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Volume Author/Editor: Mahlon R. Straszheim

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Chapter Author: Mahlon R. Straszheim

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**An Econometric Analysis
of the Urban Housing Market**

THE ROLE OF THE HOUSING MARKET

URBAN HOUSING MARKETS ARE BECOMING increasingly significant in shaping the economic and social well-being of many Americans. A substantial variation exists across neighborhoods in the type of housing available, the quality of public services, the level of tax burdens, and the quality of life generally. Consequently, households confront important tradeoffs between different types of housing, neighborhood characteristics, and accessibility to place of work. Since housing expenditures are a large component of every household's budget, the availability of housing and its price assume considerable importance. Moreover, housing markets play a central role in the process of metropolitan development, both affecting and reflecting other forces at work in this sphere. Urban development patterns, in turn, are crucial to our future welfare in many ways.

The role of the housing market in the process of metropolitan development is complex. Metropolitan development patterns are determined principally by the location decisions of firms and households. These location decisions are highly interdependent. Since the location of the job site (or sites) is an important determinant of the housing options open to any given household, major changes in employment are likely to alter the spatial pattern of housing demand significantly. At the same time, certain kinds of employment activities—principally retailing, services, and the local public sector—are related to the location of household residences. The resultant location decisions by households and by firms together determine the geographic pattern of work trips—the major factor in delineating the demand for transport service. The performance of the transport system, in turn, plays a major role in shaping the pattern of future development.

There are indirect relationships between housing markets and development patterns as well. Residential housing and local streets account for about three-fourths of all land used in urban areas. Accordingly,

household preference with respect to lot size is one of the important determinants of the spatial pattern of land rents. Conversely, land rents are important in the location decisions of both households and firms, and in the density of residential and nonresidential development. Thus, there are complex interdependencies between decisions in the housing market and decisions regarding employment locations, transport investments, and other factors affecting the pattern of spatial development; the outcome affects the quality of life for all urban residents.

Several notable social policy issues emerge which are closely associated with these housing market processes. Surely the most important of these issues is that of improving housing conditions for the urban poor. Congress has long recognized the critical role of housing. In 1949, it adopted the objective of a "decent home" for every American, reiterating this goal in the Housing Act of 1968. This objective largely reflects the public's sense of equity, the feeling that even the poor deserve adequate housing at a price which is not beyond their budget.

While some progress has been made in meeting this commitment, a significant number of poor families still spend a high share of their income on housing and obtain low-quality accommodations. Housing conditions in the central cities and for the urban poor constitute a major failure of national policy. Available measures of housing conditions for the urban poor are incomplete, and these statistics hardly capture the real essence of their plight. Of those families with incomes below \$3,000 living in Standard Metropolitan Statistical Areas (SMSA's) in 1960, 23 percent lived in substandard units,¹ hardly a strict test of the quality of living conditions. Moreover, many of the poor obtain standard units only by spending a disproportionate share of their income. While housing conditions improved during the 1960s, the 1970 Census reveals that many households remain poorly housed. The Bureau of the Census no longer attempts to classify a unit as sound or unsound; however, 3.5 percent of housing units in central cities of metropolitan areas lacked plumbing facilities, and 7.8 percent of all units were overcrowded.²

Housing conditions are substantially worse in selected geographic submarkets within the central cities. Much of the worst housing is concentrated in poverty areas in the central portions of the cities. A special survey of poverty areas in the 101 metropolitan areas with a population over two hundred and fifty thousand in 1960 revealed that

1. Report to the National Commission on Urban Problems, *Building the American City*, 1968, p. 76.
2. U.S., Department of Commerce, Bureau of the Census, *General Demographic Trends for Metropolitan Areas, 1960 to 1970* (PHC (2)-1), United States Summary, October, 1971, p. 16.

while these areas contain a third of the housing in the central city, they account for three out of four of the substandard units and over half of the overcrowded ones.³

The high correlation between the quality of a neighborhood's housing stock, prevailing housing prices, and the income of neighborhood occupants has often resulted in a vicious circle of deteriorating housing conditions and declining prices in certain subareas of the central-city housing market. The interdependency over time between housing quality, housing prices, and poverty creates an all too familiar syndrome. Expectations regarding future market prices make investors unwilling to renovate or add to the stock. The resulting low-quality housing is in demand by only the poorest families. Occupancy by low-income families, in turn, assures a continuing deterioration in living conditions, given current rates of inflation in property taxes and operating costs. Where prices will not sustain a reasonable rate of return on sound housing, investors have often chosen to disinvest through undermaintenance, which generally increases the rate of deterioration of the structure. Neighborhood quality, measured by the condition of the stock, appears to assume the character of a public good in many lower-income neighborhoods where housing has undergone some deterioration. After such deterioration occurs, a change in expectations virtually eliminates private incentives to invest. Recent studies have also revealed a sharp increase in the abandonment of buildings in the central cities, typically the culmination of this process of disinvestment in the capital stock.⁴

Living conditions in these selected central-city housing markets have indirect effects on the welfare of the poor as well. Housing property values serve as the tax base for property-tax assessments, the primary source of local taxes and a major determinant of the level of expenditures on local public services. A concentration of impoverished families implies high public-service burdens in the form of education, welfare, and crime prevention, and a low tax base to finance those efforts. For the more fortunate, the solution is often migration to another political jurisdiction. Polarization of our urban population by income across local jurisdictional lines is most likely increasing. Given the distinct preferences for housing quality by income class, and the sharp differences in ability to pay,

3. Allen D. Manvel, "Housing Conditions in Urban Poverty Areas," Research Report No. 9, National Commission on Urban Problems, 1968.
4. Ira Lowry, "Housing Assistance for Low-Income Families: A Fresh Approach," U.S. Congress, House Committee on Banking and Currency, *Papers Submitted to Subcommittee on Housing Panels*, 92nd Congress, First Session, June, 1971, pp. 489-524; George Sternlieb, "Abandonment and Rehabilitation: What Is to be Done?" *ibid.*, pp. 315-72.

stratification by income within the housing market is an outcome to be expected. However, financing local public services by property taxes much accentuates this tendency. The spatial pattern of neighborhood incomes and prices may have important effects on educational opportunities, for example, since it produces significant differences in expenditure per pupil across school districts. Whether differences in education inputs measured in real terms are even larger than the observed expenditure differences across district lines is the subject of some dispute. A central-city poverty-neighborhood teacher may be paid more than a teacher of the same quality working in a more favorable teaching environment, and an older capital stock in poorer areas may also raise costs. The effect of these differences in education inputs on education output is also uncertain.

A second major set of social issues involves the nature and consequences of racial discrimination in the housing market. The concentration of large numbers of black households in central-city ghettos is in many respects a distinguishing characteristic of American cities, reflecting a long and apparently unchanging trend in location choices by both black and white households. The explanations for this location pattern lie both in the differences in income between black and white households and in the existence of discrimination in the housing market. The latter represents very real constraints on the welfare of black households. In addition to the effects of discrimination in reducing the quality of available housing at any given price, there are second-order effects. Racially segregated school systems emerge when large racial communities exist. Black employment opportunities may be curtailed by housing-discrimination barriers. Given the importance of the length of the work trip in household decision making, the spatial patterns of entry barriers in the housing market and employment opportunities may interact. If black households' residences are confined to central ghettos, they may not benefit from employment growth in more distant suburbs because of the high costs of search and access to more remote suburban job sites.⁵ An entirely new set of policy options to combat discrimination might usefully be considered in addition to more traditional means. For example, transport policies may significantly affect the participation of black households in the urban labor market. A more open housing market may increase black employment and vice versa.

A third and very different set of issues has emerged more recently, namely, whether the character and nature of housing development patterns is in some sense suboptimal. Whereas the importance of development

5. John Kain, "Housing Segregation, Negro Employment, and Metropolitan Development," *Quarterly Journal of Economics* (May 1968), pp. 175-97.

patterns to our future welfare is undeniable, there is unfortunately little agreement on what constitutes the socially preferred pattern of development, and even less agreement on the appropriate set of policy instruments to influence development. One major area of concern involves the external costs associated with continued low-density development and the associated high levels of transport and energy use. There is little doubt that at current market prices, the demand for low-density development is dominant. However, some suggest that current land prices do not reflect the full marginal social costs, since they neglect the costs to society of access to open space and certain environmental amenities. The latter assume the character of a public good, largely unaccounted for if development patterns simply reflect responses to market prices.

Another controversial point regarding current development patterns is quite different in nature, namely, the emerging barriers to entry by low-income households imposed by many communities. These arise from the fact that poorer households generally are a tax burden on richer households within the same community. In most metropolitan areas, control over land use and zoning is vested at the local community level. In these circumstances, "fiscal zoning"—excluding rental units and imposing very high lot-size and structure-size minimums—has become an all too familiar strategy. While it is generally difficult to prove that such practices entail racial discrimination—and they may or may not, depending upon the particular case—the tendency of such practices to exclude low-income households can hardly be denied.⁶ Some have suggested that many local zoning practices go far beyond an application of the common law concerning a public nuisance and are in fact discriminatory as regards low-income households and a violation of the equal protection clause. According to this view, the burden of proof should be shifted to the State, which should be required to show that such zoning serves to promote the greater good for the State's citizens implied in its police power to "promote the general welfare."⁷

Given these divergent opinions about the desirability of any specific set of location and development patterns, it is hardly surprising that the wisdom of using any particular set of policy instruments is disputed. More centralized planning and land-use control and, conversely, more decentralization, each have their advocates.

Our limited understanding of housing-market processes is a major

6. Eric J. Brantman, Benjamin Z. Cohen, and David M. Trubek, "Measuring the Invisible Wall: Land Use Controls and the Residential Patterns of the Poor," *Yale Law Journal* (January 1973), pp. 483-508.

7. Bernard H. Siegan, *Land Use Without Zoning* (Lexington, Mass.: D. C. Heath, 1972), pp. 221-27.

handicap in resolving issues regarding a preferred pattern of metropolitan development or in answering a host of questions related to how best to improve housing conditions for the poor. Despite our lack of understanding of these processes, and substantial disagreement over policy objectives, a great variety of public policies are employed to improve the quality of urban life or alter the course of urban development. These include housing subsidies, land-use zoning and development planning, transport investments, urban renewal, and rent control. A wide range of policies have been directed at improving housing conditions for the urban poor. As of now, these policies must be formulated on the basis of far too little knowledge of how the housing market actually operates.

AN OUTLINE

This book has as its major objective the provision of a better understanding of the economics of the housing market and its role in metropolitan development. Chapter 2 reviews the existing theoretical literature and formulates a conceptual model of the housing market which serves as the basis for the econometric estimation in subsequent chapters. In the existing literature, microeconomic theories of the household and of the producer have been applied to the housing sector, and general equilibrium models determining household location, capital stock provision, and the land rent surfaces have been developed. Such general equilibrium models are in essence models of the land market, explaining how different users bid for and utilize urban land; space is treated in one dimension, distance to the center.

The alternative formulation of the housing market proposed below accepts the microeconomic theory of housing demand based on utility maximization but extends the analysis to take into account differences in the existing housing stock at different locations and the existence of racial discrimination. Perhaps the single most important characteristic of urban housing markets which motivates this reformulation is the recognition of the existence of many submarkets defined by location and housing type. Many characteristics of residential capital stocks are not easily or cheaply modified. While the differences between central-city and suburban housing markets are evident even to the most casual observer, intrametropolitan variation among housing submarkets is also a general phenomenon. Among different locations in the same city, a huge variation exists in the characteristics and prices of available housing, accessibility to shopping and employment, the quality of education and public services, the level of tax burdens, and the general quality of the environment. Since the opportunities a household confronts in the

housing market are determined by what is accessible to its work site (or sites), this spatial variation assumes particular relevance. The approach taken in this book is to focus on the market for these capital stocks, paying special attention to the spatial detail and to the effects of housing-market discrimination. Because analytic solutions as to how decisions in all these markets interact and how all markets are simultaneously cleared cannot be found, greater reliance must be placed on econometric procedures.

Chapter 3 describes the compartmentalization in the urban housing market in San Francisco, using data from a large household interview survey. Housing is treated as a multidimensional commodity, and prices are estimated for different types of housing services in different locations. The racial dimension to the housing market in the Bay Area is also described. These estimates of housing characteristics, prices, and income by geographic submarket indicate that urban housing must be analyzed on a disaggregated geographic basis.

In Chapter 4, household demand functions are estimated, based on an Alonso-type model. Households choose their housing type and its location in response to income and prices, with the latter determined by the location of a household's work site. Spatial variation in housing prices and accessibility to alternative geographic submarkets creates substantial variation in the consumption of the several attributes of housing services. The variation in relative prices of housing confronting households employed at different work sites permits estimation of direct-price and cross elasticities and a much more extensive documentation of the relationship between housing consumption and commuting costs than has been available until now. Some of the effects of income and life cycle on the demand for housing can also be specified.

Chapter 5 describes the effects of racial discrimination on housing consumed by black households. The institutional arrangements and practices enforcing discrimination against blacks have often been described, but quantitative measures of the extent of racial discrimination are only sketchy at best. Chapter 5 stresses the spatial characteristics and effects of entry barriers confronting blacks. The crucial effects of discrimination on black households arise from constraints on the types of housing available at particular locations. These supply constraints result in higher prices for certain kinds of housing, which, in turn, induce blacks to consume less housing. A model of housing demand by black households is estimated which specifies the effects of income, market prices, and nonprice rationing. The resulting estimates permit a systematic examination of why blacks are so badly housed.

The demand estimates in Chapters 4 and 5 reveal that both the price of a particular housing attribute and the prices of several substitute

and complementary housing attributes are important in the decision to acquire any bundle of services. Household choices regarding lot size and age of structure are very sensitive to the structure and spatial variation of relative prices of different attributes. At the same time, household decisions collectively influence the price at which housing is sold. Chapter 6 develops a model to explain the spatial variation in prices and incomes of occupants of the existing housing stock by neighborhood. Prices are related to market conditions in different housing submarkets by housing-stock type and location. Some concluding observations are offered in Chapter 7.