

## ECONOMIC ANALYSIS OF HOUSING MARKETS IN DEVELOPING AND TRANSITION ECONOMIES

STEPHEN MALPEZZI\*

*University of Wisconsin*

### Contents

1. Introduction	1793
1.1. Conceptual Framework	1794
2. Housing markets: The basics	1795
2.1. Property rights	1795
2.2. Housing demand	1798
2.2.1. Early literature	1798
2.2.2. Recent literature	1802
2.2.3. Cross-country demand models	1804
2.3. Housing supply	1805
2.3.1. Early cross-country research	1806
2.3.2. Market wide effects on supply	1808
2.3.3. Supply from the existing stock of housing	1809
2.3.4. Housing upgrading	1810
2.4. Tenure choice, tenure security, and mobility	1812
2.4.1. Forms of tenure	1812
2.4.2. Tenure choice	1813
2.4.3. Mobility	1814
2.5. Housing and the aggregate economy	1815
3. Related markets	1817
3.1. Housing finance	1817
3.1.1. Housing finance and financial development	1817
3.1.2. Housing finance and housing	1818
3.1.3. Institutional and systemic issues	1819
3.1.4. Mortgage design, and other technical details	1820

\* The author is indebted to Edwin Mills, Bertrand Renaud and Christine Whitehead for comments on a previous version, but bears sole responsibility for the chapter's shortcomings.

*Handbook of Regional and Urban Economics. Edited by E.S. Mills and P. Cheshire*  
© 1999 Elsevier Science B.V. All rights reserved.

3.2. Urban land markets	1821
3.2.1. How land markets work	1822
3.2.2. Land prices across markets and over time	1824
3.2.3. Prices within cities	1826
3.3. Infrastructure	1827
3.3.1. Water and sanitation	1828
3.3.2. Urban transport	1828
4. Housing policy	1829
4.1. "Industrial organization" of the housing market	1830
4.1.1. Public housing	1830
4.1.2. Privatization of public housing	1831
4.2. Subsidies	1832
4.3. Housing market regulation	1835
4.3.1. Subsidies, taxes, regulation, and other interventions: A simple model	1835
4.3.2. Rent control	1836
4.3.3. Is overregulation systematic?	1839
5. Current issues and research	1840
5.1. Taxonomy of countries and stylized "issue triage"	1840
5.2. Modes of analysis/data sources	1842
5.2.1. Recent research on housing indicators	1843
5.3. A general research agenda	1843
References	1845

## Abstract

The purpose of this chapter is to survey recent research on housing markets and policy in what used to be called the "second" and "third" worlds. We adopt the labels "transition" economies to refer to countries as disparate as Russia and Vietnam, and "developing" to refer to countries as disparate as Korea and Singapore (arguably now developed) and countries like Mozambique and Laos. It is therefore quite interesting that the bulk of the research surveyed finds that housing market *behavior* is remarkably similar from place to place. Institutions and constraints, particularly the amount of income available for housing and other goods and services certainly do vary dramatically from place to place. And the stakes of how well housing markets work vary from place to place. But these differences in institutions and constraints do not obscure regularities in behavior.

The first major section, on housing markets (Section 2), examines property rights, supply, demand and tenure. Section 3 presents research on the related markets for land, finance and infrastructure. Housing policy is covered in Section 4, including housing subsidy systems, privatization, taxation and regulation. Section 5 concludes with a discussion of current issues and research.

**Keywords:** Housing, urban development, housing finance, land use, regulation, housing subsidies and taxation

**JEL codes:** R14, R21, R31, R38, R51, R52, O12, O18

## 1. Introduction

The purpose of this chapter is to survey recent research on housing markets and housing policy in what used to be called the “second” and “third” worlds. We will adopt the labels “transition” economies to refer to countries as disparate as Russia and Vietnam, and “developing” to refer to countries as disparate as Korea and Singapore (arguably now developed) and countries like Mozambique and Laos, where the adjective “developing” is currently more a wish than a statement of fact. We generally omit research devoted to “first world”, “developed” or “OECD” countries, except when such reference is fundamental or unavoidable.<sup>1</sup> Of course much literature relevant to housing in the “second” and “third” worlds can be found in the technical literature on housing which has no particular reference to place or time.<sup>2</sup>

Some would argue—or argued a decade ago—that countries outside the so-called developed or OECD world are so different as to obviate comparisons, or the transferability of research results and methods, across countries. In fact, the bulk of the research below documents that housing market *behavior* is remarkably similar from place to place. Institutions and constraints, particularly the

<sup>1</sup> See, among others, Whitehead (Chapter 40, this volume), Shephard (Chapter 41, this volume) and Olsen (1987).

<sup>2</sup> See, for example, Arnott (1987), Olsen (1987) and Smith et al. (1988) for reviews of the relevant technical literature. Also omitted from this chapter is a review of the stylized facts regarding housing markets across countries. See Malpezzi (1990) and Angel and Mayo (1996) for such a review. Other recent reviews which may be profitably consulted include Hoffman et al. (1991), Gilbert (1992), Rakodi (1992), World Bank (1993) and UN Centre for Human Settlements (1996).

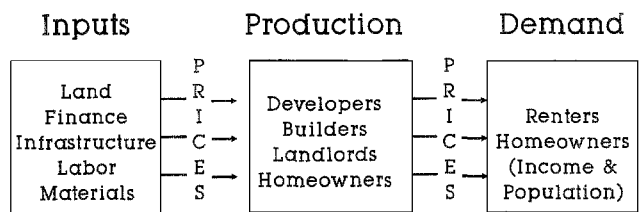


Fig. 1. How housing markets work.

amount of income available for housing and other goods and services certainly do vary dramatically from place to place. And at a different level it could be argued that the stakes of how well housing markets work vary from place to place. But these differences in institutions and constraints should not obscure regularities in behavior.

1.1. Conceptual framework

Figure 1 (from Mayo et al., 1986; Malpezzi, 1990) shows a schematic diagram of how the housing market works. Inputs such as land, labor, finance, materials and infrastructure are combined by supply-side agents such as landlords and developers to produce housing services. Homeowners, and to a lesser extent, renters, are also producers, as they maintain and upgrade their houses. Relative prices inform producers of housing services about whether to provide more or less housing, and the input suppliers about providing more or fewer inputs.

Several other important features of housing markets are implicit in Fig. 1. First, transactions within and across “boxes” are possible only to the extent property rights are defined, recognized and enforced. Second, government interventions can have profound effects on the operation of the housing market. Third, fully understanding housing markets requires analysis of key input markets and the regulatory environment, as well as revealed market behavior in the housing market per se.

Every introductory real estate textbook emphasizes a number of other salient features about housing. It is a large share of every country’s wealth and productive capital stock. Because its stock price is large relative to incomes, it must be financed. Some households own their own housing capital, others lease it. Housing is fixed in location, extremely durable (slowly depreciating), and can be viewed alternatively as a composite commodity yielding a flow of “housing services”, or as a set of individual characteristics.

Each of these interesting features will be discussed in one or more sections below. The section on the basics of the housing market will focus on the second and third “boxes” in our simple conceptual framework; the section on input markets on the first box; and the section on housing policy on the effects of government interventions within and across boxes.

## 2. Housing markets: the basics

This section corresponds roughly to the first two boxes in Fig. 1. Alternatively one could think of this section as examining the usual supply and demand diagram from any principles textbook, or, more properly, multivariate supply and demand *relations*. Housing market analysis is complicated by several facts. First, the system of property rights implicit in any supply and demand diagram cannot be taken for granted. Second, housing is a composite commodity and may be examined in terms of its service flows or stock in some aggregate way, or in terms of individual characteristics. Third, supply in any given period comes from both new construction and modification of the existing stock. Fourth, transactions costs of changing consumption are quite high. Fifth, housing consumption choices are bound up with tenure choices. Sixth, housing markets are a large part of the economy in general and the capital stock in particular, so have strong linkages with its aggregate economy. Each of these points will be discussed at greater or lesser length below.

### 2.1. Property rights

Property rights are sine qua non of housing market development. Until recently, property rights have been much neglected in the “developed” country housing literature, but were somewhat better represented in the “traditional” developing country housing literature.<sup>3</sup> Post-Perestroika (circa 1989) the topic moved properly to the fore. Some property rights issues are common among countries, and some issues are specific (more or less) to Africa, eastern Europe, or to some other specific region or country.

Property rights may be defined and assigned through a formal legal system, or by custom or tradition.<sup>4</sup> Henceforth we use “law” to refer to both. Two ar-

<sup>3</sup> This neglect refers to the housing literature. Economists, political scientists, and of course lawyers have long studied property rights in other contexts. See, for example, Browder (1984), Friedman (1975) and Moynihan (1987).

<sup>4</sup> This section draws from Vandell’s contribution to Malpezzi and Vandell (1992). See Jaffe and Louizotis (1996) for another recent review.

areas of law which particularly affect the operation of housing and real estate markets are contract law and land use regulation. Contract law deals with the system that defines and facilitates the transfer of property and property rights, allocates those rights, and settles disputes. In formal systems these functions are associated with such instruments as contracts of sale, leases, easements and rights-of-way, operating agreements, mortgages and deeds of trust, etc. In all countries, rich and poor, some of these functions are also affected by less formal "mores and folkways of society". In many countries, including most of the transition countries and many African countries, these systems are in flux. Land use regulation includes the body of custom, law, regulation and case law which governs the rights to locate certain uses in certain locations and provides standards of development and operation of those uses. Formal instruments include zoning ordinances, building and housing codes, subdivision regulations, private deed restrictions, environmental laws and regulations, etc.

Together, these two areas of the law render operational the notion of ownership, exercise and transfer of rights in real property. A wide range of descriptive studies have examined property rights in Africa (Ault and Rutman, 1979; Kiamba, 1989); in Asia (Bromley, 1989); in Latin America (Betancur, 1987; Gilbert, 1989); and of course formerly socialist countries (Jaffe, 1993; Pejovich, 1990). From that descriptive literature, and from analytic literature such as Alchian and Demsetz (1973), Coase (1960), Demsetz (1967) and Williamson (1975), a clear list of general principles has emerged. In order to maximize the social value associated with rights in real estate, the set of laws and regulations governing their associated property rights must possess certain characteristics. They must be transparent and agreed on by some not-as-yet-well-defined social consensus. They must be enforceable at a reasonable cost, with little or no uncertainty. There must be some general agreement on final arbiter of disputes (most often but not always the state).

Tenant and landlord rights must be well defined, whether with a formal or informal contract. There must be clear remedies for violation by either party. These rights and obligations will generally be freely negotiated between the parties and represent the outcome of a competitive market process. Versacaj (1993) presents a discussion of leases in Russia and shows how the violations of such principles inhibits the market.

In a well-functioning system property rights will be transferrable from seller to purchaser on payment of a consideration (Jaffe and Louziotis, 1996). The bundle of such rights can be largely complete (fee simple, although still limited by land use regulation), or partial, including leasehold. Specific rights include the right to use or modify the use of the real estate, the right to derive income or

other benefits from its use, the right to bequeath the ownership interest, the right not to be evicted, etc. Implicit in the contract of sale is not only an obligation to the seller, typically to pay a specific amount for the real estate interest but sometimes a more complex obligation such as to limit future uses or to bequeath the property in a certain way. An explicit or implicit obligation will also exist to maintain the property at a certain level, to maintain a use which is consistent with existing land use regulations, to pay taxes assessed on the basis of property ownership, to give up the property for a preemptive public purpose on payment of compensation, and not disturb or do other damage to neighbors as a result of use. Government constraints may be required to prevent certain adverse market failures or imperfections (such as conflicting land uses or limitations on access or economic productivity) or in cases in which the buyer or seller has excessive market power.

Maximum social return to the housing stock value, generally requires liquidity, or the ease of transfer of real estate interests. Landis (1986) shows that high fees or other rights of entry to the market, restrictions on appropriate purchasers or tenants, unreasonable constraints on use, excessively costly development standards, etc. can be counterproductive. Markets are rendered most efficient to the extent that they are “thick”, i.e., there are many transfers and prices/rents are well established (Bikhchandri, 1986). Because the high purchase prices of real estate requires finance for most transactions, maximum benefit is obtained when financing is freely available at market rates. Financial innovations and reforms, discussed below, which enhance the liquidity of the mortgage market, such as the development of the secondary market or securitization, also enhances the liquidity of the real estate market in general. The possibility of foreclosure in the ownership market for the nonpayment of debt or other violation of the obligations of ownership (such as the nonpayment of real estate taxes) is essential for efficient operation (Buckley, 1990) just as is the possibility of eviction in the rental market (Jimenez, 1984).

Property rights profoundly affect not only the efficiency of the housing market; they also profoundly affect other social goals or questions such as the distribution of wealth or income. Concentration of ownership rights may adversely affect on the concentration of wealth and power, as well as reduce the efficiency of the market, especially if quasimonopoly exploitative situations are produced.<sup>5</sup> Solomon and Vandell (1982) discuss alternative conditions under which real estate markets may operate which cause deviation from the competitive ideal.

<sup>5</sup> Malpezzi (1994) argues that with a few important exceptions, mainly in taxation, housing policies which are more efficient are also more equitable. The argument can certainly be made with respect to property rights, e.g., the large literature linking land reforms to faster growth.

Many of the biggest property rights and regulatory issues are regarding land. Systems can function with long-term leaseholds as well as with fee simple (Bromley, 1989), but efficient markets require long and enforceable leases. In some countries there is no history or memory of private ownership of or significant use rights over land. Paradoxically, in such countries public landlords (central government, large state enterprises or cities) may have true market power, and do not respond well to external incentives. Moving to a market system has powerful redistributive consequences which will be politically charged (Hegedus et al., 1992; Buckley et al., 1995). More research is certainly required on the essential property rights necessary sufficient for efficient use of land. Most studies of land reforms have focused on agricultural and/or rural land (e.g., Dorner, 1982). Certainly we should study the effects of past major *urban* land reforms just as carefully.

## 2.2. *Housing demand*

In this section we will examine demand in cross-section, as well as demand in the very long run as markets develop. The literature generally finds significant regularities across developing *and* developed countries, although there is a dearth of demand studies from more “middle income” countries and transition economies. Since characteristics demand is treated elsewhere in this volume by Shephard (but see also Quigley, 1982; Kaufmann and Quigley, 1987; Follain and Jimenez, 1985a, b; Gross 1988 for developing country examples), we focus on demand for the composite commodity housing.<sup>6</sup>

Research on housing demand in developing and formerly socialist countries has more or less followed the developed country’s literature. The literature on the former group of countries is somewhat more developed than on the latter, partly because only recently have data become available for socialist and formerly socialist countries, and partly because even given a dataset it can be hard to recover true demand parameters from pre-reform “prices”.

### 2.2.1. *Early literature*

The literature on housing demand on an international context is too large to review completely. Our selective review is summarized in Table 1. The earliest studies of housing demand were primarily studies which threw off housing estimates as part of larger studies of consumption, as in Lluch et al. (1977) and Howe and Musgrove (1977). These and similar studies are reviewed in Malpezzi and Mayo (hereafter M&M) (1985). Among the first published studies to carefully

<sup>6</sup> See also the related literature on “needs analysis”, for example Struyk (1987).



analyze housing demand per se were Follain et al. (1980) who studied urban Korea using survey data from 1976; Ingram (1984) who used data from Bogota, Columbia using 1978 data; and Strassman (1980b) who used survey data from Cartagena, Columbia in 1978. These and most of the other studies described below estimate single equation models using least squares, usually stratified by tenure (owners and renters in most cases). A number of the studies experiment with other types of stratification, such as by income, class or location within the city. Ingram's (1984) study of Bogota and Cali is notable because of its careful specification of intrametropolitan location. Jimenez and Keare's (1984) study of Santa Anna and Sonsonate, El Salvador, (1980 data) is notable for its analysis of the effect of using a rough permanent income measure. M&M (1985, 1987a, b) built on these and other studies to estimate a series of simple demand models in 15 cities in eight countries using a simple but consistent specification. We will discuss this study in some detail, partly as a benchmark for a number of fine studies that succeeded it.

*Within* particular markets, M&M generally found that demand is income inelastic: most estimates using household housing consumption and incomes from cross-section data range between 0.4 to 0.6 or so. *Across* markets demand is elastic: M&M estimated that, using city averages of housing consumption and incomes as the unit of observation, the very long run elasticity ranges somewhere above 1 but less than 1.6 (M&M, 1987a, b). They also found that owner and renter elasticities are surprisingly similar, but the *level* of owner consumption is higher; and the difference increases with income.

M&M's demand results are from developing countries, with a range of per capita GNP at the time of data collection of roughly \$300 per capita to \$2500 (1981 dollars). Comparing their results to those for developed countries (Mayo, 1981), individual cross-section income and price elasticities *within* markets are similar; but evidence is mixed on the very long run elasticity *across* markets and countries. Time series data on several developed countries is more consistent with a higher very long run elasticity. Microdata suggest that average housing consumption to income ratios are lower for developed countries than for Korea and some other higher income developing countries, implying that the long run elasticity is less than one over some part of the range between the two groups. Data on housing investment analyzed by Burns and Grebler (1977, discussed below) is also consistent with this pattern.

M&M's price elasticity results are less strong. Untangling prices and quantities in housing market studies is always problematical. M&M use a simple formulation due to Muth (1971) to estimate price elasticities. M&M estimated this model for Cairo and Beni Suef, Egypt, and for Manila. The model was

Table 1  
Summary of selected international housing demand studies

Author	Location & date	Model, estimation	Key results	Comments
Follain et al. (1980)	Urban Korea, 1976	Cross-section log expenditure model, single equation OLS, stratified by tenure.	Renter $E_Y = 0.12$ for current income, 0.42 for consumption; owner $E_Y = 0.21, 0.62$ . $E_P$ is near zero for all models.	Other models reported pool tenure, stratify by location.
Strassman (1980)	Cartegena, Colombia, 1978	Cross-section log expenditure model, single equation OLS, stratified by tenure.	Renter $E_Y = 0.78$ , owner $E_Y = 1.19$ . Current income only, no $E_P$ estimates.	Other models stratify by income; $E_Y$ generally increases with income but not strictly so.
Ingram (1984)	Bogota and Cali, Colombia, 1978	Cross-section log expenditure model, single equation OLS, stratified by tenure. Includes distance to workplace.	Renter $E_Y = 0.47$ (Cali), 0.72 (Bogota); $E_P = -0.48$ (Cali), $-0.28$ (Bogota). Owner $E_Y = 0.76$ (Cali), 0.78 (Bogota); $E_P = -0.44$ (Bogota).	One of few studies explicitly modeling intermetropolitan location.
Jimenez and Keare (1984)	Santa Ana and Sonsonate, El Salvador, 1980	Log expenditure model, single equation OLS, two cross-section panel data, stratified by tenure.	Renter $E_Y = 0.27$ (Santa Ana), 0.42 (Sonsonate); owner $E_Y = 1.05$ (Santa Ana).	Permanent income proxied by weighted average of two years' income.
Malpezzi and Mayo (1985, 1987)	Data from Colombia, Egypt, El Salvador, Ghana, India, Jamaica, Korea and the Philippines, various dates in the 1970s and the early 1980s	Log expenditure model, single equation OLS, stratified by tenure.	Renter and owner income elasticities, respectively: Bogota, 0.66, 0.75; Cali, 0.44, 0.69; Cairo, 0.46, 0.17; Beni Suef, 0.51, 0.42; Santa Ana, 0.48, 1.11; Sonsonate, 0.50, 0.79; Kumasi, 0.33, owners NA; Bangalore, 0.58, 0.43; Kingston, 0.16, owners NA; Seoul, 0.45, 0.44; Pusan, 0.31, 0.45; Taegu, 0.44, 0.47; Kwangju, 0.62, 0.41; other Korean cities, 0.54, 0.79; Davao, 0.88, 0.99; Manila, 0.56, 0.57.	Price elasticities estimated for Cairo, Beni Suef and Manila, following Muth (1971); most estimates close to $-1$ , but procedure is biased towards $-1$ .
Ndulo (1986)	Lusaka (1979)	Linear expenditure function.	Owner $E_Y = 0.6$ (presumably at means, see text).	Also segments by household size, finds larger households have larger income elasticities.
Mehta and Mehta (1987)	Ahmedabad (1985)	Logarithmic expenditure function, by tenure.	Renters, $E_Y$ is 0.17 to 0.40, $E_P = -0.8$ ; owners, $E_Y = 0.2$ , $E_P = -0.4$ .	Also segments by income, generally finds low income households have lower elasticities.
Grootaert and Dubois (1988)	Cote d'Ivoire (1979)	Estimate tenure choice, then rental demand equation with selectivity correction. Use hedonic to decompose rent into $P$ and $Q$ .	For Abidjan, renter $E_Y = 0.37$ , $E_P = -0.25$ . For other cities, renter $E_Y = 0.28$ , $E_P = -0.25$ .	Selectivity correction has virtually no effect on demand results. Some problem with interpretation of $P$ and $Q$ measures, see text.
Shefer (1990)	Indonesia (1978)	Logarithmic expenditure function, by tenure. Uses expenditure to proxy permanent income. Also presents results by city size and income class.	For all renters, $E_Y = 0.84$ ; for all owners, $E_Y = 1.17$ .	Elasticities generally rise with income class, size of city (with exceptions).

Table 1  
(continued)

Author	Location & date	Model, estimation	Key results	Comments
Lodhi and Pasha (1991)	Karachi (1987–88)	Linear expenditure functions, segmented by tenure and by formal–informal development. Estimates with current income and consumption (permanent income).	Planned, owners: current $E_y = 0.58$ ; permanent $E_y = 1.20$ . Planned renters: current $E_y = 0.42$ , permanent $E_y = 1.10$ . Katchi abadi owners: current $E_y = 0.06$ , permanent $E_y = 0.12$ . Katchi abadi renters: current $E_y = 0.09$ , permanent $E_y = 0.31$ .	
Assadian and Ondrich (1993)	Bogota and Cali (1978)	Simultaneous model of housing demand, location, and labor supply.	$E_y = 0.56$ for head's work income if household has two earners; is 0.95 if there is no other earner.	
Lim and Lee (1993)	Urban China, sixth plan (1981–1985)	Log model, province/municipality is the unit of observation.	At provincial level, grouped $E_y = 1.23$ (wages), 1.32 (household expenditures). At city level, grouped $E_y = 1.04$ (wages), 1.30 (expenditures).	Limited comparability to other studies because of aggregated data.
Arimah (1994)	Ibadan (1987–1988)	Log model, by tenure.	Renter $E_y = 0.88$ ; owner $E_y = 0.56$ .	
Chou and Shih (1995)	Hong Kong (1991)	Box–Cox model, by tenure.	At means, renter $E_y = 0.27$ (transitory income), 0.37 (permanent income).	Tenure choice has no effect on renter demand.

Notes: Most studies present a range of elasticity estimates from alternative specifications; therefore “Key Results” entry in this table contains our judgement of representative point estimates.

estimated separately for owners and renters. Estimates of the price elasticity are close to 1 in absolute value, ranging from  $-0.76$  to  $-1.08$ , with the exception of Manila owners whose price elasticity is estimated to be  $-0.4$ .

These price elasticity estimates suggest that demand is considerably more elastic than previous estimates in the literature suggest. However, a shortcoming of this model is that a unitary income elasticity is the null hypothesis, because a land price coefficient of zero implies a price elasticity of 1. Note that if land prices are measured with error, the price elasticity is biased towards  $-1$ . Therefore, the tests of significance of land price coefficients should not be interpreted as tests of zero price elasticity. Neither are they correct tests of unitary elasticity, because the land's share estimate, assumed fixed for the sample, actually has a distribution as well. Testing the micromodel price elasticities under alternative specifications remains high on any agenda for future research.

### 2.2.2. *Recent literature*

A number of recent studies have extended this earlier literature. Some contributors apply similar models to additional locations, and others contain theoretical extensions. A number of these are also included in Table 1. Table 1 presents point estimates of the income elasticity using various income definitions. Even a casual inspection of Table 1 shows that far fewer studies present price elasticity estimates (compared to many income elasticity estimates). Table 1 also shows that price elasticity estimates are more highly varied. Ndulo (1986) estimates a linear expenditure function for Lusaka, Zambia using data from 1979. He found an owner income elasticity of 0.6. Mehta and Mehta (1989a, b) analyze a logarithmic expenditure function similar to M&M's using data from Ahmedabad, India in 1985. Their estimates are on the low end, with income elasticities around 0.2–0.4, and price elasticities ranging from  $-0.4$  to  $-0.8$ . Grootaert and DuBois (1988) estimate a housing demand model for the Ivory Coast using 1979 data, and find income and price elasticities around 0.4 in absolute value. Shefer (1990) examines Indonesia, and obtains some of the higher income elasticity estimates; the owner estimate exceeds 1. Lodhi and Pasha (1991) study Karachi, Pakistan. They segment by tenure. Their estimates are highly variable, but generally elasticities are higher the stronger property rights. Arimah (1994) estimated a model similar in Ibadan, Nigeria and found income elasticities of 0.88 for renters and 0.56 for owners. Chou and Shih (1995) found lower income elasticities in Hong Kong, from 0.27 to 0.37.

Assadian and Ondrich (1993) revisit the Bogota and Cali data that Ingram (1984) studied, but this time estimate a simultaneous model of housing demand, location and labor supply. They find that the income elasticity of demand is much higher (0.95) if there is a single owner in the household; the income elasticity of heads work income is positive but smaller (0.56) for the heads work income of the household has two owners.

Many alternatives to the Muth (1971) factor share model discussed above can be used to estimate price elasticities. One such model uses the method of hedonic indexes to decompose rent (or value) into price and quantity. Grootaert and Dubois (1988) and Malpezzi (in press) are among studies that follow this procedure. Malpezzi's estimates for Cairo are particularly interesting, since they are based on the same dataset used by M&M to apply the Muth (1971) method. Using the Muth factor shares model, M&M estimates the point elasticity to be about  $-0.9$ ; using the hedonic model Malpezzi (1998) finds an elasticity of  $-0.5$ , so the estimated price elasticities are not robust with respect to choice of technique. Grootaert and Dubois (1988) find estimates of the price elasticity range

between  $-0.5$  and  $-0.6$ .<sup>7</sup> So point estimates of the price elasticity in developing countries have a substantial range, and if we consider the fact that these estimates themselves have considerable standard errors, we can conclude that our knowledge of price elasticities is far from satisfactory.

Other price elasticity estimates include Follain et al.'s (1982) finding that the price elasticity of demand was near zero in most of their models. Ingram's (1984) study used distance as a proxy for price, and found price elasticities in the range of  $-0.28$  to  $-0.48$ , closer to the low end of the estimates extant.

In formerly socialist economies analysis of demand is hindered by what Renaud terms "planner sovereignty and the standardization of demand". That is to say, households may consume any sort of unit they like, as long as it is a 55 m<sup>2</sup> flat. The location of the unit is determined by the planner who is working without a market referent. Location and quality choice are almost totally ignored under the planning system. Furthermore, the price of housing is centrally determined and has nothing to do with whatever variation does exist in quality, size or location. Of course this is a highly stylized view, and in many countries such as Poland and Yugoslavia official production was supplanted or supplemented by a rudimentary market. In other countries such as the former Soviet Union at least in urban areas little if any housing was produced outside "the plan". Furthermore, in many such countries there was variation in quality and location, but it was not allocated by income. Rather, incomes were typically compressed; and valued workers were party officials were compensated by receiving better quality housing (or perhaps a second dacha in the countryside).

Alexeev (1988a, b) documented how these unofficial allocation systems worked in the former Soviet Union. He found income elasticity of demand in the pre-Perestroika Soviet Union range between 0.15 and 0.30, which is somewhat low but not wildly lower than estimates for both developing and developed countries. Buckley and Gurenko (1997) analyzed housing demand in Russia post-Perestroika in 1992, the last year of the administrative allocation system (see the discussion on privatization below). In contrast to Alexeev's results, Buckley and Gurenko find no relationship between income and housing demand. They claim that there are systematic biases in Alexeev's prior study. They point out Polinsky's (1977) critique that without a price term the income elasticity of demand estimate will be biased; and they conject that, as Polinsky argued, the correlation is positive (but cf. M&M, 1985: p. 33).

<sup>7</sup> Grootaert and Dubois (1988) actually estimate a reverse regression with price as dependent variable, although they do not note that in their paper.

Daniel (1985) finds quite high income elasticities of around 1, for Hungary. She also finds that on balance the addition of implicit housing subsidies to wage income as an in kind transfer leads to an increase in the distribution of income.

Other studies of transition economies have examined demand indirectly, through queues (Ciechoncinska, 1990; Andrusz, 1990; Charemza and Quandt, 1990). McMillen and Pogodzinski (1993) point out the often cited tendency for queue to overstate effective demand because of low costs of joining the queues may or may not be correct. They point out that there are requirements for joining queues (e.g., based on family status), which vary with the country involved, but which generally raise costs or present a different cost schedule to different households.

Mayo and Stein (1995) examine these issues with data from Poland in the 1980s. Using aggregate data Mayo and Stein show that housing investment is systematically lower in Poland and several other then-socialist economies, compared to other countries with similar levels of development. They also show that housing output prices are substantially higher than marginal costs in Poland. Taken together these two facts confirm the existence of a shortage in Poland during the 1980s.

Using regional (Voivodship) data, Mayo and Stein (1995) estimate several models that show that housing queues are associated with compensating wage differentials and labor shortages, as well as depressed migration to regions. Pogodzinski (1993) undertakes a similar analysis and generally has similar findings; higher housing queues are associated with larger regional labor shortages in Poland. These queues are analyzed in other countries for example Renaud (1995a, b) examines waiting lists in Russia. Charemza and Quandt (1990) also analyze such queues.

### 2.2.3. *Cross-country demand models*

So far our review has focused on individual markets. Several studies make systematic comparisons across markets. For example, Lakshmanan et al. (1978) reviewed several (mostly developed country) demand studies, and estimated Engel curves for 31 countries using aggregate time series data. These elasticities were rather high compared to other studies, ranging from 0.38 in Tanzania to 2.3 in the US. They generally found somewhat higher elasticities in higher income countries.

In addition to their city specific estimates, M&M also present a set of cross-city Engel curves, estimated separately for owners and renters. The dependent variable is predicted housing expenditure for a five-person household at each city's mean income or its logarithm; these predictions are from the household

level equations discussed above. The income variables are based on the city averages. Incomes and rents are converted to 1981 US dollars by using local CPI and official 1981 exchange rates. Price, and its logarithm, are constructed from the rental price series devised by Kravis et al. (1982).

M&M estimate several variants of this model. The key results are straightforward: in a very long run, housing consumption is income elastic, or at least of unit elasticity. Price elasticities are lower than income elasticities in absolute value. Interval estimates of price elasticities are quite wide. In the M&M sample, which is dominated by developing countries, it does not appear that owners have higher long-run responsiveness to changes in incomes and prices; if anything, the reverse to true. Eight out of nine specifications yield a higher median income elasticity for renters than owners; the differences are not great. This does not mean that within a market renters consume less than owners, but that as cities' economies develop over a very long run, owner and renter consumption patterns increase at a similar pace, *ceteris paribus*. However, because prices rise with income, and estimated renter price elasticities are also higher than owner elasticities, the net effect of both incomes and prices rising as development proceeds is to increase owner consumption faster than renter consumption through most of the range of the data.

Further evidence on the cross-country price and income elasticities of demand for housing is provided by the UN. International Comparisons Project (ICP, see Kravis et al., 1982). The ICP is a major research effort which makes international comparisons of consumption and prices. As part of that effort, Kravis and his associates use hedonic index methods to decompose rents for similar units into rental price and quantity indexes. These indexes, and indexes of total consumption, are used to estimate simple cross-country demand models, where housing consumption is a function of total consumption and the price per unit of housing services (see their Chapter 9). Kravis et al. found demand to be slightly inelastic with respect to price, and slightly elastic with respect to income demand.

### 2.3. *Housing supply*

In this section, we will examine aggregate descriptive supply (e.g., Burns and Grebler, 1976, 1977; and related work by Renaud, 1980; Chang and Linneman, 1990; Buckley and Madhusudan, 1984). We also examine certain behavioral evidence on aggregate supply elasticities, and their determinants using data from Korea, Thailand and Malaysia. Finally, we examine supply from the existing stock and filtering (Ferchiou, 1982).

### 2.3.1. *Early cross-country research*

Several previous studies have documented cross-country differences in housing investment, notably Howenstine (1957), Kuznets (1961), Burns and Grebler (1976), Strassman (1977), Renaud (1980), Kravis et al. (1982), Annez and Wheaton (1984) and Buckley and Madhusudhan (1984). This section briefly reviews the five papers which test some models or exploratory hypotheses about cross-country differences, namely, Burns and Grebler (1976, 1977), the extensions of their model by Renaud (1980) and Buckley and Madhusudhan (1984), the shelter results of the UN's ICP reported in Kravis et al. (1982), and the model of Annez and Wheaton (1984).

Burns and Grebler's (1976, 1977) study examines the share of housing investment (measured by new residential construction) to gross domestic product, using data from 39 countries, and two time periods. Burns and Grebler regress the share of housing investment against GDP per capita and its square, change in population and its square, and a measure of urbanization, squared. They find evidence that the share of housing investment increases at an early stage of development but on average *declines* past about \$1600 per capita GDP (1970 US dollars). Furthermore, although there was a wide variance in their dependent variable at different income levels, their simple model explains that variation quite well, and the turning point is quite sharp and measured with apparently reasonable precision.

Of course this turning point in the share does not imply that the level of housing investment decreases with development, at least throughout the observed range of the data. Presumably there is a direct cross-country relationship between housing investment and consumption, since housing investment is a derived demand. Formal models of the relationship between housing demand and investment could be undertaken in the future, to make the link more precise.

Studies by Renaud (1980) and Buckley and Madhusudhan (1984) have shown the Burns and Grebler (1976, 1977) result to be qualitatively robust. Renaud analyzes time series data from Korea and confirms the nonlinearity of the relationship between the share of housing investment and per capita GDP, but finds the exact turning point to be sensitive to specification. Renaud also considers several additional explanatory variables reflecting financial constraints. In general, the financial variables perform well in some specifications but are not robust, which is not surprising given the measurement difficulties involved and the modest number of degrees of freedom.

Buckley and Madhusudhan (1984) test the effect of additional financial variables, namely, the anticipated rate of inflation, changes in the rate of inflation,



and the extent of capital deepening. Their analysis confirms the importance of financial conditions in explaining housing investment. In particular, they find that countries with deeper financial markets invest relatively more in housing *ceteris paribus*. There is also weak support for the hypotheses that the share of investment (1) is higher in less egalitarian countries, (2) increases with anticipated inflation, and (3) decreases with changes in inflation (presumed unanticipated in their model).

The principal shortcomings of these studies have been discussed at length by the authors themselves. Developed countries are overly represented. Official statistics underestimate total housing investment, because of large informal sectors and because new construction statistics fail to count upgrading, maintenance, and depreciation of existing units. These undercounting errors are doubtless largest for the poorest countries. Because of data problems, Burns and Grebler (1976, 1977), and those who followed them, ignored the effects of relative prices, climate, and other variables (although they were careful to point out these omissions). Finally, these models can be thought of as exploratory reduced forms because there is no explicit behavioral model used to justify the estimating equations.

Annez and Wheaton (1984) address several of these problems. They develop a structural model with five endogenous variables (four stochastic equations and an identity). Their model explains total growth in the housing stock, the officially recorded growth, the average quality of new units, and the cost of construction. The share of new construction to national product, conceptually similar to the Burns and Grebler (1976, 1977) dependent variable, then emerges from the identity: share of investment equals the product of change in stock, average size and cost, divided by GNP.

Annez and Wheaton (1984) assembled data from 24 nonsocialist countries (largely developed), and estimated two variants of this model. The more complete model includes several policy related variables (the share of public housing in total production, credit cost and typical loan-to-value ratios), but could only be estimated for a smaller sample of 20 countries. Key results include the following. When total stock is measured in the number of housing units, its growth is determined by demographic, not economic variables. The reverse is true for the quality of an existing unit. Demographics determine the number of units; incomes and prices determine their quality. The fraction of production officially recorded is positively related to the level of economic development, as expected. Costs also rise with development. There is no evidence of any supply inelasticity; cost is unrelated to share of housing investment. Annez and Wheaton note that

their estimates imply that as economies develop, increasing incomes fuel housing demand; but this is in large part offset by increasing prices.

### 2.3.2. *Market wide effects on supply*

To examine links between the microanalysis of incentives above and aggregate outcomes, M&M (1997a) investigated the aggregate supply of housing in Malaysia, and compared these results to those in two other rapidly growing Asian countries, Korea and Thailand. Generally, Korea has a highly restrictive regulatory framework, especially with respect to land use, redevelopment and finance (Kim K.-H., 1990a, b, 1993; Hannah et al., 1993; Green et al., 1994). Thailand has a liberal regulatory environment (Angel and Chuated, 1990; Dowall, 1989a, 1991c). The US has a generally liberal regulatory environment (albeit with restrictive environments in selected metropolitan areas, see Malpezzi, 1995b). Thus, M&M (1997a) expected price elasticities of supply to be low in Malaysia and Korea, and high in Thailand and the US.

In all three countries, income per capita grew substantially over the period. M&M (1997a) documented that the relative asset price of housing grew substantially over time in Malaysia and Korea, but not in Thailand. This is consistent with the prior that aggregate supply would be inelastic in the first two countries and elastic in the third. M&M's formal test is based on a simple three-equation supply and demand model, using prior information on demand elasticities to identify the price elasticity of supply from the reduced form coefficients. M&M calculate this elasticity for a range of assumptions, assuming the price elasticity of housing demand to lie in the interval  $-0.5$  and  $-1$ , and following M&M (1987), assuming the long-run income elasticity of demand to be alternately 1.0 and 1.5.<sup>8</sup>

The calculated housing supply elasticities are presented in Table 2. For comparison, supply elasticity estimates for the US based on a similar reduced form estimation procedure using Malpezzi and MacLennan's (1996) results for the US are also provided in Table 2. Again results are as expected. In general, Malaysia and Korea have inelastic supply curves for housing, and Thailand and the US have elastic supply.

Certainly additional research could be undertaken along these lines. M&M use a limited dataset (annual data for three developing countries from 1970 to 1986, and some US data). Analysis of additional countries would be straightforward, given the data. Longer time series would permit examining hypotheses about (e.g.) properties of the errors over time, and coefficient stability. Malpezzi

<sup>8</sup> As noted above, M&M (1987) estimated cross-sectional elasticities within markets, and long-run elasticities across markets. Since we are examining long-run phenomena, M&M (1997) used the latter results.

Table 2  
Estimated price elasticity of supply, four countries

	Long-run income demand elasticity = 1.0		Long-run income demand elasticity = 1.5	
	Price elasticity of demand = -0.5	Price elasticity of demand = -1.0	Price elasticity of demand = -0.5	Price elasticity of demand = -1.0
<i>Restrictive regulatory environments</i>				
Malaysia	0.07	0 <sup>a</sup>	0.35	0 <sup>a</sup>
Korea	0 <sup>a</sup>	0 <sup>a</sup>	0.17	0 <sup>a</sup>
<i>Liberal regulatory environments</i>				
Thailand	$\infty^b$	$\infty^b$	$\infty^b$	$\infty^b$
US	13.09	12.59	19.88	19.38

<sup>a</sup> Point estimate of price elasticity was negative, market deemed inelastic (see text).

<sup>b</sup> Point estimate of  $\gamma_1$  was negative, market deemed elastic (see text).

US estimates constructed using results from Malpezzi and MacLennan (1994), others from Table 1.

For discussion of bounds on income and price elasticities of demand see Malpezzi and Mayo (1987).

and MacLennan (1996) demonstrated that results from such models can be sensitive to time period chosen. Other fruitful extensions would be to develop a stock adjustment model and to disaggregate such analysis by region or metropolitan area.

### 2.3.3. Supply from the existing stock of housing

Another under researched area is housing from the existing stock. Other than the few studies surveyed in Ferchiou (1982) and Johnson (1987), very little has been done on filtering and other changes in utilization of the existing stock. There is a useful literature on upgrading, for example, Jimenez (1982). Analysis of the utilization of the existing stock is particularly important in understanding rental markets, as will be discussed below.

In common parlance, as units “filter down”, they pass from richer households (owners or tenants) to lower income households. Units can also “filter up”, i.e., pass from poor to richer households, if a neighborhood is undergoing “revitalization” or “gentrification”. Actually there are at least three different definitions of filtering: (1) change in the income of households living in the unit; (2) changes in price per unit of housing services from a unit; and (3) changes in quantity of housing services from a unit. Green and Malpezzi (1997) elaborate and provide further references.

Most studies of developing country /transition economy filtering fall into categories (1) or (3). Most such studies actually *labelled* filtering are chains of move

studies related to filtering concept (1). A number of studies have been done on the upgrading process, which is clearly central to (3), although incomplete. Studies of the relative price of housing at different quality levels (2) are rare in general and almost unknown in developing/transition economies.

Ferchiou (1982) examines data from Tunisia and Mexico, looking at chains of moves, following Lansing et al. (1969) methodology. Generally Ferchiou finds these chains are of limited duration; he finds that a little over two families take part in a chain of moves before it terminates. Ferchiou notes that this is probably a lower bound estimate, partly because of the limited size of the study area. He also notes that construction of more expensive units initiate longer chains.

Hegedus and Tosics (1991) undertake a similar study for Hungary. Generally, they find short chains, usually less than two moves on average. They find little systematic difference by location or by state/private construction. A conjecture (by this author) is that the shortness of these chains may unsurprisingly give the shifts in employment and population and repressed demand for housing in formerly socialist Hungary.

Several studies examine filtering using some version of the so-called "stock-user matrix" (Strassman, 1977). These basically cross-tabulate households by income category and dwellings by value or rent. A number of these studies are surveyed by Johnson (1985). Baer and Koo (1994) examine Korea.

#### 2.3.4. *Housing upgrading*

A number of papers have investigated the determinants of upgrading behavior in developing countries. Struyk and Lynn (1983) estimate several simple reduced form linear probability models for upgrading squatter housing in Manila's Tondo Foreshore area. Generally, increases in income are associated with higher probabilities of upgrading, and (dichotomously measured) improvement of tenure security increases the probability of upgrading by 0.12–0.27 depending on the model. Increasing income by a standard deviation increases the probability of upgrading by about 0.04.

Struyk (1982) presents a simple reduced form model estimated using metropolitan level data from Korea in the late 1970s. The dependent variable used as a proxy for upgrading behavior is the percentage change in average floor area in the housing stock built prior to the baseline period. Struyk's simple reduced form has a series of variables reflecting the cost of upgrading (proxied by shared units in detached dwellings and population density), and a larger set of variables proxying the potential return on expansion: crowding in the baseline year, growth in households, demolitions, the extent of new construction and conversion, and change in household size.

Generally Struyk (1982) found that the variables reflecting potential return had the expected sign and were significant, but the cost of proxies (such as type or density) were generally not significant. One variable, the extent of new construction, was significant but of the wrong sign; that is high rates of new construction were associated with greater upgrading of the existing stock. Struyk notes that this is consistent with a world in which regulatory and financial constraints impede new construction as an adjustment mechanism, so that in active markets new construction is insufficient to meet demand, and upgrading is a gross complement to new construction rather than a gross substitute for it. The crowding variables work particularly well; for example, a 10% increase in an initial crowding measure is associated with about a 10% increase for upgraded area. Elasticity of average floor area to households is 0.5 and of household size is about 1.5.

Strassman (1980b) presents another upgrading study using data from Cartagena, Columbia. Strassman's paper contains several related analyses. To begin, he assumes a cross-section unitary income elasticity and sets up what is referred to in the literature as a stock-user matrix. That is, households are arrayed by rows where income doubles in each row, and dwellings are arrayed in columns, where the value of the unit doubles in each column. If the elasticity were truly unity and if there were no households out of equilibrium, cells along the diagonal would contain most households matched in corresponding housing units. Unsurprisingly, Strassman found large numbers of households off the diagonal elements. This is consistent with M&M's findings discussed at length above that these elasticities are much lower than 1.

Strassman (1980b) also undertook a simple logit tenure choice model that was based on an ad hoc reduced form of the presence or absence of pipe water and sewage; whether relatives were forwarding remittances, household size, age of household add-in income from sales of property. As in much of the developing country literature, no measure of relative tenure prices was available. Strassman implicitly argues that the availability of infrastructure (water and sewer) is largely exogenous. He finds that the probability of owning is negatively associated with the presence of piped water but positively associated with sewage. He interprets this as evidence that "rather than build an owner a waterless shack on land reclaimed from a marsh, those who can afford it will rent a house or apartment with plumbing". While Strassman does not draw this out further, he seems to be suggesting that very low income households will be owners, albeit of units with little in the way of housing quality or property rights; as their income rise they move first into the formal rental sector, and finally into the formal homeowner sector with infrastructure and utilities. We will return to this hypothesis

later. Daniere (1992) and Malpezzi (1986) also find a nonmonotonic relationship between tenure and income.

Other upgrading studies of note include Rakodi (1987).

#### *2.4. Tenure choice, tenure security and mobility*

This section is closely related to the discussions of property rights and housing demand from above. We will examine forms of housing tenure, the value of tenure (Jimenez, 1982; Hoy and Jimenez, 1991), and tenure choice (Lim et al., 1980; Tipple and Willis, 1992; Strassman, 1982; Zorn, 1988). Having examined one method of changing consumption, upgrading, we examine the other—moving (Strassman, 1991; Zorn, 1988).

##### *2.4.1. Forms of tenure*

In much of this review, as in much of the housing market literature in both developed and developing countries, households are classified as either homeowners and renters. As always there is a tradeoff between simplicity and analytical tractability, and realism. Whether, or not, such a gross simplification is sensible depends on the purpose at hand.

There are many elements to consider in tenure as implied by our property rights discussion above. Households can own or rent structures and/or land. Usage rights can be fee simple or leased for short or long terms. Households may or may not hold title or customary rights over adjacent property and common space; they may rent from relatives or the government as well as private landlords. Long-term tenants may be treated differently from recent movers, rent may be paid in cash or in kind, periodically or in a lump sum, or some combination of the two. Lump sum payments may or may not be returned, with or without interest, on leaving the unit. Tenants may or may not receive utilities, maintenance and other services as part of the package. Tenants from family or kinship groups may have different rights than strangers. There are a thousand kinds of informal tenure if there is one.

The above list is confusing but by no means exhaustive. A number of schemes can be suggested to try to categorize tenure forms, or put them in a spectrum. Anglo-American lawyers refer to a “bundle of sticks”, that is, that any property right can be broken down into component rights. Particular tenures in particular places can be described in terms of the property rights they comprise. This can facilitate comparison and even ranking. Malpezzi (1992) presents a few simple examples of how such an index of tenure rights can be constructed. Unfortu-

nately, detailed classification and analysis of such property rights remains for future work.

#### 2.4.2. Tenure choice

Many studies of tenure choice have been carried out in developed countries (e.g., Rosen, 1979; Li, 1977). These studies usually find income and stage of the life-cycle are important determinants of tenure choice, as is the relative cost of owning versus renting.<sup>9</sup> Several studies have examined tenure choice in developing countries.

Lim et al. (1980) examined tenure choice in Korea. Limited by the econometrics of the day, they aggregated a number of tenure categories into owning and renting, and estimated an ordinary least square (OLS) tenure choice model for that simple binary choice. Not surprisingly, the authors found that income was a significant determinant of home ownership.

Several studies followed Lim et al. (1980) in examining Korea. Kim S.-J. (1992) used a hierarchical logit model to study Korea. Whereas, Lim et al. aggregated a number of tenure types into owning versus renting, Kim examines several cases separately. In addition to home ownership, Korea has several types of rental tenures, usually distinguished by their payment schemes. In the most common form, *chonsei* ("key money"), tenants put down a large lump sum deposit. In recent years this can be as much as 40% of the cash value of the unit. At the end of the lease period, the deposit is refunded, but without interest. Other tenants pay periodic rent; and there are mixed forms (deposit and rent). Kim finds both permanent and current income measures, as well as demographic variables, explain tenure choice in Korea.

Tipple and Willis (1991, 1992) examine tenure choice in Kumasi, Ghana. They also disaggregate tenure, by ownership, renters and "family housers" (roughly similar to renters, but not an arm's length transaction). They also distinguish tenure forms by whether the households share services with others or have exclusive use. Using both discriminant and logit models, they find there are more differences between sharing services or not, than between owning or renting per se. Income, wealth and how long households have resided in the city are the primary determinants of tenure.

Daniere (1992) examines tenure choice in Cairo and Manila. She uses a logit model to examine owning versus renting (Cairo); renting, squatting and legal ownership (Manila). Home ownership is strongly associated with income in

<sup>9</sup> In the US the tax code has a strong effect on the relative price of tenure, and it varies with income since the chief tax break, the mortgage interest deduction, increases with income. This partly explains the strong demand for home ownership for middle and upper income Americans.

Cairo, but not in Manila. In the latter city, rather, the probability of ownership hardly budes with income; but the probability of renting falls significantly and that of squatting rises. Interestingly, squatters have more in common with owners than with renters.

Grootaert and Dubois (1988) estimate a probit model of tenure choice in Cote d'Ivoire and find that income and lifecycle variables do the bulk of explaining home ownership.

Several studies of Philippine data show the value of tenure. For example, Friedman et al. (1988) estimate hedonic functions for formal and squatter housing. They find that on average a rented squatter unit in Manila would rent for 15% more were it formal; the corresponding owner premium is 25%.

A number of papers have presented evidence that in some cities, large fractions of low income households own in the informal sector; as incomes rise they rent in the formal sector; and the richest again become homeowners. Yet, such patterns have not been scrutinized or explained carefully. Strassman (1980b, c) suggests that availability of services such as piped water may catalyze investment by some households and make the shift to renting such units attractive relative to current owners of informal units without such amenities. In a very stylized version of such a world, we would observe the lowest income households owning very low quality housing, perhaps in the informal sector or with little tenure security; past some threshold, households would begin into a higher quality rental submarket; finally, at higher incomes and (perhaps) overcoming financial constraints, households would be able to purchase such housing.

One variable conspicuous by its absence in most of these studies is the relative price of each tenure form. Constructing such a variable is possible but requires some effort (M&M, 1987b). To a household, the user cost of a rental unit is the periodic rent paid, plus any deposits or key money payments appropriately discounted, plus their own payments to others for housing services (e.g., household maintenance expenditures). User cost for owners is even more complicated, since it must account for financing, depreciation and inflation. User cost is another fruitful area for future research.

#### 2.4.3. *Mobility*

The range of variation in mobility is enormous. Strassman's (1991) survey finds that in a given year less than 3% of households moved in a year in the German Democratic Republic in 1980; in Colombo, Sri Lanka only 5% moved. At the other extreme, in Bangkok, Thailand about 20% moved in a year, and in Seoul, Korea an astounding 43%. Strassman (1991) argues that government interventions in housing markets on balance tend to lower residential mobility. He uses



data on rents and prices as a proxy for distortion in the housing market; the higher the house price to income ratio, the lower the mobility rate. The higher the rent to income ratio, the higher the mobility rate.

Strassman's (1991) paper sets an interesting agenda in this area. Among other issues, even in such a simple model it's hard to imagine mobility as endogenous while price is exogenous. And many regulations, such as rent control, that could affect mobility can be measured directly.

In the developed country literature, in addition to income and lifecycle effects, disequilibrium in housing consumption has been emphasized as an explanatory variable for household mobility (e.g., Goodman, 1976; Weinberg et al., 1981). Malpezzi (1986) constructs a measure of housing disequilibrium and uses it as an explanatory variable in a model of planned moves and upgrades using data from Cairo. In the event, neither housing consumption variables nor lifecycle and income variables contribute much to explaining planned moves with that dataset.

Zorn (1988) estimates a joint model of tenure choice and mobility, focusing on transactions costs as well as income and lifecycle. As expected, income is positively associated with moving and owning, but negatively with moving and renting. Transactions costs generally reduce the probability of moving, whatever the tenure.

## 2.5. *Housing and the aggregate economy*

Housing has strong links to general development, both forward and backward (Malpezzi, 1990; Buckley and Mayo, 1989; Renaud, 1990). In this section, we explore the relationship between housing investment and development; housing investment and the business cycle (including employment); housing policy and structural adjustment; and alternative views of housing as a productive investment.

In policy discussions macroeconomists will sometimes point to housing's allegedly unfavorable incremental capital output ratio (ICOR) as evidence that reducing housing investment will increase growth of the economy. While the ICOR can be derived from a simple Harod Domar growth model, such models abstract from the different useful lives of capital and are of little use in distinguishing between investment in one form of capital over another. At the same time, one can find a housing related literature that strains to find multiplier and externality arguments for investment in housing (see Katsura, 1984, for a survey). Malpezzi (1990) develops the argument that housing investment decisions are generally best made on the basis of internal rate of return/present value criteria, as are

investment decisions generally. Generally high and rising prices for housing can be viewed as signals that the market requires additional investment.

A number of papers such as Strassman (1985) have examined whether housing's employment multiplier is "favorable", or not. The most careful studies using input/output analysis suggest that after indirect effects have taken into account, housing's multiplier is more or less like other multipliers. Research on the existence of externalities such as Burns and Grebler (1977) or more recent evidence for the US such as Green and White (1995), suggest that while health and education externalities may exist, in many developing and transition economies these are probably dwarfed by the innate economic return to additional housing investment.

This is not to imply that there are no general equilibrium or aggregate effects of housing in these economies. Buckley and Mayo (1989) present some examples. They examine two case studies: Argentine housing policy, with special emphasis on financial linkages, and Polish housing policy, with special emphasis on interactions with the labor market. As of the mid-to-late 1980s, they find the present value of welfare costs of Argentine housing subsidies through the financial system are on the order of 6% of GDP in present value terms. Buckley and Mayo find that Poland's insufficient housing investment and ill-located housing are equivalent to a compensating wage differential or tax of about 10% of labor income in the late 1980s. (Both the Argentine and Polish cases are illustrative; both countries have followed quite different policies in recent years.)

Malpezzi (1990) points out that many people working in the shelter sector are not used to thinking of its investments as productive. This is true of many developing country housing analysts and was certainly true under socialist central planning, where housing was explicitly labeled "nonproductive" and was not even counted in Net Material Product (the socialist analogue of Gross National Product). But of course shelter and infrastructure investments are, in fact, by definition productive: they are investment in an asset that yields a flow of services over time. To label such investment as "consumption", is quite common, but incorrect. The same criteria which governs choice of other investments governs housing. Arguments about externalities, indirect contributions to labor productivity, and employment multipliers obscure this central point. Malpezzi (1990) discusses these issues in some detail, including the role housing market reform can play in structural adjustment.

### 3. Related markets

This section is primarily about the first box in Fig. 1, above. Why examine the input markets for housing, when this is rarely done explicitly for many other goals? Because of its high cost in relation to incomes, housing must be financed. Because of its locational fixity, housing markets are profoundly affected by the operation of land markets, and by infrastructure.

#### 3.1. Housing finance

Bertrand Renaud (1984) put it best: “Cities are built the way they are financed”. In this section, we will examine housing finance, not only as a key input to housing development (Struyk and Turner, 1986), but also housing finance as a key element in financial development more generally. We will investigate certain systemic and institutional issues (Buckley, 1994; Renaud, 1990), as well as more technical details, such as instrument design (Buckley et al., 1993; Chiquier and Renaud, 1992; Sandilands, 1980). We will examine the effects of trying to run housing finance as a subsidy system rather than as a system for true intermediation (Renaud, 1990, 1993; Buckley, 1991). We will also discuss the key role the evolution of housing finance plays in the reform of formerly socialist economies (Buckley et al., 1993; Renaud, 1991).

Housing is the largest asset owned by most households. Housing is *always* financed, in the sense that virtually all owners of housing capital must pay for their units over several periods. Even households which own their units “free and clear” finance the unit in the sense that holding such a large asset has a financial opportunity cost.

But in most countries only a small share of this potential finance, roughly equal to the value of the underlying assets, is in the form of mortgages or other formal sector finance. Goldsmith (1985) shows that in both developing and developed countries formal sector finance is only a small part of the total.

##### 3.1.1. Housing finance and financial development

A large literature now exists, on the relationships between financial development and economic development in general (e.g., Besley, 1995, and references therein). It is well known that financial deepening takes place as countries develop, in general; what is less well known is that as countries develop, the formal housing finance system generally grows faster than finance in general. For example, data from the Housing Indicators Project (Angel and Mayo, 1996) show that mortgage loans average roughly 6% of total formal sector loans for countries with

GNP per capita under \$1000. For middle income countries (\$1000–10,000 per capita), the average is about 16%. For countries above \$10,000, the average is about 25%. Of course there is great variation within groups, but the overall trend is quite clear.

Buckley (1991) illustrates the spillovers that an inappropriate housing finance system can have with the case of Argentina during the 1980s.<sup>10</sup> Almost all housing finance came from two sources: a housing fund based on wage taxes (FON-AVI) and the National Mortgage Bank (BHN). Roughly, FONAVI targeted lower income households, and BHN middle income households. Buckley showed that in the system in place in the 1980s, given that payments are only partially indexed, long grace periods, and poor foreclosure and other recovery practices, only 2–5% of every dollar FONAVI invested was ever recovered. During the period Buckley studied BHN was also largely dependent on central government transfers and forced deposits from local authorities at negative rates. Together FONAVI and BHN transferred about 2% of GNP into a narrow segment of the housing market.

Buckley (1991) used a simple consumer surplus model to demonstrate the inefficiency of such transfers. The present value of the net cost of these distortions approached 6% of GNP, and the large expenditures may have accounted for up to one-third of Argentina's inflation during the period.

Many similar examples are documented in the literature. Sandilands (1980) and Silveira (1989) examine Brazil, another country with experience of a large housing fund.

Early studies of housing finance in developing countries emphasized the role of the deposit taking institutions in housing finance. Implicitly the model for many was the US savings and loan system and to some extent Britain's building society system. However, in developing countries and transition economies as well as in the developed world, the trend has been to move away from deposit taking institutions, and to break the direct link between small scale saving and mortgage lending. Secondary institutions and bond finance are becoming more important as proximate sources of funds (see Renaud, 1995).

### *3.1.2. Housing finance and housing*

Of course many studies of housing finance focus on the beneficial effects of a well functioning housing finance system for the housing market (Kim K.-H., 1994; UN Centre for Human Settlements, 1996, Chapter 11; Okpala, 1994). Buckley (1994, 1996) and Malpezzi (1990) shows that the better the housing

<sup>10</sup> The current Argentine system is quite different from that described in Buckley (1991) and in these paragraphs.

finance system performs, the lower housing prices relative to incomes. Despite these potential benefits, few developing countries have widespread and successful systems of housing finance. Many formerly socialist economies are still struggling with financial systems which were mainly conduits and are just developing basic skills in underwriting and intermediation.

Malpezzi (1990) showed a simple positive correlation between house prices and positive real interest rates across countries. While heavily regulated rates are often justified on the grounds of affordability, the simple correlation between regulation suggests that artificially low rates may be tied to inelastic supply and higher prices. While such a link remains to be demonstrated conclusively, an inevitable consequence of keeping mortgage rates below market rates is that loans are rationed.

### 3.1.3. Institutional and systemic issues

Even more that the “real side” of the housing market, housing finance is profoundly affected by institutional and systemic features that vary from country to country. A broad range of country-specific detail on these can be found in Boleat (1985), Fannie Mae (1991, 1992), Lea and Bernstein (1995) and numerous issues of *Housing Finance International*. Renaud (1984, 1997) provides useful taxonomies to place some structure on this wealth of detail.

In the Anglophone world, housing finance has been particularly influenced by the Savings and Loan/Building Society model, in which mutual savings institutions mobilized funds from household deposits and onlent the proceeds for mortgages. These systems also tended to rely on heavy government regulation, of these institutions and of the financial system generally. Of course, many countries followed quite different models, as Boleat (1985) among others illustrates. But until the last two decades, many countries instituted so-called “special circuits” for housing finance, whether they followed the Anglophone model or some other. Housing finance was generally cosseted and particularly heavily regulated.

As Diamond and Lea (1992) and Renaud (1997) among others have documented, such special circuits are in decline in developing as well as developed countries.<sup>11</sup> As general financial liberalization proceeds apace, housing finance systems are becoming ever more integrated with financial markets in general. Rather than relying on direct household deposits, more institutions are relying on broader capital markets as sources of funds. Housing finance is less often seen as a mechanism to subsidize housing off-budget; subsidies are increasingly separated from the financial system, and are generally better targeted and more

<sup>11</sup> Pre-Perestroika, transition economies generally had no financial institutions other than conduits that provided whatever funds were required to fulfill the plan.

efficient as a result. Housing finance is becoming more competitive, many specific functions are becoming “unbundled”, and actors are making ever more use of modern risk management techniques (Renaud, 1997). Of course some countries are moving faster in this direction than others. Chile is one of several Latin American countries that have made significant progress (Ferguson et al., 1996), while Korea is an obvious example of a country that has yet to tackle housing finance reform in a serious way (Green et al., 1994, Kim K-H., 1990a). India is one example of a country that has seen the growth of market oriented housing finance institutions (the Housing Development Finance Corporation) despite the general slow pace of general financial reform (Munjee, date needed).

While there are certainly common issues, research on housing finance in the transition economies has been colored by the fact that most had no true financial institutions prior to Perastroyka; so-called banks were merely conduits, and had no true intermediation or underwriting functions. Housing finance institutions as understood by market economists were generally nonexistent. Housing finance was often some nontransparent combination of municipal finance and benefit-in-kind subsidy to workers. Representative descriptions can be found in Andrusz (1990), Guarda (1993), Diamond (1992), Renaud (1993b), Thalwitz (1993), Parry et al. (1990) and Buckley and Gurenko (1993).

Building on the experience of developing and developed countries, a number of studies have analyzed the housing finance situation in individual transition economies, and presented models for the development of housing finance systems. Of course, such systemic development must be closely tied to progress in privatization and the development of the “real side” of the market (discussed above, see Struyk, 1996, for example). To date, the best published “roadmap” for the simultaneous development of housing markets and a housing finance system is the study of Russia’s housing market by Renaud et al. (1995). Other useful studies in this regard include Buckley and Gurenko (1995), Buckley et al. (1993) and Struyk and Kosareva (1993).

### *3.1.4. Mortgage design and other technical details*

Embedded in any full discussion of housing finance systems and institutions is a wealth of important, often critical, details such as the design of mortgage instruments, the proper roles and regulation of various primary and secondary institutions, insurance, settlement procedures, foreclosure procedures, risk management techniques and of course many regulatory issues. Full discussion of such

a wide range of issues is well beyond the scope of this chapter. Here, we briefly discuss one such issue, namely mortgage design.<sup>12</sup>

In the 1970s and 1980s many developing countries adopted some variation of the long-term fixed rate mortgage as the model instrument for their formal housing finance institutions. In the 1970s, in developing as well as developed countries, high and variable inflation made reliance on such instruments untenable. Some Latin American countries, with formal institutions of significant size and volatile macroenvironments, were among the leaders in moving to adjustable or indexed mortgage instruments.

Buckley and Dokeniya (1989) show how indexation aids financial deepening and, by extension, development. They demonstrate that of the set of major Latin American countries studied during the 1980s, Colombia had the most complete system of indexation and the most stable if not most spectacular financial deepening. Buckley and Dokeniya estimated an augmented aggregate production function which suggested that indexation might have accounted for up to one-third of Colombian growth.

A popular form of mortgage instrument is the so-called dual index mortgage (DIM). The DIM is designed to deal, within limits, with the problems of wages which do not track general price levels contemporaneously. The mortgage balance increases with a general price level, and payments increase with a wage-based price level. Shortfalls in real payments are capitalized into the value of the loan. Chiquier and Renaud (1992) simulate the outcomes of the DIM instrument and compare them to a range of alternative instruments. Their simulations show that even DIMs have their limits; in markets with long periods of high price inflation and stagnant or falling wages, DIMs can also “break”. This and other studies, such as Buckley et al. (1993) demonstrate that no instrument can fully substitute for sound macroeconomic policy.

### 3.2. *Urban land markets*

Of course the starting point for understanding land markets is to refer back to our previous discussion of property rights, and tenure issues. See also Alan Evans’ contribution in Chapter 42 of this volume.

Here we examine several other land related issues, especially land pricing, effects of infrastructure, and location. We also discuss development vs. redevelopment, and land development and environmental issues (see Joseph Gyourko’s contribution to this volume). We also examine regulatory issues (Bertaud, 1992; Dowall, 1989b; M&M, 1997a).

<sup>12</sup> More detailed reviews of such issues can be found in Renaud (1989) and Buckley (1996).

### 3.2.1. *How land markets work*

Much of the developing country literature on urban land markets focuses on the operation of the so-called informal sector. For example, Payne (1989) cites Vernez (1973) and Blaesser (1981) as early and innovative studies of normally illegal pirate subdivisions or (Piratas).<sup>13</sup> They found that housing investments by lower income households in so-called pirate subdivisions worked much more like a market and was a significant form of capital formation. These studies of Bogota and Medellin were in many ways a forerunner of the large World Bank funded study of Bogota and Cali generally known as the City Study (see Mohan, 1994, and references therein). In the 1970s, Gilbert and Ward (1985) undertook a three-country comparative study of Valencia, Mexico City and Bogota. They also found that so-called land invasions and other extra-legal market mechanisms worked reasonably efficiently under the circumstances. In effect, these pirate subdivisions were able to evade formal regulations which would imply large plot sizes and high development standards inconsistent with the incomes of the bulk of the city's populations. Yonder (1987) finds similar results for Istanbul. Mayo et al. (1982) is a very detailed study of the informal housing market in Cairo and Beni Suef, Egypt. All these studies find that the quality and quantity of housing produced in contravention of strict legal codes is impressive. Moreover, conditional on the income of the occupants, such development is often indistinguishable from formal or legal land development. A number of other studies in this vein (which are unpublished and often hard to find) are summarized in Payne (1989), such as Nayani's (1987) study of Hyderabad, India; Mitra's (1987) study of Delhi; and Benninger's (1986) study of Pune, India.

A number of authors have focused on the development of more formal market mechanisms in developing country cities, or "commodification" as this is often called. Amis (1984) discusses the case of urban Kenya; Mehta and Mehta (1989) discuss Ahmedabad; and Payne (1980) finds similar trends in Ankara, Turkey. These and many related studies are quite consistent with dynamic models of property rights. These authors show that, in both agricultural and urban settings, the form of property rights and the way in which they are traded will develop and change as countries densify and develop.

Some authors, such as Baken and Van der Linden (1993), approach informal land markets (pirate subdivisions and the like) as if they are fundamentally different and not amenable to normal economic analysis. Others, such as Gilbert and Ward (1985) and Malpezzi (1994), argue that (in Payne's words) "it is misleading to stress the distinctiveness of the formal and informal land markets". Malpezzi

<sup>13</sup> Some of the following is drawn from Payne (1989).



(1994) argues that there are costs to informality; it is often more difficult to get access to infrastructure, and almost always impossible to use such land or real estate as collateral for mortgage loans. Many studies, including some described above such as Jimenez (1982), show that formal tenure is associated with higher asset prices and investment.

DeSoto (1989) presents a general discussion of the inhibiting effects of excessive regulation on Latin American land development, with special reference to Peru. DeSoto's work is descriptive, yet arresting, and has made more of an impact on the popular press and the general development community than more technical pieces. A series of studies by Alain Bertaud and associates have been among the best studies of such regulatory issues. See Bertaud et al. (1988) and Bertaud and Malpezzi (1994) for discussion of methodology, and see Bertaud and Lucius (1989) and Bertaud (1997) for additional case studies. Other regulatory studies of note include Wadhva's (1983) analysis of India's Urban Land Ceiling Act, and those discussed in Farvaque and McAuslan's (1992) overview paper.

Regulatory and planning issues also arise in socialist land "markets". The quotes remind us that in true socialist economies land is often allocated by non-market means. As Bertaud and Renaud (1994) point out, socialist planners made investment and location decisions under a system in which land had no value, capital had no interest opportunity cost, and energy prices were a tiny fraction of loan prices. Since enterprises could not capture any gain from redevelopment or conversion of land to highest and best use, socialist cities often had a pattern of sprawling industrial plants, often using what would be the highest value and highest density office and residential land use under any kind of market system. French and Hamilton (1979) discuss many of these issues pre-Perestroika, and Bertaud and Renaud (1994, 1997) illustrate with examples from Russian cities.

Bertaud and Renaud show, for example, that population density in Moscow some 10 miles out is about the same as population density in the center of Paris. The negative population densities exhibited in Moscow and a number of other socialist cities would not be as problematic if it were not for the fact that employment is generally highly centralized (unlike say Los Angeles that has decentralized residential patterns but also highly decentralized employment).

This pattern is changing as Russia and a number of other formerly socialist economies move to the market. Not only are land, housing and other real estate markets emerging, but property rights are becoming assigned *de facto*, if not *de jure*, meaning that enterprises can capture the gains from redevelopment. Movement towards world energy prices also encourage a shift in the form of the city. Mozolin (1994) presents a detailed analysis of housing price gradients in Moscow.

Hamer et al. (1993) examines urban land markets in China. Many of the issues in China are conceptually similar, although they are played out against the backdrop of one of the most rapidly growing urban populations in the world. (In contrast to Russia's stable urban population.) The authors point out the shortcomings of various land market "reforms" during the 1980s, which focused on control and limiting the size of cities, and to a lesser extent on government revenue and the land needs of state enterprises. Overall allocative efficiency was not highlighted in these reforms. Reform has been pushed further by the growing obviousness of problems arising from poor allocation of land and fiscal problems of both local governments and enterprises. Hamer et al. point out that the post-1979 reintroduction of foreign investment brought in a group of actors accustomed to well defined property rights and market or market-like mechanisms. After 1984, a number of Chinese cities embarked on a range of land use management experiments, including the well known Special Economic Zones in several southern and coastal cities. Less well known are changes such as the creation of profit oriented real estate development companies (mainly publicly owned) which develop commercial real estate and sell at prices including land location premia: and introduction of the range of development fees, taxes and lease premia for specific tenure rights. China is also introducing land and building cadastres which define the location, use and rights of specific parcels. Dowall (1993) provides a convenient summary of some of the recent policy changes and requirements for the new two land markets.

Perhaps the most pathological case of land market regulation in any large country was South Africa's Apartheid system. Turok (1994a, b) presents a concise description. Brueckner (1996) analyzes the welfare gains from dismantling Apartheid in the context of the standard urban model.

### *3.2.2. Land prices across markets and over time*

A decade or two ago much of the literature on land price trends in developing countries argued, in fact mainly accepted, that given population and income growth, land prices will rise inexorably and that a corollary of this is that housing prices will show similar increases. See, for example, Evers (1976), Geisse and Sabatini (1982) and Haddad (1982).<sup>14</sup> However, several authors such as Ward et al. (1993) and Angel and Chuated (1990) point out that much of this work suffers from failure to standardize land prices, failure to consider a very long-run time period instead of simply part of the cycle, and sometimes even fail to adjust for general price inflation. The literature that has been emerging more recently has

<sup>14</sup> These references are due to Ward et al. (1993).

been more careful in each of these respects, and generally finds that: (a) land prices do not rise inexorably; (b) when they are rising over a long period of time it is often due to specific policies adopted by the public sector; and (c) at least modest increase in house and land prices need not necessarily translate into a one-to-one increase in housing prices. It should also be noted that the pattern of land prices in the aggregate (say average or median price) abstracts from locational differences within the city, as discussed further below.

Gilbert and Ward (1985) found land prices in three Latin American cities rising in real terms during the late 1970s and 1980s, but that the increase was not dramatic. Later research by some of these authors (see Ward et al., 1993) found that during part of the 1980s real land prices fell in Mexico.

Dowall (1989a) and Angel and Chuated (1990) showed that despite rapid population and income growth, land prices in Bangkok rose only modestly in real terms during the late 1970s and early 1980s. Furthermore, even this slight increase in real land prices did not translate into a significant increase in housing prices, as developers were generally free to substitute capital for land and develop more densely (cf. Foo, 1992; Dowall, 1991c).<sup>15</sup> Strassman et al. (1994) found that while land prices were high by international standards in Manila, house prices were closer to the norm. However, the downmarket penetration of the unsubsidized private sector was found to be significantly lower than Bangkok's. Strassman et al., point to a number of public sector policies which keep land prices high, focusing particularly on negligible effective property tax rates, which keeps the holding cost of vacant land low (Strassman et al., do not discuss the opportunity cost).

Peng and Wheaton (1994) also shows that in Hong Kong where land supply is extremely restrictive, increase substitution of capital for land has implied much higher land prices but reasonably stable (in the long run) housing prices. Hannah et al. (1993) show that in Korea land and housing prices rose quite rapidly during periods of high demand. They point to the extremely restrictive land use policies of the Korean government which attempts to limit land and urban use (see also Green et al., 1994).

A number of papers have further investigated the relationship between land prices, housing asset prices and rents, e.g., Lin (1993), Chang and Ward (1993), Chang et al. (1994) and Kim and Suh (1993). Chow and Wong (1997) apply the user cost model to Hong Kong prices, and Renaud et al. (1997) apply the related asset-rental price framework of DiPasquale and Wheaton (1992).

<sup>15</sup> With a number of associates, Dowall (1991c) performed similar analyses in some 30 markets. Dowall (1997) provides a review, see also Dowall and Clarke (1991).

Table 3  
Land price gradients

Study	Data	Model	Typical gradient	Comments
Asabere (1981)	Kumasi, Ghana 1970–1979	Individuals, infrastructure whether sold to Ashante/non-Ashante, type of neighborhood, size of plot.	–0.037	Also found nominal $P_L$ rose 1.1% per month, 1970–1979 (of CPI).
Son and Kim (1998)	Korea six cities	Land price gradient greenbelt dummies.	–0.027 (Seoul) to –0.290 (Kwang-ju)	Finds green belt a strongly binding constraint.
J. Eckert data reported in Bertaud and Renaud (1994)	Moscow, Russia 1992	Simple gradient (estimated by this author from graphs).	$Q_1$ 1992: –0.017 $Q_2$ 1992: –0.034	Moscow is first ever case of steepening gradient as market emerges. (Need to find figures)
J. Eckert data reported in Bertaud and Renaud (1994)	Krakow, Poland 1992	Simple gradient (estimated by this author from graphs).	1992: –0.10	(Need to find figures)
Dowall (1989)	Karachi, Pakistan 1985	Dummy for large plots and developed plots.	–0.058	Large plots sell at large premium and developed plots worth more than twice undeveloped.

### 3.2.3. Prices within cities

Table 3 presents data from several studies of the pattern of prices within cities. Asabere (1981a, b), Sun and Kim (1994) and Dowall (1989) estimate straightforward negative exponential models with familiar results. Gradients are negative and declining; constraints raise prices; and larger developed plots are worth more. Perhaps most interesting are the studies of formerly socialist markets.

Bertaud and Renaud (1994, 1997) use unpublished data from Joseph Eckert and find Krakow's land price gradient is similar to the US and other developed countries. On the other hand, Moscow's gradient is extremely flat. This is particularly remarkable given the high employment density in Moscow's center. However, Bertaud and Renaud also point out the remarkable steepening of the house price gradient in Moscow over the course of the year in which Eckert collected his data. This may be the first ever case of rent gradient steepening over time, as a true market emerges.<sup>16</sup>

Bertaud and Renaud (1994, 1997) forecast a sharp shift in the relative price of locations during the transition. Their conclusion is

in cities the process is likely to be seriously disruptive. We can only point here at some of the management issues during this transition to markets . . .

<sup>16</sup> The numerical gradient estimates in Table 2 were constructed by this author from data presented from Fig. 3 of Bertaud and Renaud's (1994, 1997), from Eckert.

Current Russian discussions of the affordability problem of non residential land or a false problem which ignore the necessity of land use transition. By definition the market price of land is affordable to new users. The industrial land may not be affordable, however, to existing users who are asked to pay for it retroactively, but these existing users are precisely those who are using land in an inefficient manner. The affordability dilemma can be solved by recognizing the land equity interest of present land users and then allowing these users to trade freely the land they occupy.

### 3.3. *Infrastructure*

See also the contributions by Eberts and McMillen (Chapter 38), Small and Gómez-Ibáñez (Chapter 46) in this volume, and World Bank (1994). Here, we will focus on transport, water and sanitation, power and housing.

The provision of infrastructure and related services—transport, water, sanitation and so forth—is a traditional public sector activity, and one of particular importance to low income households. Directly, households benefit from several types of infrastructure through saving time and money (for example, publicly supplied water rates versus user charges) and through improved living conditions. Often, infrastructure investments encourage new construction and upgrading of existing housing, including the provision of more houses to rent. Households also benefit indirectly from infrastructure investments, if these are seen as legitimizing previously illegal or informal settlements (discussed in the previous section).

Like land and finance, infrastructure for housing generally needs to be considered in conjunction with infrastructure for other uses. Roads, electricity, water and sanitation are at some level all shared by households and firms, or are if economies of scale are taken advantage of. In a series of studies of infrastructure in Nigeria, Thailand and Indonesia, Lee and his associates have examined the efficiency losses from inappropriate infrastructure policies, with a particular focus on manufacturing, although many of the arguments can be generalized to other sectors (need more here). See, for example, Anas et al. (1996), Kessides (1993) and Lee et al. (1996).

Government policies on the supply and pricing of urban infrastructure are characterized by various conflicting tendencies. For example, governments have taken the view that (a) water and sanitation (and sometimes other types of infrastructure) are merit goods; (b) infrastructure has significant externalities; (c) low income households may, out of ignorance, seriously underestimate the benefits of improved water and sanitation; and (d) some of these services involve large

economies of scale—that is, they are “natural monopolies” or at least require investments too large for the private sector. These views have led to governments’ taking the leading role in providing urban infrastructure, but often with under investment, and prices that are too low to recover costs. The result has been severe rationing and chronic problems in maintaining and expanding the stock of urban infrastructure. Therefore, cities are both less efficient and more inequitable than they could be with alternative policies. For the past two decades a large literature exists on the engineering side of a wide range of water and sanitation alternatives, such as Kalbermatten et al. (1980, 1982). Current debates are more about economics.

### *3.3.1. Water and sanitation*

Of the possible alternative policies, cost recovery is a contentious issue (Jimenez, 1987). Poor households are widely assumed to be unable or unwilling to pay for improved services; research such as Whittington et al. (1990, 1993), Katzman (1977), McPhail (1993), Warford and Turvey (1974) demonstrates that this is not so. For example, many urban households spend significant amounts of time collecting water from standpipes or wells; in cities with water vendors, people often pay high unit prices for water (Zaroff and Okun, 1984; Okun, 1982). Understanding the demand for water, sanitation, and other urban services also helps to indicate the correct type of technology. For example, the choice between a communal standpipe system and individual house connections depends on the demand for water and the value people place on the time spent in water collection. But given the potentially large externalities involved and the low incomes and often low willingness to pay for sanitation (as opposed to water), others view cost recovery as a secondary goal at best and a potential barrier to sufficient investment (Hardoy et al., 1990).

### *3.3.2. Urban transport*

Another key infrastructure element, and one deserving of its own chapter, is transportation infrastructure. Here we only highlight a few key issues and references.

Congestion is endemic in developing countries. Traffic and Lagos, Bangkok and Mexico City, to name only three cities, is legendary. In many cities this increase traffic congestion contributes to additional air pollution. The cities of Eastern Europe and the former Soviet Union, on the other hand, face somewhat different transportation issues in general. Often these cities face much slower population growth, and have more existing transport infrastructure. But given the common repression of automobile ownership under socialist regimes, we can

expect large increases in automobile use and dramatic increases in congestion in the decade ahead in many of these cities (see Hall, 1993, and the European Conference of Ministers of Transport, 1995).

A range of research such as Deaton (1984) and Yucel (1975) show transport demand elasticities and modal choice parameters to be broadly similar to those in developed countries. Rules of thumb about price elasticities and the value of travel time transfer reasonably well.

World Bank (1981, 1986) documents the bias towards large infrastructure investments in transport and away from less sexy investments in bus systems, improved maintenance and traffic management. The Urban Edge (1983) for example documents that large investments in fixed rail are often uneconomic in developing country cities. On the other hand, Walters (1979) shows extremely large net social benefits from the introduction of a minibus system to Kuala Lumpur. Barrett (1983), among other references shows the very large returns generally to traffic management improvements in cities. Readers interested in pursuing this important area further could consult World Bank (1986), Thomson (1983) and Dhareshwar (1987).

This short discussion certainly does not do justice to all infrastructure issues. Interested readers should consult Lee (1988, 1992) and Lee and Anas (1992) for example on the costs of deficient communications and electricity generation infrastructure as well as transport infrastructure in Thailand and Nigeria. Lee and colleagues are currently engaged in research on infrastructure and urban productivity in Indonesia.

#### **4. Housing policy**

This section is primarily about how the elements in Fig. 1, relate to each other. In particular, how government policies profoundly affect these relationships.

The previous discussions of housing markets and related input markets, perforce incorporated some discussion of public policy issues. In this section we examine public policy more systematically. We begin with a stylized history of thinking in the area, in both theory and practice. We examine council/public housing, an idea brought to its ultimate conclusion in socialist countries. We then introduce some alternative policy paradigms, sites and services: (Turner, 1972; Mayo and Gross, 1987), and upgrading: Indonesia's Kampung Improvement Program (KIP), for example (Payne, 1984). We compare and contrast these approaches with what some term the market wide approach and others term the enabling approach (UN Centre for Human Settlements, 1990; World Bank,

1993). We examine the effects of various government interventions: taxes, subsidies and regulations (Hannah et al., 1989). We also discuss current issues of reforming socialist economies and privatization (Struyk, 1996).

#### *4.1. "Industrial organization" of the housing market*

The "industrial organization" of the housing market can be characterized along several dimensions. First, we can compare and contrast public and private sector roles (see the Costa and van der Borg contribution to this volume). Second, we can consider competition policy (Olsen, 1969; Barlow and King, 1992; Landis, 1983; MacLennan, 1989). Third, we can consider interventions (tax, regulation and subsidy policy), as in Kim J-H. (1990), Dowall (1992), Ondiege (1986), Sanyal (1981) and Yu and Li (1985).

##### *4.1.1. Public housing*

Developing and developed countries, differ widely in the share and nature of publicly provided and assisted rental housing. Of course, as noted above, virtually all housing of whatever tenure receives some government assistance in some form (and virtually all is also taxed in some way), so "publicly assisted" is surprisingly arbitrary and difficult to define rigorously. Publicly provided usually means that governments or local authorities own and manage rental units, but even here there are gray areas; some nonprofit housing authorities do not fit unambiguously into either public or private definitions; in socialist countries, where does rental housing provided by state enterprises fit in? And partly because of such definitional problems, a consistent data series for cross-country comparisons is surprisingly difficult to construct.

Within market or mixed economies, most countries' public rental or council housing stock is a small percentage of the total (5% or less); most significant exceptions are in developed countries such as the Netherlands (9%); the UK (29%); but Hong Kong (40%). Many centrally planned economies have much greater shares of their housing stock as public rental; for example China's urban housing stock is well over 80% public or enterprise rental.

Even in those countries where public and council housing is not a large share of total housing, the asset value of such housing can be significant, because housing's asset value is large due to its long life, and because a disproportionate number of these units are built on expensive urban land. For example, according to unpublished World Bank estimates some 15,000 public housing units in Ghana have an asset value of about 2% of GNP; yet most are barely maintained and the rents collected are so low that the development corporation which owns the



housing is technically insolvent. Privatization as a solution to such problems is discussed below; first a discussion of the relative efficiency of the public and private rental markets is in order.

#### 4.1.2. *Privatization of public housing*

Three kinds of housing related issues have been neglected in the privatization literature. First, when should housing be privatized, or, more precisely, should a change be made in the manner of provision? Second, what concomitant regulatory changes are required for the new delivery system? Third, how can the privatization or other change be implemented? Malpezzi (1990) illustrates the issues and an approach using a simple present value model. Mills (1995) presents an overview of the concomitant changes necessary for privatization. Other useful general references include Clapham (1995), Turner et al. (1992) and Telgarsky and Struyk (1991).

Tomann (1992) discusses the case of eastern Germany. Reunification presents special problems and opportunities. Rather than struggle to develop property rights, legal systems, financial institutions, policy and the like, from scratch, eastern Germany has largely adopted the western system whole. Post-unification, state-owned housing has been transferred to local governments and their subsidiary housing authorities. Ownership of private units is still clouded by 1.3 million claims from pre-communist owners, driving up risk and reducing investment. Rents for sitting tenants are controlled in both private and public markets; units are relet at market rents if tenants turn over, and new construction is exempt; while still low, controlled rents are rising, from 0.3 DM per square meter two years ago to 1.75 DM today for multifamily; for single families rents have risen from 1.2 to 4.9 DM (there are currently about 1.65 DM to the dollar).

Hegedüs and Tosics (1992) discuss Hungarian public housing. This housing has been devolved to local governments, and as in those countries recurrent costs drain local treasuries. Hegedüs and his colleagues laid out a range of privatization options—whether to sell mainly to sitting tenants or to others, at what selling price, and what rents to charge for unprivatized stock.

Despite a slow start in 1988–1989, the privatization effort picked up steam in the 1990s, so that now over a quarter of the public units have been privatized, mostly to sitting tenants. Terms are very favorable to tenants—the authors estimate the selling price is about 15% of market value, with a 40% discount of that sale price for cash, or 10% down with a 15-year 3% mortgage (inflation was 26% in 1992). Hegedüs et al. (1992) predict a wide and rapid shift from rental into home ownership, given such terms and the uncertainty of the future of public rental housing. They note, however, that since receiving the best housing was a

large part of the communist elite's compensation, selling public units to sitting tenants at nominal prices, in effect, capitalizes the value of the previous subsidy and exacerbates perceived inequities in the distribution of income and wealth.

Among many other interesting points, the authors discuss the interaction between rent policy and selling price policy. The current situation, with low controlled rents and low selling prices, bleeds local treasuries and (as just argued) perpetuates perceived inequities. If, on the other hand, rents are kept low and selling prices are raised to market levels, privatization will be hindered as households have strong incentives to keep renting. Conversely raising rents while keeping selling prices low encourages privatization. Hegedüs et al. (1992) favor raising both selling prices and rents to market levels, to stem local government losses, and to avoid distorting tenure decisions in either direction. This would also wipe out current subsidies, which could be replaced with more equitable and targeted housing allowances. However, they are not optimistic about the political feasibility of raising rents and selling prices simultaneously.

A different point of view is expressed in Buckley et al. (1995). They argued that moving to market rents is so unlikely for political reasons that the inequities in the current distribution of units should be ignored, especially since the most desirable units had already been privatized, i.e., the worst inequities could no longer be addressed. Another argument they raised in favor of low rent-low price policy was that governments would be hard pressed to come up with the money for housing allowances. They therefore recommended a strategy not too far removed from current practice: keep rents and selling prices low; effectively giving units away would, they argue, allow a faster move to a market. The most detailed and comprehensive roadmap to privatization on a wide scale remains the study by Renaud et al. (1993) for Russia; see also Kaganova (1994) and Kosareva and Struyk (1992).

#### 4.2. *Subsidies*

Subsidies and public actions reduce the cost of something to particular recipients. A common type of subsidy is a payment to someone for a particular purpose—such as an allowance used for rent. But subsidies are also created when government makes rules which change the price that someone has to pay for a good or service—such as rent control.

In most countries, market as well as socialist, the pattern of subsidies that has grown up over time has little to do with explicitly articulated policy objectives. For example, most countries pay some sort of lip service to the notion that housing subsidies should be at least partly targeted to low income households.

But in fact, in most countries larger subsidies go to higher income households, especially when indirect subsidies through the tax and finance subsidies are considered. Similar patterns can be found in most other countries, developing and developed, market and socialist.<sup>17</sup>

In reforming socialist countries tax subsidies are not yet an issue, partly because income tax systems are still poorly developed. Other indirect subsidies, especially to rental housing, have been shown to be large and inefficient (Buckley et al., 1993), and perversely targeted (Daniel, 1983; Alexeev, 1990).

Mayo (1986) makes an important distinction between production and consumption efficiency. Production efficiency refers to the economic value of the unit in relation to the cost of producing it. Consumption efficiency refers to the value the *tenant* places on the unit in relation to its market value. The concepts are equally applicable to rental and other programs.

Empirical evidence suggests that public housing is rarely a very efficient way to increase housing consumption or welfare. In the most complete study to date Mayo (1986) reported that the consumption efficiency of US public housing is about 86% (ratio of benefits to costs), and its production efficiency is only 43% (ratio of value to costs). Another study by Olsen and Barton (1983) that took a more narrow view of production efficiency, reported that US public housing costs 14% more than they were worth. Agrawal (1988) reports that for the 300,000 public housing units in Australia the mean consumption efficiency is 0.75 to 0.68. Daniel (1983) studied the effect of public housing on the distribution of income in Hungary. She found that the ratio of highest to lowest income decile was 1 : 6; for housing consumption, 1 : 12; and for housing expenses per head, 1 : 23. Rents for flats are about 40% of maintenance costs, and about 15–20% of full cost (maintenance, depreciation, and a small profit to finance expansion). The average subsidy is 15% of income (only 10% in lowest decile). She examines the effect on income distribution and finds “*the rented flat as an allowance in kind does not reduce vertical inequality in society, as it should under the declared intentions, on the contrary it augments it*” (emphasis in the original). Her findings suggested horizontal equity is also violated.

Yu and Li (1985) study Hong Kong's public units, which house 40% of its population. In 1980, the rent charged for public units was \$10 per square meter; the market rent for comparable units was \$56 per square meter. Consumption efficiency is 0.75. A later study by Wong and Liu (1988) found qualitatively similar results. Wong and Liu highlighted the fact that public housing's inefficiency was due to underconsumption by higher income tenants as well as overconsumption

<sup>17</sup> See, for example, Agrawal (1988), Piggott (1984), Trollegard (1989) and Nicholson and Willis (1990).

by lower income tenants, and only a fraction of eligible low income tenants obtained public housing, leading to violations of horizontal and vertical equity. Ondiege (1986) carried out a similar study for Kenyan public housing. He found an average deadweight loss of only a little over 2%. But Ondiege also noted the wide variance in outcomes across households, implying poor horizontal equity and perverse vertical equity (the largest benefits go to the richest households). Ravallion (1989) analyzes the welfare costs of stylized housing programs in Indonesia, but is only able to present *ex ante* costs and benefits under different assumptions of how binding standards would be.

Such welfare analyses are difficult to carry out in transition economies because of the lack of market comparators (e.g., a private market reasonably close to equilibrium that can be used to estimate market prices for units and market demand for households). Papers which present rough magnitudes based on cost data include Wang (1991) and Pudney and Wang (1995).

A related issue that has not received the attention it deserves in developing and transition economies is the extent to which public housing expenditure—for owner occupied or rental units—simply crowds out private. For example, Murray (1983) found that for every 100 public rental housing units built in the US during the 1970s, private construction was reduced by about 85 units.<sup>18</sup> From the studies done so far, in the developed and developing countries, it seems that publicly built housing or subsidized new construction has not given good value for money. But often the largest and most problematic expenditures never appear on the budget.

The dominance of off-budget housing expenditures through the financial system and tax code in developed countries is well known. For example, in the US the value of the mortgage interest deduction tax subsidy alone is at least three times the size of on-budget federal housing expenditures. Off-budget expenditures are often as much, or more, a central feature of housing policies in developing and transition countries. In developed countries tax expenditures receive much of the attention. In developing countries there are often large implicit subsidies in the provision of land for shelter projects, although these are somewhat self-limiting, as large implicit subsidies limit their scale. Such housing finance subsidies are often “off the books”; Buckley and Mayo (1989) discuss the example of Argentina. In transition economies, the subsidy implied by non-market housing systems, already discussed, are large and only partly carried on government budgets.

<sup>18</sup> But more recent work by Murray (1993) highlights the fact that the degree of substitution varies markedly by type of housing program.

Another important class of off-budget expenditures related to housing are energy related. These are particularly problematic in the former Soviet and eastern European countries, where residential energy use was unpriced and spectacularly wasteful. Renaud et al. (1993) calculate that Russian residential energy prices are less than 10% of world prices, for example.

Housing allowances require a certain level of administrative capability, as well as reasonably reliable income data. Many countries would have great difficulty with the latter if not the former, given the nature of urban labor markets. Little research has been undertaken on this important practical issue.

### 4.3. *Housing market regulation*

A number of authors suggest changes in regulation are often among the most pressing areas for reform (Hannah et al., 1989; Dowall, 1992). Regulatory reform can play a key role in the three areas just discussed, i.e., increasing the supply of finance, infrastructure and developable land. Zoning, taxes, rent controls and building standards are other obvious regulatory areas to study for possible change. Governments must carefully weigh the costs and benefits, and the distributional consequences, of regulation. Regulation should strive for a “level playing field” insofar as is practical. Land regulation has already been briefly discussed; we now discuss the issue more broadly, based on a simple framework laid out in Hannah et al. (1989) and M&M (1997a).

#### 4.3.1. *Subsidies, taxes, regulation, and other interventions: a simple model*

Hannah et al. (1989), Malpezzi and Mayo (1997a) and related papers cited therein, point out the obvious fact that government subsidizes, regulates, taxes and otherwise, intervenes in housing markets for a variety of purposes. Each policy intervention can be analyzed in turn by examining how the interventions change the prices and corresponding present values. Present values have the advantage of enabling direct comparisons of the costs and benefits of quite different interventions in different programs. Some interventions impose costs (e.g., land use regulations, taxes, rent controls, building regulations) and some benefits (e.g., land subsidies, tax relief, financial subsidies). Some interventions confer corresponding costs and benefits on different market participants; for example, rent controls benefit some tenants at the expense of landlords (and perhaps some other tenants). Other interventions confer costs and/or benefits on some participants without an obvious corresponding gain or loss elsewhere. For example, some very high infrastructure standards can confer large costs on developers without producing much in the way of benefit for anybody.

While there is nothing technically difficult about doing so, hardly ever are the effects of all the numerous taxes, regulations and subsidies added up. In the US the “user cost” literature takes this approach, usually focusing on the interaction between taxes, inflation and finance.<sup>19</sup> In a number of developing countries, we are beginning to adopt a variant of the same approach.

In this framework, there are three entities from whose point of view housing policies and programs are evaluated: the economy, housing suppliers (or developers) and households. The exact incidence of the various costs and benefits of government interventions can be a subtle issue. For example, although the incidence of the property tax appears straightforward—property owners pay the property tax—some portion of the tax could be shifted to tenants (for rental property) or to the owners of capital generally (if capital markets were well integrated).<sup>20</sup> Incidence can depend on the competitiveness of the market, the state of transactions costs and knowledge in the market, the efficiency of financial markets in a country, and the time frame—in other words, it is rarely settled and unambiguous. Hannah et al. (1989) adopt a simple approach, where the entire cost or benefit is assigned to one participant. They point out that if our knowledge of actual incidence improves, it would not be difficult to build in more sophisticated treatment of incidence.

Hannah et al. (1989) and Malpezzi and Mayo (1997a) use the case of Malaysia to illustrate the simple “incentives model”. Malaysia’s Special Low Cost Housing Program was designed to induce private developers to build low-cost housing. But analysis using this model demonstrated that despite strong demand, on balance government regulations still cost the developer money, raised costs and reduced supply. Many of these regulations yielded little or no benefit to consumers or anyone else.

Similar models have been applied to Turkey (Baharagolu et al., 1997), Korea (Kim K-H., 1991) and Ethiopia (Erbach et al., 1996). In each case, the application has highlighted several interventions, especially on the regulatory front, that have had unintended consequences, driving up housing costs, often disproportionately at the low end of the market.

#### 4.3.2. *Rent control*

Roughly 40% of the world’s urban dwellers are renters; in many developing country cities, two-thirds or more of the housing stock is rental (Malpezzi and

<sup>19</sup> DeLeeuw and Ozanne (1981) and Diamond (1978) provide examples.

<sup>20</sup> See, for example, Aaron (1975) and McLure (1977).

Ball, 1991). A majority of countries have some form of price control on some or all of their rental housing stock.

Rent control is usually thought of as a policy applied to private markets, but publicly provided housing is also subject to controls, and to some of the attendant problems like reduced revenue and maintenance. For example, most urban housing in Russia and China is owned by the government or state enterprises. Rents are based on historical costs and extraordinarily low in real terms. As a consequence, housing subsidies are a huge share of government budgets. Many units are undermaintained because of lack of financing.

Malpezzi and Ball (1991, 1993) document the many different kinds of rent control regimes around the world. For example, one key feature is whether regulations set the level of rents, or control increases in rent. Others include *how* controlled rents are adjusted for changes in costs (with cost pass-through provisions, or adjustments for inflation); how close the adjustment is to changes in market conditions; how it is applied to different classes of units; or whether, or not, rents are effectively frozen over time. Other key provisions that vary from place to place include breadth of coverage, how initial rent levels are set, treatment of new construction, whether, or not, rents are reset for new tenants, and tenure security provisions. Rent control's effects can vary markedly depending on these specifics, and on market conditions, as well as enforcement practices.

A number of rent control cost-benefit studies have been carried out; Malpezzi (1993) and Malpezzi and Ball (1993) review several. For example, in Cairo, Egypt, monthly rents for a typical unit are less than 40% of estimated market rents (Malpezzi, 1986). "Key money" (illegal upfront payments to landlords) and other side payments make up about one-third of the difference. In Amman, Jordan, the static cost of controls is about 30% of estimated market rent; the benefit to the typical tenant is only 65% of cost (Struyk, 1988a).

Rent control can also impose dynamic costs (i.e., undesirable changes in the stock of housing over time). Controls can reduce dwelling maintenance, reduce the useful life of dwellings, and inhibit new construction. Controls provide strong incentives to convert rental units to other uses. These market responses shift the incidence of rent control's costs forward to tenants, over time. It is theoretically possible to design a rent control regime that does not discourage maintenance, and starts with a pricing scheme that rewards maintenance and new construction (Malpezzi, 1986; Olsen, 1988). In practice, revaluation and maintenance inspections are expensive and difficult to organize; and new construction can still be adversely affected by the expectation of future controls.

Given their potential importance, dynamic effects of controls are understudied. For example, no one has yet credibly analyzed the effects of controls on

the aggregate supply of housing. Despite many studies which imply controls, qualitatively reduce returns to rental investors, given the myriad ways real world regimes work and ways around controls (legal and illegal) the size of the net aggregate effect on supply remains unknown. Malpezzi and Ball (1993) found that countries with stricter rent control regimes invested less in housing, in the aggregate; but while they controlled for demand (income and demographics), they were unable to control for other constraints on housing markets (e.g., land use constraints, financial constraints). Since these may well be correlated with the strength of controls, precise quantitative measures of the effects of rent controls per se await future research.

The evidence to date casts doubt on controls' effectiveness as income transfer mechanisms. In Cairo and Bangalore, for example, no relationship was found between the benefits gained from reduced rent and household income, because rent control is not well targeted to low income groups. In Kumasi and Rio, benefits were found to be somewhat progressive (Malpezzi and Ball, 1991; Malpezzi, 1986; Malpezzi and Tewari, 1991; Malpezzi et al., 1990; Silveira and Malpezzi, 1991).

Another questionable assumption behind redistribution as a rationale for controls is the notion that landlords are rich and tenants are poor. In Cairo, Kumasi and Bangalore, the income of tenants and landlords was compared; and, while the landlords' median income was higher in all three, there was significant overlap. In Cairo, for example, about 25% of tenants had incomes that were higher than the landlord median, and about 25% of landlords had incomes lower than the tenant median. There is no guarantee the transfers will only occur from high income landlords to low income tenants.

Rent control issues in formerly socialist countries are somewhat different. While construction is now more or less decontrolled, rents on public and private housing are still controlled. For example, in an unpublished presentation, Jan Brzeski explained that in Poland current proposals for rent reform are not based on letting rents seek market levels but on rents based on costs. Each year rents may be increased by a fraction of the difference between current rents and 6% of "replacement costs". Apart from the poor incentives inherent in cost-based systems, in practice these replacement costs are poorly estimated. Tolley (1991) provides a detailed analysis of cost-based rents in the Chinese context.

Generally, tenants in formally socialist countries have very strong security of tenure, although if a tenant dies, and there are no parties with rights of succession to the tenure, private property owners may now repossess the property, resetting rents to market or selling. State rental property was devolved to municipalities.



This has had serious repercussions for municipal finance, as rents do not cover maintenance costs.

Alternatives for decontrol are analyzed in Malpezzi and Ball (1991), following Arnott (1981). In addition to analysis of changes in controls per se, Malpezzi and Ball emphasize the need for collateral reform in land, finance and housing development regulations, for decontrol to work. Decontrol in an inelastic market (due for example to other distortions) will largely raise rents with little supply response, and lead to political pressure for reimposition of controls.

#### 4.3.3. *Is overregulation systematic?*

Much of the discussion on regulation so far in this chapter is in the context of *overregulation*. But regulation per se is neither good nor bad nonetheless, is there a systematic tendency to overregulation? Malpezzi (1990) argues the tendency to overregulate can be explained by (1) the failure to consider costs and benefits, from which follows (2) that every interested party adds his own small regulation which are never considered together (the adding up problem), (3) some overregulation results from a breakdown in exchange between regulators and the regulated (the Coase theorem can be applied here), and (4) regulations are an opportunity for rent seeking behavior/vested interests. Given such overregulation, understanding reduced efficiency is easy: they impose larger transactions costs than benefits. Inequities also follow: the poor are not usually particularly good at rent seeking behavior, and since regulations raise costs and restrict supply, it is the poor who are rationed out first. Regulations on lot size, for example, are not directly binding on the rich.

Other areas are clearly underregulated. The environment is one area in which a consensus is building that more needs to be done. What we have argued above is that our path is clear for *all* regulation: do the cost-benefit of specific regulations; eliminate or modify regulations whose benefits exceed costs; keep, enact or enforce the ones that make the grade. Get the *regulations* right. The superficial inconsistency of arguing for tighter environmental regulations disappears in this framework; even more importantly, we have a tool to discriminate between important and frivolous environmental issues, and policies.<sup>21</sup>

The lesson of a number of studies is that regulation per se is neither good nor bad; what matters is the cost and benefit of specific regulations under specific market conditions. Having said that, it is common for regulations to exceed their costs in developing countries and the former socialist economies as well as in developed countries. In Mexico, for example, the waiting period to obtain

<sup>21</sup> See Blinder (1987, Chapter 4).

a building permit is 8–10 months (Shidlo, 1994; Zearley, 1993). In Malaysia, Mexico, and Peru as well as Indonesia, research has documented literally 100 steps or more in the development or house purchase process. Each step increases risk, delays development or purchase, and is often associated with explicit and implicit cash transactions (De Soto, 1989).

A number of countries have recently taken steps to reduce the regulatory burden notably Mexico and Malaysia. Green et al. (1994) document the extraordinary rigid development regulations in Korea. Cook (1984) describes building codes and bye-laws in Africa with a series of recommendations for changes in codes that recognize the progressive step-by-step building methods used in the informal sector. It is often not recognized that given cost constraints as well as climate and materials availability, so-called traditional materials such as mud and wattle adobe or rammed earth are not always inferior materials. Generally, research in this area has argued for codes based on outcomes and performance rather than inputs, paralleling the developed country literature. For example, a well-constructed and maintained house of rammed earth (swish) in Ghana can return 100 years or more service.

## 5. Current issues and research

Reversing the normal order of such a discussion, we go from the specific to the general. First, several “live” housing issues are briefly outlined by geographical region. Because of the size of the countries and the scope of the issues they face, we discuss India and China separately. Next we briefly examine research by “modes of analysis”, with particular reference to recent research on comparative indicators. A more general research agenda concludes the chapter.

### 5.1. *Taxonomy of countries and stylized “issue triage”*

Current research on China focuses on how to reform prices and move from a command and control system to a market oriented system in land and housing markets. Other research points to the severe problems China faces managing a huge money-losing public stock as the private housing market takes off. China’s rapid urbanization (see Becker and Morrison, Chapter 43 of this volume) adds further urgency to the research agenda. Even more than in other countries, housing issues in China are tied up with a host of other micro- and macroreform issues, because of housing’s link to employment (through enterprise housing) and the fact that a large share of Chinese wages have traditionally been paid in-kind

rather than in cash (Tolley, 1991; Renaud and Bertaud, 1989; Hamer, 1996; Fong, 1989; Lim and Lee, 1993; Zhang, 1986).

Much recent research on India focuses on financial innovations such as replacing state directed credit with private and quasiprivate institutions like the Housing Finance and Development Corporation (HDFC). India also urgently needs additional research on the regulatory environment for land and housing. Some empirical research has been undertaken on rent control, but little has been done on land use regulation or the regulation framework for housing finance, apart from mainly descriptive analyses of the Urban Land Ceiling Act (Malpezzi and Tewari, 1991; Mehta and Mehta, 1989; Mohan, 1992; Munjee, (date); Buckley, 1990; Acharya, 1987).

Remarkably little research has been published for other south Asian markets, with the exception of Pakistan. Several papers have examined demand (Pasha and Ghaus, 1988) and land issues, namely, regulatory issues and the relative roles of public versus land development in Pakistan (Dowall, 1989b, 1991a; Pasha, 1992).

The research agenda in east Asia is somewhat different. Here the focus is on price bubbles and their effects, on households and the aggregate economy (Chang, 1990). Other studies examine the order of liberalization of housing and financial markets, and compares the "tigers" and "semitigers" with slower growth economies like the Philippines and not-yet-liberalizing economies such as Burma. (Bertaud and Malpezzi, 1994; Mayo, (date); Green et al., 1994; Kim K.-H., 1990a, b, 1991a, 1993). Events at the time of this 1997 writing suggest further research on the relationship between property lending, underwriting and development incentives, and the aggregate economy would prove particularly fruitful.

In central and eastern Europe, and the states of the former Soviet Union, research focuses on developing property rights, the distributional consequences of existing subsidies, and different methods of privatization. Issues of political economy loom large here, as does research relevant to the development of true financial intermediaries to replace conduit institutions, and the effects of broader reform dynamics on housing, and vice versa (Sillince, 1990; Hegedus and Tosics, 1991; Daniel, 1989; Renaud, 1995a, b; Alexeev, 1988a; Kosareva and Struyk, 1993; Jaffe, 1989).

Current issues in northern Africa and the mideast include the effects of small but heavily subsidized public housing programs and financial institutions that offer even less transparent subsidies to a selected few households (Tipple, 1993; Dehesh, 1994). Daniere (1992) examines tenure choice, and Struyk (1988b) vacancy rates. Research has been carried out on finance (Landeau, 1987) and the informal sector (Mayo et al., 1980; Payne, 1980; Yonder, 1987). Particularly sen-

sitive and important housing issues arise relative to the development of politically volatile parts of this region, e.g., Gaza and the West Bank.

Despite recent growth in countries such as Uganda, sub-Saharan Africa is still in many respects a region in economic disarray, and the housing market is no exception (Malpezzi and Sa-Aadu, 1996). Analysis of property rights, currently in flux in many countries, is particularly useful (Ault and Rutman, 1979; Asabere, 1981; Mabogunje, 1992; Besley, 1993). Other literature addresses the consequences of extremely disrupted and declining economies for the housing market (Amis and Lloyd, 1990). Other research focuses on "governance" issues, deep subsidies to small minorities (Awotona, 1987; Megbolugbe, 1983). Many papers make particular reference to South Africa, especially to apartheid's unwinding and the housing market ties to locational issues (Turok, 1994a, b; Brueckner, 1996; Mayo, 1993a, b; Hoek Smit, 1992).

Latin America and the Caribbean have spawned significant research on finance under extreme inflation. Chile's experience with housing under stabilization and structural adjustment is much studied (Morande, 1992; Renaud, 1988; Rojas and Greene, 1995). Squatting and tenure issues also come to the fore (Gilbert, 1983, 1989, 1993). One of the best integrated analyses of housing, land and labor markets in any developing or developed market remains the "City Study" of Bogota and Cali, Colombia (Ingram, 1984; Mohan, 1994).

## 5.2. *Modes of analysis/data sources*

Twenty years ago, many doubted that market-based models of housing markets had much applicability to developing countries. Furthermore, it has been increasingly clear that in many respects the "distance" between so-called developing countries at middle and low levels of development are often greater than the "distance" between particular pairs of developing countries. To give a simple concrete example, the *World Development Report* reports a US life expectancy of 77 years for the US, which is average for "high income countries". Jamaica, Costa Rica, Sri Lanka and Jordan are just a few of the developing countries with life expectancies over 70 years. Hong Kong, a country until recently often classified as developing, has a life expectancy of 78 years. Contrast these countries with Mozambique, Sierra Leone, Uganda, Senegal and a half dozen other countries with life expectancy under 50 years. One hardly has to develop the idea that the countries we label "transition" are similarly diverse. Among the countries of the former Soviet Union alone, per capita income ranges from around \$3000 in Russia to under \$500 in Azerbaijan and Tajikistan.

Thus, it is perhaps remarkable that this chapter documents that, in general, market models have been fruitfully applied to so many and diverse places. But the chapter also documents that widely divergent market conditions, institutions and constraints requires a tailoring of models to the particular case at hand. A number of examples now exist of solid case studies of markets, including analysis of household survey data. See especially the studies of Cairo by Mayo et al. (1982), of Indonesia by Struyk et al. (1990), of Bangkok by Angel et al. (1986), and by Dowall (1989a), and of Cameroon by the Government of Cameroon in 1990. References on data collection and study design include Jones and Ward (1993), Tipple and Willis (1991), Malpezzi et al. (1982) and Malpezzi (1984, 1988). Guides to regulatory research include the so-called Bertaud model, and the "Malaysia model" of incentives (Hannah et al., 1989; M&M, 1995), and rent control (Malpezzi and Rydell, 1986; Malpezzi et al., 1988). Examples of institutional and property rights research include Cifuentes et al. (1984), Harsman and Quigley (1991) and Page and Struyk (1990).

#### *5.2.1. Recent research on housing indicators*

During the past five years, the World Bank and the UN Center for Human Settlements (UN Centre for Human Settlements) has sponsored an ongoing housing indicators program. The aim of this program is to systematically collect more or less comparable data on housing and other urban development outcomes as wide a range of countries as possible. As of this writing, an initial round of data collection has been completed in some 51 countries, and is ongoing in a larger sample. In each country, a set of centrally specified data is collected by a local analyst including rudimentary data on house values, rents, their relationship to incomes, housing output, floor area, the prevalence of unauthorized housing, several housing finance indicators, and information on land development, infrastructure and the regulatory environment. See Angel (1996), M&M (1997b) and especially Angel and Mayo (1996).

#### *5.3. A general research agenda*

Many elements of the general research agenda are discussed in the preceding paragraphs, and to some extent within the body of the chapter. More research is needed on behavioral parameters and their determinants; particularly on the supply side. Additional research is needed on institutions and the role of governance. There is a large agenda related to property rights. Most of the research surveyed above is static; we need to learn more about dynamics, especially of reform.

Research on property rights remains paramount. Comparative analysis would be greatly facilitated by a careful cross-market categorization and indexation of the specific "sticks" that make up the bundle of property rights. How to measure property rights, how to price them, and their effects on the housing market and on related markets (especially finance) all need further study.

The developing and transition economy literature on tenure choice, tenure security and mobility, could profit by further application of models incorporating the relative user costs of owner-occupied and rental housing.

In housing demand, we clearly know much about the income elasticity of demand and its remarkable stability across countries and markets. Much less is known about the price elasticity of demand, particularly given the difficulty of decomposing expenditure into price and quantity. New research on cross-country demand could have a high payoff. So far, such work has focused primarily on developing countries (M&M). Much remains to be learned about demand in middle and even upper income countries. This is particularly important since many of the emerging markets in eastern Europe and the former Soviet Union fit into the "omitted middle" of little studied countries.

We reiterate Olsen's (1987) lament that so little empirical work has been done on housing supply. Certainly the initial efforts in M&M (1985) and the filtering research of Thompson (1985) and Ferchiou (1982) can be extended and updated.

Research on housing and the aggregate economy can be extended in several directions. For example, little is known systematically about the leading the relationship between housing and the business cycle in developing and former socialist countries.

The research agenda in finance is developing rapidly. Risk management perspectives and more rigorous institutional analyses head the list of current research topics. Studies such as Diamond and Lea's (1993) study of developed countries provide good models for future work in this area. Much of the world is shifting from a housing finance perspective, where special circuits are used to mobilize short-term household deposits for long-term mortgages, to a perspective where housing finance is integrated with broader capital markets. Research on the conditions under which such a shift occurs, and the concomitant costs and benefits, and changes in risk, are high on any agenda.

Research on land markets can be extended in several directions. We still know very little beyond assertions and results from simple theoretical models about such policies as India's Urban Land Ceiling Act.

Most research on developing country and transition economy housing markets has developed in isolation from analysis of broader real estate markets. In North America, and increasingly in other OECD economies, housing is more and more

examined as part of an overall real estate market which also includes commercial uses. This perspective has been largely neglected in the developing and transition country literature. Paradoxically, in developing countries the distinction between housing and commercial property is less distinct than in richer economies, since housing unit and place of work often overlap (ILO, 1995).

The industrial organization of the housing market remains a fertile area for research. Analysis of distributional as well as efficiency outcomes from privatization of public housing in socialist and other countries would remain high on any list. Despite the large literature on the production and consumption efficiencies of public housing vouchers and other programs in the US and a few other countries, remarkably little empirical research has been done in developing countries or the former socialist economies. Even more remains to be done on the analysis of off-budget expenditures, particularly subsidies in the tax and financial systems. Many of these countries have not yet built up large tax expenditures as has the US and other developed countries.

## References

- Aaron, H. (1975), *Who Pays the Property Tax?* (The Brookings Institute, DC).
- Aaron, H.J. and G.M. von Furstenberg (1971), "The inefficiency of transfers in kind: the case of housing assistance", *Western Economic Journal* 9:184–191.
- Acharya, B.P. (1987), "The urban land ceiling act: a critique of the 1976 legislation", *Habitat International* 11:39–51.
- Agrawal, N. (1988), "The economic effects of public housing in Australia", *The Economic Record* 254–267.
- Agarwala, R. (1983), *Price Distortions and Growth in Developing Countries*, World Bank Staff Working Paper No. 575.
- Ahmad, N. (1994), "A joint model of tenure choice and demand for housing in the city of Karachi", *Urban Studies* 31:1691–1706.
- Akbar, M. (1990), "Rate of return to investment in housing attributes", *Pakistan Journal of Applied Econ.* 9:71–92.
- Alchian, A.A. and H. Demsetz (1973), "The property rights paradigm", *Journal of Economic History* 33:16–27.
- Alexeev, M. (1988a), "Market vs. rationing: the case of Soviet housing", *Review of Economics and Statistics*.
- Alexeev, M. (1988b), "The effect of housing allocation on social inequality: a Soviet perspective", *Journal of Comparative Economics* 12:228–234.
- Alexeev, M. (1990), "Distribution of housing subsidies in the USSR, with some Soviet-Hungarian comparisons", *Comparative Economic Studies* 32:138–157.
- Amis, P. (1984), "Squatters and tenants: the commercialization of unauthorized housing in Nairobi", *World Development* 12:87–96.
- Amis, P. and P. Lloyd (1990), *Housing Africa's Poor* (Manchester University Press, UK).
- Anas, A., K.S. Lee and M. Murray (1996), *Infrastructure Bottlenecks, Private Provision, and Industrial Productivity: A Study of Indonesian and Thai Cities*, World Bank, Policy Research Working Paper No. 1603.
- Andrusz, G.D. (1990), "Housing policy in the Soviet Union", in: J.A.A. Sillince, ed., *Housing Policies in Eastern Europe and the Soviet Union* (Routledge, New York).
- Angel, S. and S. Chuated (1990), "The down-market trend in housing production in Bangkok, 1980–87", *Third World Planning Review* 12:1–20.

- Angel, S. and S.K. Mayo (1996), Enabling Policies and Their Effects on Housing Sector Performance: A Global Comparison. Paper presented to the Habitat II Conference, Istanbul, Turkey.
- Angel, S. et al. (1986), The Land and Housing Markets of Bangkok: Strategies for Public Sector Participation, PADCO, Thailand National Housing Authority, and ADB.
- Annez, P. and W.C. Wheaton (1984), "Economic development and the housing sector: a cross-national model", *Economic Development and Cultural Change* 32:749–746.
- Antwi, A. (1995), An Economic Perspective of Land Policy Implementation in a Developing Economy: The Case of Accra (Royal Institute of Chartered Surveyors, Ghana).
- Archer, R.W. (1989), An Outline of Urban Land Policy for the Developing Countries of Asia (Asian Institute of Technology, Bangkok).
- Arimah, B.C. (1992a), "An empirical analysis of the demand for housing attributes in a Third World City", *Land Economics* 68:366–379.
- Arimah, B.C. (1992b), "Hedonic prices and the demand for housing attributes in a Third World city: the case of Ibadan, Nigeria", *Urban Studies* 29:639–651.
- Arimah, B.C. (1994), "The income elasticity of demand in a sub-Saharan African housing market: evidence from Ibadan, Nigeria", *Environment and Planning A* 26:107–119.
- Arnott, R.J. (1987), "Economic theory and housing", in: E.S. Mills, ed., *Handbook of Regional and Urban Economics*, North Holland, V.2.
- Arnott, R. and N. Johnston (1981), *Rent Control and Options for Decontrol in Ontario* (Ontario Economic Council, Toronto).
- Asabere, P. (1981a), "The determinants of land values in an African city: the case of Accra, Ghana", *Land Economics*.
- Asabere, P. (1981b), "The price of land in a chiefdom: empirical evidence on a traditional African city, Kumasi", *Journal of Regional Science*: 529–539.
- Asabere, P.K. and K. Owusu-Banahene (1983), "Population density function for Ghanaian (African) cities: an empirical note", *Journal of Urban Economics* 14:370–379.
- Asabere, K., C.F. Sirmans and P.F. Colwell (1982), "The intensity of residential land use in Accra, Ghana", *Journal of Urban Economics* 11:190–198.
- Ashenfelter, O. and D. Genesove (1992), "Testing for price anomalies in real estate auctions", *The American Economic Review* 82:501–505.
- Assadian, A. and J. Ondrich (1993), "Residential location, housing demand and labor supply decisions of one- and two-earner households: the case of Bogota, Columbia", *Urban Studies* 30:73–86.
- Ault, D.E. and G.L. Rutman (1979), "The development of individual rights to property in tribal Africa", *Journal of Law and Economics* 22:163–182.
- Awotona, A. (1987), "Housing policy in Nigeria—government policies for housing Nigeria's urban poor and the working class: laudable promises, great expectations, colossal failure", *Habitat International* 11:89–103.
- Baer, W.C. (1991), "Filtering and third-world housing policy", *Third World Planning Review* 13:69–82.
- Baer, W. and C. Koo (1994), "Housing turnover in developing nations: the case of Seoul", *Journal of Planning Education and Research* 13:104–118.
- Baharoglu, D., L.M. Hannah and S. Malpezzi (1997), *Getting Housing Incentives Right in Turkey*, University of Wisconsin, Center for Urban Land Economics Research Working Paper.
- Baken, R.-J. and J. Van der Linden (1993), "Getting the incentives right: banking on the formal private sector—a critique of World Bank thinking on low-income housing delivery in third world cities", *Third World Planning Review* 15:1–22.
- Bariandiaran, E. and E. Mills (1983), *Macroeconomic Analysis of the Chilean Housing Program*, Mimeo.
- Barlow, J. and A. King (1992), "The state, the market, and competitive strategy: the house building industry in the United Kingdom, France, and Sweden", *Environment and Planning A (UK)* 24:3811–400.
- Barrett, R. (1983), "A brief review of World Bank experience in traffic management", World Bank.
- Barro, R.J. and X. Sala-i-Martin (1995), *Economic Growth* (McGraw Hill, New York).
- Barry, C., G. Casteneda and J. Lipscomb (1994), "The structure of mortgage markets in Mexico and prospects for their securitization", *Journal of Housing Research* 5:173–204.
- Bartone, C. (1990), "Water quality and urbanization in Latin America", *Water International* 15:3–14.
- Bartone, C. (1991), "Environmental challenge in third world cities", *APA Journal*: 411–415.



- Bater, J.H. (1994), "Housing developments in Moscow in the 1960s", *Post-Soviet Geography* 35:309–328.
- Behbehani, R., V. Shetty Pendakur and A. Armstrong-Wright (1984), *Singapore Area Licensing Scheme: A Review of the Impact* (Water Supply and Urban Development Department, World Bank).
- Belkina, T. (1994), "Housing statistics and the condition of the housing sector", *Problems of Economics Transition* 37:56–71.
- Benninger, C. (1986), *Formal and Semi-formal Strategies of Land Acquisition*. Poona, India (Centre for Development Studies).
- Bertaud, A. (1992), "The impact of land-use regulations on land supply, consumption and price", *Regional Development Dialogue* 13:35–40.
- Bertaud, A. (1997), *The Spatial Distribution of Population in Cracow: A City's Structure Under the Conflicting Influences of Land Markets, Zoning Regulations and its Socialist Past*. Paper presented to the Lincoln Institute of Land Policy Conference on Land Prices, Land Information Systems, and the Market for Land Information (Cambridge, Mass.).
- Bertaud, A. and S. Malpezzi (1994), *Measuring the Costs and Benefits of Urban Land Use Regulation: A Simple Model with an Application to Malaysia* (Center for Urban Land Economics Research, University of Wisconsin).
- Bertaud, A. and B. Renaud (1994), *Cities Without Land Markets: Lessons of the Failed Socialist Experiment*, World Bank Discussion Paper No. 227.
- Bertaud, A. and B. Renaud. (1997), "Socialist cities without land markets", *Journal of Urban Economics* 41:137–151.
- Bertaud, A., M.-A. Bertaud and J. Wright (1988), *Efficiency in Land Use and Infrastructure Design: An Application of the Bertaud Model*, World Bank, INU Discussion Paper.
- Bertaud, M.-A. and D. Lucius (1989), *Land Use, Building Codes, and Infrastructure Standards as Barriers to Affordable Housing in Developing Countries* (World Bank Urban Development Department).
- Besley, T. (1993), *Property Rights and Investment Incentives: Theory and Microevidence from Ghana* (Research Program in Development Studies, Princeton University).
- Besley, T. (1995), "Finance, credit and insurance", in: J. Behrman and T.N. Srinivasan, eds., *Handbook of Development Economics*, vol. 3(A) (Elsevier).
- Betancur, J.J. (1987), "Spontaneous settlement housing in Latin America: a critical examination", *Environment and Behavior* 19:286–310.
- Bikhchandri, S. (1986), *Market Games With Few Traders*, Ph.D. Thesis, Stanford University School of Business.
- Binswanger, H.P. and K. Deininger (1993), "South African land policy: the legacy of history and current options", *World Development* 21:1451–1475.
- Blaesser, B.W. (1981), *Clandestine Development in Colombia* (U.S. Agency for International Development).
- Blinder, A. (1987), *Hard Heads and Soft Hearts* (Excellent chapter on the environment, Addison Wesley).
- Boehm, T.P. (1981), "Tenure choice and expected mobility: a synthesis", *Journal of Urban Economics* 10.
- Boeat, M. (1985), *National Housing Finance Systems: A Comparative Study*. London: Croom Helm.
- Briscoe, J. (1984), "Water supply and health in developing countries: selective primary care revisited", *American Journal of Public Health*: 1009–1013.
- Bromley, D.W. (1989), "Property relations and economic development: the other land reform", *World Development* 17:867–877.
- Browder, J.O. and J.R. Bohland (1995), "Patterns of development on the metropolitan fringe: urban fringe expansion in Bangkok, Jakarta and Santiago", *Journal of the American Planning Association* 61:310–327.
- Browder, O.L. (1984), *Basic Property Law*, Fourth Ed. (West Publishing, St. Paul).
- Brueckner, J.K. (1996), "Welfare gains from removing land-use distortions: an analysis of urban change in post-apartheid South Africa", *Journal of Regional Science* 36:91–109.
- Buckley, R.M. (1985), *Pricing Federal Credit Programs: An Application of the Option Pricing Perspective to the AID Housing Guaranty Program*, Urban Institute Working Paper.
- Buckley, R.M. (1990), "Housing finance in India", Mimeo (World Bank).
- Buckley, R.M. (1991), "The measurement and targeting of housing finance subsidies: the case of Argentina", *Public Finance* 46:355–372.

- Buckley, R.M. (1994), "Housing finance in developing countries: the role of credible contracts", *Economic Development and Cultural Change* 42:317–332.
- Buckley, R.M. (1996), *Housing Finance in Developing Countries* (Oxford).
- Buckley, R.M. and A. Dokeniya (1989), *Inflation, Monetary Balances and the Aggregate Production Function*, World Bank, INU Discussion Paper No. 55.
- Buckley, R.M. and E.N. Gurenko (1995), *Housing Finance in Reforming Economies: Measuring Macro Constraints on Moving to Market* (World Bank).
- Buckley, R.M. and E.N. Gurenko (1997), "Housing and income distribution in Russia: Zhivago's legacy", *World Bank Research Observer* 12:19–32.
- Buckley, R.M. and R. Madhasudhan (1984), *The Macroeconomics of Housing's Role in the Economy: An International Analysis*. Paper presented to the American Real Estate and Urban Economics Association.
- Buckley, R.M. and S.K. Mayo (1989), "Housing policy in developing countries: evaluating the macroeconomic impacts", *Review of Regional and Development Studies* 1.
- Buckley, R.M. and B. Renaud (1988), *Urban Finance in Post-Depression Latin America: The Solvency Status of Urban Borrowers*, INU Discussion Paper No. 22.
- Buckley, R.M. and R.J. Struyk (1985), *An Economic Analysis of AID's Housing Guaranty Program*. Urban Institute Working Paper.
- Buckley, R.M., B. Lipman and T. Persaud (1993a), "Mortgage design under inflation and real wage uncertainty: the use of dual indexed instruments", *World Development* 21:455–464.
- Buckley, R.M., P.H. Hendershott and K.E. Villani (1993b), *Ponxies to Zombies: Housing Finance in Previously Centrally Planned Economies* (World Bank).
- Buckley, R.M., Z. Daniel and M. Thalwitz (1993c), *The Welfare Cost and Transparency of Housing Policy in Socialist Economies: The Hungarian Experience* (Urban Development Division, World Bank).
- Buckley, R.M., P.H. Hendershott and K.E. Villani (1995), "Rapid housing privatization in reforming economies: pay the special dividend now", *Journal of Real Estate Finance and Economics* 10:63–80.
- Burns, L.S. and L. Grebler (1976), "Resource Allocation to Housing Investment: A Comparative International Study", *Economic Development and Cultural Change* 25:95–121.
- Burns, L.S. and L. Grebler (1977), *The Housing of Nations: Advice and Policy in a Comparative Framework* (Macmillan, London).
- Cairncross, S. and J. Kinnear (1988), *Measurement of the Elasticity of Domestic Water Demand: A Study of Water Vendors and their Clients*, in *Urban Sudan* (London School of Hygiene and Tropical Medicine).
- Cameroon, Republic of (1990), *Evaluation of Real Housing Needs in Cameroon* (Ministry of Town Planning and Housing, Yaounde, Cameroon).
- Chang, C.-O. and C.W.R. Ward (1993), *Forward Pricing and the Housing Market: The Pre-Sales Housing System in Taiwan*. Paper presented to the American Real Estate and Urban Economics Association International Conference, Mystic, CT.
- Chang, C.-O. and P.P.Y. Lai (1993), *Indicators of Real Estate Cycles in Taiwan*. Working Paper, National Chengchi University.
- Chang, C.-O. and P. Linneman (1990), "Forecasting housing investment in developing countries", *Growth and Change* 21:59–72.
- Chang, C.-O., C.-C. Lin and S.C.L. Farr (1994), *A Study of Real Estate Transaction Price in Taipei Metropolitan Area* (National Chengchi University).
- Charemza, W. and R. Quandt (1990), "Dual housing markets in a centrally planned economy", *Kyklos* 43:411–436.
- Cheung, Y.-L., S.-K. Tsang and S.-C. Mak (1995), "The causal relationships between residential property prices and rentals in Hong Kong: 1982–1991", *Journal of Real Estate Finance and Economics* 10:23–36.
- Chiquier, L. and B. Renaud (1992), *Alternative Mortgage Instruments in Distorted Housing Systems: How Useful is the Dual Rate Adjustable Mortgage?* (EMTIN Technical Department, World Bank).
- Choko, M.H. and C. Guangting, eds., (1994), *China: The Challenge of Urban Housing* (Meridien, Laval, Quebec).
- Chomchan, S. and S. Silapacharanan (1990), *Land Use Development in Bangkok and Major Cities: Directions and Problems*. Thailand Development Research Institute Foundation, Background Report No. 5-1.

- Chou, W.L. and Y.C. Shih (1995), "Hong Kong housing markets: overview, tenure choice, and housing demand", *Journal of Real Estate Finance and Economics* 10:7–22.
- Chow, Y.-F. and N. Wong (1997), *Property Value, User Cost, and Rent: An Investigation of the Residential Property Market in Hong Kong* (Chinese University of Hong Kong).
- Ciechoncinska, M. (1990), "The social image of urban housing—dreams and realities: the case of Poland", *Journal of Urban Affairs* 12:157–172.
- Cifuentes V., J.R. Stevenson and R.L. Paredes (1984), *Housing and Urban Development in Bogota: The Institutional Backdrop* (World Bank, Washington).
- Clapham, D. (1995), "Privatization and the east European housing model", *Urban Studies* 32:679–694.
- Coase, R.H. (1960), "The problem of social cost", *Journal of Law and Economics* 3:1–44.
- Cook, D.B. (1984), "Building codes and regulations in low income settlements", in: P.J. Richards and A.M. Thomson, eds., *The Urban Poor: The Provision of Communal Services* (Croom Helm).
- Daniel, Z. (1983), "Public housing, personal income and central redistribution in Hungary", *Acta Oeconomica* 31:87–104.
- Daniel, Z. (1985), "The effects of housing allocation on social inequality in Hungary", *Journal of Comparative Economics*.
- Daniel, Z. (1989), "Housing demand in a shortage economy: results of a Hungarian survey", *Acta Oeconomica* 41:157–179.
- Daniel, Z. and G. Partos (1989), *Housing Reforms in Hungary: History and Lessons of Experience*. Paper presented to the Joint Seminar on the Urban Housing Reforms in China, Beijing.
- Daniel, Z. and A. Semjen (1987), "Housing shortage and rents: the Hungarian experience", *Economics of Planning*.
- Daniell, J. and R. Struyk (1994), "Housing privatisation in Moscow—who privatize and why", *International Journal of Urban and Regional Research* 18:510–526.
- Daniere, A.G. (1992), "Determinants of tenure choice in the Third World: an empirical study of Cairo and Manila", *Journal of Housing Economics* 2.
- Daniere, A.G. (1994), "Estimating willingness to pay for housing attributes—an application to Cairo and Manila", *Regional Science and Urban Economics* 26:577–600.
- Deaton, A.S. (1984), *The Demand for Personal Travel in Developing Countries: Pricing and Policy Analysis*. Paper presented to the Transportation Research Board, Washington, D.C.
- De Leeuw, F. (1971), "The demand for housing: a review of the cross-section evidence", *Review of Economics and Statistics* 53:1–10.
- De Leeuw, F. and L. Ozanne (1981), "Housing", in: H. Aaron and J. Pechman, eds., *How Taxes Affect Economic Behavior* (The Brookings Institute, DC).
- De Soto, H. (1989), *The Other Path: The Invisible Revolution in the Third World* (Harper and Row, New York).
- Dehesh, A. (1994), "Developmental instability in Iran: its impact on housing since 1962", *Cities* 11:409–424.
- Demsetz, H. (1967), "Towards a theory of property rights", *American Economic Review* 57:347–373.
- Dhareshwar, A. (1987), *Transportation Sector Bibliography*. World Bank Transportation Department Report TRP8.
- Diamond, D.B. Jr. (1978), "A note on inflation and relative tenure prices", *Journal of the American Real Estate and Urban Economics Association* 6:438–450.
- Diamond, D.B. Jr. (1993), "Restructuring housing finance in Hungary", *Housing Finance International*, December, pp. 10–42.
- Diamond, D.B. Jr. and M.J. Lea (1992), "The decline of special circuits in developed country housing finance", *Housing Policy Debate* 3:747–778.
- Diamond, D.B. Jr. and M.J. Lea (1993), "Housing finance in developed countries: an international comparison of efficiency", in B. Turner and C. Whitehead, eds., *Housing Finance in the 1990s* (Gavle, Sweden: The National Swedish Institute for Building Research).
- DiPasquale, D. and W.C. Wheaton (1992), "The markets for real estate assets and space: a conceptual framework", *Journal of the American real Estate and Urban Economics Association* 20:181–198.
- Dorner, P. (1992), *Latin American Land Reforms in Theory and Practice* (University of Wisconsin Press).
- Dowall, D. (1988), "The land and housing market assessment: an important tool", *Habitat International* 12:135–149.

- Dowall, D. (1989a), "Bangkok: a profile of an efficiently performing housing market", *Urban Studies* 327-339.
- Dowall, D. (1989b), *Karachi Land and Housing Market Study* (UNCHS and PADCO, Karachi Development Authority).
- Dowall, D. (1991a), "Comparing Karachi's informal and formal housing delivery systems", *Cities* 8:217-227.
- Dowall, D. (1991b), *The Land Market Assessment: A New Tool for Urban Management*. Jointly published by the United Nations Development Program, The World Bank, and the United Nations Centre for Human Settlements (Habitat).
- Dowall, D.E. (1991c), "A second look at the Bangkok land and housing market", *Urban Studies* 29:25-37.
- Dowall, D.E. (1991d), "The Karachi development authority: failing to get the prices right", *Land Economics* 67:463-471.
- Dowall, D. (1992), "Benefits of minimal land-use regulations in developing countries", *Cato Journal* 12:413-423.
- Dowall, D. (1993), "Establishing urban land markets in the People's Republic of China", *Journal of The American Planning Association* 59:182-192.
- Dowall, D.E. (1997), *A Retrospective Look at the Land Market Assessment*. Paper presented to the Lincoln Institute of Land Policy, Cambridge, November.
- Dowall, D.E. and M. Leaf. (1991), "The price of land for housing in Jakarta", *Urban Studies* 28:707-722.
- Eberts, Chapter 38 this volume.
- Edwards, M. (1982), "Cities of tenants: renting among the urban poor in Latin America", in: A. Gilbert et al., eds., *Urbanization in Contemporary Latin America* (Wiley, New York).
- Edwards, M. (1990), "Rental housing and the urban poor: Africa and Latin America compared", in: A. Phillip and P. Lloyd, eds., *Housing Africa's Poor* (Manchester University Press, Manchester).
- Erbach, G.E., K. Moges and J.K. Bachmann (1996), *Cost Benefit Analysis of Representative Housing Investents* (Ministry of Works and Urban Development, Government of Ethiopia).
- European Conference of Ministers of Transport (1995), *Transport Infrastructure in Central and Eastern European Countries* (OECD, Paris).
- Evans, A.W. (Chapter 42, this volume).
- Evers, H. (1976), "Urban expansion and land ownership in underdeveloped societies", in: J. Walton and L. Masotti, eds., *The City in Comparative Perspective* (Sage).
- Fannie Mae (1991), *Housing Finance Arrangements: A Comparative Analysis*. Conference Proceedings.
- Fannie Mae (1992), *Housing Finance for Sustainable Development*. Conference Proceedings.
- Farvaque, C. and P. McAuslan (1992), *Urban Land Policies and Institutions in Developing Countries*. World Bank/UNDP Urban Management Program Paper UMP-5.
- Ferchiou, R. (1982), "The indirect effects of new housing construction in developing countries", *Urban Studies* 19:167-176.
- Ferguson, B., J. Rubenstein and V. Domingez Vial (1996), "The design of direct demand subsidies for housing in Latin America", *Review of Regional and Urban Studies* 8:202-219.
- Fitzwilliam Memorandum: The (1991), *Land Value Changes and the Impact of Urban Policy upon Land Valorisation Processes in Developing Countries*. Conclusions of an International Research Workshop at Fitzwilliam College, Cambridge; reprinted in *International Journal of Urban and Regional Research* 15:623-628.
- Follain, J.R. and E. Jimenez (1985a), "Estimating the demand for housing characteristics: a survey and critique", *Regional Science and Urban Economics* 15.
- Follain, J.R. and E. Jimenez (1985b), "The demand for housing characteristics in developing countries", *Urban Studies* 22.
- Follain, J.R. and S. Malpezzi (1980), *Dissecting Housing Value and Rent* (Urban Institute).
- Follain, J.R., G.-C. Lim and B. Renaud (1980), "The demand for housing in developing countries: the case of Korea", *Journal of Urban Economics* 7.
- Follain, J.R., G.-C. Lim and B. Renaud (1982), "Housing crowding in developing countries and willingness to pay for additional space: the case of Korea", *Journal of Development Economics* 11:249-272.
- Follain, J.R., E. Jimenez, S. Malpezzi and S.K. Mayo (1983), "Housing in Korea: recent trends and recurrent problems", in Gill-Chin Lim, ed., *Urban Planning and Spatial Strategies in Rapidly Changing Societies* (Consortium on Urban and Regional Policies in Developing Countries, Princeton).

- Fong, P.K.W. (1989), "Housing reforms in China", *Habitat International* 13:29–41.
- Foo, T.S. (1992), "The provision of low cost housing by private sector developers in Bangkok, 1987–1989—the result of an efficient market?", *Urban Studies* 29:1137–1146.
- French, R.A. and F.E.I. Hamilton, eds., (1979), *The Socialist City: Spatial Structure and Urban Policy* (John Wiley, Chichester, UK).
- Friedman, J., E. Jimenez and S.K. Mayo (1988), "The demand for tenure security in developing countries", *Journal of Urban Economics* 29:185–198.
- Friedman, M. (1975), *Contents and Consequences of Real Property*. Third ed. (Practicing Law Institute, New York).
- Frimpong-Ansah, J.H. (1992), *The Vampire State in Africa: The Political Economy of Decline in Ghana* (Africa World Press).
- Geisse, G. and F. Sabatini (1982), "Urban land market studies in Latin America: issues and methodology", in: M. Cullen and S. Woolrey, eds., *World Congress on Land Policy*, (1980) (Lexington Books).
- Ghosh, P. and R. Mohan (1983), *Housing in the National Accounts: A Critical Review of Concepts and Sources*. Urban Development Task Force Paper No. S.7, Housing and Urban Development Division, Planning Commission.
- Gibb, K. (1992), "Bidding, auctions and house purchase", *Environment and Planning A* 24:853–860.
- Gilbert, A. (1983), "The tenants of self help housing: choice and constraint in the housing markets of developing countries", *Development and Change* 14.
- Gilbert, A. (1989), *Housing and Land in Urban Mexico* (Center for U.S.–Mexican Studies, University College, San Diego).
- Gilbert, A. (1992), "Third world cities: housing, infrastructure and servicing", *Urban Studies* 29:435–460.
- Gilbert, A. and A. Varley (1990), "The Mexican landlord: rental housing in Guadalajara and Puebla", *Urban Studies* 27:23–44.
- Gilbert, A. and A. Varley (1991), *Landlord and Tenant: Housing the Poor in Urban Mexico* (Routledge).
- Gilbert, A. and P. Ward (1985), *Housing, the State and the Poor* (Cambridge University Press, Cambridge).
- Gilbert, A., O.O. Camacho, R. Coulomb and A. Necochea (1993), *In Search of a Home: Rental and Shared Housing in Latin America* (University of Arizona Press, Tucson).
- Goldsmith, R.W. (1985), *Comparative National Balance Sheets: A Study of Twenty Countries, 1688–1978* (University of Chicago Press, Cambridge).
- Gómez-Ibáñez, J. (Chapter 46, this volume).
- Goodman, J.L. Jr. (1976), "Housing consumption disequilibrium and local residential mobility", *Environment and Planning A* 8:855–874.
- Government of India (1988a), *National Housing Policy* (Ministry of Urban Development, New Delhi).
- Government of India (1988b), *Report of the National Commission on Urbanisation* (New Delhi).
- Green, R.K. and S. Malpezzi (1997), *A Primer on U.S. Housing Markets and Policies*. University of Wisconsin, Center for Urban Land Economics Research Working Paper. Forthcoming as a monograph of the American Real Estate and Urban Economics Association.
- Green, R.K. and M.J. White (in press), "Measuring the benefits of homeownership: benefits to children", *Journal of Urban Economics*.
- Green, R., S. Malpezzi and K. Vandell (1994), "Urban regulations and the price of land and housing in Korea", *Journal of Housing Economics*.
- Grootaert, C. and J.-L. Dubois (1988), "Tenancy choice and the demand for rental housing in the cities of the Ivory Coast", *Journal of Urban Economics* 24:95–112.
- Gross, D.J. (1988), "Estimating willingness to pay for housing characteristics: an application of the Ellickson bid-rent model", *Journal of Urban Economics* 24:95–112.
- Guarda, G.C. (1993), "Housing finance in Albania", *Housing Finance International*, December 1993, pp. 5–42.
- Gyourko, J. (Chapter 37, this volume).
- Gyourko, J. and K. Jaehye Han (1989), "Housing wealth, housing finance, and tenure in Korea", *Regional Science and Urban Economics* 19:211–234.
- Haddad, E. (1982), "Report on urban land market research in Sao Paulo, Brazil", in: M. Cullen and S. Woolrey, eds., *World Congress on Land Policy* (1980) (Lexington Books).

- Hall, D., ed. (1993), *Transport and Economic Development in the New Central and Eastern Europe* (Belhaven Press, London and Halsted Press, New York).
- Hamer, A.M. (1996), *The World Bank's Involvement in Urban Housing Reforms in China*. Paper presented to the American Real Estate and Urban Economics Association International Conference, Orlando.
- Hamer, A.M. et al. (1993), *China: Urban Land Management in an Emerging Market Economy* (World Bank, Washington, DC).
- Hannah, L., A. Bertaud, S. Malpezzi and S. Mayo (1989), *Malaysia: The Housing Sector; Getting the Incentives Right*. World Bank Sector Report No. 7292-MA.
- Hannah, L., K.-H. Kim and E.S. Mills (1993), "Land use controls and housing prices in Korea", *Urban Studies* 30:147-156.
- Hanushek, E. and J. Quigley (1978), "An explicit model of intra-metropolitan mobility", *Land Economics* 411-429.
- Hardoy, J.E. and D. Satterthwaite (1989), *Squatter Citizen: Life in the Urban Third World* (Earthscan, London).
- Hardoy, J., S. Cairncross and D. Satterthwaite, eds. (1990), *The Poor Die Young: Housing and Health in Third World Cities* (Earthscan Publications, London).
- Harsman, B. and J.M. Quigley (1991), *Housing Markets and Housing Institutions: An International Comparison* (Kluwer Academic Press, Dordrecht).
- Hegedus, J. and I. Tosics (1991), "Filtering in socialist housing systems—results of vacancy chain surveys in Hungary", *Urban Geography* 1:1-18.
- Hegedus, J. and I. Tosics (1994), "The poor, the rich and the transformation of urban space", *Urban Studies* 31:989-993.
- Hegedus, J., K. Mark, R. Struyk and I. Tosics (1992), *The Privatization Dilemma in Budapest's Public Rental Housing Sector*. Paper presented to the American Real Estate and Urban Economics Association international meeting.
- Hegedus, J., K. Mark, R. Struyk and I. Tosics (1994), "Tenant satisfaction with public housing management: Budapest in transition", *Housing Studies* 9:315-328.
- Hinds, M. (1990), *Issues in the Introduction of Market Forces in Eastern European Socialist Economies*. World Bank: Europe, Middle East and North Africa Region Internal Discussion Paper No. IDP-0057.
- Hoek-Smit, M. (1992), *Housing Supply Systems and Housing Outcomes in Southern Africa*. Paper prepared for the American Real Estate and Urban Economics Association/USC International Real Estate Conference, Los Angeles.
- Hoffman, M., B. Haupt and R.J. Struyk (1991), *International Housing Markets: What We Know; What We Need to Know*. Fannie Mae Working Paper.
- Howe, H. and P. Musgrove (1977), "An analysis of ECIEL budget data for Bogota, Caracas, Guyaquil and Lima", in: C. Lluch et al., eds., *Patterns in Household Demand and Savings* (Oxford University Press, Oxford).
- Howenstine, E.J. (1957), "Appraising the role of housing in economic development", *International Labor Review* 75.
- Hoy, M. and E. Jimenez (1991), "Squatter rights and urban development: an economic perspective", *Economica* 58:79-92.
- Ihlanfeldt, K.R. (1981), "An empirical investigation of alternative approaches to estimating equilibrium demand for housing", *Journal of Urban Economics* 9:97-105.
- International Labour Office (1995), *Shelter Provision and Employment Generation*. Geneva.
- Ingram, G.K. (1984), *Housing Demand in the Developing Metropolis: Estimates from Bogota and Cali, Colombia*. Staff Working Paper No. 633.
- Ingram, G.K. and A. Carroll (1981), "The spatial structure of Latin American cities", *Journal of Urban Economics* 9:257-273.
- International Journal of Urban and Regional Research (1987), *Special Volume on Eastern Europe* 11.
- Ivanicka, K., M. Zubkova, E. Sindlerova and D. Spirkova (1996), *Development of Housing Finance in Visegrad Countries*. Paper presented to the American Real Estate and Urban Economics Association International Conference, Orlando.
- Jaffe, A.J. (1989), "Concepts of property, theories of housing, and the choice of housing policy", *Netherlands Journal of Housing and Environmental Research* 4.

- Jaffe, A.J. (1989), Property Rights and Market Behavior in Eastern European Housing Reforms. Paper presented to the January (1993) meeting of American Real Estate and Urban Economics Association, Anaheim, CA.
- Jaffe, A.J. and D. Louziotis, Jr. (1996), "Property rights and economic efficiency: a survey of institutional factors", *Journal of Real Estate Literature* 4:137-159.
- Jimenez, E. (1982a), "The economics of self help housing: theory and some evidence from a developing country", *Journal of Urban Economics* 11:205-228.
- Jimenez, E. (1982b), "The value of squatter dwellings in developing countries", *Economic Development and Cultural Change* 30.
- Jimenez, E. (1984), "Tenure security and urban squatting", *Review of Economics and Statistics* 66:556-567.
- Jimenez, E. (1985), "Urban squatting and community organization in developing countries", *Journal of Public Economics* 27:69-92.
- Jimenez, E. (1987a), *Pricing Policy in the Social Sectors: Cost Recovery for Education and Health in Developing Countries* (Johns Hopkins University Press).
- Jimenez, E. (1987b), "The magnitude and determinants of home improvement in self-help housing: Manila's Tondo project", *Land Economics* 70-83.
- Jimenez, E and D. Keare (1984), "Housing consumption and permanent income in developing countries: estimates from panel data in El Salvador", *Journal of Urban Economics* 15:172-194.
- Johnson, T.E. Jr. (1985), *A Study of Upwards Filtering of Housing Stock as a Consequence of Informal Settlement Upgrading in Developing Countries* (Graduate School of Design, Harvard University).
- Johnson, T.E. Jr. (1987), "Upward filtering of the housing stock", *Habitat International* 11:173-190.
- Jones, G. and P. Ward, eds., (1994), *Methodology for Land Market and Housing Analysis* (University College Press, London).
- Kaganova, O.Z. (1994), *On the Program of the Land Policy and Reform of Taxation in the Cities of Russia Proposed by Adherents of Henry George's Ideas*. Discussion Paper.
- Kalbermatten, J. et al. (1980), *Appropriate Technology for Water Supply and Sanitation: A Summary of Technical and Economic Options* (World Bank).
- Kalbermatten, J., DeAnne Julius, D. Mara and C. Gunnerson (1982), *Appropriate Sanitation Alternatives: A Technical and Economic Appraisal* (Johns Hopkins University Press).
- Karadimov, N. (1992), *The Reorientation of Urban Development and Housing Policy in Central and East-European Countries in their Transition to a Market Economy: General and Specific Tendencies and Phenomena of the Experience of the Republic of Bulgaria* (Ministry of Regional Development, Housing Policy and Construction, Sofia).
- Kasongo, B.A. and A.G. Tipple (1990), "An analysis of policy towards squatters in Kitwe, Zambia", *Third World Planning Review* 12:147-165.
- Katsura, H.M. (1984), *Economic Effects of Housing Investment*. Urban Institute Contract Report.
- Katsura, H.M. and R.J. Struyk (1991), "Selling eastern Europe's social housing stock: proceed with caution", *Housing Policy Debate* 2:1251-1271.
- Katzman, M. (1977), "Income and price elasticities of demand for water in developing countries", *Water Resources Bulletin* 13:47-55.
- Kaufman, D. and J. Quigley (1987), "The consumption benefits of investment in infrastructure: the evaluation of sites and services programs in underdeveloped countries", *Journal of Development Economics* 25:263-284.
- Kessides, C. (1993), *The Contributions of Infrastructure to Economic Development*. World Bank Discussion Paper No. 213.
- Kiamba, M. (1989), "The introduction and evolution of private landed property in Kenya", *Development and Change* 20:121-148.
- Kidokoro, T. (1992), "Development control systems for housing development in southeast Asian cities", *Regional Development Dialogue* 12:64-87.
- Kim, J. (1995), "Demand for rental housing in Korea with some estimation issues", *Journal of Urban Planning and Development-Asce* 121:57-74.
- Kim, J.-H. (1990), "Korean housing policies: review and future directions", in: *Hyundai Research Institute, Proceedings of (the) International Housing Conference on Korean Housing Policies*, Seoul.

- Kim, J.-H. (1991), Housing Program Evaluation Using the Present Value Model: A Korean Experience. Paper presented to the World Bank seminar on Korean Housing Markets and Policy.
- Kim, K.-H. (1990a), "An analysis of inefficiency due to inadequate mortgage financing: the case of Seoul, Korea", *Journal of Urban Economics* 28:371–390.
- Kim, K.-H. (1990b), "Housing finance and housing related taxes in Korea", in Hyundai Research Institute, *Proceedings of (the) International Housing Conference on Korean Housing Policies*, Seoul.
- Kim, K.-H. (1993), "Housing prices, affordability and government policy in Korea", *Journal of Real Estate Finance and Economics* 6:55–72.
- Kim, K.-H. (1994), *Financing Shelter and Urban Development: Towards Habitat II* (UN Centre for Human Settlements, Nairobi).
- Kim, K.-H. and K.-Y. Kim (1992), Policy for Public Housing Finance in Korea. Paper presented at the International Symposium on Housing, Korea National Housing Corporation, Seoul.
- Kim, K.-H. and E.S. Mills (1988), "Korean development and urbanization: prospects and problems", *World Development* 16:157–167.
- Kim, K.-H. and S.-H. Suh (1989), An Analysis of Optimality of Housing Investment in Korea. Paper presented to the Korea International Economic Association.
- Kim, K.-H. and S.-H. Suh (1993), "Speculation and house price bubbles in the Korean and Japanese real estate markets", *Journal of real estate Finance and Economics* 6:73–88.
- Kim, S.-J. (1992), "A model of rental housing choices in the Korean market", *Urban Studies* 29:1247–1263.
- Kingsley, G.T. and R.J. Struyk (1990), *Institutional Reform and the Housing Sector: Thinking Through the Transition*. Urban Institute Working Paper, U.I. Project No. 3941.
- Kingsley, G.T. and R.J. Struyk (1992), *Progress in Privatization: Transforming Eastern Europe's Social Housing* (The Urban Institute for USAID).
- Klak, T. and M. Holtzclaw (1993), "The housing, geography, and mobility of Latin American urban poor: the prevailing model and the case of Quito, Ecuador", *Growth and Change* 24:247–276.
- Kornai, J. (1990), *The Road to a Free Economy* (Norton).
- Kornai, J. (1992), *The Socialist System: The Political Economy of Communism* (Princeton University Press).
- Kosareva, N. and R. Struyk (1993), "Housing privatization in the Russian Federation", *Housing Policy Debate* 4:81–100.
- Kosareva, N., O. Pchelintsev and G. Ronkin (1991), "On the path to housing reform—analysis and forecast", *Problems of Economics* 34:60–82.
- Kravis, I.B., A. Heston and R. Summers (1982), *World Product and Income: International Comparisons of Real Gross Product* (Johns Hopkins University Press).
- Kuznets, S. (1961), "Quantitative aspects of the economic growth of nations. VI: long term trends in capital formation proportions", *Economic Development and Cultural Change* 9:3–124.
- Lakshmanan, T.R., L. Chatterjee and P. Kroll (1978), "Housing consumption and level of development: a cross national comparison", *Economic Geography* 54:222–233.
- Landeau, J.-F. (1987), "Tunisia: a case study in analyzing the affordability of mortgage loans", *African Urban Quarterly*.
- Landis, J.D. (1983), *How Competitive Are Urban Housing Markets?* Ph.D. Dissertation (University of California, Berkeley).
- Landis, J.D. (1986), "Land regulation and the price of new housing: lessons from three California cities", *Journal of the American Institute of Planners*: 9–21.
- Larbi, W.O. (1995), *The Urban Development Land Process and Urban Land Policies in Ghana* (Royal Institute of Chartered Surveyors).
- Lea, M.J. and S.A. Bernstein (1995), *International Housing Finance Sourcebook 1995* (International Union of Housing Finance Institutions, Chicago).
- Lee, K.S. (1988), *Infrastructure Constraints on Industrial Growth in Thailand*. INURD Working Paper No. 88-2.
- Lee, K.S. (1992), "Spatial policy and infrastructure constraints on industrial growth in Thailand", *Review of Urban and Regional Development Studies* 4.
- Lee, K.S. and A. Anas (1992), "Costs of deficient infrastructure: the case of Nigerian manufacturing", *Urban Studies* 29:1071–1092.



- Lee, K.S., A. Anas and G.-T. Oh (1996), Costs of Infrastructure Deficiencies in Manufacturing in Indonesia, Nigeria and Thailand. World Bank, Policy Research Working Paper No. 1604.
- Lee, L.-F. and R. Trost (1978), "Estimation of some limited dependent variable models with application to housing demand", *Journal of Econometrics* 357–382.
- Leibenstein, H. (1966), "Allocative efficiency versus X-efficiency", *American Economic Review*.
- Li, M. (1977), "A logit model of homeownership", *Econometrica* 45:1081–1097.
- Lim, G.-C. (1987), "Land markets and public policy: a Korean case study", *Habitat International* 11:73–81.
- Lim, G.-C. and M.-H. Lee (1993), "Housing consumption in urban China", *Journal of Real Estate Finance and Economics* 6:89–102.
- Lim, G.-C., J.R. Follain and B. Renaud (1980), "The determinants of homeownership in a developing economy", *Urban Studies* 17.
- Lim, G.-C., J.R. Follain, Jr. and B. Renaud (1984), "Economics of residential crowding in developing countries", *Journal of Urban Economics* 16:173–186.
- Lin, C.-C.S. (1993), "The relationship between rents and prices of owner-occupied housing in Taiwan", *Journal of Real Estate Finance and Economics* 6:25–54.
- Linneman, P. (1981), "The demand for residence site characteristics", *Journal of Urban Economics* 129–148.
- Linneman, P.D. and I.F. Megbolugbe (1994), "Privatisation and housing policy", *Urban Studies* 31:635–651.
- Lira, R. (1989), *Viviendas Subsidiadas en Países en Desarrollo: Eficiencia y Movilización de Recursos* (Instituto de Estudios Urbanos, Universidad Pontificia Católica de Chile).
- Lluch, C., A. Powell and R. Williams (1977), *Patterns in Household Demand and Savings* (Oxford University Press, Oxford).
- Lodhi, A. and H.A. Pasha (1991), "Housing demand in developing countries: a case-study of Karachi in Pakistan", *Urban Studies* 28:623–634.
- Mabogunje, A.L. (1992), *Perspective on Urban Land and Urban Management Policies in sub-Saharan Africa*. World Bank Technical Paper No. 196.
- Mackay, C.J. (1996), "The development of housing policy in South Africa in the post apartheid period", *Housing Studies* 11:133–146.
- MacLennan, D. (1989), *Privatization, Deregulation and Competition in the British Housing System, 1979 to 1989*. Mimeo.
- Maddison, A. (1995), *Explaining the Economic Performance of Nations* (Edward Elgar).
- Malpezzi, S. (1984), *Analyzing an Urban Housing Survey*. World Bank: Infrastructure and Urban Development Department Discussion Paper No. UDD-52.
- Malpezzi, S. (1986), *Rent Control and Housing Market Equilibrium: Theory and Evidence from Cairo, Egypt*. Unpublished Ph.D. Dissertation (The George Washington University).
- Malpezzi, S. (1988), *Analyzing Incentives in Housing Programs: Evaluating Costs and Benefits with a Present Value Model*. World Bank: INU Discussion Paper No. 23.
- Malpezzi, S. (1990), "Urban housing and financial markets: some international comparisons", *Urban Studies* 27:971–1022.
- Malpezzi, S. (1991), "Discounted cash flow analysis: present value analysis of housing programmes and policies", in: A.G. Tipple and K.G. Willis, eds., *Housing the Poor in the Developing World: Methods of Analysis, Case Studies and Policies*, pp. 208–233 (Routledge Publishing).
- Malpezzi, S. (1992), *Rental Housing in Developing Countries: Issues and Constraints*. United Nations Centre for Human Settlements, *Rental Housing: Proceedings of an Expert Group Meeting* (Nairobi).
- Malpezzi, S. (1993), "Can New York and Los Angeles learn from Kumasi and Bangalore? A comparison of costs and benefits of rent controls", *Housing Policy Debate* 4:589–626.
- Malpezzi, S. (1994), "'Getting the incentives right': a reply to Robert-Jan Baken and Jan Van Der Linden", *Third World Planning Review* 16:451–466.
- Malpezzi, S. (in press), "Welfare analysis of rent control with side payments: a natural experiment in Cairo, Egypt", *Regional Science and Urban Economics*.
- Malpezzi, S. and C.P. Rydell (1986), *Rent Controls in Developing Countries: A Framework for Analysis*. World Bank, Water Supply and Urban Development Department Discussion Paper No. 102.
- Malpezzi, S. and D. MacLennan (1996), *The Long Run Price Elasticity of Supply of New Construction in the United States and the United Kingdom*. Paper presented to the European Network for Housing Re-

- search/American Real Estate and Urban Economics Association Conference, Glasgow, September (1994). Revised, University of Wisconsin, Center for Urban Land Economics Research Working Paper.
- Malpezzi, S. and G. Ball (1991), Rent Control in Developing Countries. World Bank Discussion Paper No. 129.
- Malpezzi, S. and G. Ball (1993), "Measuring the urban policy environment: an exploratory analysis using rent controls", *Habitat International* 17:39–52.
- Malpezzi, S. and J. Sa-Aadu (1996), "What have African housing policies wrought?", *Real Estate Economics*.
- Malpezzi, S. and K. Vandell (1993), Housing Markets and Policy in Market Economies: Lessons for Formerly Socialist Economies. Paper prepared for the American Real Estate and Urban Economics Association, Mystic, CN, October.
- Malpezzi, S. and L. Ozanne (1980), Evaluation of FMRs in the Section 8 New Construction Program: An Application of Hedonic Price Indexes (Urban Institute).
- Malpezzi, S. and S.K. Mayo (1987a), "The demand for housing in developing countries", *Economic Development and Cultural Change* 35:687–721.
- Malpezzi, S. and S.K. Mayo (1987b), "User cost and housing tenure in developing countries", *Journal of Development Economics* 25:197–220.
- Malpezzi, S. and S.K. Mayo (1994), A Model Design for a Developing Country Housing Market Study. University of Wisconsin-Madison, Center for Urban Land Economics Research Working Paper.
- Malpezzi, S. and S.K. Mayo (1997a), "Getting housing incentives right: a case study of the effects of regulation, taxes and subsidies on housing supply in Malaysia", *Land Economics* 73:372–391.
- Malpezzi, S. and S.K. Mayo (1997b), "Housing and urban development indicators: a good idea whose time has returned", *Real Estate Economics* 25:1–11.
- Malpezzi, S. and V. Tewari (1991), Costs and Benefits of Rent Regulation in Bangalore, India. World Bank, Infrastructure and Urban Development Department Discussion Paper No. 82 (160 pp).
- Malpezzi, S., M. Bamberger and S.K. Mayo (1982), Planning an Urban Housing Survey. World Bank: Infrastructure and Urban Development Department Discussion Paper No. UDD-42.
- Malpezzi, S. and S.K. Mayo and D.J. Gross (1985), Housing Demand in Developing Countries. World Bank Staff Working Paper No. 733.
- Malpezzi, S., S.K. Mayo, R. Silveira and C. Quintos (1988), Measuring the Costs and Benefits of Rent Control: Case Study Design. INU Discussion Paper No. 24.
- Malpezzi, S., G. Tipple and K. Willis (1990), Costs and Benefits of Rent Control: A Case Study in Kumasi, Ghana. World Bank Discussion Paper No. 74.
- Mathey, K. (1990), "An appraisal of Sandinista housing policies", *Latin American Perspectives* 17:76–99.
- Mayo, S.K. (1981), "Theory and estimation in the economics of housing demand", *Journal of Urban Economics* 10:95–116.
- Mayo, S.K. (1986), "Sources of inefficiency in subsidized housing programs: a comparison of U.S. and German experience", *Journal of Urban Economics* 20:229–249.
- Mayo, S.K. (1990), Housing Finance Development: Experiences in Malaysia and Thailand, and Implications for Indonesia (World Bank).
- Mayo, S.K. (1993), Housing Policy Reform in South Africa: International Perspectives and Domestic Imperatives (World Bank).
- Mayo, S.K. (1993), South African Housing Sector Performance in International Perspective. Paper presented to the 21st IAHS Housing Congress, Capetown.
- Mayo, S.K. and D.J. Gross (1987), "Sites and services—and subsidies: the economics of low cost housing in developing countries", *World Bank Economic Review* 1:301–335.
- Mayo, S.K. and J. Stein (1988), Housing and Labor Market Distortions in Poland: Linkages and Policy Implications. INU Discussion Paper No. 25.
- Mayo, S.K. and J. Stein (1995), "Housing and labor market distortions in Poland: linkages and policy implications", *Journal of Housing Economics* 4:153–182.
- Mayo, S.K. et al. (1982), Informal Housing in Egypt (Abt Associates).
- Mayo, S.K., S. Malpezzi and D.J. Gross (1986), "Shelter strategies for the urban poor in developing countries", *World Bank Research Observer* 1:183–203.

- Mayo, S.K., S. Angel, M. Heller and W. Stephens (1992), The Housing Indicators Program: Extensive Survey Preliminary Results (Urban Development Division, World Bank).
- McLure, C. (1977), "The 'new view' of the property tax: a caveat", *National Tax Journal*.
- McMillen, D.P. and J.M. Pogodzinski (1993), *Land Use in Planned Economies: A Survey of Eastern Europe*. Paper prepared for the American Real Estate and Urban Economics Association International Conference, Mystic, CT.
- McPhail, A.A. (1993), "The 'five percent rule' for improved water service: can households afford more?", *World Development* 21:963–973.
- Megbolugbe, I.F. (1983), "The hopes and failures of public housing in Nigeria: a case study of Kulende and Adewole housing estates, Ilorin", *Third World Planning Review* 5:349–369.
- Mehta, M. and D. Mehta (1989a), *A Report on Housing Finance Systems in Metropolitan Areas of India (USAID, New Delhi)*.
- Mehta, M. and D. Mehta (1989b), *Metropolitan Housing Market: A Study of Ahmedabad* (Sage Publications, New Delhi).
- Merrett, S. (1984), "The Assessment of housing consumption requirements in developing countries", *Third World Planning Review* 6.
- Mills, E.S. (1995), *Housing: The Step-Child of the Privatization and Deregulation Movement*. Paper prepared for the UNU/WIDER Conference on Human Settlements in the Changing Global Political and Economic Process.
- Mills, G., D. Sherwell and M. van Rooyen (1995), "Integrated housing policy in South Africa: cost constraints on built form", *Environment and Planning B: Planning and Design* 22:5–20.
- Mitra, B.C. (1987), *Land Supply for Low Income Housing in Delhi* (Institute for Housing Studies, Working Paper, Rotterdam).
- Mohan, R. (1989), *Housing and Urban Development in India: The Need for Innovative Strategies*. Mimeo (New Delhi).
- Mohan, R. (1992), "Housing and urban development policy issues for the 1990s. 1", *Economic and Political Weekly* 27:1913–1920.
- Mohan, R. (1994), *Understanding the Developing Country Metropolis: Lessons from the City Study of Bogota and Cali, Colombia* (Oxford University Press, Oxford).
- Mok, H.M.K., P.P.K. Chan and Y.-S. Cho (1995), "A Hedonic price model for private properties in Hong Kong", *Journal of Real Estate Finance and Economics* 10:37–48.
- Morande, F.G. (1992), "The dynamics of real asset prices, the real exchange rate trade reforms and foreign capital inflows: Chile, 1976–1989", *Journal of Development Economics* 39:111–139.
- Moser, C.O.N. and L. Peake, eds., (1987), *Women, Human Settlements and Housing* (Tavistock, London).
- Moynihan, C.J. (1987), *Introduction to the Law of Real Property*. Second Edition (West Publishing Co., St. Paul).
- Mozolin, M. (1994), "The geography of housing values in the transformation to a market economy—a case study of Moscow", *Urban Geography* 15:107–127.
- Munjee, N.M. (1992), "Recent developments in Indian housing finance", *Housing Finance International*.
- Murray, M.P. (1983), "Subsidized and unsubsidized housing starts: 1961–1977", *Review of Economics and Statistics* 65:590–597.
- Murray, M.P. (1993), *Subsidized and Unsubsidized Housing Stocks 1935–1987: Crowding Out and Cointegration* (Department of Economics, Bates College).
- Muth, R.F. (1971), "The derived demand for urban residential land", *Urban Studies* 8:243–254.
- Nayani, P. (1987), *Process of Illegal Subdivision of Land and Housing Consolidation*. New Delhi School of Architecture, Working Paper.
- Ndulo, M. (1986), "Patterns of housing demand in a low income economy: the case of urban Zambia", *Eastern Africa Economic Review* 2.
- Nelson, K.P. (1992), "Housing assistance needs and the housing stock", *Journal of the American Planning Association* 58:85–102.
- Nicholson, M. and K.G. Willis (1990), "The scale and distribution of financial subsidies to owner-occupied households: a comparison", *Journal of Economic and Social Measurement* 16:71–85.

- Okpala, D.C.I. (1985), *Urban Low Income Shelter in Africa: A Review of Provision and Delivery Policies, Programmes and Strategies* (United Nations Center for Human Settlements, Addis Ababa).
- Okpala, D.C.I. (1986), *Investments in Human Settlements Development in the National Development Plans of African Economies*. Addis Ababa: UNCHS (Habitat) Discussion Paper.
- Okpala, D.C.I. (1987), "Received concepts and theories in African urbanization", *Urban Studies* 24:137–150.
- Okpala, D.C.I. (1994), "Financing housing in developing countries—A review of the pitfalls and potentials in the development of formal housing finance systems", *Urban Studies* 31:1571–1786.
- Okun, D.A. (1982), "Financing water supply systems", in: E.J. Shiller and R.L. Droste, eds., *Water Supply and Sanitation in Developing Countries* (Ann Arbor Science).
- Olsen, E.O. (1969), "A competitive theory of the housing market", *American Economic Review*: 612–622.
- Olsen, E.O. (1987), "The demand and supply of housing services: a critical review of the empirical literature", in: E.S. Mills, ed., *Handbook of Regional and Urban Economics*, vol. 2 (Elsevier, Amsterdam).
- Olsen, E.O. (1988), "What do economists know about rent control?", *The Journal of Real Estate Finance and Economics* 1:295–308.
- Olsen, E.O. and D.M. Barton (1983), "The benefits and costs of public housing in New York City", *Journal of Public Economics* 20:299–332.
- Ondiege, P. (1986), *Implicit Benefits in the Rental Public Housing Sector in Nairobi*. Paper presented to the International Conference of Urban Shelter in Developing Countries, London, September 1–4.
- Page, D. and R.J. Struyk (1990), *Measuring the Housing Sector: Results from the International Housing Market Survey* (The Urban Institute).
- Parry, David L., Maya T. Koleva and Eugeni M. Popov (1990), "Bulgarian housing markets and mortgage financing", *Housing Finance International*, May 1990, pp. 27–30.
- Pasha, H.A. (1992), "Maximum lot size zoning in developing countries", *Urban Studies* 29:1173–1181.
- Pasha, H.A. and M.S. Butts (1996), "Demand for housing attributes in developing countries: a case study of Pakistan", *Urban Studies* 33:1141–1154.
- Pasha, H.A. and A. Ghaus (1988), "The demand for housing in Pakistan", *Pakistan Journal of Applied Economics* 7:83–99.
- Payne, G. (1980), "The Gecekondus of Ankara", *Process of Architecture* 15:78–115.
- Payne, G., ed. (1984), *Low Income Housing in the Developing World* (Wiley).
- Payne, G. (1989), *Informal Housing and Land Subdivisions in Third World Cities: A Review of the Literature* (Centre for Development and Environmental Planning, Oxford Polytechnic).
- Peattie, L. (1987), "Affordability", *Habitat International* 11:69–76.
- Pejovich, S. (1990), *The Economics of Property Rights: Towards a Theory of Comparative Systems* (Kluwer Academic Press, Dordrecht).
- Peng, R. and W.C. Wheaton (1994), "Effects of restrictive land supply on housing in Hong Kong: an econometric analysis", *Journal of Housing Research* 5:263–291.
- Piggott, J. (1984), "The value of tenant benefits from UK council housing subsidies", *Economic Journal* 94:384–389.
- Pinto-Lima, L. (1990), "The financing of housing in Brazil", *Housing Finance International* 5:25–26.
- Pogodzinski, J.M. (1991), "Reform of the Polish housing market: issues and methods", *Mimeo*.
- Pogodzinski, J.M. (1993), *The Effect of Housing Market Disequilibrium on the Supply of Labor: Evidence From Poland, 1989–1990*.
- Pogodzinski, J.M. (1994), "The value of 'full' ownership rights: a Hedonic study of Warsaw", *Mimeo*.
- Polinsky, A.M. (1977), "The demand for housing: a study in specification and grouping", *Econometrica* 42:1533–1551.
- Pollak, R. and T. Wales (1981), "Demographic variables in demand analysis", *Econometrica* 49:1533–1551.
- Pornchokchai, S. (1992), *Bangkok Slums: Review and Recommendations* (Agency for Real Estate Affairs, Bangkok).
- Pudney, S. and L. Wang (1995), "Housing reform in urban China—efficiency, distribution and the implications for social security", *Economica* 62:141–160.
- Quigley, J.M. (1982), "Nonlinear budget constraints and consumer demand: an application to public programs for residential housing", *Journal of Urban Economics* 12:177–201.
- Rakodi, C. (1987), "Upgrading in Chawama, Lusaka: displacement or differentiation?", *Urban Studies* 25.

- Rakodi, C. (1992), "Housing Markets in third world cities: research and policy in the 1990s", *World Development* 20:39–55.
- Rakodi, C. (1995a), "From a settler history to an African present—housing markets in Harare, Zimbabwe", *Environment and Planning* 13:91–116.
- Rakodi, C. (1995b), "Housing finance for lower income urban households in Zimbabwe", *Housing Studies* 10:199–227.
- Rakodi, C. and P. Withers (1995), Home ownership and commodification of housing in Zimbabwe", *International Journal of Urban and Regional Research* 19:250–271.
- Ravillion, M. (1989), "The welfare cost of housing standards: theory with application to Jakarta", *Journal of Urban Economics* 26:197–211.
- Renaud, B. (1980), "Resource allocation to housing investment: comments and further results", *Economic Development and Cultural Change* 28:189–199.
- Renaud, B. (1984), *Housing and Financial Institutions in Developing Countries*. World Bank Staff Working Paper No. 658.
- Renaud, B. (1988a), *Compounding Financial Repression with Rigid Urban Regulations: Lessons of the Korean Housing Market*. World Bank, Infrastructure and Urban Development Department Discussion Paper No. 21.
- Renaud, B. (1988b), *Housing Under Economic Structural Adjustment in Chile*. INURD Working Paper No. 88-3.
- Renaud, B. (1988c), "The future of the housing finance system in Korea", Mimeograph.
- Renaud, B. (1989a), *Affordable Housing, Housing Sector Performance and Behavior of the Price-to-Income Ratio: International Evidence and Theoretical Analysis*. Paper Presented to the Center of Urban Studies and Urban Planning, University of Hong Kong.
- Renaud, B. (1989b), *Understanding the Collateral Qualities of Housing for Financial Development: The Korean "Chonse" as Effective Response to Financial Sector Shortcomings*. INU Discussion Paper No. 49.
- Renaud, B. (1990), "Housing affordability and housing finance: an international perspective", in: Hyundai Research Institute, *Proceedings of (the) International Housing Conference on Korean Housing Policies*, Seoul.
- Renaud, B. (1991), *Housing Reform in Socialist Economies*. World Bank Discussion Paper No. 125.
- Renaud, B. (1992), *The Housing System of the Former Soviet Union: Why Do the Soviets Need Housing Markets?* Paper presented to the Fannie Mae University Colloquium Series, UCLA.
- Renaud, B. (1993), "Confronting a distorted housing market: can Korean policies break with the past?", in: L.B. Krause and F.-K. Park, eds., *Social Issues in Korea: Korean and American Perspectives* (Korea Development Institute, Seoul).
- Renaud, B. (1995a), "The real estate economy and the design of Russian housing reforms, Part I", *Urban Studies* 32:1247–1264.
- Renaud, B. (1995b), "The real estate economy and the design of Russian housing reforms, Part II", *Urban Studies* 32:1437–1451.
- Renaud, B. (1997), *Financial Markets and the Financing of Social Housing: The View from Developing Countries*. Paper presented to the Conference on Social Housing Finance in the European Union, Nunspeet, The Netherlands.
- Renaud, B. and A. Bertaud (1989), *The Urban Housing Reforms in China: Review of City Experiments and Analytical Issues*. Paper presented at the Joint Seminar on Urban Housing Reforms, Beijing.
- Renaud, B. and R.M. Buckley (1987), *Housing Finance in Developing Countries: A Framework for Bank Operations* (World Bank).
- Renaud, B. and R.M. Buckley (1988), *Urban Finance in Post-Depression Latin America*. INU Discussion Paper No. 22.
- Renaud, B. and M. Gronicki (1990), *Bulgaria: Aide Memoire*, World Bank Housing Reconnaissance Mission.
- Renaud, B. et al. (1993), *Russia—Housing Reform and Privatization: Strategy and Transition Issues*. World Bank Sector Report 11868-RU.
- Renaud, B., F. Pretorius and B. Pasadilla (1997), *Markets at Work: Dynamics of the Residential Real Estate Market in Hong Kong* (Hong Kong University Press, Hong Kong).
- Rodwin, L., ed. (1987), *Shelter, Settlement and Development* (Allen and Unwin, London).

- Rojas, E. and M. Greene (1995), "Reaching the poor: lessons from the Chilean housing experience", *Environment and Urbanization* 7:31–50.
- Rosen, H.S. (1979), "Housing decisions and the U.S. income tax", *Journal of Public Economics* 1–23.
- Rosen, S. (1974), "Hedonic prices and implicit markets", *Journal of Political Economy* 177–201.
- Salazar-Carrillo, J. and I. Tirado De Alonso (1989), "Housing services in national accounts: the case of Latin America", *International Journal of Housing Science and its Applications* 13:297–300.
- Sandilands, R.J. (1980), *Monetary Correction and Housing Finance in Colombia, Brazil and Chile* (Gover Publishing, Farnborough, UK).
- Sanyal, B. (1981), "Who gets what, where, why and how: a critical look at housing subsidies in Zambia", *Development and Change* 12:409–440.
- Sanyal, B. (1987), "Problems of cost-recovery in development projects: experience of the Lusaka squatter upgrading and site/service project", *Urban Studies* 24:285–295.
- Shlyter, A. (1985), "Housing strategies: the case of Zimbabwe", *Trialog* 6:20–29.
- Shefer, D. (1990), "The demand for housing and permanent income in Indonesia", *Urban Studies* 27:259–272.
- Shephard, S. (Chapter 41, this volume).
- Shidlo, G., ed. (1990), *Housing Policy in Developing Countries* (Routledge).
- Shidlo, G. (1994), *Housing Regulatory Reform in Mexico*. World Bank Infrastructure Note HS-8.
- Sillince, J.A., ed. (1985), *Housing Policies in Eastern Europe and the Soviet Union* (Routledge, London).
- Silveira, R. (1989), *The Evolution of Rent Control in Brazil, 1921–1989*. INURD Working Paper No. 89-8.
- Silveira, R. and S. Malpezzi (1991), *Costs and Benefits of Rent Control in Rio De Janeiro*. World Bank, Infrastructure and Urban Development Department Discussion Paper No. 83, (97 pp).
- Simkins, C., M. Oelofse and D. Gardner (1992), "Designing a market-driven state-aided housing programme for South Africa", *Urban Forum* 3:13–38.
- Small, K.A. and J.A. Gomez-Ibanez (Chapter 46, this volume).
- Smith, L.B., K. Rosen and G. Fallis (1988), "Recent developments in economic models of housing markets", *Journal of Economic Literature* 26:29–64.
- Solomon, A. and K. Vandell (1982), "Alternative perspectives on neighborhood decline", *Journal of the American Planning Association* 45:81–91.
- Son, J.Y. and K.H. Kim (1998), "Analysis of urban land shortages: the case of Korean cities", *Journal of Urban Economics* 43:362–384.
- Stedman, S.J. (1992), *Botswana: The Political Economy of Democratic Development* (L. Rienner Publishers, Boulder).
- Strassman, W.P. (1977), "Housing priorities in developing countries: a planning model", *Land Economics* 53.
- Strassman, W.P. (1980a), *Guidelines for Estimating Employment Generation through Shelter Sector Assistance* (Michigan State University).
- Strassman, W.P. (1980b), "Housing improvement in an opportune setting: Cartagena, Colombia", *Land Economics*.
- Strassman, W.P. (1980c), "Shelter improvement in Lima, Peru", Mimeo.
- Strassman, W.P. (1982), *The Transformation of Urban Housing: The Experience of Upgrading in Cartagena* (Johns Hopkins University Press).
- Strassman, W.P. (1984), "The timing of urban infrastructure and housing improvements by owner occupants", *World Development* 12:743–754.
- Strassman, W.P. (1985), "Employment in construction: multicountry estimates of costs and substitution elasticities for small dwellings", *Economic Development and Cultural Change* 33:395–414.
- Strassman, W.P. (1991), "Housing market interventions and mobility: an international comparison", *Urban Studies* 28:759–771.
- Strassman, W.P., A. Blunt and R. Thomas (1992), "Land prices and housing in Manila", *Urban Studies* 31:267–285.
- Straszheim, M. (1975), *An Econometric Analysis of the Urban Housing Market* (NBER).
- Struyk, R.J. (1982), "Upgrading existing dwellings: an element in the housing strategies of developing countries", *Journal of Developing Areas* 17:69–76.
- Struyk, R.J. (1987), *Assessing Housing Needs and Policy Alternatives in Developing Countries* (Urban Institute Press, Washington, DC).

- Struyk, R.J. (1988a), "The Distribution of tenant benefits from rent control in urban Jordan", *Land Economics* 64.
- Struyk, R.J. (1988b), "Understanding high vacancy rates in a developing country: Jordan", *Journal of Developing Areas* 22:373–380.
- Struyk, R.J. (1993), *Implementing Housing Allowances in Russia: Rationalizing the Rental Sector* (Urban Institute Press, Washington, DC).
- Struyk, R.J., ed. (1995), *Economic Restructuring in the Former Soviet Bloc: Evidence from the Housing Sector* (Urban Institute Press, Washington, DC).
- Struyk, R.J., ed. (1996), *Economic Restructuring in the Former Soviet Bloc: Evidence from the Housing Sector* (Urban Institute Press, Washington, DC).
- Struyk, R.J. and N.B. Kosareva (1993a), "Developing the Russian housing finance system", *Housing Finance International* 7:2–10.
- Struyk, R.J. and N.B. Kosareva (1993b), *The Russian Housing Market in Transition*. Prepared by the Urban Institute for U.S. Agency for International Development.
- Struyk, R.J. and N.B. Kosareva (1994), *Transition in the Russian Housing Sector: 1991–1994* (The Urban Institute Press, Washington, DC).
- Struyk, R.J. and R. Lynn (1983), "Determinants of housing investment in slum areas: Tondo and other locations in metropolitan Manila", *Land Economics* 59:444–454.
- Struyk, R.J. and M. Turner (1986), *Housing Finance and Quality in Two Developing Countries* (Urban Institute Press, Washington, DC).
- Struyk, R.J., M. Hoffman and H. Katsura (1990), *The Market for Shelter in Indonesian Cities* (Urban Institute Press, Washington, DC).
- Struyk, R.J., K. Mark and J.B. Telgarsky (1991), "Private management for eastern Europe's state rental housing", *Journal of Housing Economics* 1.
- Struyk, R.J., J. Daniell, A. Puzanov and N.B. Kosareva (1993a), *Income Adjustments When Raising Rents in Post-Soviet Economies: Housing Allowances or Wage Increases? Analysis for Moscow* (Urban Institute Press, Washington, DC).
- Struyk, R.J., N.D. Kosareva, Daniell, Hanson and Mikelsons (1993b), *Implementing Housing Allowances in Russia. Rationalizing the Rental Sector* (University Press of America (UPA), Lanham).
- Struyk, R.J., et al. (1994), *Implementing Housing Allowances in Russia: Rationalising the Rental Sector* (Urban Institute Press, Washington DC).
- Telgarsky, J.P. and R.J. Struyk (1991), *Toward a Market-Oriented Housing Sector in eastern Europe: Developments in Bulgaria, Czechoslovakia, Hungary, Poland, Romania, and Yugoslavia* (Urban Institute Press, Washington, DC).
- Tewari, V.K. and T. Krishna Kumar (1987), "Rent control in India: its economic effects and implementation in Bangalore", *Nagarloka* 19:55–85.
- Thalwitz, M. (1993), "Poland: building a new system of housing finance", *Housing Finance International*, December, pp. 13–42.
- Thomson, M.J. (1983), *Toward Better Urban Transport Planning in Developing Countries*. World Bank Staff Working Paper No. 600.
- Tideman, N. et al. (1990), Open letter to Mikhail Gorbachev on land markets in Russia.
- Tipple, A.G. (1983), "Housing policy and culture in Kumasi", *African Urban Studies* 15:17–30.
- Tipple, A.G. (1993), "Housing in Algeria—recent research at CAROD—a review article", *Third World Planning Review* 15:55–62.
- Tipple, A.G. (1994), "The need for new urban housing in sub-Saharan Africa—problem or opportunity", *African Affairs* 93:587–610.
- Tipple, A.G. and K.G. Willis (1991a), "Tenure choice in Kumasi, Ghana", *Third World Planning Review* 13:27–45.
- Tipple, A.G. and K.G. Willis, eds. (1991b), *Housing the Poor in the Developing World: Methods of Analysis, Case Studies and Policy* (Routledge, London).
- Tipple, A.G. and K.G. Willis (1992), "Who owns, who rents: tenure choice in a west African city", in: L. Kilmartin and H. Singh, eds., *Housing in the Third World: Analyses and Solutions* (Concept Publishing, New Delhi).

- Tolley, G.S. (1991), *Urban Housing Reform in China: An Economic Analysis*. World Bank Discussion Paper No. 123.
- Tolley, G.S., ed. (In press), *Urban Land and Housing Reform in Socialist and Formerly Socialist Countries*.
- Tomann, H. (1992), *Towards a Housing Market in Eastern Germany*. Paper presented to the American Real Estate and Urban Economics Association, Los Angeles.
- Tomlinson, R. (1992), "Competing urban agendas in South Africa", *Urban Forum* 3:97–110.
- Trollegaard, S. (1989), *Distributional Aspects of Housing and Taxation Policies*. United Nations, Economic Commission for Europe, Committee on Housing, Building and Planning, monograph.
- Turner, B., J. Hegedus and I. Tosics, eds. (1992), *The Reform of Housing in Eastern Europe and the Soviet Union* (Routledge, London, New York).
- Turner, J.F.C. (1972), *Freedom to Build* (Macmillan, New York).
- Turok, I. (1994a), "Urban planning in the transition from apartheid—Part I: the legacy of social control", *Third World Planning Review* 65:243–259.
- Turok, I. (1994b), "Urban planning in the transition from apartheid—Part II: towards reconstruction", *Third World Planning Review* 65:355–374.
- United Nations (1993), *Housing Policy Guidelines: The Experience of ECE with Special Reference to Countries in Transition* (E.93.II.E.15).
- U.N. Centre for Human Settlements (Habitat) (1989), *Improving Income and Housing: Employment Generation in Low-Income Settlements* (Nairobi).
- UNCHS (Habitat) (1990), *The Global Strategy for Shelter to the Year 2000* (Nairobi, Kenya).
- UNCHS (Habitat) (1996), *An Urbanizing World: Global Report on Human Settlements, 1996*. New York: Oxford University Press.
- UN Centre for Human Settlements, and the World Bank (1993), *The Housing Indicators Program—Volume I: Report of the Executive Director* (Nairobi).
- UN Centre for Human Settlements, and the World Bank (1993), *The Housing Indicators Program—Volume II: Indicator Tables* (Nairobi).
- UN Centre for Human Settlements, and the World Bank (1993), *The Housing Indicators Program—Volume III: Preliminary Findings* (Nairobi).
- UN Centre for Human Settlements, and the World Bank (1993), *The Housing Indicators Program—Volume IV: The Extensive Survey Instrument* (Nairobi).
- Urban Edge, The (1983), *Third World Faces Great Subway Debate*. World Bank 7.
- U.S. Agency for International Development (1981), *Housing and Health: An Analysis for Use in the Planning, Design, and Evaluation of Low-Income Housing Programs* (U.S. A.I.D.).
- Valladares, L. do P. (1978), "Working the system: squatter response to resettlement in Rio de Janeiro", *International Journal of Urban and Regional Research* 2:12–25.
- van der Linden, J. (1986), *The Sites and Services Approach Reviewed* (Gower, Aldershot).
- van Vliet, W. (1990), *International Handbook of Housing Policies and Practices* (Greenwood Press, Westport, CT).
- van Vliet, W. and J. van Weesep, eds. (1990), *Government and Housing: Developments in Seven Countries* (Sage Publications, Urban Affairs Annual Reviews, Vol. 36).
- Vandell, K.D. and T.J. Riddiough (1991), *On the Use of Auctions as a Disposition Strategy for RTC Real Estate Assets: A Policy Perspective*. University of Wisconsin, Department of Real Estate and Urban Land Economics Working Paper.
- Vanderporten, B. (1992), "Strategic behavior in pooled condominium auctions", *Journal of Urban Economics* 31:123–137.
- Vernez, G. (1973), *Bogota's Pirate Settlements*. University of California at Berkeley, Working Paper.
- Versacaj, J.P. (1993), "Leasing real estate in the Russian Federation", *Real Estate Review*: 70–75.
- Wadhva, K. (1983), "An evaluation of the urban land ceiling legislation: a case study of Ahmedabad", *Nagarloka* 15:76–86.
- Walters, A.A. (1979), *The benefits of minibuses: the case of Kuala Lumpur*, *Journal of Transport Economics and Policy*.
- Wang, Y. (1991), "The size of housing subsidies in China", *Review of Urban and Regional Development Studies* 3.



- Ward, P. (1989), "Land values and valorisation processes in Latin American cities: a research agenda", *Bulletin of Latin American Research* 8:47–66.
- Ward, P., E. Jimenez and G. Jones (1993), "Residential land price changes in Mexican cities and the affordability of land for low-income groups", *Urban Studies* 30:1521–1542.
- Warford, J. and R. Turvey (1974), *Lahore Water Supply—Tariff Study*. World Bank, Public Utilities Report No. PUN 12.
- Weinberg, D.H., J. Friedman and S.K. Mayo (1981), "Intraurban residential mobility: the role of transactions costs, market imperfections and household disequilibrium", *Journal of Urban Economics* 9:332–348.
- Wells, J. (1986), *The Construction Industry in Developing Countries: Alternative Strategies for Development* (Croom Helm).
- Wheaton, W.C. (1979), "Public policy and the 'shortage' of housing in Egypt", Mimeograph.
- Wheaton, W.C. (1981), "Housing policies and urban 'markets' in developing countries: the Egyptian experience", *Journal of Urban Economics* 9:242–256.
- Whitehead, C. (Chapter 40, this volume).
- Whittington, D., J. Briscoe, X. Mu and W. Barron (1990), "Estimating the willingness to pay for water services in developing countries: a case study of the contingent valuation method in Haiti", *Economic Development and Cultural Change* 38:293–311.
- Whittington, D., D.T. Lauria, A.M. Wright, K. Choe, J.A. Hughes and V. Swarna (1992), *Household Demand for Improved Sanitation Services: A Case Study of Kumasi, Ghana* (UNDP-World Bank Water and Sanitation Program).
- Whittington, D., D.T. Lauria, K. Choe, J.A. Hughes, V. Swarna and A.M. Wright (1993), "Household sanitation in Kumasi, Ghana: a description of current practices, attitudes and perceptions", *World Development* 21:733–748.
- Williams, M. and M. Ondera (1982), "Public expenditures on housing in less developed countries", *Journal of Economic Development* 7:127–133.
- Williamson, O.E. (1975), *Markets and Hierarchies: Analysis and Antitrust Implications* (Free Press).
- Willis, K.G. and A.G. Tipple (1991), "Economics of multihabitation: housing conditions, household occupancy and household structure under rent control, inflation and nonmarketability of ownership rights", *World Development* 19:1705–1720.
- Willis, K., S. Malpezzi and G. Tipple (1990), "An econometric and cultural analysis of rent control in Kumasi, Ghana", *Urban Studies* 27:241–257.
- Wong, Y.-C. and P.-W. Liu (1988), "The distribution of benefits among public housing tenants in Hong Kong and related policy issues", *Journal of Urban Economics* 23:1–20.
- Woodfield, A. (1989), *Housing and Economic Adjustment* (Taylor and Francis for the United Nations, New York).
- World Bank (1981), *The Road Maintenance Problem and International Assistance* (Washington).
- World Bank (1986), *Urban Transport: A World Bank Policy Study*.
- World Bank (1990), *Ghana Housing Sector Review*. Report No. 8099-GH.
- World Bank (1992), *China: Implementation Options for Urban Housing Reform* (World Bank, Washington, DC).
- World Bank (1993a), *China: Urban Land Management in an Emerging Market Economy* (World Bank, Washington, DC).
- World Bank (1993b), *Housing: Enabling Markets to Work*. World Bank Policy Paper.
- World Bank (1993c), *Russia Housing Reform and Privatization: Strategy and Transition Issues*. (By B Renaud et al.) Report 11868-RU, 2 Vols.
- World Bank (1994), *World Development Report 1994: Infrastructure for Development* (Oxford University Press, Oxford).
- Yap, K.S., ed. (1992), *Low Income Housing in Bangkok: A Review of Some Housing Submarkets*. Bangkok, Asian Institute of Technology, HDS Monograph No. 25.
- YapiDiahou, A. (1995), "The informal housing sector in the metropolis of Abidjan, Ivory Coast", *Environment and Urbanization* 7:11–30.
- Yonder, A. (1987), "Informal land and housing market: the case of Istanbul", *Journal of the American Planning Association* 53:213–219.

- Yoon, I.-S. (1994), *Housing in a Newly Industrialized Economy: The Case of South Korea* (Brookfield, Vt., Aldershot, UK and Ashgate, Avebury, Sydney).
- Yu, F.-L. and S.-M. Li. (1985), "The welfare cost of Hong Kong's public housing program", *Urban Studies* 22:33–140.
- Zaroff, B. and D.A. Okun (1984), "Water vending in developing countries", *Aqua* 5:289–295.
- Zearley, T.L. (1993), "Creating an enabling environment for housing: recent reforms in Mexico", *Housing Policy Debate* 4:239–249.
- Zhang, J. (1986), *Urban Construction Reconsidered: China's Cities, Issues and Solutions*. World Bank, UDD Discussion Paper No. 101.
- Zorn, P. (1988), "An analysis of household mobility and tenure choice: an empirical study of Korea", *Journal of Urban Economics* 24:113–128.