁴² and, therefore does not answer the question of whether a high-voucher neighborhood has higher rents than a low-voucher neighborhood that is similar in all other respects. It also does not help answer the question of whether vouchers drive up rents in the affordable segment of the housing market generally, rather than in particular neighborhoods with high concentrations of vouchers. On the other hand, the findings by Devine, *et al.*, that voucher households are found in 83 percent of all census tracts with occupied housing units in the 50 largest MSAs and rarely constitute a large percentage of households in a tract, may be at odds with Susin’s premises that voucher holders are confined to the lowest tercile of the rental market and that rent changes in that segment of the market can be attributed to vouchers.

Vouchers May Have Harmful Effects on Neighborhood Quality

The presence of voucher households might have a harmful effect on the quality of life in certain types of neighborhoods by creating or adding to a concentration of poor households in those neighborhoods.⁴³ This section reviews two studies that address this topic directly, one that examined the effect of voucher households on property values in Philadelphia and one

⁴¹ In addition to the overall dampening effect on supply response to increased demand, a highly regulated housing market may have impeded the repair of units to meet the voucher quality standard or the conversion of low quality homeownership units to rental use.

Another possible weakness is in Susin’s finding that units occupied by voucher holders are in the lower tercile of the rent distribution, which is based on answers to AHS questions that are known not to report receipt of housing assistance reliably or to distinguish between vouchers and project-based housing assistance (Shroder, 2002).

⁴² The analysis uses cross-tabs, not multivariate regression.

⁴³ The potential negative effects of project-based subsidies are discussed in Chapter Six.

that focused on Baltimore County.⁴⁴ Changes in property values are used as a proxy for changes in the quality of life in the neighborhood. Given the previous discussion that suggested that vouchers might increase the price of housing, the studies presented in this section that find that vouchers can have a negative effect on property values initially seem paradoxical. To resolve the apparent paradox, it is important to distinguish between immediate neighborhood quality effects of vouchers and larger housing market effects. The presence of voucher households might have a negative impact on the value of properties within a small range (500 to 2000 feet or even a census tract) but a positive impact on rents throughout the remainder of the housing market, which is much larger.

A fair criticism of studies of the effect of Section 8 voucher households on neighborhood property values is that they may be unable to identify the direction of causation: does the presence of subsidized households causes neighborhood decline, or are subsidized households attracted to neighborhoods that are weak to begin with? The two studies reviewed here incorporate controls for the quality of the neighborhood in an effort to eliminate the latter possibility as the explanation for their findings. To the extent that the studies fail to capture differences in neighborhood quality, their findings that vouchers lead to declines in property values may be attributable to unobserved variables, not the presence of voucher households.

Lee, *et al.*, (1999) analyzed a sample of approximately 18,000 properties that sold between 1989 and 1991 to find the effect of vouchers⁴⁵ on property values within one-quarter mile in Philadelphia. The authors use statistical models that control for property characteristics, neighborhood quality (in some specifications),⁴⁶ distance from the central business district, and distance from a park or river. In specifications that control for neighborhood characteristics, the presence of voucher households has a statistically significant negative effect on property values. However, effects are fairly small: for every 100 voucher households within one-quarter mile, property values decrease by about 0.5 percent.⁴⁷

The Galster, *et al.*, (1999) study of the impact of voucher users⁴⁸ on single-family home values in Baltimore County finds that impacts depend on the neighborhood context and the concentration of assisted households. In higher-valued, appreciating neighborhoods, a few

⁴⁴ Lyons and Loveridge (1993) also investigated the effect of vouchers on property values, and found no impact. However, only 39 Section 8 voucher households were in the sample.

⁴⁵ We use vouchers here to refer to both vouchers and certificates, which for this (and much other) analysis are treated as the same program.

⁴⁶ Neighborhood condition variables at the census block group level are from the 1990 Census.

⁴⁷ Results are reported for only one of four specifications. The results from all three specifications that included neighborhood controls were consistent in the sign on the coefficients, although magnitudes varied somewhat.

⁴⁸ In this case, the form of the voucher was Section 8 certificates.

voucher sites⁴⁹ located within 500 feet had a positive impact on property values. In low- or moderately valued census tracts experiencing real declines in value since 1990, voucher sites had a negative effect on prices within 2,000 feet.

The study uses a sample of 43,361 home sales and examines the effect of voucher sites⁵⁰ first occupied between 1991 and 1995. Galster compares the level and trend of home prices in a micro-neighborhood (an area within a ring), both before and after a site in the ring is occupied by a subsidized tenant. House value models control for property characteristics and overall housing market price patterns, such as the countywide trend in home prices and variation in price levels across census tracts. The number of voucher units within the ring at the time of the sale is also included as an explanatory variable. Proximity to voucher sites, the number of occupied voucher sites, and the number of occupied voucher units are used as explanatory variables in three separate models. Countywide statistical models are estimated, as well as stratified models for clusters of census tracts in the county that were grouped by racial composition, median 1990 home values, and real changes in median home values from 1990 to 1996.

Based on their results, the authors reach several conclusions. First, voucher households had a tendency to locate in neighborhoods⁵¹ that have lower values and/or lower rates of house price appreciation than other neighborhoods. Second, the countywide models show that in general, within a 500-foot ring of sales, small numbers of voucher sites are associated with positive effects on property values. However, larger concentrations of voucher sites and units within 500, 1,000, or 2,000 feet of sales, and particularly within the 500-foot ring, are associated with negative impacts on value.

Third, the stratified models show that positive price effects occur only in census tracts that have relatively high median home values, have experienced real price appreciation, and are overwhelmingly occupied by whites. The authors speculate that, in this type of neighborhood, the voucher program may induce renovation or increased maintenance by landlords in preparation for occupancy by a voucher household. Negative price impacts appear to occur only in vulnerable neighborhoods. The magnitude of the impact is small, but increases with increasing concentrations of voucher households.⁵²

⁴⁹ A site refers here to a property that may contain multiple units occupied by voucher holders.

⁵⁰ Voucher sites selected for analysis were those for which a sufficient number of sales took place both prior to and after occupancy within various distances and which had an average annual rate of single-family home sales of two in each of the three rings considered by the study. In addition, only sites that were continuously occupied by a voucher household (not necessarily the same one) were retained as analysis sites, to ensure that a consistent post-occupancy effect was being measured.

⁵¹ Here, a neighborhood means areas within 1,000 feet of a voucher site.

⁵² To help explain their findings, the authors conducted focus groups with residents of a variety of neighborhood types in the county. Comments from participants indicate that it is not the presence of a voucher household per se that influences their view of neighborhood quality, but rather the exterior

Lessons Learned

The only clear finding on the extent and causes of low housing supply elasticity is that, as expected, highly regulated housing markets are not able to respond well to increases in housing demand. There is a great deal that we do not know about the determinants of supply elasticity other than regulation. Additional research of the type attempted by Green, *et al.*, (2000) should be pursued in order to develop a more complete typology of housing markets with low supply elasticities. In particular, it would be useful to know more about the interaction with housing supply of demand factors such as population growth, income distributions, and rates of household formation of different types of households. It may be that the greater uncertainty of projecting certain types of increased housing demand (for example, those associated with the arrival of immigrant groups and the aging of immigrant cohorts) makes producers of housing less quick to respond to demand in some locations.⁵³

The regulations that increase the cost of supplying housing and reduce the responsiveness of producers to increased demand are themselves the result of public policy. Therefore, it might seem perverse to conclude that metropolitan areas or jurisdictions that enact such regulations should be “rewarded” through increased allocations of federal housing assistance.⁵⁴ On the other hand, the regulations that increase the price of housing are enacted largely on behalf of more affluent residents—to protect or enhance the value of their housing units and neighborhoods (Hamilton, 1976). It may be a legitimate function of federal housing policy to protect low-income renters in those areas from the adverse distributional effects of local regulations.

Theoretically, the elasticity of supply in a market has important implications for the effectiveness of vouchers: in markets with inelastic housing supply, vouchers could increase the cost of housing for unassisted low-income households. Findings on whether vouchers actually do harm unassisted low-income households are mixed. Given the potential extent of damage that could be caused by vouchers, this is an important question that deserves additional study.

condition of buildings occupied by voucher households or the behavior of members of voucher households. An Abt Associates study conducted in eight locations where the presence of voucher households gave rise to community conflict describes multiple factors, including economic and racial transition, PHA administrative practices, and the process of conflict management, that affect the perception that voucher families are harming a neighborhood (Churchill, *et al.*, 2001).

⁵³ Myers, *et al.*, 2002, describes some of the difficulties in predicting household growth, in particular in California.

⁵⁴ Increased federal housing assistance can come either in the form of increases to FMRs (i.e., to voucher subsidy levels) or allocations of funds for housing production programs.

The question of whether the presence of voucher-recipient households reduces neighborhood property values also deserves more attention. While the limited literature available suggests that it does, additional cross-metro area research is needed. In particular, more clarity about the market conditions that increase the likelihood of a negative impact on property values would also be helpful. One implication of the finding that weak neighborhoods are negatively affected by even a small number of voucher units is that FMR levels may need to be raised to allow voucher holders to live in high-valued, appreciating, white neighborhoods (Galster, 1999). However, doing this could decrease or even erase the cost advantage that vouchers currently have over production subsidies.

Chapter Six

Where Are Production Subsidies Least Effective?

Chapters 4 and 5 reviewed the evidence on the population groups for which vouchers are less effective and the housing markets and neighborhoods for which demand subsidies may have negative consequences. In this chapter, we turn to the literature on places where production subsidies may not be effective. First, production subsidies typically have higher costs than vouchers. A second and related issue is that, because of their typically higher costs and their constraining effect on household choice, production subsidies should not be used in places where the housing market provides an ample supply of units at rents affordable to voucher holders. Third, production subsidies may “crowd out” private production of housing and, therefore, be ineffective in increasing the total housing stock.⁵⁵ Fourth, production subsidies may reduce property values in some neighborhoods.

Chapter 6 Highlights

- Production subsidies are generally more expensive than vouchers
- Production subsidies are not needed in places where the market works well
- Production subsidies may crowd out private investment
- Production subsidies may reduce property values in some neighborhoods

As we discuss below, there is consensus in the literature that production programs are more expensive than vouchers, but there is a high degree of variation in the production/voucher cost differential across production programs and metropolitan areas. Studies on the degree of upward and downward filtering in housing markets provide indications of where housing markets “work well” and, therefore, relatively more expensive and less flexible production

⁵⁵ Another commonly cited shortcoming of production subsidies is that, if they are built for poor households who are charged very low rents, the housing will have a “captive” market and its owners will have little incentive to manage and maintain the housing to competitive standards. We do not address this issue in this paper, because it is not related directly to which types of housing markets and which types of households are better served by production subsidies than by vouchers. If correct, however, it may suggest that production subsidies should be used for “mixed income” housing or for housing that reaches relatively higher income households, as the LIHTC does, with portable vouchers used to make the developments affordable for the extremely low income households most likely to have worst-case needs (Khadduri, *et.al*, 2001).

subsidies are not the best method of addressing worst-case needs. Little work has been done on the extent to which production programs may crowd out private housing construction. The research that has been done indicates that production programs do crowd out private production, but that the degree of crowding out varies based on the characteristics of the housing market and the population group served. Throughout this discussion, we assume that voucher programs are operated skillfully; if they are not, vouchers may not work well in markets where they should.⁵⁶

Production Subsidies Are More Expensive Than Vouchers

Studies have repeatedly shown that it is more expensive to house people using production subsidies than demand subsidies.⁵⁷ Rather than review an already well-known body of work, we instead focus here on the most recent cost comparison between demand-side and supply-side subsidies.

A GAO study (2002) and further analysis by DiPasquale, *et al.*, (2002) examine the total cost of providing housing under six active federal housing programs: housing vouchers, LIHTC, HOPE VI, Section 202, Section 811, and Section 515.⁵⁸ Unlike the earlier study by Wallace, *et al.*, (1981), GAO (2002) and DiPasquale, *et al.*, (2002) are not able to compare costs controlling for quality. Therefore, cost differences found could be related to differences in quality of units across programs.⁵⁹ Nevertheless, these studies provide the best recent evidence on the costs of vouchers and production programs.

The GAO and DiPasquale, *et al.*, studies find that all of the programs that provide production subsidies are more expensive than vouchers, considering both costs to the government and costs to the occupants of the units. It is important to note that both the GAO and DiPasquale, *et al.*, studies are based on small numbers of properties, particularly for the Section 811 and Section 202 programs. In addition, the studies define cost as the present discounted value of

⁵⁶ See Finkel and Buron (2001) for evidence that the PHA's practices and procedures play a role in voucher success.

⁵⁷ Five major studies have estimated the cost per unit and the mean market rent of apartments provided by housing certificates and vouchers and the largest older production programs, Public Housing, Section 236, and Section 8 New Construction. These are Mayo, *et al.*, (1980), Olsen and Barton (1983), Schnare, *et al.*, (1982), HUD (1974), and Wallace, *et al.*, (1981). Olsen (2000) provides a description and critical appraisal of the data and methods used in these studies as well as a summary of their results.

⁵⁸ See Chapter 1 for definitions of the housing voucher, LIHTC, HOPE VI, Section 202, Section 811, and Section 515 programs.

⁵⁹ In response to analysis by McClure (1998) suggesting that the long-term discounted costs of rental units produced by a supply-side program may be similar to the cost of vouchers, Shroder and Reiger (2000) compare costs of similar-size units located within the same zip codes and show that vouchers are less expensive.

costs estimated over 30 years.⁶⁰ Nevertheless, the results are based on the best data available and provide some interesting insight. Both studies find that LIHTC units are less expensive *to the government* than vouchers, but this is only because the tenants pay a larger share of the bill (relatively higher income households, on average, live in LIHTC units, and many LIHTC residents pay more than 30 percent of their income for rent).

Given previous analysis, these findings are not surprising. However, a very important finding of the GAO study is that there is a high degree of variation in costs (to the government) both across the six programs and within a single program depending on location. For example, in Boston, the differences in total 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, one-bedroom tax credit units are nearly 40 percent more costly than vouchers (DiPasquale, *et al.*, 2002). The difference between Boston and Denver for all sizes of tax credit units is somewhat smaller, but still substantial: tax credit units are 30 percent more expensive than vouchers in Denver, but only 15 percent more expensive in Boston.

The GAO study also finds that there is little consistency across programs in the cost of production programs versus vouchers. In Boston and Dallas/Ft. Worth, the cost of production programs is close to or below the national average for all three programs. Production programs are significantly more costly than vouchers in New York and Chicago for all three programs. Denver has unusually high costs for tax credit units compared with vouchers; in Boston, both tax credit and voucher costs are high, so the cost difference between the two programs is small. Section 811 units appear to be unusually expensive in New York relative to vouchers and inexpensive in Denver. Section 202 units are the most costly relative to voucher costs in Chicago; they are the least costly relative to vouchers in Dallas/Ft. Worth.

Differences between costs of production programs and vouchers in non-metropolitan areas are much larger than in metropolitan areas (DiPasquale, *et al.*, 2002). This suggests that eligible households are more efficiently served through vouchers than through production subsidies in non-metropolitan areas. In fact, in non-metropolitan areas, tax credit units actually have higher rents than housing vouchers. This is also true for the Dallas/Ft. Worth metro area. For these areas, it appears that the government's investment into the development costs of production programs does not buy reduced rent. It may improve the quality of units available to some low-income households, although it cannot do so for households that would need to use vouchers to make rents affordable.

⁶⁰ Forecasts over this length of time are necessarily uncertain, but the authors view life-cycle costs as a more appropriate measure of cost than monthly costs at a point in time.

Unfortunately, not enough data are available to provide much insight into the types of markets that are good candidates for production subsidies simply on the basis of costs relative to vouchers. In addition, the reasons for cost differences are not always clear. Some of these differences may be attributable to the premiums paid for special features that may be important for particular types of households (Chapter 7). For other units, the reasons for higher costs are not clear, and DiPasquale suggests that more work is needed on the determinants of development costs and the effectiveness of current cost containment guidelines.

Production Subsidies Are Inefficient in Places Where the Housing Market Functions Well

In housing markets with elastic supply, units are added to the affordable housing stock primarily through filtering of previously higher-quality units (Chapter 2). Units affordable to very low-income renters will not be added through unsubsidized new construction, because the cost of new construction in most markets is too high. Instead, affordable units are created as relatively higher income households “move up” to the new units and the rents of older units decline into the affordable range.⁶¹

In these markets, government involvement on the supply side is unnecessary, because rents are high enough to support construction and maintenance, and there is sufficient demand to keep vacancy rates comfortably low. Vacancies are high enough that households with vouchers can find units, but low enough that units are operating profitably and private producers build new units. The new units will, through the filtering process, provide affordable housing for households with vouchers and for some other low-income renters as well. Building government subsidized rental housing in these “well functioning” housing markets is wasteful.

Nelson, *et al.*, (1998) analyze the filtering issue using data from the American Housing Survey in 41 metropolitan areas to track individual housing units twice at four-year intervals during the period from 1985 to 1992. The study tracks both changes to the stock through additions, changes in tenure, and demolitions, and changes to rent levels as units move between price categories affordable for households at different levels of income. Nelson, *et al.*, find that there was widespread growth in the stock of housing renting at or below FMRs over the periods studied. This implies that, in certain segments of the market, the filtering process generally works well and demand subsidies are more appropriate than production

⁶¹ Production subsidies, at least to create new units, are also not needed in areas where there are high vacancy rates among units affordable to very low-income renters. Nelson (2002) identifies several such MSAs, including Phoenix and Dallas (18 percent vacancy), Tampa-St. Petersburg (17 percent), and Oklahoma City (22 percent).

subsidies. They found, however, that the number of extremely low-rent units shrank, and were more likely to filter up than down, suggesting that the process of filtering does not result in the addition of units to this portion of the housing stock.

The authors group the 41 metropolitan areas into six categories, in an attempt to discover the market characteristics where the filtering process works poorly. Based on two variables—rates of total new housing construction and gains or losses in the affordable rental housing stock⁶²—metropolitan areas are classified as:

- Booming/Gaining (high rate of construction and gain in affordable units);
- Booming/Some Loss (high rate of construction and some loss of affordable units);
- Booming/High Loss (high rate of construction and substantial loss of affordable units);
- Low Growth/Gaining (low rate of construction and gain in affordable units);
- Low Growth/Some Loss (low rate of construction and some loss of affordable units); and
- Low Growth/High Loss (low rate of construction and substantial loss of affordable units)

Nelson, *et al.*, demonstrate that many types of metropolitan housing markets experienced growth in the number of units renting at or below FMR during the four-year periods studied, suggesting that there was adequate supply (and, by extension, that subsidized additions to supply might have simply crowded out unsubsidized production). With vouchers, extremely low and very-low income households could find suitable units to rent. Low-income and some very-low income households could find affordable units without needing rental assistance. Further, many of these markets had constant dollar declines in FMRs over the period studied, suggesting that vouchers were an increasingly inexpensive method of providing housing.

While Nelson, *et al.*, find that there was adequate supply in most types of metropolitan housing markets, there was a supply problem in Low Growth/High Loss markets. In these markets, a declining number of units were affordable to unassisted households and FMRs were rising, increasing the cost to the government of providing vouchers. In these markets, there was little new construction of housing (homeownership or rental), and there was also little filtering down in rent categories of the stock of rental housing that already existed. Therefore, in Low Growth/High Loss metropolitan areas, production subsidies may have been needed to add to the stock of housing affordable for households with vouchers. Low

⁶² Affordable units are defined as private market, unsubsidized rental units affordable to households with incomes at or below 50 percent of HAMFI.

Growth/High Loss metropolitan areas included Anaheim, Boston, Los Angeles, New York, Newark, Philadelphia, San Francisco, and Washington, DC. These metropolitan housing markets appear also to be among those in which regulatory constraints may prevent private producers from responding to increases in housing demand (Chapter 5).

A study by Somerville and Mayer (forthcoming) makes the connection between filtering and regulation explicit, examining how restrictions on new construction affect the probability that a unit will stay in the stock of rental units affordable to low-income households.⁶³ They find that restrictions on the supply of new units in *any* segment of the market lower the supply of affordable units. This occurs because the increase in demand that is unmet by new construction raises the returns to landlords for improving the quality (and the price) of their existing units.

Somerville and Mayer use data on individual units at two points in time and generate a sample of about 78,800 units. They find substantial movement in and out of the affordable housing stock.

To explain these movements in and out of the affordable housing stock, the authors estimate the probability of a unit remaining in the low-income stock (or in the unaffordable stock, if that was its initial state), becoming unaffordable (or becoming affordable), converting to owner-occupied, or being demolished or converted to another use. Unit characteristics such as adequacy and age are included as explanatory variables along with neighborhood⁶⁴ characteristics such as the ratio of rental units to all units, affordable units to all rental units, the average age of the rental stock, and the median income. Control variables for housing price and rent changes in the MSA over the period also are included.

The effect of regulation is included by using two variables: the number of growth management techniques prevalent in the MSA and whether development or impact fees are imposed in the cities in the MSA. In addition, a dummy variable for whether the percentage of rent-controlled units in the zone is greater than 10 percent is included, along with the percentage of rent-controlled units in the zone. An additional explanatory variable described as a measure of supply elasticity for the MSA is also included.⁶⁵

⁶³ Rental units are defined as affordable to low-income households here as those with gross rents less than or equal to 30 percent of household income for a household with 35 percent of the median MSA household income.

⁶⁴ A neighborhood is defined here as an AHS zone, which is a socioeconomically homogeneous area of approximately 100,000 people.

⁶⁵ The measure of supply elasticity appears to be the number of new single-family permits, but the variable is not explained.

Somerville and Mayer find that greater regulation increases the probability that an affordable rental unit will become unaffordable, although the effect is small. However, the authors point out that, even with a small effect per unit, the aggregate effect on affordable housing throughout the MSA can be large. For example, the probability that an affordable will filter up to become unaffordable increases by less than 1 percent with a 10 percent increase in the number of jurisdictions in an MSA using impact fees. Applying this 1 percent change in probability to 50,000 affordable units in a metro area implies a loss of almost 500 affordable units. In addition, a lower supply elasticity of housing increases the probability that an affordable unit will filter up, although the coefficient is not statistically different from zero in all of the specifications. The probability of filtering up increases because, with a weak supply response (in the form of new construction) to an increase in demand for unaffordable housing, the returns to upgrading a unit so that it can filter up increase.

Production Subsidies May Crowd Out Private Investment

One of the primary concerns about the use of production subsidies is that they may “crowd out” units that would have been supplied in the private market. If a production subsidy increases the quantity of occupied housing units per capita, thus providing housing for households that would not otherwise have their own housing unit, then there is no crowding out. On the other hand, if there is no net effect on the housing stock and subsidized units are occupied by households that would be housed even in the absence of the program, then the program represents a transfer of resources to those households. In other words, there is complete crowding out (Sinai and Waldfoegel, 2002). Transferring resources to poor households may be desirable, so that feature of a production subsidy that results in crowding out is not at issue. The issue is that, in many housing markets, vouchers are a more efficient means of transferring resources to poor households than production subsidies. Therefore, an effectively targeted production subsidy should also increase the consumption of housing.

In order to understand the implications of crowding out for the *affordable* housing stock, it is important to make a distinction between two different mechanisms through which crowding out can occur. First, crowding out may occur in strong markets where private production would undertake development of housing units in the absence of production subsidies. These units would eventually filter down to increase the affordable housing stock.

Crowding out can also occur in weak markets, and particularly in low-income neighborhoods, by accelerating abandonment. In these areas, units are affordable because there is no competing use for the buildings or properties. Production subsidies do not prevent private construction, because rents are too low to support the cost of construction or major renovation. However, production subsidies may create units of better quality than the

existing low-cost units and draw away demand for the existing private units, eventually resulting in their abandonment (see Rothenberg, *et al.*, 1991).⁶⁶

In neighborhoods where this would happen, there are two possible strategies. One is to replace (demolish and rebuild) the worst of the existing housing with the new supply, because otherwise the new, subsidized housing will crowd out the old, unsubsidized units. However, the potential danger in this strategy is creating a neighborhood with long-term dependency on government subsidies and, perhaps, long-term isolation from work opportunities. The other strategy is not to use production subsidies in these neighborhoods, but instead to permit households with vouchers to choose rental units throughout those portions of the private rental market that have units affordable within the voucher program's payment standards.

Empirical work done to date does not allow us to determine with much precision how the degree to which crowding out occurs varies by the characteristics of the housing market. This creates an important gap in our current understanding of how production subsidies should be targeted to neighborhoods and metropolitan areas. The remainder of this section summarizes the empirical work that has been done on crowding out in housing markets.

Crowding-Out at the National Level

Murray has conducted two studies on whether subsidized housing construction has crowded out unsubsidized housing construction (1983 and 1999). His first study (1983) analyzes data from 1961 through 1977 and concludes that much of the effect of subsidized housing starts on the housing stock was offset by the displacement of unsubsidized starts. In that study, Murray estimates demand and supply equations for unsubsidized housing starts that include variables for the effects of subsidized housing and finds that conventionally financed moderate-income subsidized housing⁶⁷ starts had no net effect on the stock of housing, even in the short run. Government-financed subsidized housing for low-income and elderly households caused less crowding out, and resulted in net new additions to the housing stock. Over the long run, he finds that about 35 percent of the subsidized government-financed housing units did not displace unsubsidized housing units. In other words, the 370,000 units of low-income housing units financed by the government made a net contribution to the housing stock of 130,000 units over the 17-year time period.

⁶⁶ Production subsidies may also compete with existing subsidized housing. For example, a new subsidized development built near an older subsidized project may attract many of the residents of the older project, leading to high vacancy in the older project. Although this is not technically considered crowding out (which usually refers to private investment), it is an important potential effect of production subsidies that policy makers and planners should consider. Two subsidized developments situated close together may have negative effects for a second reason. As noted later in this chapter, large-scale subsidized housing developments can have a negative effect on property values in some types of neighborhoods. It is possible that two smaller-scale developments could have the same effect as one larger-scale development.

⁶⁷ Such as those originated under the 221(d)(3) program.

Based on the finding that conventionally financed subsidized starts caused a higher degree of crowding out than government-financed housing starts, Murray hypothesizes that an inelastic supply of mortgage financing (with respect to price, i.e., interest rates) was an important cause of the displacement.

Murray's second (1999) study uses data from a much longer period (1935 to 1987) and reaches similar conclusions. Again, he finds that low-income housing (specifically public housing) does not entirely crowd out unsubsidized construction, but that moderate-income, conventionally financed subsidized housing adds little or nothing to the total housing stock. Based on the finding that public housing makes net contributions to the housing stock, he hypothesizes that the poor use public housing to form independent households. Single parents may move out of their parents' houses. Similarly, the elderly may move out of their children's houses to form their own households. On the other hand, moderate-income people, who are more likely to be in an independent household when they enter a housing program, reduce their demand for unsubsidized housing entirely.

Reviewers of Murray's work argue that the degree of crowding out may have increased over time for two reasons. First, financial markets are more integrated now than the 1961-1977 period of Murray's first study. Therefore, the distinction between government and conventional financing is less important. If the supply of mortgage financing remains inelastic (for the integrated financial market), the degree of crowding out by low-income subsidized housing may have increased (Weicher, 1990). Second, the type of housing that Murray found contributed to the total stock of housing – primarily large-scale public housing projects – is no longer constructed today. Struyk (1990) argues that these projects are sometimes occupied at all only because they are subsidized. In contrast, the smaller-scale, mixed-income subsidized housing now in favor is more likely to substitute for unsubsidized units.

Murray's work leaves two important gaps in our understanding about the extent to which production subsidies cause crowding out. First, the studies use national-level data. Although it is important to know that production subsidies in general are likely to displace unsubsidized housing, it is likely that there are some metropolitan areas where crowding out is more or less likely to occur. Studies of crowding out using metropolitan-level data are needed as a basis for targeting production subsidies to those places where crowding out is least likely to occur. Second, if Struyk's hypothesis that the type of subsidized housing constructed today is more likely to cause crowding out needs to be tested. The last year covered in Murray's second study was 1987, the year of the inception of the LIHTC program. LIHTC developments are not necessarily small in scale, but, given their rent levels, they must appeal to households more similar to private, unsubsidized renters than the poor families who typically occupy public housing.

Crowding Out at the State and Sub-state Levels

Malpezzi and Vandell (2002) attempt to shed light on this last point by analyzing whether the LIHTC increases the supply of housing. They use a cross-sectional model of the effect of LIHTC units on the size of the total (rental and homeownership) housing stock (per thousand population) for each of the 50 states and the District of Columbia.⁶⁸ They include controls for non-LIHTC supply-side rental subsidy programs and vouchers from a data set collected by HUD as of 1998. Housing stock data are from the 2000 Census, as are vacancy rates, demographic data, and poverty rates. Per-capital income and population in the state are from the Bureau of Economic Analysis.

Malpezzi and Vandell find that none of the coefficients for the housing subsidy variables (LIHTC, older supply-side programs, *or* vouchers) are significantly different from zero, which would suggest that none of these programs increases the size of the housing stock for entire states. The study implies complete crowding out. However, the study is ultimately inconclusive because the standard errors are so large that the hypothesis that there is *no* crowding out (in which case, the coefficients would be equal to one) cannot be rejected.

Sinai and Waldfoegel (2002) analyze crowding out for census places, which are incorporated jurisdictions such as cities and towns, and a statistical equivalent used by the Census Bureau to group unincorporated places. This provides better insight into the types of *housing markets* where crowding out is most and least likely to occur than Malpezzi and Vandell's state-level analysis. Sinai and Waldfoegel find a smaller degree of crowding out than Malpezzi and Vandell: an additional subsidized unit raises the total number of housing units in a census place by between .25 and .375 units.

Instead of examining data over a period of time, as Murray does in both of his studies, Sinai and Waldfoegel use cross-sectional data from the 1990 census on the housing stock and assume this represents housing markets in long-run equilibrium. Data on subsidized housing units are from HUD's 1996 Picture of Subsidized Housing. The model used in the study estimates the total occupied housing stock per capita and includes as explanatory variables total subsidized rental units per capita, the racial/ethnic distribution of the population, the income distribution, the percentage of the population over age 65, median family income, and state dummies. These are in addition to the number of families eligible for public and other subsidized rental housing per existing unit,⁶⁹ which indicates the pent-up demand for subsidized housing (or the excess demand for public housing). Because the study uses

⁶⁸ The number of LIHTC units authorized each year from 1987 to 2001 is obtained from the annual report of the National Council of State Housing Agencies. They assume that all approved units were built and all units built remain in the stock.

⁶⁹ "Existing units" includes both project-based and tenant-based housing. A family is considered "eligible" if its income is less than 50 percent of AMI for a family of four.

housing stock data from 1990, only three years after LIHTC units began being approved, no conclusions can be drawn about the LIHTC program specifically.

Sinai and Waldfoegel find that there is less crowding out in more populous places. In places with populations larger than the median, they find that each public unit adds .2 to .4 units to the housing stock. In contrast, for places in the bottom quartile of the population distribution, each public or subsidized unit adds .06 of a unit to the long-run housing stock. The reasons for these differences are not clear. They also find that there is less crowding out in places with greater excess demand for subsidized rental housing. In these types of markets, it appears that production subsidies are more likely to provide housing units to households that otherwise would not have their own unit. Sinai and Waldfoegel find that, in places with greater excess demand for subsidized rental housing, 100 additional public or subsidized units raises the total housing stock by 49 units. In places with less excess demand, 44 units are added to the total housing stock.

While the concept of crowding out may not have the same meaning for vouchers as for production subsidies, Sinai and Waldfoegel also examine the extent to which vouchers result in an increase in the stock of housing. They find that one voucher generates 0.7 units of new housing and conclude that this means that supply is not perfectly elastic and that vouchers do not lead to the production of enough units to meet the increased demand.⁷⁰ The finding that there *is* a supply response to vouchers is inconsistent with the Susin (2002, see Chapter 5) findings that vouchers lead to little increased production and therefore higher rents.

Production Subsidies May Reduce Property Values in Some Neighborhoods

Residents of some neighborhoods fear that a new subsidized housing development will cause a decline in property values because of an influx of low-income neighbors. The possibility that subsidized housing units could revitalize the community, thus increasing property values, is addressed in Chapter 7. In the studies reviewed in this chapter, the subsidized developments evaluated have not been intended to revitalize the community by replacing abandoned buildings or filling in vacant lots. Instead, they have been intended to desegregate public housing (Yonkers, New York), or their siting decision has been left up to individual developers (LIHTC projects).

We found no study that concludes that subsidized housing developments caused large declines in property values. Several find that they may have small positive effects. However, as discussed below, there appears to be a fine line between the circumstances in

⁷⁰ This conclusion appears not to take into account that some households use vouchers to reduce their rent burdens rather than to create a demand for an additional unit of housing.

which a production subsidy will improve a neighborhood and the circumstances in which it will cause deterioration. The actual effect of the production subsidy depends both on the scale of the project and on the characteristics of the neighborhood.

Madison and Milwaukee

Green, *et al.*, (2002) study the effect of LIHTC developments on property values in the Madison and Milwaukee metropolitan areas and find that the effect on property values differs depending on the characteristics of the area. They analyze data on real estate transactions that include only units that have sold at least twice⁷¹ over a period of 10 years in Madison (between 1990 and March 2001) and five years in metropolitan Milwaukee (between 1995 and March 2001). Because price changes are measured for the same units, detailed data on unit and neighborhood characteristics are not necessary.⁷²

In Madison, Green, *et al.*, test five different model specifications. Four of the five specifications show that proximity to an LIHTC development increases the rate of property value appreciation, although this result is statistically significant in only one specification. In Milwaukee County, proximity to an LIHTC development has a negative impact on appreciation rates in all four specifications tested, although the magnitude of the effect is not large. These findings are statistically significant in three of the four specifications. The results for Milwaukee County contrast with the findings for Waukesha and Ozaukee counties, which are also in the Milwaukee metropolitan area. There is no evidence that the LIHTC developments in Waukesha and Ozaukee counties had an effect on property value. For these counties, the coefficients on the measures of proximity to an LIHTC development are all close to zero and not statistically significant. However, the number of transactions available for Waukesha and Ozaukee counties was small, and may explain the insignificant results in the Waukesha and Ozaukee specifications.⁷³

The lesson drawn from the study by Green, *et al.*, is that the effect of LIHTC developments on nearby property values may depend on the characteristics of the neighborhood where the development is located. Of the three Milwaukee metropolitan area counties studied, Milwaukee has the lowest median household income, the highest poverty rate, and the highest fraction of the population that is African-American. Waukesha and Ozaukee

⁷¹ This is called a repeat-sales technique.

⁷² Nevertheless, specific controls for neighborhood characteristics were included in at least one specification used in Madison and two specifications used for Milwaukee, Waukesha, and Ozaukee counties. These controls include neighborhood poverty rate, income, marital status, percentage African-American, percentage married couple, and percentage of households headed by women.

⁷³ This study does not allow a determination of whether the LIHTC developments, when initially built, had any effect on property values. It only tests for a difference in house price appreciation for property near the developments at the times when the repeat sales occurred. It is possible that properties near LIHTC developments an initial change in value (in either direction) when they were first built, but then went on to appreciate at a rate similar to other neighborhoods.

counties are both affluent compared to Milwaukee County. The authors conclude that the impact of LIHTC developments on property appreciation rates in relatively affluent areas is either neutral or positive. However, in areas where poverty is concentrated, these developments have a negative effect on property values, perhaps because of the increase in poverty concentration they introduce.

Scattered-Site Public Housing in Yonkers, New York

During the 1990s, 200 scattered-site public housing units were placed across seven moderate- and upper-income neighborhoods in Yonkers as a result of a court order to desegregate public housing. Residents of the recipient neighborhoods were vociferous in their opposition to the low-income housing developments. Briggs, *et al.*, (1999) study the effects of the seven scattered-site developments (ranging in scale from 14 to 48 units) on house values in the recipient neighborhoods and find no price effect from the developments.

The authors analyze data on real estate transactions in the city of Yonkers from 1985 to 1996. Hedonic models are specified to estimate the effect of the scattered-site public housing on house prices. All the models include variables for building characteristics and lot size. Additional variables indicate the census tract (intended to control for neighborhood quality) and the quarter of sale (to represent time-trend market effects). Because the sites for the developments were known to the public about five years prior to occupancy, the effects of both the announcement of the sites and their occupancy by low-income households are tested. Variables also indicate whether the property sold was within one-quarter mile of any of the scattered-site public housing sites and whether the property was sold prior to announcement, after announcement but prior to occupancy, or after occupancy.

None of the models yield statistically significant effects on prices resulting from either announcement of the developments or occupancy in any of the neighborhoods where the developments were located. The authors, therefore, conclude that there is no evidence that the scattered-site public housing developments had an effect on house prices. Given the results of other studies, it is not surprising that such small developments would have no impact on moderate-income neighborhoods.⁷⁴

⁷⁴ The study is not entirely convincing because the lack of statistical significance could also be attributable to the relatively small size of the sample available. Although there were 3100 total observations over the 12-year period, only 332 of these were proximate to one of the developments. Of these, 35 occurred pre-announcement; 132 occurred post-announcement but pre-occupancy; and 165 occurred post-occupancy. The proximity variables used in two of the three models were specific to each of the seven neighborhoods where the developments were located, resulting in 14 proximity variables in one model (one for each neighborhood and pre- or post-announcement period) and 21 in the second (one for each neighborhood and pre-announcement, post-announcement, or post-occupancy period). With the small number of observations available for each of these 14 and 21 variables it is not surprising that, despite large differences in the sizes of the coefficients, these differences are not statistically significant.

Various Forms of Subsidized Housing in Philadelphia

A study of the effects of a range of federally assisted housing programs on property values in Philadelphia was conducted by Lee, *et al.* (1999). They analyze a sample of approximately 18,000 properties that sold between 1989 and 1991 to determine the effect on neighborhood property values of several subsidy programs, including public housing developments, scattered-site public housing, homeownership programs, LIHTC rental developments, and Section 8 New Construction or Substantial Rehabilitation developments. The authors use property value models that control for property characteristics, neighborhood quality (in some specifications), distance from the central business district, and distance from a park or river. In the specifications that include controls for neighborhood characteristics, the presence of a public housing development, scattered-site public housing units, and LIHTC units all have a negative effect on property values. In contrast, units in homeownership programs and Section 8 New Construction or Rehabilitation units all have a positive effect. Both negative and positive effects are statistically significant.⁷⁵

These findings are difficult to interpret, and most of the effects are fairly small. The largest impact is associated with the presence of a public housing development within one-eighth mile of a property.⁷⁶ This has a negative effect on price of about 9 percent.⁷⁷ For every 100 Section 8 New Construction or Substantial Rehabilitation units, property values increase by about 0.1 percent. For every 100 LIHTC units, there is a 0.1 percent decrease in property value, although the authors speculate that this may be the result of a lag in the positive impact of this program on property values. Most of Philadelphia's LIHTC units were built after 1987, so the earliest tax credit units would have been occupied only two years before the first sales transactions analyzed for this study.

Like the study of the Madison and Milwaukee metropolitan areas by Green, *et al.*, this study does not attempt to measure the initial impact on property values of subsidized housing developments. Instead, the authors seek to measure whether there is a continuing effect on property values a decade or more after initial occupancy.

Galster (2002) suggests that some of the negative impact found by Lee, *et al.*, and by other studies is not the result of the subsidized housing. Rather, developers of assisted housing may choose sites in neighborhoods with low and declining property values. For example, developers may look for relatively inexpensive land in neighborhoods where a subsidized

⁷⁵ The coefficient on LIHTC developments is statistically significant only in the specification that restricts the range on presence of a development to one-eighth of a mile.

⁷⁶ The coefficient on the variable indicating the presence of a large public housing development within one-quarter mile is large and negative, but not statistically significant.

⁷⁷ Results are reported for only one of four specifications. The results from all three specifications that included neighborhood controls were consistent in the sign on the coefficient, although magnitudes varied somewhat.

housing development is less likely to meet with opposition. Therefore, the level of housing prices and house price trends near subsidized housing developments may be systematically inferior to the rest of the census tract.

Scattered Site Public Housing in Denver

Santiago, *et al.*, (2001) study the impacts of scattered-site public housing in Denver and find that, in general, these subsidized units did not reduce single-family home values in the neighborhood in which they were developed. On the contrary, in many cases, they resulted in higher home values, and this was true despite the fact that these units were sited in neighborhoods with below-average property values. However, the magnitude and direction of the effect depended on the characteristics of the recipient neighborhood and the spatial concentration and scale of the scattered-site developments.⁷⁸ Results from the study are summarized in Exhibit 7 below.

Exhibit 7. Impact of Scattered-Site Developments

Neighborhood Type	Positive Impacts	Negative Impacts
Higher Value, Less Vulnerable	No more than five sites within 1,000 to 2,000 feet	More than one site within 1,000 feet or more than five sites within 1,000 to 2,000 feet
Lower Value, More Vulnerable	No more than four sites within 1,000 to 2,000 feet	More than four sites within 1,000 to 2,000 feet

Source: Galster (2002).

LIHTC Units in Cleveland, Portland, and Seattle

Johnson and Bednarz (2002) studied the impact of LIHTC projects that began occupancy in 1995 through 1997 in Portland, OR, Cleveland, and Seattle. All but one project had 100 units or fewer. In all three cities, LIHTC projects were located in neighborhoods with below-average single-family house values. In Cleveland, LIHTC projects were located in neighborhoods with substantially lower property values than the citywide average; in Portland and Seattle, LIHTC neighborhoods had only moderately lower property values than other neighborhoods.

In all three cities, LIHTC projects had positive impacts on the sale prices of homes within 300 meters of the project. This increase in property value often occurred when the development was announced. Between 301 and 600 meters of the developments, there was generally no home sale price impact in the less vulnerable neighborhoods of Portland and Seattle. In Cleveland’s lower valued, more vulnerable neighborhoods, LIHTC projects had a clear negative impact on homes in areas between 301 and 600 meters of the development.

⁷⁸ A site is an address with one or more dwelling units.

Public Housing in 29 MSAs

Rosenthal (2003) takes a much longer view, based on census tract data from 1950 to 1990 for 29 MSAs and data from 1900 to 1990 for Philadelphia. This research finds economic decline and renewal is quite common among urban neighborhoods, with neighborhood income changing about 12 percent per decade relative to MSA median income. Significantly, for higher-income tracts, older housing stocks accelerate downward movement in neighborhood income, while among lower income tracts older housing stocks deter upward movement.

Unlike other studies reviewed in this section, Rosenthal does not examine changes in neighborhood property values that result from introducing subsidized housing. Instead, he studies changes in neighborhood income over time. The research finds that “as the number of public housing units in the neighborhood increases, low-income neighborhoods are significantly less likely to move up the economic ladder while higher income neighborhoods are more likely to decline” (p. 19). This is at least in part because only lower-income families are eligible to occupy public housing units, which serves to restrict access to the neighborhood by higher-income households to a degree.

It is not known whether the neighborhood impact of other subsidized projects is similar to the impact of public housing units, but degree of concentration may be important and the effects may not be apparent in the short run. The study also serves as an empirical confirmation of filtering, because it demonstrates that housing units change hands over time from higher-income households to lower-income households and vice versa.

Lessons Learned

One of the few points clearly established in the literature on housing subsidies is that production subsidies are generally more expensive than vouchers. Little is known, however, about the reasons behind the substantial variation in the production/voucher cost differential across production programs and across metropolitan areas. The variation may indicate places where the housing market is not operating efficiently. Nelson, *et al.*, demonstrate that most markets work well, in that the supply of units renting at or below FMR grew over the period studied. They also find some markets that do not work well. However, little is known about the reasons for these market failures. Somerville and Mayer provide some evidence that regulation is a factor, but more research is needed to identify other causes as well as confirm their findings. Like several studies of the effects of regulation reviewed in Chapter 5, Somerville and Mayer use a data set that is now dated and provides only rough measures of the degree of regulation. In addition, more research into the extent to which the supply problems identified by Nelson, *et al.*, are temporary would help policy makers determine

whether to wait out a supply problem using vouchers or to intervene by building housing units.⁷⁹

Several studies that examine whether production subsidies cause declines in property value find that they have virtually no effect. Many of these studies do not allow us to draw solid conclusions, because they suffer from small data sets, are unable to measure impact at the time of construction, or do not attempt to take into account what property value trends would have been in the absence of the production subsidy. More recent studies find that production subsidies sometimes do have an effect on neighborhood property values, and that the effect can be positive or negative. The effect appears to depend on the scale of the project and the stability of the neighborhood. A small project in a stable neighborhood has either no effect or a small positive effect. On the other hand, a project added to an unstable neighborhood, especially a large project, can either cause a decline in property values or prevent revitalization that would otherwise occur as a result of market forces.

The studies that examine whether subsidized production of housing crowds out private production (or maintenance) agree that there is at least partial crowding out. It is important to note, however, that few of these studies have been conducted. More research is necessary both to confirm results of previous studies and to answer several questions. First, what market characteristics account for the variation in the extent of crowding out across census places? Further work along the lines of the research conducted by Sinai and Waldfogel may help answer this question. For example, the use of longitudinal data would be desirable, both because Sinai and Waldfogel's assumption that 1990 census data represents housing markets in equilibrium clearly is too simple and because variables that measure changes over time in such demand factors as population, income, and racial/ethnic distribution should be tested. Second, how does crowding out affect the affordable segment of the housing market? The studies reviewed in this chapter examine the effect of production subsidies on the total housing stock, but not the affordable rental stock. If the crowding does not displace units of affordable rental housing directly, and if the housing units displaced would not have increased the affordable housing stock through filtering, a certain degree of crowding out may be tolerable.

Third, little is known about the timing of crowding out. If newly constructed high rent units are crowded out but it would have taken many years for those units, through the filtering process, to increase the stock of affordable units, housing production may in the meanwhile increase the stock of affordable housing. A common criticism of housing production program is that, by the time units are planned, funded, built, and ready for occupancy, the unsubsidized market will have responded to demand. However, markets may respond much more slowly than this implies.

⁷⁹ HUD has commissioned from ICF, Inc., a new version of the filtering study conducted earlier by Nelson, *et al.* The new study will use more recent panels of AHS metropolitan data.

Chapter Seven

Where May Production Subsidies Be Most Effective?

This chapter examines several circumstances in which production subsidies may be more effective than demand subsidies and brings us closer to answering the question of where production subsidies should be used. First, populations such as people with disabilities, the frail elderly, and large households may be served more effectively with production subsidies than with demand subsidies because of the special housing services required by some of these households.

Second, it has often been argued that production subsidies may play an effective role in community revitalization. If this is the case, then the fact that production programs are more expensive than vouchers may be justified by the improved quality of life in the affected neighborhoods. Third, production subsidies may be able to help low-income households relocate to neighborhoods where they experience less racial segregation and better economic opportunity. Fourth, production subsidies may prevent affordable housing units in gentrifying neighborhoods from filtering up by making it possible for owners to reinvest in existing units while keeping them at affordable rents.

Chapter 7 Highlights

Production Subsidies May Be Effective:

- For populations requiring special housing services
- For distressed neighborhoods in need of revitalization
- In locating subsidized households in high-quality neighborhoods
- In preserving affordable housing in tight markets and gentrifying neighborhoods

Populations Requiring Special Housing Services

At least three populations sometimes require special housing services that tend not to be offered through the private market in sufficient supply. Both the frail elderly and people with disabilities may need special services such as transportation, on-site health care, and assistance with daily activities, as well as units with physical accessibility features. Large

families (defined here as households with five or more members) generally require units with larger numbers of bedrooms than are commonly offered in private market rental housing, or at least in those units likely to be rented to voucher holders.

Housing For People with Disabilities

A natural assumption is that production subsidies might be effective for people with disabilities because they may have difficulty using vouchers because of a lack of suitable units. Contrary to this expectation, the voucher success rate study by Finkel and Buron (2001) finds that households comprised of single disabled members had the highest average success rate of any household type across the 48 urban locations sites in which the program was studied, although this result was not statistically significant. The authors speculate that people with disabilities might have received special assistance in searching for units. In addition, some groups representing or advocating for people with disabilities prefer voucher assistance to subsidized housing projects, because vouchers avoid the institutional character that may be associated with housing that groups those with disabilities together.

Despite some evidence that people with disabilities are well served by vouchers and may prefer that type of assistance, production subsidies may provide additional benefits for some individuals that justify their expense. Section 811, the program currently in operation that provides grants to develop supportive housing for persons with disabilities, has funded about 18,000 units, either separate apartments or group homes. The group homes typically include a bedroom for each resident and a common kitchen, dining, and living area. Section 811 properties may also make transportation, housekeeping, and health care services available (DiPasquale, *et al.*, 2002).⁸⁰

According to a recent comparison of the costs of various federal housing assistance programs by DiPasquale, *et al.* (2002), units constructed under Section 811 are the least expensive of the active production programs. In metropolitan areas, the cost of one-bedroom Section 811 units is only 8 percent higher than the cost of vouchers. For two-bedroom units, the price difference between Section 811 units and vouchers is only 6 percent (DiPasquale, *et al.*, 2002).⁸¹ The analysis is based on a very small number of units and uncertain cash-flow forecasts over 30 years, so further research is clearly warranted. However, these findings suggest that the relatively small additional cost of providing Section 811 units instead of

⁸⁰ According to DiPasquale, 2002, Section 811 properties range from single-family dwellings to walk-up apartments and have an average of about 12 units. Group homes usually house no more than six persons. There are continued pressures to reduce the size of Section 811 projects, and this may affect their costs. Abt Associates is conducting, for HUD, an exploratory study on the relationship among the size of subsidized housing developments for people with disabilities, their costs, and the quality of housing and services provided.

⁸¹ The difference between the cost of one-bedroom Section 811 units and vouchers in non-metropolitan areas is much larger, at about 35 percent (DiPasquale, *et al.*, 2002).

vouchers to people with disabilities living in metropolitan areas may be justified by services provided along with the units that are not readily found in affordable housing in the private market. The fact that people with disabilities have the highest incidence of worst-case needs of any household type, as noted in Chapter 3, may also justify serving this population with higher-cost production programs.

Housing Providing Services for the Elderly

The elderly also have a high incidence of worst-case needs (Chapter 3) and, when living in metropolitan areas, were found by the latest study to have a lower probability of using vouchers successfully than other types of households (Chapter 4). Again, a look at the existing production program for the elderly provides some evidence that production subsidies may provide housing to the frail elderly⁸² at relatively low cost. Section 202 provides primarily newly constructed properties for the elderly, usually mid- and high-rise buildings with elevators. Units average one bedroom. Like Section 811, Section 202 properties often provide special services for their residents. These include congregate dining facilities, common rooms, transportation, housekeeping, and health care services (DiPasquale, *et al.*, 2002).

According to DiPasquale's comparison of the costs of rental housing subsidy programs, the cost of a one-bedroom Section 202 unit is about 13 percent higher than the cost of vouchers in metropolitan areas. In comparison, tax credit units are about 19 percent more expensive than vouchers in these areas. Given the high incidence of worst-case needs among the elderly and the services provided in Section 202 units that often are not provided in units that can be rented using a voucher, the relatively small additional expense of using production subsidies instead of vouchers may be justified.⁸³ As noted earlier, the analysis is based on a small number of properties, so more research is needed. Unfortunately, there is also little analysis of the costs of earlier programs for housing the elderly, such as public housing and Section 8 New Construction/Substantial Rehabilitation to learn from.

Housing for Large Families

Households with five or more members comprise a third group with special housing needs (in this case, large numbers of bedrooms) that may be more effectively met using production subsidies instead of vouchers. As shown in both the metropolitan and rural studies of voucher success rates, large households have lower success using vouchers than smaller families (Finkel and Buron, 2001, and Pistilli, 2001). In rural areas, PHA staff reported that

⁸² Note that most elderly are not "frail."

⁸³ Part of the lower expense of Section 202 units relative to tax credit units may be attributable to less community resistance to this type of housing, and therefore fewer delays. Some anecdotal evidence suggests that fiscally strapped communities may limit new housing developments to seniors-only housing to avoid further burdening the school system (See Barrett, 2003).

large families had leasing difficulties, both because of the small numbers of large-bedroom units in the rental market and because landlords preferred smaller families. Further evidence of the difficulty that large families have in using vouchers is found in HUD's 2001 report on worst-case needs. In all regions, 2000 vacancy rates in units at rents below FMR were lowest for units with three or more bedrooms, those most often needed by large families (HUD, 2001).⁸⁴

In addition, the cost difference between three-bedroom and larger units provided through production subsidies and provided by vouchers is very small.⁸⁵ DiPasquale, *et al.*, (2002) demonstrates that, for all production subsidy programs, the cost differential over vouchers is smaller for three- and two-bedroom units than for one-bedroom units. In metropolitan areas, one-bedroom tax credit units cost 19 percent more than vouchers. In comparison, two-bedroom tax credit units cost 14 percent more. Three-bedroom tax credit units cost only 4 percent more than vouchers. Similarly, one-bedroom Section 811 units cost 8 percent more than vouchers (in metropolitan areas) than vouchers, while two-bedroom units cost 6 percent more. The remaining cost differential involved in the production subsidy might be justified by the difficulty that large families have in using vouchers.

Shroder and Reiger (2000) demonstrate the relatively small cost difference between vouchers and production in larger units for the Section 8 New Construction/Substantial Rehabilitation program but note that their analysis is based on a small number of units. They also note that developers appear reluctant to build units with three and four bedrooms, perhaps because of the smaller premiums.

Revitalization Effects of Production Subsidies

In Chapter 6, we reviewed studies of the effects on property values of subsidized developments that were not intended to revitalize the community. In this section, we examine the often-cited argument in support of production subsidies is that they may play an important role in community revitalization for distressed neighborhoods. Even though production subsidies usually are more expensive than demand subsidies, if a housing development both provides affordable housing and improves economic prosperity in a distressed neighborhood, the extra cost associated with production subsidies might be justified.

⁸⁴ Goodman (2001) found that the proportion of 3+ bedroom units affordable to households with less than 30 percent of AMI exceeds the corresponding proportion for the entire stock. However, many of the occupants of these units are higher-income households.

⁸⁵ Recognizing that large families have a more difficult time using vouchers, HUD sets the Fair Market Rents that control the total costs of the voucher program at a higher point in the distribution of private rents for three bedroom and larger units than for smaller units. HUD, "Hearing on Section 8 Existing FMRs: Background Statement," February 26, 1986.

The neighborhood effects of subsidized housing are very difficult to study, because it is hard to establish a good estimate for what would have happened to the neighborhood in the absence of the subsidy, to find good measures of neighborhood improvement, and to separate the effect of the housing production program from other market interventions that may have been occurring in the same neighborhood at the same time.⁸⁶ Little of the empirical work has investigated directly the issue of positive externalities of rental housing production subsidies. Some literature relates to programs that produce homeownership units, and some has been framed to address the hypothesis that subsidized housing has *negative* externalities. However, neighborhood effects are such an important issue for the decision on where to locate subsidized housing that we tease what we can from the relevant literature.

In practice, the method for determining the benefits that result from production subsidies has been to measure the change in property values surrounding the development. Controlling for factors including the physical characteristics of housing units, higher property values indicate that the development has been successful in improving the quality of the neighborhood.

The literature reviewed in this section demonstrates that production subsidies have not succeeded in improving the quality of *severely distressed* neighborhoods. However, they can have a positive effect in neighborhoods that are beginning to decline or are only moderately distressed. It might, therefore, be more useful to think of production subsidies as stabilizing neighborhoods rather than revitalizing them. Along with further information about what defines neighborhoods that are too severely distressed to be rescued by a production subsidy that affects only a modest portion of the neighborhood's housing units or land or that makes only modest quality improvements to each unit, this guideline could be helpful in determining where production subsidies have the best chance of producing the positive externalities that would justify their expense.

Rebuilding Public Housing Under HOPE VI

The HOPE VI program was created by Congress in 1992 to address the problem of severely distressed public housing. In addition to replacing deteriorated public housing projects, the program's goals include revitalizing the project's neighborhood in order to improve the living environment for residents. The program also aims to reduce concentrations of very low-income households and, over the past decade, the program has increased its emphasis on providing mixed-income housing. Between 1993 and 2001, a total of 165 revitalization grants were funded (Buron, *et al.*, 2002).

⁸⁶ Walker, *et al.*, (2002) attempt to deal with similar issues in measuring the effect of Community Development Block Grant (CDBG) expenditures on neighborhood change.

Evidence available so far indicates that HOPE VI projects have had no impact on values of nearby homeownership units.⁸⁷ However, such studies can only be conducted in neighborhoods with large numbers of repeat home sales and where the effect of HOPE VI cannot be confused by other public investments in the neighborhood. It may be that HOPE VI has a neighborhood revitalization effect on types of neighborhoods not studied. In addition, positive effects of HOPE VI developments may take more time to emerge. Because HOPE VI replaces very distressed public housing projects, private investors may wait to see what happens during their early years of re-occupancy. The HOPE VI projects generally have been very large—in numbers of units, the size of the redeveloped site, and the per unit subsidy cost. For example, according to DiPasquale, *et al.* (2002), the national average of total development costs for HOPE VI projects (housing-related expenses only) was \$117,920 per unit, compared with \$73,510 per Section 202 unit.

The Nehemiah Program in Philadelphia

Philadelphia is one of the many cities where production of subsidized housing – in this case concentrated development of new homeownership units – has been undertaken in part as a community development strategy. Two Nehemiah developments, in the West Poplar and West Philadelphia neighborhoods, were built in some of the highest poverty census tracts in the city during the mid-1990s. The developments were relatively small, consisting of 176 units and 135 units. Units in the developments were sold to qualified buyers at prices substantially below the cost of construction.⁸⁸

Cummings, *et al.*, (2002) evaluate the effects of the developments on surrounding property values using data on real estate transactions in Philadelphia from 1986 to 1997.⁸⁹ They

⁸⁷ Two studies have been conducted but not yet released: a study by Abt Associates of HOPE VI projects in San Francisco and New Haven, and a study by the Urban Institute, of three HOPE VI projects. Both studies show that HOPE VI projects had essentially no impact on house values as of one to two years after the projects were occupied. (Based on authors' knowledge of Abt Associates study and telephone communication with Tom Kingsley of the Urban Institute, March 2003.)

⁸⁸ The Nehemiah Housing Opportunities Grant Program (NHOP) was created by the Housing and Community Development Act of 1987. The program offered competitively selected non-profit organizations federal funding of up to \$15,000 per unit, used to provide interest-free second mortgages to low- and moderate-income first-time homebuyers who bought units produced (newly constructed or substantially rehabilitated) for the program. Grantees were encouraged to find other sources of subsidy in addition to the NHOP funds. The program established a minimum number of homes to be produced in an area, in order to increase the likelihood of neighborhood impact. In cities with over 100,000 housing units, a Nehemiah grant was to produce at least 250 units on contiguous parcels of land. Program size requirements could be waived, however, and "contiguity" was broadly interpreted (Phipps, *et al.*, 1994). The West Poplar Nehemiah project received funding from the NHOP program; although the West Philadelphia project borrows the Nehemiah name, it did not receive any NHOP funding.

⁸⁹ Data include information on 146,053 arm's length home sales. Construction on the West Philadelphia project began in 1994 and was completed in the fall of 1997. Households began moving into the development in 1995. Construction of the first phase of the West Poplar project began in 1996, with households beginning to move into these units that year.

estimate property value models to compare house price appreciation in Nehemiah census tracts with two sets of control tracts, testing whether the Nehemiah tracts experienced greater price appreciation than other high poverty tracts over the period studied.⁹⁰ They find that there was no statistically significant difference between appreciation rates in the Nehemiah tracts and the control group tracts. In addition, Cummings, *et al.*, analyze commercial transactions and find that there was no growth in these transactions or in commercial real estate values in or adjacent to Nehemiah census tracts.

The authors note that there are several possible reasons for this result. First, the census tracts in which the developments are located are some of the city's most blighted. They are highly racially segregated, have a low percentage of residents with college degrees, low homeownership rates, very high poverty rates, murder rates several times higher than the rest of the city, and lower public school quality. Given the relatively small size of the developments and the severity of the neighborhoods' distress, it may not be surprising that there were no positive spillover effects in the form of increased property values and commercial activity.

Second, as in other studies, the data used in estimating the models are not perfect. Information on basic characteristics often used in property value models, including the number of bedrooms, the number of bathrooms, and the age of the home, are missing from the real estate transaction data. In addition, although the emphasis in the study is on estimating appreciation rates *after* the completion of construction, some portion of the data for the Nehemiah census tracts and the control group census tracts consists of real estate transactions before that period.

In any case, the benefits resulting from the developments would have to be large to justify the high subsidy per unit, an average of \$83,268 per unit across both developments. The fact that no benefits were readily apparent suggests that, even if there were some benefits that the study's methodology was unable to measure, they likely did not justify the investment. The lesson from the Philadelphia Nehemiah experience, then, is that a small development is not sufficient to turn around a very distressed neighborhood.

These findings are consistent with those of other studies, which suggest that even the most concerted community development efforts cannot turn around devastated neighborhoods. Community development corporations (CDCs) can be very successful in terms of output and yet unable to radically transform their neighborhoods (Briggs, *et al.*, 1997).

⁹⁰ A limited number of housing unit attributes were included in the hedonic regression. These were the total area of the lot, the number of stories in the structure, and whether or not the unit has a garage.

Subsidized Homeownership New York City

A community revitalization strategy based on the production of new homeownership units was used in distressed neighborhoods in New York City. Here, the strategy appears to have been more successful than was found to be the case by Cummings, et al., for Nehemiah projects in Philadelphia. Ellen, et al., (2001) use data on real estate transactions in New York City from 1980 to 1999 to examine the impact on property values of two programs that subsidized the construction of affordable owner-occupied homes. The Nehemiah Program and the Partnership New Homes program replaced blighted properties or land, primarily in Brooklyn and Queens, with new structures. The Nehemiah and Partnership developments are located in distressed neighborhoods with higher poverty rates, higher unemployment, and lower homeownership rates than all census tracts citywide. However, the projects do not appear to be located in devastated neighborhoods. This is indicated by the fact that, even before project completion, the average price differential between the immediate locations of the projects and the larger areas defined by their zip codes was declining.

Ellen, *et al.*, estimate prices of properties within a small ring surrounding each development site and compare them with the prices of comparable properties that are outside the ring, but within the same zip code. The changes in the size of price differences over time are examined, with a particular focus on whether the change is associated with the completion of a Nehemiah or Partnership project. The study considers both the actual trend in prices and an estimate of what the house price trend would have been in the absence of the Nehemiah or Partnership developments.⁹¹

The authors conclude that completion of the developments had a positive, statistically significant impact on house prices within 500-, 1000-, and 2000-foot rings of the projects. Upon initial project completion, the difference between the value of properties within 500- and 1,000-foot rings and those outside the ring but in the same zip code shrank by several percentage points, although values inside the ring never exceeded property values outside the ring. This positive impact on property values gradually dissipated over time, disappearing by about 10 years after project completion. The initial impact in the 2,000-foot ring was smaller but it appears to have been more persistent. Larger developments appear to have significantly larger effects on property values than smaller developments.

The study overcomes some of the shortcomings of other studies on price effects in several ways. First, it employs a large data set, in terms of both numbers of real estate transactions and numbers of Nehemiah and Partnership developments. Second, the authors are able to estimate price effects both at the time of project completion and for several years afterward. Third, the study includes a comparison of actual price trends, given the fact that the developments were built, both with what price trends would have been in the absence of the

⁹¹ The authors use two prices three and five years prior to construction of a Nehemiah or Partnership development to estimate house price trends in the absence of the developments.

developments (although here as in other studies, this is difficult to measure) and with comparison areas.

The study, therefore, provides some evidence that the production of subsidized homeownership units can help revitalize surrounding communities, if those neighborhoods already are on a path towards improvement. Despite the study's strengths, several questions remain. First, some of the effect on sale prices may have resulted from New York City's market conditions. A study comparing housing developments across cities would provide results that might be applicable to other housing markets. Second, no analysis is provided to determine whether the costs of the Nehemiah projects were justified by the benefits they created. Third, it is not clear whether a rental housing development would have the same effect as the homeownership developments considered in this study. The answer depends on whether most of the price impact resulted from the increase in the homeownership rate or the influx of residents with higher incomes, or whether it stemmed simply from replacing eyesores or vacant lots with new structures.

Enabling Residents of Subsidized Housing to Live in Better Neighborhoods

The last section reviewed the evidence on whether production subsidies can have a positive effect on the value of nearby properties or help stabilize at-risk neighborhoods. In this section, we examine whether production subsidies can help assisted households gain access to neighborhoods better than those in which they would live otherwise. We first establish, through a very brief review of the extensive literature on this topic, that the quality of a neighborhood does have an important effect on outcomes for neighborhood residents. If production subsidies can improve the quality of neighborhoods in which program participants live, this may be another justification for using production subsidies despite their higher costs. Next, we review the effects of both demand and supply subsidies on the quality of neighborhoods where participants reside. We find that, despite their potential to locate households in high-quality neighborhoods, supply subsidies generally have not achieved this goal.

The Effect of Neighborhood Quality on Residents

Ellen and Turner (1997) conduct an exhaustive review of research on the effects of neighborhood quality for families and children. Based on this literature, they conclude that the characteristics of a neighborhood clearly affect a wide range of individual outcomes for its residents. High poverty rates, the absence of affluent or well-educated neighbors, high unemployment, high rates of welfare reciprocity, and the absence of two-parent families have all been found to play a role in one or more important outcomes for children and families.

For adolescents, neighborhoods have been found to play a role in educational attainment, labor market outcomes, and sexual activity or pregnancy.

Studies of the Gautreaux program provide evidence that neighborhood quality plays a role in shaping adult employment outcomes. Participants in the program received rental subsidies (both vouchers and units in Section 8 projects) to move into predominantly white neighborhoods, either in Chicago or in the surrounding suburbs. Rosenbaum and Popkin (1991) find that, compared with families who located in the city, those who moved to the suburbs, when measured over a long enough period of time, had improved labor market prospects for adults and improved educational outcomes for their children. However, the households that moved to the suburbs may have been more entrepreneurial or ambitious (MacDonald, 1997) or may have had better social networks than those who located in the city. Jencks and Mayer (1990) hypothesize that affluent neighbors might be *disadvantageous*, all else equal, for poor households who have to compete with them for jobs.

Ellen and Turner find little evidence about *which* neighborhood characteristics are most important in affecting outcomes. In fact, the neighborhood characteristics that affect outcomes may differ for different people. For example, African American boys appear to be affected less positively by the presence of affluent neighbors than other youth, unless those affluent neighbors are African American. In addition, although neighborhood effects are important, family effects are much more important. Therefore, families with a given set of characteristics may have similar outcomes regardless of the characteristics of the neighborhood in which they reside.⁹²

To provide a more reliable test of the effect of living in a low poverty neighborhood on families and their children, HUD is conducting a randomized experiment called the Moving to Opportunity (MTO) demonstration. Under MTO, randomly selected families originally residing in distressed public housing developments were required, as a condition for using a housing voucher, to move to a census tract with a poverty rate below 10 percent.⁹³ The restricted-voucher families are being compared with families who remained in public housing or used vouchers without a locational restriction. Interim evaluation of the MTO demonstration shows that adults who moved to low-poverty neighborhoods experienced improved physical and mental health in the form of reduced incidence of obesity and a substantial reduction in psychological distress. Girls in families given restricted vouchers also experienced reductions in the incidence of psychological distress, depression, and generalized anxiety disorder. Overall, teenagers in treatment-group families were less likely to be arrested for violent criminal behavior, although boys showed increases in the frequency

⁹² Briggs (1997) also argues that, while there is agreement in the literature that neighborhood effects matter, there is little evidence on how they work.

⁹³ MTO enrollment began in 1994.

of arrests for property crimes. The interim evaluation confirmed hypotheses that MTO effects on education and employment would take longer than four to seven years to become evident. To date, MTO appears to have had little effect on adult employment outcomes and economic self-sufficiency, as well as on children's educational achievement. It may be that neighborhood effects take longer to manifest themselves in these areas, in which case they will become apparent in a final evaluation that will be conducted 10 years after the experiment's implementation (Orr, *et al.*, 2003; see also Goering, *et al.*, 2002).

Evidence on Whether Production Subsidies Provide Access to Better Neighborhoods

Assuming that neighborhood characteristics matter, can production subsidies successfully locate households in high-quality neighborhoods? The answer from the public housing program appears to be no. Several studies establish that most public housing has been developed in low-quality neighborhoods, although this is not necessarily the case for scattered-site public housing. Analysis of the location of assisted households has shown that voucher users are substantially less likely than occupants of public housing or Section 8 projects to live in high poverty neighborhoods (Newman and Schnare, 1997; Khadduri, Shroder, and Steffen, 2001; Briggs, 1997).

However, the location of rental housing developments subsidized by the LIHTC program shows that a production subsidy can be successful in siting subsidized housing in mixed-income areas. Such housing could support efforts to reduce poverty concentration. Based on information collected for HUD by Abt Associates on all projects produced by the tax credit, the program is locating an increasing number of units in low poverty census tracts. In the early 1990s, just over a third of tax credit units were in census tracts with 20 percent or fewer persons in poverty (Abt Associates, 1996). For Tax Credit developments placed in service more recently (1995-1998), about two thirds of all units are in census tracts with 20 percent poverty or less (Nolden, *et al.*, 2002).⁹⁴

LIHTC success in deconcentrating poverty may be limited, however, by the selection of families to live in the tax credit developments. Buron *et al.* (2000) studied LIHTC developments in five MSAs and found that there were no high poverty LIHTC properties in low poverty neighborhoods,⁹⁵ and only 19 percent of all projects were high poverty properties in moderate poverty neighborhoods. Tax Credit developments in high value or gentrifying neighborhoods in these five MSAs usually have no vouchers. Developments

⁹⁴ In comparison, for the 50 largest MSAs, about 59 percent of Housing Choice Voucher families with children present were located in census tracts with less than 20 percent poverty (Devine, *et al.*, 2002).

⁹⁵ A low poverty neighborhood is defined in the study as having a poverty rate of 9 percent or lower; moderate poverty is a neighborhood with a poverty rate of 10 to 29 percent; high poverty neighborhoods have a poverty rate of 30 percent or higher. Poverty levels for LIHTC developments are defined the same way (i.e., a low poverty development has a poverty rate of 9 percent or lower).

with more than trivial numbers of voucher households almost always are located in high poverty, high crime neighborhoods (Buron, *et al.*, 2000).

Tax Credit developments in some metropolitan areas can actually exclude the poor, because they have rents above voucher Fair Market Rents⁹⁶ (Nelson, 1999; Stegman, 1999). The rents in a Tax Credit project may not exceed 18 percent of HAMFI, which may or may not be below the FMR. Nelson (1999) shows that rents are higher than FMRs for areas of the country with almost half of the U.S. metropolitan population.⁹⁷ However, Tax Credit units do not necessarily charge the maximum allowable rent. In a study of actual rents for LIHTC units in 19 cities, average rents for projects exceeded FMRs only in Baltimore and Boston. In Midwestern metro areas, where the Tax Credit rents most often could exceed FMRs, they do not (Cummings and DiPasquale, 1999).

Regardless of their limitations, many LIHTC developments can be considered mixed-income. They include households with a range of incomes (from extremely low-income households to those with incomes above 50 percent of HAMFI). Buron *et al.* (2000) found that over half of the LIHTC developments in the five MSAs they studied meet the definition of mixed-income housing. (This analysis excludes developments that have project-based Section 8 subsidies or that are designated for occupancy by the elderly.)

LIHTC's success in deconcentrating poverty could improve if sponsors of tax credit developments charged rents affordable with a voucher and removed other barriers, such as failure to market LIHTC units to voucher holders. HOME appears to have been more successful in providing access to housing in low poverty census tracts to households with extremely low incomes and households using vouchers. It may be that HOME projects are more often developed with voucher families in mind as potential occupants (Khadduri, *et al.*, 2001).⁹⁸

One local approach that has been taken to increasing the supply of affordable housing is the implementation of inclusionary zoning ordinances. Generally, a developer trades off designating some share of units in a development as affordable housing for a "density bonus" or permission to build more units than typically allowed by local zoning restrictions. Developer participation can be voluntary or mandatory. The inclusionary zoning generally applies to both owner-occupied subdivisions and rental housing. Little evidence exists about

⁹⁶ Rents that are above voucher FMRs do not necessarily exclude assisted households, because under the Housing Choice Voucher program, households are allowed to rent a unit above the Payment Standard and pay more than 30 percent of income for rent. However, managers of projects may in practice refuse to accept voucher holders.

⁹⁷ Tax Credit maximum rents exceed FMRs in parts of the country where rents are low relative to incomes.

⁹⁸ Both HOME and LIHTC project managers are prohibited from discriminating against voucher holders when selecting tenants.

the effectiveness of these ordinances, but Brown (2001) summarizes ordinances used by four counties in the Washington, D.C. metropolitan area: Montgomery and Prince George's County in Maryland, and Fairfax and Loudoun County in Virginia. She documents some accomplishments of these efforts to increase the supply of affordable housing, and makes recommendations for improvements.

Requirements of the ordinances vary, but maximum income limits range from 65 to 70 percent of AMI for homeownership units and from 50 to 70 percent for rental units. These affordable units appear to be targeted at about the same segment of the market as LIHTC units, and are not by themselves designed to address the housing problems of households in poverty. Loudoun County's ordinance actually requires a minimum income of 30 percent of AMI, which precludes very low-income households from renting affordable units. However, used in combination with vouchers, affordable rental units that result from inclusionary zoning ordinances could help to address housing supply problems in areas where voucher enrollees have relatively low success rates in using vouchers (see Chapter 4.)

Production Subsidies Can Preserve Affordable Housing In Tight Markets and Gentrifying Neighborhoods

The balance of the evidence reviewed in Chapter 6 suggests that, in many housing markets, private sources of housing produces, through the filtering process, additional affordable housing units that can be rented by low-income households with vouchers (Nelson, *et al.*, Sinai and Waldfogel, Devine, *et al.*). In some markets, however, the filtering mechanism does not appear to work to the advantage of low-income renters. In these markets, excess demand for housing (as a result of rapid population growth, for example) causes housing to filter up in price, and perhaps in quality, instead of down, and there are losses of units in the affordable housing segment of the market. For families able to get vouchers, it can be difficult to find a unit, and the vouchers provided are expensive because of increasing rents. In these markets, production subsidies may be necessary to help prevent further loss of affordable housing units.

Nelson, *et al.*, in the study of filtering discussed in Chapter 6, analyze data separately for the "zones" within the metropolitan samples of the AHS to determine if there are some sub-metropolitan areas or neighborhoods for which the filtering process does not add to the affordable rental housing stock.⁹⁹

The study finds that, across all metropolitan areas, numbers of units with rents affordable to extremely low-income rent households dropped by about one-third, primarily as a result of

⁹⁹ AHS zones are groupings of locations within metro areas that total approximately 100,000 people and are chosen to have roughly similar income and racial/ethnic characteristics.

upward filtering.¹⁰⁰ However, the loss of extremely low-income units does not necessarily mean that a production program is warranted. Except for the metropolitan areas that have a combination of low rates of housing construction and losses of affordable rental units (Chapter 6), the study shows that there is ample supply of housing units that can be rented with a voucher.

On the other hand, the study's analysis of the AHS zones suggests that the filtering process is leading to increased concentration of affordable housing, for low income households with and without vouchers, in those portions of metropolitan areas with the lowest levels of incomes and the largest numbers of minorities. In the relatively more affluent portions of metropolitan areas, rental housing is tending to filter up into less affordable categories and to be less likely to be reached by low-income households, whether or not they have voucher rental assistance.

Somerville and Mayer (forthcoming) reach similar conclusions in their study of filtering that, like Nelson, *et al.*, uses AHS longitudinal data. They find that older rental units are less likely to filter up and that upward filtering is more likely to occur in neighborhoods with many rental units, but less likely if those units are mostly affordable. Units are also more likely to become unaffordable if the unit's initial survey rent is closer to the affordability cutoff and if they are initially considered adequate in quality. For initially unaffordable units, units are much less likely to become affordable in areas with higher median incomes and with greater overall increases in rents. The result is an increasing concentration of affordable units in a few neighborhoods and decreasing rent and income diversity in strong neighborhoods.

The results of the Nelson, *et al.* and Somerville and Mayer analyses suggest an important potential use of production subsidies for reinvesting in units of affordable housing in neighborhoods that are experiencing growth in rents at rates above the metropolitan average, tenure change from rental to homeownership, and replacement of rental housing with other land uses. Reinvestment could be through production of new units of affordable rental housing, rehabilitation of existing rental housing in return for a commitment to rent limitations over some period of time, or even simple acquisition of selected housing units within a neighborhood. Such neighborhoods should not be thought of exclusively as older, urban neighborhoods that are "gentrifying." In metropolitan areas with new suburban housing development, "reinvesting in" affordable rental housing might be through acquisition of selected units for low-income use in developments or subdivisions built for a more affluent market of homeowners or renters.

¹⁰⁰ In this rent category, 47 percent of the units in the original stock analyzed had filtered up four years later, and only 9 percent filtered down.

Lessons Learned

For the most part, the studies reviewed in this chapter offer suggestions about where production subsidies might be most effectively targeted, rather than conclusive evidence. First, there is weak evidence that production subsidies may better serve populations requiring special housing services than vouchers. However, no direct comparison of the effectiveness of the two types of housing subsidies for these populations has been made (other than the cost comparisons reviewed in this chapter). It is not clear, for example, whether the loss of choice of location that comes with a production subsidy is outweighed by improved access to units with desirable features.

Second, the studies reviewed in this chapter suggest that production subsidies can play a role in community revitalization, but only in moderately distressed neighborhoods.¹⁰¹ More severely distressed neighborhoods apparently require more intervention than anything other than a massive capital infusion can provide. However, this finding is based on only two studies. More evidence is necessary for a firm conclusion. Studies of HOPE VI developments show no short-term effect on prices of nearby homeownership units. Given that HOPE VI replaces extremely distressed public housing projects, it may take longer for investors to believe that the neighborhood really has changed. In addition, the scale of these projects is generally much larger than would likely be possible under a new production subsidy program.

There is strong evidence that the quality of a neighborhood has an important impact on its residents. There is some evidence that a production subsidy can, at least some of the time, locate low-income households in neighborhoods with relatively low concentrations of poverty. Whether a production subsidy that incorporates elements of inclusionary zoning ordinances (in particular its mixed-income housing approach) and combines resulting affordable units with vouchers may be successful is unknown, but may be worth investigating.

¹⁰¹ Recall, however, that studies reviewed in Chapter 6 show that the opposite can also be true: production subsidies sometimes reduce property values in some neighborhoods.

Chapter Eight

Conclusions

The question of how to appropriately target production subsidies does not have a simple answer. There is widespread agreement that vouchers work well for most people, in most places, most of the time. Effective targeting, therefore, involves a search for exceptions to the rules and careful consideration of a broad range of topics. This review has surveyed the literature for insights on these topics, which are divided into four broad categories: Where are the worst-case needs for housing assistance? Where are demand subsidies least effective? Where are production subsidies least effective? Where are production subsidies most effective?

In amassing the available evidence to answer these questions, we have turned to a number of areas of research, including the mechanisms through which units are added to the affordable housing stock; the reasons for the inelastic supply of housing evident in some markets; the effect of demand and production subsidies on the quality of neighborhoods in which they are sited (positive or negative); and the extent to which production subsidies “crowd out” privately constructed housing units. This chapter synthesizes our findings from this literature and presents the evidence (incomplete though it is) on where production subsidies are most effectively targeted. We also point to the areas in which our current knowledge is the weakest and make some suggestions for areas in which further research is needed.

Where are the Worst-Case Needs for Housing Assistance?

The literature review is based on the premise that, because of the limited resources available for housing low-income households, production subsidies should be targeted to the geographic areas and market segments with the most acute housing needs. The primary cause of worst-case needs is a severe rent burden. Worst-case needs are concentrated among:

- Extremely low-income renters;
- The West and Northeast census regions;
- Metropolitan areas (central cities and suburbs); and
- Households with disabled or elderly members.

Places and types of households with high concentrations of worst-case needs are not *necessarily* good candidates for production subsidies. For example, it is likely that the majority of extremely low-income renters with worst-case needs could be most effectively

aided with demand vouchers. These households face an income problem, not an affordable housing supply problem. It is impossible for the private market to supply housing that is affordable to people with very small incomes.¹⁰² The most appropriate response to this problem, therefore, is an income supplement (such as a rent voucher). Therefore, other indicators are needed to determine which of the housing markets with large numbers of households with worst case needs are good candidates for production subsidies. Indeed, to the extent that worst-case needs are used to determine where to target production subsidies, it may be appropriate to exclude households with incomes below a certain level from the calculation.

Where are Demand Subsidies Least Effective?

Not every household that receives a voucher is successful in using it. Household success in using vouchers varies from place to place. Different types of households also have different rates of success. Recent studies of voucher success in rural areas and in metropolitan areas find that voucher success rates are lowest:

- For households with five or more people;
- For single, non-elderly, non-disabled households;
- In tight housing markets; and
- In jurisdictions that do not have laws barring discrimination on the basis of source of income.

There is mixed evidence for the success rates of households headed by an elderly person. In metropolitan areas, households headed by an elderly person had low voucher success rates; in rural areas, these households had high success rates. Households with a person with a disability had high success rates in both rural and metropolitan areas, as did households headed by younger people.

Demand subsidies can have two effects on recipient households. First, they can lower the household's rent burden. Second, demand subsidies can help recipients increase their housing consumption, by forming new households, moving to higher-priced housing, or staying in pre-program units that are repaired to meet the quality standard. As reviewed in Chapter 5, demand subsidies do not work well unless they trigger a supply response. In most cities, demand subsidies increase rents only modestly (because of the increased demand for housing they generate) before the supply of housing in the affordable segment of the market

¹⁰² An affordable rent for a household with a monthly income of \$200, for example, would be \$60, which may not even be enough to cover utilities.

increases (through either new construction or changes in quality of the existing units). The net effect of the modest rent increase and subsequent supply response is that demand subsidies increase the cost of housing for unassisted households little, if at all.

However, in metropolitan areas with a weak supply response, the use of vouchers could increase the cost of housing in the affordable segment of the housing market, resulting in a net loss to low-income households. These are metropolitan areas with low voucher success rates, which may indicate low elasticity of supply for affordable housing. Numerous studies have identified regulatory constraints that increase the cost of supplying housing as a primary reason for low elasticity of supply of housing. A few studies examine the types of regulation that have the most important effect on supply. One of these concludes that regulations that lengthen the development process or make its outcome more uncertain have a larger effect than purely financial regulations. Other than regulatory constraints, little is known about the reasons for the low supply elasticity evident in some cities.

More research is needed to measure rental supply elasticities across different housing markets and to identify the other housing market characteristics that are associated with unresponsive rental supply.

The Housing Assistance Supply Experiment found that demand subsidies had little effect on the cost of affordable units for unassisted households in Brown County, Wisconsin, which had a tight housing market during the experiment, and St. Joseph County, Indiana, which had a loose housing market. However, a recent study by Susin on the effect of demand subsidies on the cost of rental housing found that low-income households in metropolitan areas with more vouchers per poor household experienced faster rent increases than those with fewer vouchers. The study concluded that, in the largest 90 metropolitan areas, the result of vouchers was a net loss to low-income households. These findings are contradicted, however, by findings by Sinai and Waldfogel that there is a supply response to vouchers (.7 new housing units for each additional voucher).

More research should be conducted to test the Susin findings and to identify the characteristics of metropolitan areas where vouchers are most likely to result in increased rents for unassisted households.

In addition to the possibility that vouchers can result in increased rents faced by unassisted households in some markets, voucher households may also have a harmful effect on the quality of the neighborhood where they locate. In a Philadelphia study, the presence of voucher holders is found to have a small negative effect on property values. A second study, using data from Baltimore, suggests that the effects of voucher households depend on the type of neighborhood, and that negative effects increase with larger concentrations of such households in the neighborhood. Relatively strong neighborhoods may actually be positively

affected by the presence of voucher households, but weak neighborhoods appear to be negatively affected by even a small number of voucher units.

Further research to test the findings from the Baltimore study in other cities could be helpful for identifying those neighborhoods PHAs should try to avoid when providing advice to voucher households on the availability of rental units, especially when a concentration of voucher households appears to be occurring there.

Where are Production Subsidies Least Effective?

Two primary shortcomings of production subsidies are their generally higher costs compared with demand subsidies and the possibility that they may crowd out existing privately owned units or construction of new units in the private market. Both because of the higher cost of production subsidies and because they limit household choice on where to live (and possibly owner incentives to maintain good housing), production subsidies should not be used where the market is providing an adequate supply of rental units affordable for voucher holders. Finally, production of rental housing may in some circumstances have a negative impact on neighborhood quality, measured by changes in property values.

Studies have repeatedly shown that, on average, it is more expensive to house people using production subsidies than demand subsidies. Therefore, production subsidies must be justified on the basis of some benefit they provide that offsets their higher costs. Benefits are more likely to outweigh the additional costs of production subsidies when those additional costs are fairly small. For example, the average cost differential between Section 811 units and vouchers appears to be relatively small. In addition, the difference between production subsidies and vouchers varies widely between metropolitan areas. (Production subsidies appear to be much more costly than vouchers in non-metropolitan areas.)

Further research could help to identify the characteristics of metropolitan areas where cost differentials are most likely to be small, and thus metropolitan areas that are good targets for production subsidies (assuming the production subsidies provide an additional benefit that outweighs the remaining cost difference).

Early studies using national data sets provided evidence that, on average, production subsidies crowd out private housing units (although not entirely, depending on the program and/or its financing). A more recent study using place-level data finds that the degree of crowding out varies from place to place. The study finds less crowding out in more populous places and in places with greater excess demand for the existing public and other subsidized rental housing stock (measured as the number of families eligible for subsidized rental housing per existing unit).

Theoretically, subsidized construction is more likely to crowd out private construction in a market with elastic supply than in other types of markets. Subsidized producers in these markets would compete with unsubsidized developers for available land and labor. In a market with inelastic supply, little private construction is likely to be undertaken, so subsidized construction is less likely to displace existing housing. However, these theories have not been empirically tested, and other factors may affect the degree of crowding.

Research that further explores the characteristics of markets where crowding out is most and least likely to occur would be a valuable contribution to the ability to effectively target production subsidies.

Research on the types of markets in which additional production subsidies may compete with existing subsidized developments, and the circumstances under which this can happen should also be conducted. Careful siting decisions may help to avoid this type of competition. For example, new subsidized housing may draw tenants from existing projects when the two projects are built within a half mile of each other, but there may be no such crowding out when the projects are several miles apart.

Where are Production Subsidies Most Effective?

Because production subsidies are generally more expensive than demand subsidies, they are most likely to be effective for groups of people or in markets where production subsidies generate a benefit that outweighs the excess costs.

Populations such as people with disabilities, the frail elderly, and large households may be served more effectively with production subsidies than with demand subsidies because of the special housing features required by some of these households. Both the frail elderly and people with disabilities may need special services such as transportation, on-site health care, and assistance with daily activities, as well as units with physical accessibility features. The increased cost for both Section 811 and 202 units appear to be relatively small, on average, compared with vouchers, so the additional benefits these programs provide may justify their additional expense. Note, however, that studies done to date have not addressed project scale as a factor in the cost per unit of subsidized housing. Smaller-scale projects, which are likely to meet less resistance by jurisdictions than larger projects, may be substantially more expensive per unit than vouchers. On the other hand, Section 811 produces many group homes, which may have relatively low costs because of shared kitchens and other common space, or even shared bedrooms.

Similarly, large families generally require units with larger numbers of bedrooms than are commonly offered in private market rental housing, or at least in those units likely to be rented to voucher holders. The cost difference between three-bedroom LIHTC units located

in metropolitan areas and vouchers is even smaller than those for Section 811 and 202 units, and the remaining cost differential involved in the production subsidy may be justified by the difficulty that large families have in using vouchers.

Production subsidies may also be effective in aiding in community revitalization and improving quality of life in some neighborhoods, although findings from empirical studies are mixed. Production subsidies used as a community revitalization strategy appear to have a positive impact on property values only when the neighborhood is not too severely distressed to begin with. New studies of the neighborhood effects of homeownership production in Philadelphia and New York provide the best current evidence on the ability of production subsidies to achieve community revitalization objectives. The Philadelphia study suggests that a small number of subsidized homeownership units in severely distressed neighborhoods will be unable to revitalize the community; the New York study suggests that subsidized homeownership units in moderately distressed neighborhoods may have an impact on nearby property values.

Because community revitalization is so often the motivation for using rental production subsidies, it is essential to replicate the Philadelphia and New York studies in other cities and to measure directly the effect of rental housing production on neighborhood quality.

Production subsidies may also allow low-income households to occupy better-quality neighborhoods than they could afford (or would choose) using a voucher. In this case, residents of recipient neighborhoods often voice concerns that their property values will decline as a result of the changing neighborhood demographics. Several studies find that, where production subsidies are used to locate low-income households in high-quality neighborhoods, they have virtually no effect on property values, although these studies typically have one or more serious shortcomings. More recent studies overcome some of these shortcomings and find that production subsidies do have an effect on neighborhood property values, but that the effect depends on the scale of the project and the stability of the neighborhood. In general, big projects added to an unstable neighborhood can cause a decline in property values. On the other hand, a small project in a stable neighborhood has either no effect or, in some cases, a positive effect.

Regardless of the effect of the production subsidies on property values in the recipient neighborhoods, there is widespread agreement in the literature that the characteristics of a neighborhood affect a wide range of individual outcomes for its residents. Compared with vouchers, public housing and Section 8 projects have a worse record of locating households in high-quality neighborhoods. The LIHTC program has had better success and is locating an increasing number of units in low poverty census tracts. While the LIHTC often is combined with other subsidies (including vouchers), little is known about the extent to which the LIHTC developments located in low poverty areas are serving those households that would most benefit from positive neighborhood effects.

Research is needed to document the occupancy patterns of LIHTC developments in different types of locations and the extent to which larger LIHTC developments are themselves mixed income communities.

Last, production subsidies may prevent affordable housing units in gentrifying neighborhoods from filtering up by providing aid to owners to preserve existing units at affordable rents. Two studies conclude that, in many metropolitan areas, the process of filtering leads to the concentration of affordable units in a few neighborhoods and decreasing rent and income diversity in strong neighborhoods. In the relatively more affluent portions of metropolitan areas, rental housing is tending to filter up into less affordable categories and to be less likely to be reached by low-income households, whether or not they have voucher rental assistance.

Production subsidies may, therefore, play an important role in preventing or decreasing the incidence of concentrated poverty. If production subsidies are effective in preventing some of the costs associated with the effects of high-poverty neighborhoods, they provide another benefit that may justify their additional expense compared with vouchers. The types of places where production subsidies may be used to preserve mixed-income neighborhoods may also be places where the likelihood that production subsidies will crowd out privately-produced affordable units is low. In these neighborhoods, affordable rents probably do not cover the costs of new construction, and units are more likely to filter up than down because of the increasing demand for housing in the middle and upper segments of the market. Use constraints, of the type used in LIHTC developments, would preserve affordable units in the neighborhood and prevent them from filtering upward for a lengthy period.

How Should Production Subsidies Be Used?

The literature provides a number of suggestions for where production subsidies are most appropriately targeted. First, need should be a basic allocation factor for any program, whether supply-side or demand-side. This suggests that production subsidies should be targeted to metropolitan areas with relatively high worst-case needs. Second, because vouchers are less expensive than production subsidies, vouchers should be considered the first response to meeting worst-case housing needs. Production subsidies should be targeted to places and for types of households where vouchers do not work as well or where additions to the rental housing stock are needed to prevent vouchers from increasing rents for unassisted households. Therefore, appropriate targets for production subsidies are household types with low success in using vouchers and markets where the supply of rental housing is inelastic.

Production subsidies are best targeted not only where vouchers are less effective, but also where they themselves are most effective. Production subsidies should be avoided in markets where the degree of crowding out of affordable units would be high and, therefore, there would be little effect on the overall availability of affordable housing. While there have been some studies of the filtering process, too little is known about the relationship between crowding out and filtering. For example, if the production of units by the Low Income Housing Tax Credit crowds out other housing production in the middle of the rent distribution, would the “crowded” units have produced affordable housing through the filtering process?

Additional research should be undertaken on the linkages between segments of the rental housing market, including the process through which production of new rental units creates additional rental housing at lower rent levels.

Production subsidies are most likely to produce benefits that outweigh their higher costs (compared with vouchers) where the cost differential between production subsidies and vouchers is relatively small. Instances where this may occur include:

- Using production subsidies to preserve mixed-income communities by securing rental housing for low-income use in neighborhoods where rents are rising, and
- Using inclusionary zoning as a means of creating mixed-income communities. In areas with high demand and relatively low costs, private developers may be sufficiently eager to produce new, high-quality units that they would also be willing to produce affordable units.

Although production subsidies can, in some places, play a role in community revitalization, they are not a “sure thing,” so expectations about their capabilities should be modest when they are used for this purpose. It may require a very large intervention to revitalize a highly distressed neighborhood and, given the cost, the benefits would need to be substantial.

Implications for State and Local Housing Planners

One tool that may be useful in best targeting production subsidies is a planning screen (or set of screens) that isolates the most effective use of the production subsidies available to state or local housing planners. Essentially, the screens apply a set of criteria to the decision of whether to use a production subsidy, and, once a target has been selected for a production subsidy, the type of production subsidy to apply. The example given here is not a definitive list of criteria that would be applied, but provides an illustration of how a planning screen could be useful.

The first criterion is the extent of worst-case needs for housing assistance among renters in the housing market in which the production subsidies are to be used. We also assume that there has been feedback on the success of vouchers at motivating a supply response. As long as a reasonable proportion of voucher holders are successful in using them and rents (and, therefore, voucher payment standards) are not shooting up, there is no compelling case for a production subsidy. However, vouchers may not work as well for specific groups of households, such as the elderly and large families, and production subsidies may provide additional benefits for the frail elderly and people with disabilities. The extent of worst-case needs among those household types and the local experience with using vouchers for them should also be used to determine whether to target production subsidies to them.

Given some evidence that vouchers are not working as well as desired (in general, rather than for specific types of households), we next apply a second screen. In this example, the second screen considers income mix and supply elasticity.¹⁰³

As long as supply elasticity is not low, there is a reasonable expectation that vouchers will trigger additional supply and filtering will maintain the stock of affordable housing. Even if the supply elasticity is low, as long as there is a rising diversity of income across neighborhoods in a metro area, production subsidies should not be necessary because, with vouchers, low-income households should be able to find good places to live in low-poverty neighborhoods. However, if the supply elasticity is low and income groups are becoming segregated, targeted production subsidies could be a good solution (Exhibit 8).

Exhibit 8. Planning Screen

		Income Mix	
		Rising Diversity	Falling Diversity
Supply Elasticity	High	Voucher	Voucher
	Low	Voucher	Prod. Subsidy

Having met the conditions of the first two sets of criteria for production subsidy (i.e., a metro area with worst-case needs, low supply elasticity, and falling income diversity across neighborhoods), we consider two more factors: production cost and rent growth (Exhibit 9). If the government’s share of the cost is much higher for production subsidies than demand subsidies, then vouchers may still be the most appropriate response—that is, serve more needy households within a finite budget. If production costs per unit are modest, the recommended form of production subsidy depends on the pattern of rent growth.

¹⁰³ Measures of supply elasticity for individual metropolitan areas and possibly sub-markets within metropolitan areas will be developed as part of the research project of which this literature review is a part.

Exhibit 9. Planning Screen

		Rent Growth		
		Falling	Stable	Rising
Production Cost	High	Voucher	Voucher	Voucher
	Low	Community Revitalization	Production Subsidy (e.g., LIHTC)	Preservation of affordable units and Inclusionary Zoning

When rents are falling in a housing market (and the drop in rents does not appear to be the temporary result of excess building), rents will not stabilize until the excess supply is removed. In many communities, it may be better to let abandonment remove the excess supply and use vouchers to permit households to take advantage of the increased supply of affordable housing. Community revitalization projects in distressed neighborhoods in these communities will simply fail, particularly given the evidence that production programs short of total neighborhood rebuilding do not have the intended effect of raising property values in distressed neighborhoods.

However, in housing markets in which rents are falling *and* there is falling income diversity, there is a good case for using production subsidies to take advantage of the opportunity to transform distressed neighborhoods into diverse communities. In weak neighborhoods, many old units will have to be replaced with higher quality, new units so that a diverse mix of income groups can be attracted into the development. The production cost per unit should be modest because the land is inexpensive and the abandoned buildings worthless. However, the effort will still have a large cost from having to replace so many units and so much of the failed neighborhood, so that the new community can create its own positive externalities and relatively higher income households will choose to live there, despite falling housing prices in other neighborhoods.

At the other extreme of rapidly rising rents, production subsidies may be unnecessary or can be relatively small if the market is tight enough. Developers may be willing to build affordable units as a concession for being allowed to build market rate units. A variety of inclusionary zoning schemes can trade density bonuses for affordable units. The production subsidies may be necessary to ensure that the units remain affordable for many years.

Even if rents are not accelerating rapidly, the rising rents, low supply elasticity, and falling income diversity may suggest the need for reinvestment. The goal is to prevent so many units from gentrifying that the affordable units disappear. New investment is good for a neighborhood, but it is important to maintain a balance of incomes and range of housing quality. Landlords may be unwilling to accept vouchers in such neighborhoods because they

anticipate higher market rate rents as wealthier tenants and homeowners move in. Production subsidies can target these neighborhoods and provide the necessary investment (and use restrictions) so that the units can be preserved to stay in the affordable stock for a long time.

The final category is areas with stable rents. Stable rents are fairly common, but it may be unusual to also find the situation of relatively low production cost in the same places that meet the other tests of falling income diversity and low supply elasticity. Rents may not stay stable if the falling income diversity signals to owners and investors that the neighborhood is declining or, alternatively, that the neighborhood is gentrifying. In these areas, the cost of a production subsidy may be offset if the subsidized project can generate substantial positive externalities for the neighborhood. If the falling diversity results from higher income households leaving the area, it could be desirable for the government to subsidize projects that would attract and retain moderate-income earners. Once private developers see the income mix has stabilized, they will be more willing to construct units suitable to middle and upper-income households. The goal is not to have the government subsidizing housing for moderate-income families (rather than extremely low income families), but to preserve an income mix in the neighborhood so that private developers provide a range of units.

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Appendix

Research on Supply Elasticity

Although it is important to know the supply elasticity in a housing market, it is difficult to do so with the available data. Researchers have come to a wide range of conclusions when estimating supply elasticities. This section describes the research findings and the factors that may drive those results. It is important to note that this research does not specifically address the supply elasticity of rental housing, but of total housing stock or single-family housing. The lack of research on the supply elasticity of rental housing is an important gap in the literature and in our knowledge of how rental housing markets work.

The most direct approach to measuring supply elasticity was attempted in the Experimental Housing Allowance Program (EHAP) Supply Experiment. Lowry (1983) found that rents appeared to change nearly the same way in the experimental cities as in the comparison cities. It may have been that the allowances were too small to increase the overall demand for housing (Kennedy, 1983) or that low-income households used their additional buying power for purchases other than housing services. Rydell (1982) also suggested that the market responded on the supply side through vacancy adjustments rather than rent changes. The cities used for the supply experiment, Green Bay, Wisconsin and South Bend, Indiana, did not have tight housing markets or seriously substandard housing. The modest increase in demand could be accommodated by adjustments in supply, so that house prices were unchanged and we learned little about supply elasticity in response to a large increase in demand.

Some of the earliest studies found evidence for elastic supply, though their methods and data are considered simplistic by today's standards. Muth (1960) found no significant relation between the price of housing and the quantity supplied for data from 1919 to 1934. The real value of new construction was regressed on the relative price of housing, controlling for building input prices. An insignificant coefficient on housing prices suggested that supply was so elastic that the quantity of housing could be high or low without much impact on prices, i.e., the supply curve was nearly flat supply curve. One problem with this approach is that it cannot distinguish between perfectly elastic and perfectly inelastic supply. In either case, there is no significant relationship between quantity supplied and price.

Follain (1979) improved on the econometrics (with better controls for simultaneity and serial correlation), but found similar results of elastic supply for data from 1947 through 1975. Olsen (1987) criticized the specifications used by both Muth and Follain, stating that the input prices they used were not exogenous and, therefore, should not have been considered independent variables. Blackley (1999) used a long time series, 1950-1994, and found elasticity estimates of 1.6 to 3.7. An elasticity of 1.6 means that an increase in house prices

of 1 percent generates an increase in housing supply of 1.6 percent. Topel and Rosen (1988) used quarterly data on starts from 1963-1983 and found a long-run elasticity of 3.0. Another model using national data for 1963 to 1990, DiPasquale and Wheaton (1994), estimated supply elasticity in the range of 1.0 to 1.4. The traditional dividing point between elastic and inelastic is 1.0, so the findings of DiPasquale and Wheaton continue to suggest that housing supply is moderately elastic.

In reviewing the previous findings, Malpezzi and Maclennan (2001) thought the range of results might be sensitive to the time period examined. The highly elastic findings of Muth and Follain reflected a period of relatively flat or declining prices, whereas Topel and Rosen used years with rising prices. To avoid this sensitivity to time period, Malpezzi and Maclennan used the longest possible time series they could collect, 1889 to 1997, although their post-WWII models provide the most useful information comparison for us. Malpezzi and Maclennan estimated two different kinds of models, a flow model (which assumes all adjustment takes place in a single year) and a stock adjustment model (which assumes an adjustment of 0.3 per year). Supply elasticity estimates for the flow model range from 6 to 13, while the elasticity estimates for the stock adjustment model were from 1 to 6. One reason for estimating a stock adjustment model is the assumption that supply is inelastic in the short run, but increases in the long run when developers have fully responded to the price change. That being the case, the authors could not explain why the stock adjustment model gave lower elasticity estimates and called for more research. Unfortunately, these appear to be the current, best estimates of supply elasticity using aggregate data.

As noted above, the elasticity of supply is hard to measure precisely, and it is quite possible that it varies widely over time and place. However, the empirical work conducted to date to measure supply elasticities does not provide us with much insight on the way in which supply elasticities vary from place to place (and over time for those places) and for types of housing produced for difficult population groups. These, however, are central to the purpose of this study, which is to discover the circumstances for which production subsidies are superior to demand subsidies.

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