12 Housing

Stephen Malpezzi

Housing characteristics, and the process by which housing is constructed and occupied, are key aspects of the living standards of households in developing countries. Housing is of great importance to households in both developed and developing economies, because it is the largest fixed capital investment that households make. In developing countries, housing accounts for 10–30 percent of household expenditure, 6–20 percent of GNP, and 10–50 percent of gross fixed capital formation. Furthermore, as economies develop, the proportion of GDP accounted for by housing investment rises. Other than human capital, housing and land are the types of capital that are most widely owned.

There are three main ways that housing data are used in policy research and thus three reasons why housing data should be collected in LSMS surveys. First, housing information provides useful direct indicators of living standards, including access to electricity and clean drinking water, type of dwelling, toilet facilities, and living space per person. Second, housing is a form of consumption that can be overlooked when analysts estimate overall standards of living using household survey data. For example, families that rent their housing report their rent payments as part of their overall expenditures, whereas families that own their housing often report incurring little current expenditure on housing—as they are consuming the fruits of a previous investment. Thus estimates of total household consumption should include the implicit rent of owner-occupied housing. Third, housing data can be used to understand why particular housing conditions exist and whether specific government policies can be adopted that will lead to more efficient or more equitable outcomes. As is explained further in the first section of this chapter, governments regulate and intervene in housing markets in many ways, and household survey data can be used in analyses that determine the effectiveness of these policies.

This chapter discusses what policymakers need to know about housing and housing markets and which housing issues can be analyzed using data from household surveys such as the Living Standards Measurement Study surveys. The first section of this chapter discusses key housing policy issues and shows how housing market analysts can address these issues. The second section reviews the data that would need to be collected in a multitopic household survey to make it possible for these issues to be analyzed. The third section contains a draft prototype housing module that can be customized to match the prevailing conditions in the country of the survey. The fourth section provides explanatory comments on the draft module.

Housing Policy Issues

This section discusses in detail the ways in which data on housing collected in multitopic household surveys like the LSMS surveys can be used to analyze some key issues in the housing sector. Box 12.1 reflects this discussion in that it shows which issues can and which cannot be analyzed with LSMS-type data.

Using Housing Characteristics as Indicators of Living Standards

In order to use the characteristics of a household's dwelling as indicators of the household's standard of living, analysts require data on those housing characteristics. Exactly which of these characteristics are useful is discussed in the next section of this chapter.

Measuring Housing Consumption

A second reason for collecting housing data is to obtain the information needed to derive a correct estimate of a household's consumption of housing. In principle, households purchase accommodation (or produce it for themselves) just as they purchase food, clothing, and other consumption items. As explained in Chapter 5, total consumption is a crucial indicator of household welfare, so it is important that it be calculated carefully. For most common purchases, such as purchases of food and clothing, the cost of the items is their market price, which is the value that should be placed on these items. However, some households' housing may not be purchased, or even rented, in a directly observed transaction at its true market price. For example, some housing is inherited, and some is built by the households themselves. Some households that rent housing do so at subsidized or controlled prices. Therefore, to measure housing consumption correctly, it is necessary to use market prices or an estimate of such prices.

Another problem is that households that own their housing incurred much of the cost many years ago but still use the dwelling today. Yet if two households live in similar dwellings, their standard of living is similar regardless of when the housing was purchased. Thus it is necessary to estimate each household's current consumption of housing by estimating what the household would spend to rent an equivalent unit at market prices. Therefore, the household survey should collect data on market rent (if observed) or this should be estimated (if not directly observed) for each survey household's housing unit.

Virtually every housing unit is unique in terms of its size, quality, location, and other characteristics. This

Box 12.1 Policy Issues and Housing Data

Policy issues that can be analyzed with cross-sectional data from LSMS-type surveys

- The level and distribution of housing consumption
- The distribution of housing assets
- The frequency and distribution of specific housing characteristics and conditions (such as space, sanitation, age, condition, and crowding)
- Housing tenure, tenure security, and tenure choice
- The demand for housing
- The determinants of price changes
- Upgrading
- The measurement and determinants of vacancies
- The valuation of housing subsidies (for example, from public housing, or from rent-controlled markets)
- How households finance their housing
- Behavior relating to housing finance and savings
- Satisfaction with the neighborhood and the unit

Policy issues that can be analyzed with panel data from an LSMS survey

- Housing filtering (changing supply from the existing stock)
- The determinants of price changes (panel data better than one cross-section of data)
- Tenure choice (panel data better than one cross-section of data)
- Upgrading (panel data better than one cross-section of data)
- Vacancies (panel data better than one cross-section of data)

Policy issues that cannot easily or directly be analyzed with data from an LSMS survey

(Note: Many analyses of these issues make indirect use of some household survey data.)

- The regulation of development (for example, zoning and building codes)
- The determinants of the supply of new construction
- Changes in the supply of serviced land
- Housing investment and the business cycle
- Net effects of government interventions on producer and consumer incentives

heterogeneity, the durability of most housing, and the many forms of tenure and payment that exist can make it a complex process to estimate market prices. Some of the relevant measurement issues are briefly discussed in Appendix 12.1; see also Green and Malpezzi 1998.

Understanding Housing Market Behavior

The third reason for collecting housing data in LSMS surveys is to help analysts and policymakers understand how housing markets work and how government policies affect housing outcomes. In this chapter the discussion of housing market analysis focuses on the analysis needed for public policy purposes because of the overall purpose of this book. Nevertheless, analysis of market behavior is of interest to, for example, housing providers and academics as well as to policymakers.

In principle, government interventions in housing markets can correct for market failures and produce positive externalities for society as whole. In most countries governments define and enforce property rights, which are the "rules of the game" and the essential element of a successful housing market. However, there is no guarantee that all public interventions will have positive outcomes in practice. There are many examples of public interventions that have exacerbated market failures as well as examples of interventions that have been more successful (World Bank 1993a). Much depends upon the capacity of the institutions in the country of the intervention and the prevailing process of housing development and management.

The remainder of this section will discuss several types of housing market analysis. Before doing so, it is useful to review the different ways in which government housing policies can affect housing outcomes, since this is the most direct way governments can improve housing conditions in developing (and developed) countries. Of course, the other obvious way that government policies can improve housing outcomes is by increasing economic growth, which raises household income, allowing households to purchase or rent better housing.

Besides the general role that governments play in providing a stable macroeconomic environment conducive to housing investment, there are many types of government policies that affect housing. The most important are:

- Assigning and enforcing property rights with respect to land and real estate, including housing.
- Regulating development by means of zoning, subdivision regulation, and building codes.
- Providing public housing, either directly or through state-owned enterprises.
- Taxing and subsidizing housing.
- Enforcing rent control and other rental regulations.
- Regulating other aspects of the real estate industry, such as construction and brokerage.
- Providing infrastructure such as electricity, water, and sewage.
- Regulating finance through interest rate regulations, the provision of credit, and the prudential regulation of lenders.

The relationship between policies and housing outcomes can be studied using both descriptive analysis and estimations of behavioral relationships. Descriptive analysis is essentially the tabular presentation of simple statistics on housing, such as which households rent or own, which live in subsidized units or units subject to rent control, how much households pay for their housing, and how dwellings were obtained (whether inherited, purchased, or built). These basic characteristics of housing can also be cross-tabulated by different income and tenure groups. This type of analysis is very useful for getting an initial snapshot of various government policies and of the general state of the housing market, but it cannot usually provide quantitative estimates of the effects of government policies on the housing market. To find out how different housing policies affect housing outcomes, analysts need to understand household behavior. The following two subsections examine these two categories of analysis—descriptive analysis and the estimation of behavioral relationships.

Descriptive Analysis

Good descriptive analysis can provide policymakers with key facts about the housing market. For example, it can show which income groups benefit from subsidized housing and which households constructed their own dwellings (and thus would not be directly affected by changes in construction industry regulations). Three basic types of data are most useful for descriptive analysis: data on the housing stock, data on housing expenses (including taxes and subsidies), and data on property rights (including rental arrangements).

THE HOUSING STOCK. Perhaps the most obvious data to collect on housing is information on the physical

characteristics of the dwelling, some of which are basic indicators of a household's living standard. This general use of data was already considered above and will be discussed in more detail in the second section of this chapter. However, there are certain dwelling characteristics that have particular significance for policymaking. Descriptive analysis of housing stock data can be used to examine:

- The characteristics of a dwelling that yield information about the incidence of taxes, subsidies, or regulations. For example, information on the relative importance of indigenous versus "modern" construction techniques or single-family homes versus multi-family housing often provides estimates of how much housing is subject to particular regulations or taxes. It is often useful for policymakers to know how such characteristics vary by region and income.
- Dwelling characteristics related to basic quality standards and building code requirements such as regulations concerning water supply and sanitation.
- Vacancy patterns and how these vary by location.
- In many countries, the differences in the quality of the housing between "formal" and "informal" submarkets. How do crowding, vacancies, and other market outcomes differ in these submarkets?

Malpezzi (1984, Appendix F) provides a convenient list of descriptive tables and cross-tabulations on housing stock and related variables, which can be a useful starting point for a descriptive analysis plan. Mayo and others (1982) provides an excellent illustration of how household survey data can be used to describe and analyze basic housing market outcomes such as quality and the policy implications that can be drawn from such analysis.

HOUSING EXPENDITURES, TAXES, AND SUBSIDIES. Obviously, analysts need basic information on housing expenditures to estimate any meaningful welfare measure for households and also to analyze the issues of housing subsidies and taxation, which are discussed below. Key issues for descriptive analysis are:

- Whether households that own their dwelling are making payments on loans or mortgages, the size and term of such payments, and when the loans will be paid off.
- The amounts that renters pay and the form that rent payments take (for example, cash, in-kind, or work) and any utilities included in these payments.
- Payments by both renters and owners for utilities and other housing-related services (such as water, sewerage, electricity, and telephone services).
- The shares of the housing market that are financed formally and informally, the terms, and how these vary by income, region, and other household characteristics.
- Direct taxes paid, either by renters or owners.
- Subsidy payments received by (or payments made on behalf of) renters and owners.
- The proportion of their income that households typically spend on housing and how this varies by type of tenure, the household's income level, region, and other household characteristics.
- The consumer's surplus gains and losses from subsidies.

The notion of a consumer's surplus is important and merits a brief explanation. When a government subsidizes a household by giving it an unrestricted cash grant, a dollar is worth a dollar, a peso a peso, a ruble a ruble. However, when the government subsidizes a household by providing it with a good or service (such as housing) or if the government requires that a household spend a transfer of cash in a certain way (for example, on housing), the value of the subsidy to the household is usually less than its cash value. Measuring the household's actual benefit from such a transfer is the aim of measuring the consumer's surplus. Detailed discussions of the consumer's surplus and related concepts can be found in Green and Malpezzi (1998), Freeman (1979), and Deaton and Muellbauer (1980). On subsidies, including the application of consumer's surplus, see Kim (1991), Sanyal (1981), Mayo (1986), and Yu and Li (1985). For more general analyses of incentives that examine a wide range of such interventions, see World Bank (1989) and Malpezzi and Mayo (1997).

PROPERTY RIGHTS. Until the last decade, property rights in developing countries had not been analyzed in much depth, largely because they are well-established in many developed countries and have therefore been taken for granted. Nevertheless, property rights are still an issue in many developing countries, particularly in the transition economies of Eastern Europe and the former Soviet Union. The most important kinds of property rights data for descriptive analysis include:

- How many households own and how many rent, and how this ratio varies by region and income

group. For owners, information on the specific nature of property rights is also useful.

- For renters, the form of their rental arrangement, such as the length of the lease (if specified), from whom the dwelling is rented, and if there is any relationship between the tenant and the owner.
- For owners, the existence of any official title or deed for the house and for the land it is built on, exactly who owns the title to the unit (or, for renters, who signed the lease) and what kind of title it is, and the extent to which the household's ownership of the title is secure.
- The length of time the household has lived in the dwelling, whether rented or owned. If owned, how the dwelling was obtained; if rented, the details of the lease.

Additional discussion of property rights can be found in Kiamba (1989) for Africa, Bromley (1989) for Asia, and Betancur (1987) and Gilbert (1989) for Latin America. The recent literature is dominated by analysis of property rights in formerly socialist countries; see, for example, Jaffe (1993), Jaffe and Louziotis (1996), and Pejovich (1990). Examples of research on forms of housing tenure and the value of this tenure include Jimenez (1982a, 1982b, 1984) and Tipple and Willis (1991b).

The Estimation of Behavioral Relationships

The above discussion showed how simple descriptive statistics can be used to get an idea of how government policies may affect housing outcomes. However, descriptive analysis is mainly concerned with "what is." To answer "why," it is important to know how households (and other relevant actors like suppliers and governments) behave. For example, descriptive statistics can show how much households spend on housing on average. This description can be extended by presenting averages for, say, different income groups. However, to understand more about the underlying behavior of households and other relevant actors, analysts can go a step further and, for example, estimate the "income elasticity of demand," a summary numerical measure of how much housing expenditure increases as income increases.[1] Analysis of housing markets can be complicated by many different factors, including housing's physical and locational heterogeneity, imperfect information about buyers and sellers, illiquidity, significant environmental and other externalities, and time lags in supply. Many, though not all, of these issues are discussed in this chapter. For a more elaborate treatment see World Bank (1993a) and Green and Malpezzi (1998).

HOUSING DEMAND. How much people are willing to pay for housing is one of the most important characteristics of the housing market that can be examined with data from a multitopic household survey like the LSMS. As noted above, and as discussed in some detail in Appendix 12.1, housing rent (both actual or imputed) is an expenditure measure and consists of price multiplied by quantity. The majority of demand studies (including Follain, Lim, and Renaud 1980 and Malpezzi and Mayo 1987a, 1987b) examine expenditure by estimating so-called Engle relationships (for example, actual or imputed rent) or sometimes house value (the present value of rent) as a function of income, demographic variables, and so on. A smaller number of studies have decomposed housing expenditure into its quantity and price components using hedonic models (see Appendix 12.1) or models in which prices vary with the interurban location of the dwelling. Ingram (1984) and Malpezzi (1998) are examples of studies that regress some quantity measure against prices as well as other factors that influence demand, such as income and household composition. Although there are a plethora of measurement and other issues to be resolved in this research area, housing demand is generally the most thoroughly studied and best understood of the major categories of housing market behavior (Olsen 1987). Key policy issues regarding housing demand are:

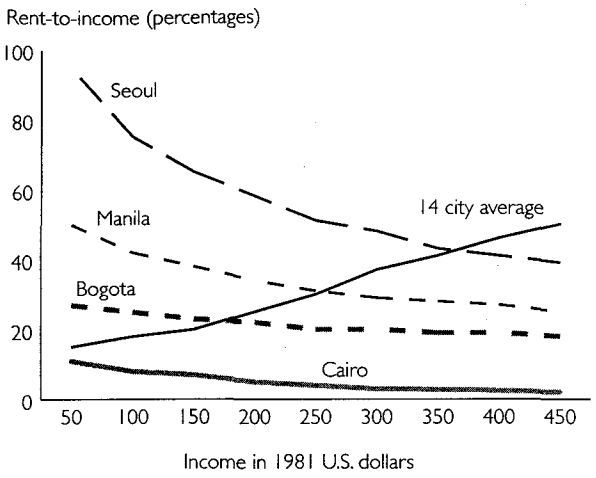
- How housing expenditures change with household income (the income elasticity of demand). Understanding this relationship is the key to understanding the often-misunderstood set of issues that are loosely labeled "affordability" issues.
- How housing expenditures change in response to changes in housing prices (the price elasticity of demand). As housing prices are affected by taxes and subsidies, this information can be used to show how tax and subsidy policies affect households' housing decisions made by households.
- How demand varies with demographic characteristics. For example, how fast does housing consumption change with household size? Do female-headed households spend more or less than average after controlling for other demand determinants?
- The determinants of demand for different tenure arrangements (owning, renting, or living in government-provided housing).

- How demand relates to the household's investment motives, as well as its demand for current consumption.
- The demand for the individual characteristics of housing such as space, quality, location, and types of amenities (such as type of toilet, drinking water, and electricity). In particular, how the location of a household's dwelling relates to the location of the workplaces of the household's members. When policymakers misunderstand the latter relationship, this can result in empty housing projects, underemployed public housing residents, and large inefficiencies in transport spending in developing, developed, and transition economies alike.

Comparative studies such as Malpezzi and Mayo (1987a) and many studies of single markets such as Follain, Lim, and Renaud (1980) have demonstrated that the parameters of demand vary from country to country in significant and at least partly predictable ways. Most studies have found income elasticities of demand that are less than 1 within markets. (In other words, housing consumption has increased with income, but less than proportionately). Despite the relative stability of within-market elasticity across countries, the average share of the household's budget that is spent on housing varies tremendously from market to market and especially across countries; see Figure 12.1 for an illustration. This relation can be examined by estimating the cross-market elasticity of average budget shares with respect to average income in each market. Malpezzi and Mayo (1987a) found that in a range of developing countries, the cross-market elasticity was actually greater than 1 (in other words, housing consumption increased somewhat faster than income).

Despite the fact that many studies have already been carried out, experience suggests it is generally worthwhile to undertake customized demand studies for a given market. There is a particular need for further research on how consumption responds to price—in other words, price elasticities (which are less settled than income elasticities). Also, much of the literature on housing demand in developing countries focuses on demand for housing as a composite good, while there is much less research on demand for individual housing characteristics such as numbers of rooms and various measures of quality. See Follain and Jimenez (1985b) for a review of the literature on demand for specific housing characteristics. Follain, Lim, and Renaud (1980), Ingram (1984), Mayo and others (1982), and Mohan (1994) provide useful examples of how to undertake a demand study and tailor it to specific country conditions.

Figure 12.1 Rent-to-Income by Income (Owners)



Note: The authors compare markets by examining each market's median income household. The dotted lines representing Cairo, Bogota, Manila, and Seoul slope down because within markets (for example, within cities or within countries), housing consumption always increased with income but generally grew more slowly than income—in other words, the income elasticity was less than 1. Comparing 15 markets' median income (the solid line; not all 15 cities are shown), the average rent-to-income ratio in each market increases with the median income—in other words, the income elasticity is slightly greater than 1.
Source: Malpezzi and Mayo 1987a.

HOUSING SUPPLY. Much less research has been done to date on housing supply, despite the fact that supply parameters are probably even more important for policymakers to know about than demand parameters. In broad terms, housing supply comes from two sources: new construction and the existing stock. Housing economists refer to changes in the existing stock as "filtering." In common parlance, as units "filter down," they pass from richer households (owners or tenants) to lower-income households. Units can also "filter up"—pass from poor households to richer households—if a neighborhood is being revitalized or "gentrified." Large improvements (upward filtering) in a particular dwelling are also known as "upgrading." (For further information on upgrading see Strassman 1982, Struyk 1982, and Rakodi 1987.) Key questions about supply include:

How much of the housing supply consists of new construction and how much is from the existing stock? How much upgrading is done in place and how

much is effective supply changed when two or more households share (or stop sharing) a dwelling?

- How does supply change in response to changes in the price of housing? What determines this elasticity? What are the effects of natural (geographical) constraints versus man-made (regulatory) constraints on supply?
- What is the role of filtering in the market? In other words, how does the supply of housing from the existing stock change to meet demand? During a given period, how much housing filters up and filters down? What are the determinants of this filtering process, and are there regulatory or other impediments to it?
- What effects do different government policies (such as rent control, the regulation of real estate industry, or government provision of housing) have on the supply of housing?
- How do these effects differ for different tenure (for example, renting versus owning), by income, and by type of housing unit?

Some supply issues are best studied with aggregate time-series data, but many can be studied with household survey data, especially if the survey has collected panel data, which would make it possible to study housing supply over time. Burns and Grebler (1977) and Renaud (1980) are examples of aggregate studies of supply. Malpezzi and Mayo (1987a) presented the first econometric estimates of supply elasticities from time-series data for several developing countries. Bramley (1993) and Ozanne and Struyk (1978) used alternative methods to study supply with household survey data. For studies of supply from the existing stock through filtering, see Green and Malpezzi (1998) for a general review and see Ferchiou (1982) and Johnson (1987) for developing country examples.

LAND AND INFRASTRUCTURE. Housing supply is inextricably related to the amount of land available for housing construction and to the availability of infrastructure. Major policy questions regarding land and infrastructure that require the estimation of behavioral relationships include:

- Is the supply of serviced land in urban areas expanding to meet growing population and employment needs? Which land uses are growing the fastest? Where is urban land conversion taking place? Is the supply of infrastructure keeping up with demand?
- Are land prices increasing faster than the overall rate of inflation? Where are land prices the highest and where are land prices increasing the fastest?
- How do changes in land prices affect the costs of end users? Is the price and affordability of housing and commercial and industrial space changing and are real occupancy costs greater now than before?
- Is the land market segmented—for example, divided into a formal and an informal sector? Which households do not have access to housing from the formal private sector? What regulations govern the use and sale of land?
- What is the system for providing infrastructure? What roles do the private and public sectors play in this? Are costs recovered? Does the infrastructure system respond to demand? Does infrastructure get installed in low-income areas?

Once again, many of those questions are answered most directly using aggregate or other collateral data, but many of these issues can also be analyzed using household survey data. For example, it is straightforward to add questions on land prices and land acquisition to household surveys (see Mayo and others 1982 for examples). Also, cross-tabulations of responses to household survey questions regarding services such as water, sanitation, and transport can yield insights into the provision of infrastructure. Angel and others (1986), Dowall (1991), and Farvaque and McAuslan (1992) are a few of the many useful studies of land issues. Ingram and Carroll (1981) and Mohan (1994) give particularly good accounts of the spatial structure of land markets in developing countries, and Bertaud and Renaud (1994) examine socialist countries where, until recently, land prices were not permitted to vary from place to place (or according to their productivity). Gackenheimer and Brando (1987), Lee (1992), and Lee and Anas (1992) discuss infrastructure issues in general. See Chapter 14 on the environment for a discussion of water supply and sanitation issues in great detail.

HOUSING FINANCE. Perhaps the most important single determinant of the quality of the housing of a given household is its income and, therefore, its ability to purchase or rent housing. Nevertheless, because all housing is an expensive and long-term investment, all housing purchases are financed in one way or another. Formal housing finance, provided by a wide variety of organizations, has been the subject of much research

in recent years. However, in many developing countries, formal housing finance institutions are relevant only to a small proportion of households. Instead, households in developing countries often turn to various informal sources of housing finance such as interfamily transfers, but these tend to be very expensive as outlined in Renaud (1984) and Malpezzi (1996). Some countries have only small enclave formal institutions that make few loans at very favorable terms. These often have little relevance to low-income and rural households whose members earn their living in the informal sector. In many respects, the challenge facing the governments of many developing countries is to encourage the development of formal sources of housing finance that are sustainable and affordable to a broad range of the population.

Given the importance of finance for determining housing outcomes, policymakers should aim to deepen housing finance markets in order to encourage investment in housing. Key issues in the area of housing finance include:

- What are the sources of housing finance, and how are these funds used? What is the system of intermediation for housing finance, and how is it connected to financial intermediation in general? What kinds of mortgage instruments are available on the lending side? What rules govern institutional features such as mortgage insurance and foreclosure?
- Are subsidies and taxes built into the financial system? If so, what is the nature and extent of these subsidies and taxes? What are the effects of tax, regulatory, and subsidy policies on the cost of credit?
- What are the mortgage interest rates, and other terms, paid by households of different types that are borrowing from formal and informal sector finance institutions? How do these terms compare to the financing available for other (nonhousing) investments, and how do they compare to inflation?
- What are the real effects of housing finance—in other words, the effects that housing finance has on housing consumption, tenure choice, and mobility? Does the availability (or lack) of formal housing finance affect such outcomes, or are formal and informal finance good substitutes?

Most research on housing finance has used institutional and macroeconomic data rather than household survey data. However, much can be learned about housing finance from household survey data if the questionnaire includes carefully chosen questions about how the households in the sample have financed their housing and at what terms. The best example to date of housing finance analysis using household-level data is Struyk and Turner (1986).

Research Methods and Data Needs

The data needed to analyze many of the policy issues discussed above can be collected in a multitopic household survey that includes a module specifically related to housing. This housing module would gather data on, for example, housing location, housing conditions (quality and quantity), tenure, and the rents and prices that households pay. This information could then be combined with data from other parts of the household questionnaire (on, for example, household incomes and characteristics) to answer many of the questions posed in the first section of this chapter.[2] A well-designed housing module will also collect data that assists analysts in other ways (for example, to measure consumption accurately and precisely).

It should be mentioned at this point that there is very little information on the operation of rural housing markets in developing and transition economies. In fact, the vast majority of housing market analysis in developing, transition, and developed countries has focused on urban housing markets, thus excluding a significant slice of the housing market in the countries being studied.[3] While this is the case in virtually all countries, the severity of the problem that this omission presents varies from country to country. For example, in Asia, Korea is currently about four-fifths urbanized, while Thailand is about four-fifths rural. More than one-third of the populations of Poland, the Czech Republic, Hungary, Italy, and Switzerland live in rural areas. Certainly, one of the biggest contributions of LSMS surveys to housing analysis is their provision of data on rural housing markets, which can be used to research this much neglected area.

Categories of Data

This subsection outlines the categories of data that can be collected in a housing module in a multitopic household survey. It also indicates specific questions that should be included in the questionnaire, the answers to which are likely to illuminate the important policy issues outlined in the first section of this chapter.

HOUSING CHARACTERISTICS. The most basic data that should be collected in the housing module are data on

the characteristics of the household's dwelling. The most relevant characteristics for policy research purposes will vary somewhat from place to place, but it is always important to collect data on the basic structure of the dwelling (for example, whether it is single-family or multifamily and what material it is built with), the age of the structure, its size, the number of rooms, the number and size of bathrooms, and other characteristics related to type and reliability of it water and sanitation services.

Other important questions relate to the quality of the neighborhood in which the dwelling is located and what services are provided in that neighborhood. Not all of these location data need to be collected by asking questions of household respondents. It would be better for the interviewers to make their own observations of these phenomena while they are in a household's dwelling to conduct the survey interview. First and foremost, they should record the location of the dwelling in a city, town, or other market, since housing markets are typically analyzed by place. Within each city or market, they should indicate where the dwelling is located in relation to the central business district of a city or town. One question that must be asked of the respondent rather than observed by the interviewer is the distance household members must travel to their workplaces and the amount of time it takes them to get there. Also, it may be useful to find out how far the dwelling is from other places of employment in the area or from central locations in the metropolitan area.

PRICES. One set of issues that must be addressed early in the design phase of any LSMS housing questionnaire relates to measuring housing prices and consumption. These issues have been discussed briefly above and are discussed again in some detail in Appendix 12.1. Rent is the most obvious measure needed for any consumption analysis. Because rent can be observed directly for renters but not for owners, it is usually necessary to impute the rental value of an owner-occupied unit.

There are several ways to collect these data (Green and Malpezzi 1998). First, the owner can be asked how much rent they could charge for their unit. Second, the coefficients of a hedonic index estimated using a rental sample can be applied to the corresponding characteristics of individual owner-occupied units to impute rent.[4] A third general approach is to apply a capitalization rate to each owner-occupied unit to appraise its value.

Appendix 12.1 briefly describes hedonic indexes and "cap rates" for readers unfamiliar with these concepts. Each approach has its pros and cons. Generally these approaches are complementary, although the hedonic approach can be especially useful. Hedonic indexes require extensive data on a unit's characteristics (such as size, type, and location) as well as on the amount of rent paid.

Whatever general approach is taken, data must be collected on arms-length market transactions, which are transactions between two parties who have no special relationship that would suggest the price paid is different from market prices. For example, transactions between close relatives may not be arms-length.[5] Price controls, subsidies, discounts to relatives and kin, and transactions that include in-kind rents (such as services performed in lieu of cash rent) all introduce obvious differences between the cash price paid and the arms-length market price. The questionnaire needs to differentiate households that are reporting their own rents and values based on arms-length transactions from households that are under some form of control or subsidy, are related to the landlord, and so on. A further complication is that in some markets, very few market transactions are not affected by some sort of price control. For example, in some markets, very few units are traded at market prices. This can be because housing is primarily owned by the government and is rented at very low rents (as in Moscow and, until recently, China) or because rent control is very widespread (as in Ghana; see Malpezzi, Tipple, and Willis 1991). Nevertheless, despite the problems that can be involved in interpreting such numbers in countries like Russia, it is necessary in these countries to collect data on the official (nonmarket) rent for the purposes of policy analysis.

It follows that the questionnaire should be designed to elicit from the respondent whether the household receives any housing subsidy and, if so, what kind and if the unit is subject to rent control. It is also important that the questionnaire carefully distinguish between housing and agricultural real estate in rural areas and between housing and shops, offices, and other nonresidential uses in both rural and urban areas. In addition, it should be noted whether any commercial premises are physically attached to the household's dwelling.

When the survey is fielded in countries or regions with no active housing market, it may be appropriate to include questions about housing prices in the community module of the household survey. These questions can be put to community leaders or others who are knowledgeable about what housing units exist of various standard types. These questions in the community module will supplement the housing questions asked in the household questionnaire. If the market is extremely moribund with few similar dwellings being sold, the questions included in the community module can be about the costs of constructing typical housing units.

In many countries, property taxes are an important source of government revenue (Dillinger 1991). Of course, how great a burden they impose depends on whether they are levied or enforced. In some markets, various transaction taxes and registration fees on housing sales are high. Where this is relevant, questions about such taxes and fees can easily be added to the housing module. In some markets, questions about condominium fees or maintenance fees will also be relevant.

EXPENDITURES. An issue that can arise when survey designers are framing the questions about housing demand is the distinction between gross and net household expenditures on housing. Some renters pay for their utilities separately from their rent, but others pay a monthly rent that includes utility charges. If more than one household lives in a unit, it is necessary for analysts to know how much money is passed from one household to another and how much goes to third parties such as the landlord. Renters may also face additional charges—particularly in controlled markets—including key money, advance rent, and expenditures on maintenance and repairs. Malpezzi (1998) discusses the role of such side payments in some detail. The questions in the housing module should cover all of these possible extra charges.

MOBILITY. Research has demonstrated that the longer a household stays in a unit, the lower are rents for a given level of housing service, even in markets without rent control. This "tenure discount" associated with longer stays is often motivated by a landlord's desire to reduce turnover, avoid vacancy losses, and continue leasing to known tenants.[6] Consequently, a question should be included about the length of the family's tenure in the unit.

A related factor that critically affects demand is the mobility of the household. This can vary enormously among countries. Strassman (1991) found that, in a given year, fewer than 5 percent of households in Colombo, Sri Lanka moved, whereas in Bangkok, Thailand about 20 percent of households moved in a year and in Seoul, Korea an astounding 43 percent moved. Including questions about the length of tenure in the survey can yield data that can be used to study such behavior. More elaborate housing questionnaires often add additional questions about previous residences and planned moves (see Mayo and others 1982 and Malpezzi 1994).

SUPPLY. As was discussed in the first section of this chapter, the supply of housing in any given country consists of the existing stock and of new construction. In any given year, well over 90 percent of the housing in a given market consists of the existing stock. Descriptive tabulations of housing characteristics, both on their own and cross-tabulated by relevant criteria such as income and tenure, can yield important insights into housing in the existing stock.

A more dynamic way to analyze the supply of housing from the existing stock is known as studying "filtering." There are three ways of analyzing filtering (Green and Malpezzi 1997). The first way is to examine the incomes of the changing occupants of existing housing units over time and whether they "filter up" or "filter down" (Zais and Thibodeau 1983). The second way is to examine the price per unit of housing services for different parts of the housing stock—for example, low quality versus high quality housing (Lowry 1960). The third alternative is to examine how the quantity of the stock changes (Malpezzi, Ozanne, and Thibodeau 1987). For example, what effect does new construction have on the amount of low-quality housing? What are vacancy rates like at the bottom of the market? How fast do units depreciate? Each of these types of analysis can be done with data provided that a panel of data is collected. The answers to questions on rents and prices, household income, tenure, length of stay, housing characteristics, and age of the unit are key variables for filtering studies. The respondent should also be asked whether the household has had or currently has any plans to upgrade its dwelling.

PROPERTY RIGHTS AND TENURE. Another set of variables that needs to be collected in the questionnaire is

the set of variables related to tenure security. First and foremost, analysts need data on how long the household has lived in its current dwelling. Information on the type of rent control on the dwelling or any subsidy received by the household is often relevant for the study of tenure security since security is often related to these regulations. Other questions may need to be included in markets in which there is squatting or a mix of "traditional" and "formal" tenure.

Household surveys have a number of uses in studying property rights and tenure issues (Daniere 1992; Friedman, Jimenez, and Mayo 1988; Gyourko 1989; Jimenez 1984; Lim, Follain, and Renaud 1980). Questions relating to property rights and tenure should be drafted carefully to ensure that they reflect the current circumstances in the country of the survey. Thereafter, at a minimum, rights and tenure should be categorized in three ways: owning versus renting, informal versus formal/secure tenure, and public/social versus private ownership. These categories are often continua rather than mutually exclusive. For example, in Korea renting encompasses several payment systems, including periodic payment of rent, a deposit-based rental system (*chonsei*), and several mixed forms of deposit and periodic rent (*wolsei*). On the other hand, the British system of very long-term leases (99 years or more) is in some ways closer to owning than renting, even though periodic ground rent is paid and eventually the property reverts back to its residual owner.

LAND AND INFRASTRUCTURE. Since the provision of infrastructure is a core function of all governments, the proportion of households living on land served by basic infrastructure is of great interest to public policymakers. The benefits of the services can often be approximated by how they affect land value. The LSMS housing module should contain questions about the value of lots, as well as questions about their size, location, and the type of infrastructure to which they have access.

HOUSING FINANCE. Many of the questions relevant to housing finance are included in the savings and credit modules rather than the housing module (see Chapters 20 and 21). Of course the questions described in those chapters have to be tailored to local conditions. For example, the most common kind of mortgage in the United States (also found in many other countries), a self-amortizing mortgage with a fixed interest rate and equal payments, can be completely described by four pieces of information: the interest rate, the loan amount, the loan term (duration), and any up-front fees. However, many other kinds of mortgages are possible. For example, interest rates may be tied to an index or payments and amortization schedules may vary (Buckley 1996; Chiquier and Renaud 1992).

Much can be learned from household survey data about how different kinds of households finance their housing and on what terms. Discrete choice models and cross-tabulations can be used to analyze these outcomes. Another finance issue that can be analyzed using household survey data is the relative inefficiency of "progressive building" (which is based on the stockpiling of materials and their use from time to time) compared to mortgage finance (see Renaud 1984).

In countries in which financing is subsidized for some borrowers or some kinds of households face very different finance terms than others, the value of different "deals" can be calculated in present value terms and then the distribution of these implicit transfers can be analyzed. World Bank (1989) demonstrated how to carry out a simple analysis of this type. Struyk and Turner (1986) demonstrated another way in which household survey data can be used to study the effects of finance on the housing market. They developed a simultaneous model of housing investment and demand for finance that can be used to test whether, and if so how much, finance availability affects housing investment.

HOUSING AND EMPLOYMENT. The importance of location with respect to workplace and other services was discussed above. When housing markets do not function well, this can prevent the efficient functioning of labor markets in general (Hughes and McCormick 1987; Johnes and Hyelak 1994; Mayo and Stein 1995). Another issue that must be tackled in some countries is the fact that in many specific enterprises, both public and private, employees' housing is provided in conjunction with their employment. Enterprise housing in China is the most obvious example of this phenomenon, but company housing can often be found in noncommunist countries as well (Tolley 1991; Fishback 1992). For example, company housing is often associated with mining and other extractive industries when these are undertaken in remote areas.

If relevant, questions should be included in the housing module about employer- or enterprise-provided housing.

MIGRATION. Another issue that arises mainly in rural areas is the housing of migratory workers, such as itinerant agricultural laborers. This issue also sometimes arises in urban areas. For example, in China, the government classifies many urban households as "temporary." This can make the choice of sampling frame particularly critical. Many obvious sampling frames, such as household registration lists, may systematically miss such households. Thus this kind of sample frame may need to be supplemented to ensure that these households are included in the sample.

DATA FROM OTHER PARTS OF THE QUESTIONNAIRE. Much housing analysis, especially studies of housing demand, relies on data gathered in other parts of the questionnaire. The main data needed for housing analysis from other parts of the questionnaire are summarized here so that survey designers will not overlook them.

It is reasonable to assume that the demand for housing is related to the household's expectations about its long-term economic situation. Since housing consumption is related to long-run or permanent income, this suggests that permanent income rather than current income is the true determinant of housing consumption. Permanent income is, however, never directly observable and total household consumption is usually used to proxy for it (Hall 1978). Thus it is important for housing demand analysis that the questionnaire contain detailed consumption modules.

It is also useful for housing market analysts to have data on current income measures as well—for example, to analyze mortgage underwriting criteria or to study the targeting of housing subsidies. Because the qualification process for various subsidies and mortgage underwriting usually depends on current income rather than on permanent income or consumption, analysts need to know the household's marginal propensity to consume out of its current income as well as its consumption. What would be even more useful for housing analysts would be a detailed analysis of the marginal propensity to consume housing out of different kinds of income (by type of employment, by the head of household versus the other household members, and so on). Thus these types of data should also be collected in the relevant modules of the questionnaire.

Estimating patterns of demand requires data not only on prices and incomes but also on other determinants of demand such as the family's preferences about housing, the family's composition, and the household's size (which is the most important single demographic variable affecting housing consumption). Other data that would be useful for analysis include the age of household head, the number of children in the household, and the sex of the head of the household. In some circumstances it may be appropriate to collect data on the household's income, type of tenure, religion, or caste to use as proxies for taste.

Survey Issues

There are several important issues relating to the mechanics of implementing the housing module.

SAMPLE. Statistical methods are used to estimate the sample size required to answer a particular question to a desired degree of precision (Kish 1965). Experience suggests that roughly 500 observations are the minimum required from a given "housing market" (for example, a metropolitan area or a rural region) for useful analysis that cross-classifies data by tenure and other factors and that allows for nonresponses and other data problems. Because LSMS surveys tend to have national samples of 2,000–5,000 households, they are often unable to produce large enough subsamples in all but the largest metropolitan areas. This means that current LSMS designs are better suited to broad analyses of "national," rural-urban, or regional housing markets. However, much research suggests that defining markets so broadly often obscures important differences among geographically disaggregated markets. Of course, resource constraints are a fact of life, and much can be done with surveys on the scale of the typical LSMS. Yet if housing market analysis is an important goal of an LSMS and if there appear to be different market conditions in different cities—or in different rural regions—in the country of the survey, serious consideration should be given to increasing the size of the sample or to over-sampling cities or regions of special interest. If the latter strategy is adopted, sample weights must be assigned to reflect this over-sampling.

PANEL DATA. Analyzing the dynamics of the housing market over time requires panel data. However, using

the household or the individual rather than the dwelling as the unit of observation can present comparability problems for housing analysts because households do not necessarily stay in the same dwelling between survey rounds. In previous LSMS surveys the housing unit has generally been used as the basis for the sample frame, which means that the survey followed the housing unit rather than its original occupants over time. While this has complicated analysis for some other issues, it is preferable for some housing analysis.

In some studies, such as the Mayo and others (1982) study of Egypt, retrospective questions were used as a proxy for a prior panel. Of course, this is not as good for analysis as proper panel data, as respondents often give inaccurate responses to retrospective questions because their memories of past events are imperfect.

Some key issues that need to be addressed when designing such a panel include the need to ensure that units that have dropped out of the stock are clearly coded to distinguish them from units that are temporarily unoccupied and the issue of how to bring newly constructed units into the panel over time. It must be possible to link each unit's data in one year's file to that in another year's file. It is essential to include a unique identifier code for each unit. Units that have been demolished, held vacant, or otherwise dropped out of the panel in the past should be identified, along with their current status. With regard to vacant units, survey designers should devise a short section of questions to be put to a respondent in a neighboring dwelling to discover, for example, how long the unit has been vacant, whether it is slated for demolition, and the rent at which it is being offered.

COUNTRY-SPECIFIC QUESTIONS. The need for survey designers to tailor the questionnaire carefully to local conditions cannot be overemphasized. For example, it is highly unlikely that bamboo would be used to construct houses in Moscow. It is just as important to tailor less obvious questions such as those about tenure and payment methods. See Malpezzi with Loux (1994) for examples of more detailed housing questionnaires.

The Housing Module

This section introduces a draft housing module (presented in Volume 3) which, suitably modified, can be inserted into an LSMS questionnaire. "Suitably modified" deserves special emphasis. Every country is different in terms of the physical design of housing, its tenure, how it is paid for, and so on. The sample questionnaire introduced here should be considered only a starting point for designing an actual module. The initial design of any module should be thoroughly pretested to ensure that it is capable of yielding the required data. This sample questionnaire will not repeat questions that appear in other modules of the survey and are covered thoroughly in the relevant chapters. Note that this module contains a bare minimum of questions on water, sanitation and fuel use, which are suitable for describing basic living conditions and enumerating households' major expenditures on these items. If water, sanitation, or fuel use are of special interest in the survey, the questions in this draft module should be dropped, and the expanded submodules contained in the environment chapter (Chapter 14) should be inserted in their place.

Similarly, the draft module does not contain much on housing finance, since such questions are contained in the credit module introduced by Chapter 21 (and presented in Volume 3). If that module were to be dropped, some of the questions about credit for housing could be moved to this module. Additional questions can be found in the sample housing questionnaire in Malpezzi with Loux (1994).

The "long" draft module presented here is somewhat longer than that used in many past LSMS surveys. This is partly because it will support more analysis of housing market issues, rather than merely the description of living conditions and calculation of consumption of housing. It also includes water and sanitation questions that are suitable to situations in which households use multiple sources; includes questions on such transactions as deposits, "key money," and cooperative fees, which were rarely covered in previous LSMS surveys; and tries to cover the full range of housing market characteristics that exist in all regions of the developing world from Eastern Europe to Sub-Saharan Africa. In practice, only in very few countries will all of these additional questions need to be included in the module. In the places where a particular characteristic is rare, questions about that characteristic can be simplified or omitted. A shortened version of the questionnaire is presented after the main version to give an idea of how it can be shortened. In this case, some of the topics that allow study of housing market issues have been omitted, and the detail on living standards has been reduced. Again, the short version shown here is merely indica-

Box 12.2 Cautionary Advice

- *How Much of the Draft Module Is New and Unproven?* Almost all of the components of the draft housing module have been used either in past LSMS surveys or in special-purpose housing surveys.
- *How Well Has the Module Worked in the Past?* This module has been used for simple descriptive sketches of the housing conditions of the households, for which it has worked fairly well. One exception to this is that the modules included in past LSMS surveys have often included only one question on the household's source of water, which in many situations has not reflected the complexity of household water sources. Also, some of the housing cost questions have been ambiguous or insufficient. In particular, they have failed to make clear whether the rent includes utilities, and few surveys have included questions on any additional financial transactions such as key money or condominium or cooperative fees. However, while previous LSMS studies have made only limited use of the housing module, many other studies have been undertaken in developing countries that have made extensive use of such data. Mayo and others (1982) is probably the best single example.
- *Which Parts of the Module Most Need to Be Customized?* A great deal of the module needs to be carefully customized to reflect the housing conditions in the country where the survey is to be fielded. Many aspects of housing vary greatly from country to country, including the predominant types of dwellings, the materials that they are made of, the kinds of amenities that are indicators of living standards, and the form in which different housing-related expenditures are made. For example, questions on privatization of state-owned dwellings, on how well elevators operate, and on the adequacy and costs of heating will be relevant in surveys in Eastern European countries but not in countries in Sub-Saharan Africa.

tive; exactly which subset of questions should remain in a shortened version will depend on the circumstances. For example, the short version shown here omits questions on key money and other such deposits, but if they are relevant to a country setting, they should be included, even in a short version of the questionnaire.

Notes on the Housing Module

This section briefly discusses the definition of key concepts and other specific points in the module, following the numbering system of the longer version of the module. When the module is going to be used in an actual LSMS survey, it is important to produce a manual that includes a more detailed checklist of definitions both for survey workers and for future users of the data. The U.S. Census report on the American Housing Survey 1995 (which can be downloaded from www.census.gov) provides a general example of such documentation. See also Malpezzi, Bamberger, and Mayo (1982) and Malpezzi (1994) for further examples.

For housing analysts to be able to use the housing data from an LSMS survey, the survey must also yield accurate, reliable information on related topics, such as household size and composition and household income. It is assumed in this chapter that these key collateral data are indeed collected in accordance with the discussion in the other chapters in this book.

It cannot be emphasized enough that survey designers will need to revise and pretest the questionnaire to bring it in line with local conditions. For example, there are not very many houses in Cracow, Poland that have felt walls or thatched roofs, and detailed questions about heating systems will be irrelevant in Accra, Ghana. While this section does not address the issue of country-specific relevance with regard to every question, survey planners should do so themselves when they are designing the questionnaire for their particular survey.

Part A: Description of the Dwelling

Part A of the housing module is designed to yield data that give a basic description of the dwelling.

Question A1 asks whether the dwelling is the household's primary residence and, if it is not, redirects the interview to be about the primary residence. For measuring living standards, it is most important to know about the conditions of the primary residence since those are the ones that pertain to the household most of the time and best reflect the quality of infrastructure available to the household. If the survey's purpose were only analysis of housing markets, gathering information about the costs and quality of secondary residences would be a perfectly reasonable option.

There are at least three ways to deal with secondary residences. In past LSMS surveys the issue was completely ignored, and Question A1 was not used. Although this is not technically correct, no complaints have ever been made to the central LSMS team on the

subject. One reason this issue has been ignored is that in most countries where LSMS surveys have been done, secondary residences are rare and pertain only to the extreme upper end of the welfare distribution. Moreover, the richest frequently have the highest nonresponse rates and even when they do respond, their expenditure, income and wealth are probably underestimated since LSMS questionnaires are designed to be applicable to the broad range of society with special emphasis on the poor. Thus ignoring this issue in the past may not have had much empirical impact on most of the analysis done with the data.

A second option is to use just the simple question included here. It will give some information on how important the topic is in the country, and will allow sampling weights to be adjusted. A third option is to deal with the issue of secondary residence much more fully. This will be appropriate where secondary residences are relatively common and their ownership extends to a wider range of society (for example, in Finland, where about 20 percent of households have a secondary dwelling). To deal with the issue fully will mean not only directing the interview on housing quality to the primary residence, but also adding questions about at least current expenditures on the secondary dwelling, and probably adding questions on its value as an asset. Whatever approach is taken in the questionnaire should accord with how secondary units are treated in the sample. Are they included or excluded from the sample frame? Are they substituted out if detected during interviewing? Are the sampling weights adjusted for households that own or geographic areas that contain secondary residences?

Each person has a commonsense notion of what is meant by such terms as "house," "household," "room," and so on, but these notions may differ from person to person. For example, is a "bathroom" also counted as a "room"? Accurate use of survey data is only possible if such definitions are consistent—in other words, if all of the survey interviewers have the same definition of each concept. For this reason, some definitions of common but important housing concepts are presented here. Many of the sample definitions will have to be modified to suit country conditions.

For example, consider Question A11 on rooms. The definition of "room" will vary from country to country. A sample definition that can be used as a starting point, adapted from the U.S. Census definition, is: "whole rooms used for living purposes, such as living rooms, dining rooms, bedrooms, finished attic or basement rooms, recreation rooms, permanently enclosed porches suitable for year-round use, lodger's rooms, and rooms used as offices or for business purposes. A divided room is separate if there is a partition from floor to ceiling but not if the partition is impermanent or made only of shelves or cabinets. Not included are bathrooms, halls, vestibules, balconies, alcoves, closets, unfinished attics, or basements, unenclosed porches. If a room is used by occupants of more than one unit, the room is included with the unit from which it is most easily reached."

Separate questions should be developed for particular types of rooms or structural features that are especially important in the country surveyed. For example, many questionnaires ask how many bedrooms a unit has. In the Ghanaian survey that was analyzed in Malpezzi, Tipple, and Willis (1990), separate questions were asked about unenclosed verandahs, because households with this feature tend to make considerable use of it. It is not important that there is double-counting in this case, since a bedroom would be counted both as a room and a bedroom. What is important is that the special rooms are either always double counted or never double counted and that the documentation makes clear which is the case.

DWELLING UNIT. A dwelling is an accommodation unit that contains one or more households. It may be a detached house, a villa, part of a flat, a shack, a tent, a separate room, or a houseboat. There may be several dwellings in a structure.

STRUCTURE. A structure is a physically separate entity such as a house, an apartment building, or a tent. It may contain one or more dwelling units.

BEDROOMS. The number of bedrooms in the unit is the sum total of all separate rooms that are used regularly for sleeping, even if they are also used for other purposes. Rooms reserved for guests' sleeping are counted as bedrooms. On the other hand, rooms used regularly for other purposes, even though used occasionally for sleeping, are not counted as bedrooms. All bedrooms are also counted as rooms.

Question A14 asks about the area of the unit. In some countries, such as Korea, households are likely to know this area precisely. In other countries they will only be able to produce a rough estimate.

A number of questions in this and other sections are questions for which households may have only approximate answers. In some cases, such as the area of the unit, an alternative approach is possible; for example, if there is enough interview time, it may be possible for the interviewer actually to measure the dwelling unit. For other questions, such as the age of the dwelling, no such alternative may exist.

Generally, it is better to get an approximate answer to the right question than a precise answer to a useless question. This may seem obvious, but census bureaus around the world mistakenly exclude important questions because they are likely to be measured with error. It is certainly important to understand the consequences of such errors—in particular to understand the difference between biased estimates and imprecise estimates. For example, studies have shown that households tend to give answers to questions about the age of their unit that contain a significant degree of error. However, if they are as likely to overestimate as to underestimate, the statistics based on this data (such as the mean age of dwellings of a certain type) will be unbiased, although these estimates will be less precise than if the respondents had a very good idea of the age of the unit. A further discussion of this issue can be found in Follain and Malpezzi (1981).

Part B: Housing Services

If water, sanitation, or fuel use are of special interest in a given survey, the expanded modules contained in Chapter 14 on the environment will be better starting points for questions on those subjects than the questions given here. The questions on such topics included in this housing module can only yield descriptive information. If the specialized modules contained in the environment chapter are used, these questions should be omitted. It would be natural to put the housing module next to the water and sanitation modules in the questionnaire and possibly next to the fuel module as well (though this might just as logically be placed next to the consumption module).

The questions on water sources included in this draft housing module distinguish between rainy and dry seasons. In some countries this distinction can be omitted. The module also distinguishes sources depending on whether they are used for drinking and cooking or for bathing and washing. In a few countries that are highly urbanized and have very well-developed water systems, this distinction can be dropped. However, households in rural areas probably use different sources for these two purposes until there is a considerable amount of infrastructure in their areas, which means that this distinction is pertinent in most countries.

The questions about "what is the main source of water..." are a little tricky to word. These questions aim to yield data on the type of access that a household has, not on the body of water that feeds into the central pipeline. Thus great care should be taken in translating these questions. Similarly, there are many different possible sources, and they can be called different things in different places (for example, a standpipe versus a public tap). The basic idea is to devise use answer codes that convey something about the likely safety and convenience of each source, without devising so many codes as to overwhelm the interviewer or the respondent.

Sanitation systems (flush toilets, pit latrines, bucket systems, and so on) are another example of something that varies tremendously from country to country. A housing unit is classified as having a bathroom if it has a room attached to the house with at least one of the following: a toilet, and a bathtub, a shower, or a sink with running water. If a unit has these facilities but the toilet and at least some washing facilities are not in the same room, then the unit does not have a bathroom.

A kitchen is a room set aside for preparing food. It must have a stove or other facility for cooking and may have a sink and a refrigerator or icebox as well. A complete kitchen has all three facilities. A kitchen is also counted as a room if it is enclosed.

Part C: Dwelling Expenditures

Part C of the module focuses on household expenditures on housing. Obviously, how these questions are asked will vary from place to place. In particular, questions about expenditure are inextricably bound up with questions about the form of housing tenure, and this varies from place to place. Often, units are either owned outright or rented, but there are many other forms of tenure in some countries. In Korea many households have a form of tenure called *chonshei,* which is similar to renting but, instead of paying periodic rent, the household puts down a large refundable lump sum as a deposit, often as much as half of the value of the unit. Other forms of tenure in Korea include owning outright and renting, but there are

also mixed forms, such as households that put down a smaller deposit and then pay a periodic rent, *wolsei*.

This section is closely related to the chapter on credit, which introduces a draft credit module in which data are collected on mortgage transactions (see Chapter 21).

In addition to collecting accurate, reliable data on expenditures associated with housing, it is extremely important to get some sense of whether these particular households are facing market prices and engaged in arms-length transactions. For example, it is important to design the questionnaire to find out whether the government provides a household with its dwelling. In that case, analysts might want to know what the rent is for other purposes than as an indication of the state of the market. If a household is renting its dwelling from a close relative, the household may be paying a lower-than-market rent. In some cultures being a member of a kinship group implies that the household gets a discount. If this information is collected in the survey, analysts can study the size of these discounts.

Questions about payments that households make for their utilities are in this section, and use a recall period of the previous month. This should work well in places where most of these items are billed for on a monthly basis. In places where this is not the case, it may be preferable to ask respondents about some of these items earlier in the module when the amenity is discussed. For example, questions about different forms of payments for the different sources of water can be interwoven into that section. Chapter 14 on environment covers the most detailed set of water charges, and differentiates many of the questions according to the type of source and the different ways in which charges for it may be made, illustrating this idea of interweaving expenditure with use and amenity questions. Expenditures on fuel can be included in the housing module, in the consumption module, or in a specialized fuel use module, with increasing detail possible in each case. Naturally they need be put in only one of those places, though this book illustrates their placement in each of the three.

Some households rent out part of their dwelling. It is important to calculate the net costs (payments out minus rent coming in) of the dwelling. For analysis of crowding, it may be useful to get further information about the number of rooms rented out and the number of persons who occupy them. It is important to make clear for the interviewer and for the respondent which rental income is covered here and which is covered in the transfers and other nonlabor income chapter. Only data on the rental income from the dwelling to which the interview pertains are captured in the draft housing module. Income from the rental of other dwellings where the respondent does not live is covered in the transfers and other nonlabor income module introduced by Chapter 11 rather than in the housing module.

Part D: Household Opinions About Their House and Neighborhood

The purpose of this section is to identify the aspects of the house and neighborhood with which households are most and least satisfied. Only a few general opinion questions have been included in the draft housing module about households' satisfaction with their unit and their neighborhood. Hedonic price studies of the United States suggest that such general opinions are closely associated with housing prices but that once such general questions have been asked, more detailed questions (for example, about households' satisfaction with schools, public safety, and so on) are not generally statistically significant.[7]

However, there may be situations in which it is worthwhile to ask additional questions about housing and neighborhood satisfaction. For example, it is plausible that different neighborhood characteristics may be valued differently in different countries. For example, consider a country with a highly stratified educational system, where attending primary school in a particular location leads to the opportunity to attend a prestigious secondary school and university. The value of this may be capitalized into housing prices and may be highly significant in such a country.

If the list of neighborhood questions is expanded, Malpezzi with Loux (1994) and especially the American Housing Survey have many examples of potential questions. It is possible either to leave open the list of aspects with which they are satisfied or dissatisfied and then to post-code them or to include a list in the questionnaire on the basis of a pilot survey.

Part E: Planned Moves and Upgrades

A household can easily change its consumption of food either up or down by purchasing more or less food in a particular day or week. Changing a household's consumption of housing is more difficult and

costly. The household must either move or upgrade the unit in which it already lives.

Since households move so infrequently and this moving process is fundamental to understanding the state of the housing market, it is sometimes useful to ask retrospective questions about the previous unit in which the household lived or prospective questions if the household is planning to move. The usefulness of these questions and the way they are worded will vary from place to place. In countries like Korea, households move on average every two years, whereas in other countries such as Egypt households may move as infrequently as every 15 years. Also, people in different cultures have different attitudes about prospective questions.

Housing-Related Questions in Other Modules

The strong links between housing finance questions and the credit module, the transfers and other nonlabor income module, and the specialized water, sanitation and fuel submodules contained in the environment module have already been noted. It has also been noted that having accurate, reliable information on income, household size and composition, and commuting from other modules in the survey is important for housing analysis. Information on housing costs can be gathered in the community questionnaire.

Questions about household composition in the roster module should be drafted in such a way as to distinguish temporary accommodation from permanent accommodation. When units are shared by more than one household, this should be clearly indicated. In some countries it is important to indicate whether the landlord lives in the building or to clarify kinship relations between households in the unit. In addition, because many developing countries have surprisingly high vacancy rates, at least in some parts of the market (Mayo and others 1982; Struyk 1988), when this is of particular interest, it can be useful to devise questions that yield the data necessary for analysts to study the extent and incidence of vacancies and their determinants. The identification and control page (see Chapter 4 on metadata) has a question showing why interviews could not take place in the selected dwelling. One of the response codes is that the dwelling was vacant. It would be possible to add follow-up questions there that would be asked of neighbors to gather some information on vacancies.

For many purposes it is useful—and sometimes very important—to include information about the location of the unit within a city or other geographical unit. These variables can be coded from the unit's address. For example, distances to the center of the city should be coded for urban units. See Ingram (1984) and Mohan (1994) for examples of the use of locational data in housing market analysis.

Appendix 12.1 What is the "Price" of Housing?

There is a difference between the way in which economists use the term "price" and the way in which housing analysts, real estate professionals, and other noneconomists often use the term.

Economists generally define rent, the periodic expenditure for housing, as the product of the price per unit of housing, P, and the real estate services yielded by the unit, Q. Thus $R = PQ$. Rent and this associated price per unit of service, P, are "flow" (per period) concepts. The physical real estate itself is durable, so Q is a "stock" concept. A stock (housing asset) yields a flow of services over time.

Of course, many readers will know that the flow "rent" can be translated into the stock concept of "value": $V = R/i$, where i is the capitalization rate. Housing value, the stock analog to rent, is also known to economists as the asset price of the unit. When real estate brokers and others use the term house price, or unit price, they are referring to this present value measure or asset price, V, rather than the flow price per unit of service, P, as described above. When economists use the term price, they are often referring to P. However, even economists sometimes loosely refer to V as price, although careful economists will usually use the term "asset price." In any event, the context should make the distinction clear.

Note that if, by the assumptions of their model or analysis, analysts standardize the quantity of real estate services produced (say, in square feet of a given homogenous level of quality, including location), then rent and flow price are basically synonymous. More precisely, rent and flow price P are proportional, since by assumption Q is fixed.

Housing economists use a number of different methods to construct indexes of the price of housing. The main types of methods: simple medians and averages, Laspeyres, Paasche, Divisia, and related time series indexes, hedonic price indexes, repeat sales indexes, user cost models, and hybrid methods. These methods are described briefly in the following paragraphs;

Malpezzi and Green (1998) provides a more detailed discussion.

Simple Medians or Averages

The most commonly used measures of this type in the United States are median sales prices for existing housing (which are published by the National Association of Realtors) and Census Median House Prices (values for owner occupiers and rents for renters). The method is, in general, self-explanatory. A big advantage of this type of measure is its simplicity and the fact that it allows rough comparisons over time and across markets. The biggest disadvantage is that this type of measure does not usually control for differences in the quantity of housing services, Q, across markets or over time.

A number of studies suggest that, while these simple indexes are not adjusted for quality differences, quantity generally varies less than price in such a sample. Thus the studies conclude that these simple measures, while imperfect, do include valuable price information.

The Laspeyres Price Index and Related Indexes

Familiar examples include consumer price indexes and implicit price deflators from national income accounts, which are available in virtually all countries. These are generally constructed by taking a sample of units in some base year and revisiting the units over time, appraising them, and computing any percentage changes. The familiar Laspeyres indexes are constructed as:

$$I_t = (P_t Q_0 / P_0 Q_0)100$$

where I is the index, P is the price per unit of housing services, Q is the quantity of housing, and subscripts denote time. Time 0 is the base year or period, and time t is any year, forward (positive t) or backward (negative t). Thus the index is the ratio of what is spent in time t to what is spent in time 0, holding what is purchased constant to the "bundle" purchased in time 0.

Related indexes, including Paasche and chain indexes, are discussed in Afriat (1977) and Diewert (1991). Indexes differ in how the bundle is fixed or varied. The U.S. Department of Commerce has recently moved from Laspeyres to chain indexes (with a constantly changing bundle) for most time series.

Laspeyres and related indexes have much to recommend them, but they do have some disadvantages. Generally, these are time-series indices only. That is, if there is one housing consumer price index for, say, Monterey, and another housing consumer price index for Tijuana, it is possible to compare how fast prices are rising in the two cities but not to discover which city is more expensive. Also, the results may vary depending on which "bundle" (typical housing unit) is chosen. Ideally, analysts would like to hold the bundle fixed, but as prices change over time, the typical bundle consumed changes in real life, even if not in the index.

Hedonic Indexes

These are constructed by regressing rent or value against characteristics of the unit and its location. Then analysts use the coefficients to predict rent or value for "standard" units. Most often these are done for one point in time, but they can be done over time as well. These methods have good theoretical and intuitive foundations and are discussed in detail in Malpezzi, Ozanne, and Thibodeau (1980). However, they involve substantial data requirements and analytical work.

Repeat Sales Indexes

These indexes are constructed after surveying units that have been sold twice. Although they are constructed using regression methods, intuitively these indexes are roughly similar to annualizing and averaging the percentage growth in sales prices over time. These indexes are time-series only. They have the advantage of being based on actual transaction prices, but most units are not sold in any given period, so using repeat sales misses a lot of information. Also, units that sell are not necessarily representative of all units, and sometimes it can be hard to tell whether Q for a unit has changed (for example, due to remodeling). Repeat sales indexes are thoroughly discussed in Wang and Zorn (1997).

The User Cost Method

The idea behind this method is simple: it calculates what a "user" of the house really pays (or would pay) net of financing, taxes, maintenance, inflation, and so on. These measures are generally time-series (for example, Hendershott and Shilling 1982) but can be done for one point in time (for example, Follain 1982). The user cost method incorporates a model of what actually determines prices, and it accounts for the effects of taxation, inflation, and maintenance on prices.

Hybrid Indexes

These indexes combine (usually) two of the above methods. Hybrid indexes can be time-series, for one point in time, or both. For example, hedonic and repeat sales methods can be combined (as in Case and Quigley 1991) as can hedonic and user cost methods (as in Follain 1982).

Notes

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1. Specifically, the income elasticity of demand is the percentage change in expenditure given a percentage change in income. See Meier (1983) for elaboration.

2. Many existing LSMS surveys have collected substantial housing information that has not yet been used in analysis.

3. For example, very few empirical analyses have been done of U.S. rural housing markets despite the vast literature in that country. See Vandell (1997) for a review and discussion.

4. An hedonic index is a regression of rents (or house values) against the characteristics of the units. See Appendix 12.1 for a more detailed explanation.

5. In the case of the owner-occupied imputation, the question must be asked in such a way that the respondent assumes that this would be such an arms-length transaction.

6. See Malpezzi, Ozanne, and Thibodeau 1980, pp. 78–9.

7. The lack of significance does not prove or demonstrate that specific things like schools or public safety do not matter but rather that, once general neighborhood and unit satisfaction are taken into account, additional specific questions do not seem to add much information.

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