AN ECONOMIC ANALYSIS OF HOUSING AND HOME BASED BUSINESSES IN COLOMBO, SRI LANKA

by

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ABSTRACT

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Housing markets in Sri Lanka have been the subject of only a few economic analyses. Furthermore, there is very little evidence in the economic literature of research about the relationship between housing and home based businesses in an LDC setting. This dissertation examines household behavior and home businesses in the market for permanent housing in the metropolitan area of the capital city, Colombo. Specifically it addresses the following topics: the patterns of demand, and the impact of household characteristics and forms of tenure on demand, home based businesses and their relationship to housing and income, the incidence and types of home improvement carried out by households, the determinants of the value of dwellings and the demand for housing space.

A sample survey was carried out in Colombo, in 1981, specifically for the purpose of this study.

The regression estimates show that the income elasticity of demand

for owner occupants is 0.94. Contrary to expectations, household size elasticity of demand is negative. Households with older heads demand more housing. When households with and without home businesses are considered separately, the income elasticities are quite similar in magnitude. The income elasticity of demand for renters was 0.86.

About one out of every five households use their home and site area to produce goods and services and generate income. The type and scale of the businesses determine how the home space is used. About 45 percent of the businesses used less than 400 square feet of floor area. More than 40 percent of the businesses have been in operation for less than 5 years and over half of them generate incomes over Rs 500 (US $24.40) per month.

The extent and type of home improvement among owners was not what was expected given the long average periods of occupancy. Only about 15 percent of the owners had added space, with the proportion somewhat higher for those with home businesses.

According to the hedonic price function, the floor area site area and the number of rooms were the most important attributes determining house values. The demand for space, derived from the hedonic information, was highly sensitive to prices and household income.

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CHAPTER ONE

SCOPE AND OBJECTIVES OF THE RESEARCH

Introduction

The relationship between housing and other sectors of the economy has drawn attention to the possibility that improvements in housing conditions are not only a target but also a tool for economic development. (See Burns and Tjioe, 1968). Some of the problems of the housing sector in less developed countries (LDC's) are well known and they are the concern of both policy makers and housing analysts, (Turner 1976; Grimes 1976; Yeh and Laquian 1979). Small enterprises form an important component of LDC's urban economy. A large proportion of urban small businesses, in many LDCs are located at home (Sethuraman 1981). However, this phenomenon has not been the subject of careful study. Small enterprises need space, and their location at home is a source of income for home construction. This complementarity is a new area of study which covers small enterprises as well as urban housing markets.

Scope and Objectives of the Study

There has been hardly any research into the relationship between housing and home businesses in an LDC setting. Meanwhile for the case of Sri Lanka, only a few economic analyses of the urban housing market have been encountered. Most studies depend almost exclusively on official data from the census or government sponsored surveys. Verification of findings through other sources of data is rare and conspicuous by its relative absence. Therefore, our research study fills an important gap in the knowledge of urban housing markets in Sri Lanka. We limit our research to a part of the metropolitan housing market of Colombo, the capital city of Sri Lanka. We study the market for permanent housing.[1] We investigate the behavior of households in this housing market and the nature of the enterprises located in the dwellings. In specific terms, the research attempts to develop a better understanding of urban housing demand and addresses the following topics:

a. the pattern of housing demand, especially the income elasticity, taking the differences between types of households into consideration.

b. home based businesses and their relationships to housing and income.

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[1]The housing stock in Sri Lanka is classified according to to the materials of construction. Permanent housing refers to dwellings made of durable materials. Permanent houses are those with walls of clay or cement brick, a floor of cement and roof made of clay tile, corrugated metal, or asbestos cement sheets. [See Department of Census and Statistics (1982, p. 5)].

c. the incidence of home improvement and the pattern across different types of households.

d. the hedonic analysis of home values.

e. the demand for housing space.

The insights and information about housing behavior, of the patterns of housing demand, and of the estimated income elasticities can be a valuable guide for policy makers. Meanwhile, the information on home businesses would add to the knowledge needed to promote small enterprises. The relationship between dwellings and businesses draws attention to the need for a different outlook on the regulations of businesses, zoning, and urban development.

Research Method

This research used household interview data was obtained from a cross section sample survey. For details on the sample selection see Appendix A. The surveys were conducted during the months of June and July, 1981. The data were coded and processed using the Statistical Package for the Social Sciences (SPSS) computer program. The method of multiple regression was used to analyze housing demand and hedonic value.

We assumed that the housing market was in equilibrium. The households were assumed to be utility maximizers subject to the constraint imposed by income.

Literature Review

This section reviews the current state of the discussion related to the topic of our research. We stress a few themes and highlight the concepts related to housing in general and within an LDC setting. It is both a review of what is known as well as a guide for the research.

Housing and Construction in Economic Development

As Burns and Grebler (1976) point out; "The position of the housing sector in various stages of economic development has long been a controversial issue, both in the literature and the conduct of public policy. This is especially true in the case of housing investment in developing countries." Different strands in the discussion of housing in economic development can be readily identified. They are:

a. The debate between economists, housing specialists and urban planners about the optimal levels of resource allocation to residential construction.

b. A normative theory of housing investment based on the assumption of indirect benefits resulting from improved housing.

c. The identification of stages of housing development related to stages of economic growth or levels of development.

The economist views housing as one of the many alternatives for using scarce resources. Rapid urbanization and migration in LDC's has brought the debate between economists and the housing activists, or as Burns and Grebler call them "housers", into the open. Resources are directed to

housing within an institutional framework. What the economists often underestimate, but not exactly overlook, are the effects of the absence of particular institutions on a decision making environment. Therefore in order to enhance the performance of the housing sector, institutions have to be developed and fostered. This often implies the direct public intervention in housing.

Housing can be regarded not only as a target of development but also as a tool for development. As in the case of public goods, social and individual returns to housing have to be identified in order to study the patterns of resource allocation to this sector. Private profitability may underestimate the social desirability of resources allocated to this social overhead sector. Burns and Tjioe (1968), argue that social overhead capital is not only complementary to, but is also substitutable with, economic production capital. The contribution of the social overhead sector, they point out, would be in terms of a share in the increase in the output of the production sector. Better or improved housing is linked to productivity increases and in addition it may contribute to better health, increased education and higher participation in the work force. Based on a study in South Korea, Burns and Tjioe (1968), point out that the view of housing investment as being unproductive is inaccurate and that improved housing is resource generating in that it improves the quality of human resources.

In the discussion of the behavior of housing and construction investment during the process of economic development, a few authors have attempted to relate output allocation to housing with general stages of economic development. Howenstein (1957), developed a three stage scheme in order to explain the relationship. During the first

stage, resources are allocated primarily to build factories and other producer goods and investment in housing is undertaken only to the extent clearly necessary for the success of these. The second stage consisted of investment in housing to insure a minimum standard of "health and decency" with priority for workers already employed and difficult to replace. The final stage is when housing investment is undertaken for its own sake. However, an empirical verification of the existence of such a pattern was not undertaken by Howenstein. Meanwhile, Chenery (1960), Kuznets (1960), Strassmann (1970) and Lakshmanan et al, (1978), have attempted to empirically investigate the relationship between housing construction and economic development.

The cross section analysis of Chenery indicated that the value added in the construction sector increased from about 4 to 7 percent of GNP during the process of development. Kuznets (1960), using cross section post war data for 34 countries, found that the share of gross construction increased from 8.5 percent of GDP for countries of the lowest per capita income group, to 11.9 percent for those in the highest group. He attributed this generally rising trend to supply factors; dwelling costs have risen relative to that of other construction. However, in the study of 11 developed countries using time series data, Kuznets (1961), noted that construction had declined relative to fixed capital formation and that residential construction had remained almost constant or declined relative to total construction. The reason suggested was on the demand side where less housing was associated with declining rates of population growth. Strassmann (1970), combining cross section and time series analysis with data from 27 countries for the period 1955-64, found that the growth rate of residential

construction rose from around 2 percent per year in poor countries to nearly 10 percent in middle income countries and fell back to about 6 percent for the rich countries. Meanwhile, the share of residential construction in gross national product also rose and fell. This finding was confirmed in the work of Burns and Grebler (1977).

Lakshamanan et al, (1978), presented evidence supporting the assertion that housing consumption is related to the level of development and is analogous to the behavior of the output of the construction sector shown by Strassmann and others. Using data from published UN sources for 42 countries for the period 1950-73, they related income elasticities of housing consumption expenditures to three levels of development. Income elasticity rose and then fell with increasing income levels. Several reasons were advanced to explain these trends. In low income countries a considerable portion of housing consumption may lie outside the monetized and statistically measured sector. The claims on resources of other consumption, especially food, may be very strong. On the supply side, rigidities in the supply of building materials and organization of construction retard housing production. The middle income countries are characterized by acceleration in industrialization and urban migration resulting in an increased demand for housing. On the supply side, the rigidities become less binding, the skills of the labor force and the volume of physical overhead capital increase. The supply of housing keeps pace with demand because technology is simple and materials are largely indigenous while both workers and entrepreneurs have easy entry into the building industry. Moderate inflationary conditions provide a motive for investing in housing as an asset. At the upper income level, migration

and population growth is reduced, new commodities enter the consumption stream becoming substitutes for housing services. Meanwhile, labor in the construction sector becomes highly organized and wages in this sector increase relative to manufacturing wages. The income elasticity tends to decline due to the high level of housing consumption already achieved at this stage.

Housing Demand

The analysis of housing demand has followed the advances in the conceptual framework of microeconomics. This section reviews the literature on housing demand. The primary objective is to highlight the development in the methods and concepts used in the analysis.

The Housing Commodity

Because of its relatively high supply price, durability, heterogeneity and locational fixity, housing is distinguished from most other goods traded in the economy. As Quigley points out: "Together, durability, heterogeneity and fixity indicate that the housing market is really a collection of closely related but segmented markets for particular packages of underlying commodities, differentiated by size, physical arrangement etc. and location. These submarkets are connected in a complex way" (Quigley in Bourne and Hitchcock, 1978, p. 25).

Meanwhile, the microeconomic underpinings of the consumer decision making process relates housing demand to the flow of services from the durable good housing (Hicks 1946).

Olsen (1969, p. 612), points out that there are two distinct markets, one for the durable good housing and the other for the services derived from the durable good. Muth (1960, p. 32), relates the two markets by defining one unit of housing service to be the quantity of service per unit of time yielded by one unit of the housing stock. Therefore, Muth assumes that the housing stock is the only input in the production of housing services.

All work on housing demand is guided by the underlying assumption that the demand for housing is primarily a reflection of the demand for the service yielded by it (deLeeuw 1971, p. 1). If housing markets are perfectly competitive, the housing service is capitalized into the value of the house (Muth 1969).

Two different views of the housing service are evident in the literature. Olsen (1969, p. 613), argues that one can define a unit of "housing service" as an homogeneous commodity, which, in equilibrium, has a constant price over the entire market. This implies that in the long run equilibrium, houses renting for the same price produce equal services. In this case, such houses are perfect substitutes for one another, and consumers are indifferent to the composition of the individual houses. Therefore, space, quality and the location of a house play no unique separate parts in the consumers choice. Although the view of the housing service as a homogeneous one has provided great insights into the behavior of housing markets, for many analytical and descriptive purposes it is inadequate.

The second view of the housing service is that it is a heterogeneous bundle comprised of different types of services. Many recent analyses of housing markets have taken the heterogeneity of the

housing good into account. [See Ball (1975 for an early review, later, Quigley in Mieszkowski and Straszheim (1979)]. These studies consider housing as a bundle of individual attributes, each contributing to the provision of one or more housing services. The housing commodity is examined in hedonic or characteristic terms.

The work of Lancaster (1966), Muth (1966), and Becker (1965), provided part of the theoretical base which led to the hedonic analysis of housing. The "new demand theory" of Lancaster asserts that consumers view the goods they purchase as a bundle of characteristics, and therefore, value the goods for the characteristics inherent in them. Both Muth and Becker proposed the view that purchased goods are used as inputs in the production of another set of commodities from which consumers gain utility. Accordingly, the dichotomy between production and consumption, present in the traditional economic theory is removed. Rosen (1974), developed a theoretical model for the analysis of hedonic prices. This model recognizes that the market price of goods such as housing is jointly determined by the consumers' evaluation of and the producers' offer price for, each service provided by the house.

To summarize this section, the large volume of literature on housing demand can be separated into two categories according to how the commodity, housing, is dealt with. Both types of study offer important insights into the behavior of the consumer and the naure of housing markets.

The Income Variable

The appropriate concept of income is less clear for housing than for other commodities. Due to the high transaction costs and the durability of housing, the relevant notion of income for analyzing consumer choice is "normal" or "long run" income and not annual income, (see Muth 1960, Reid 1962). According to deLeeuw (1971, p. 1), "The hypothesis guiding all of the work is that the quantity of housing services demanded per unit of time depends on 'normal' real income and the relative price of housing services."

Permanent income in the sense proposed by Friedman is the most commonly used concept of normal or long run income. Although there is general agreement that some form of long-term income variable is one of the principal determinants of demand for housing, Goodman and Kawai (1980), propose two reasons for the inclusion of the transitory component of income. First, capital markets are not perfect and consumers cannot generally borrow against expected life time income. Therefore, transitory income may be used to make adjustments to the flow of housing services, that could not be met from permanent income. For instance windfall gains, can be used to improve and upgrade a dwelling. The second reason is related to the fact that housing is a durable good as well as an asset for the home owner. If transitory income is to be saved for future consumption, it can be invested in a home. Therefore, transitory income can affect the demand for housing services.

Different methods have been used to deal with the problem of estimating the permanent income elasticity. They include grouping of

observation (deLeeuw 1971, Muth 1974), using lagged income as an instrumental variable (Lee 1968, Lee and Kong 1977), use of an average income over several years (Carliner 1973, Mayo 1977) and the use of an instrumental variable based on a regression of income on its presumed determinants (Mayo 1977, Goodman and Kawai 1980).

The issue of the appropriate income to be used, is common to both studies of homogeneous as well as heterogeneous housing services.

Measure of Housing Services

In actual transactions, what is observed is the value of the total house or the expenditures on housing services. Consumer theory relates quantities to income and relative prices. In practice, neither the prices of the various housing services nor the quantities are actually observed. For home owners, even the value of housing services or expenditure for housing services is not observed. Many of the studies of homogeneous housing, for owner occupants, use the market value of the house in place of housing expenditures. Muth (1960), Reid (1962), Winger (1968) and Lee (1968), used the market value of the home to estimate the demand for housing among home owners. As deLeeuw (1971, p. 2), points out: "The variable to which the theory of consumer demand and most empirical demand studies refer is expense per unit of time, usually per year, not market value; and there is evidence that housing expense per year is a smaller fraction of market value for high value homes than for low value homes." The use of market values is expected to bias income elasticity estimates upwards, (deLeeuw, 1971, p. 3).

The Price Variable

Because of the difficulty of devising an appropriate unit price for housing services, many studies exclude this variable altogether from the demand function estimates. For example see Reid (1962).

For the homogeneous housing case, only a few studies have measured housing prices other than as market wide averages in samples gathered across cities. Two analyses, Muth (1971) and Polinsky and Ellwood (1977), have derived estimates of "unit prices" for housing which vary by observation. They estimated the parameters of a housing production function (CES) with inputs of land and non-land, and substituted the parameters into the cost function to estimate the price per unit of housing.

Assuming that housing suppliers were profit maximizers, operating in a competitive market, Follain et al (1980), derived housing prices using a Cobb Douglas housing production function with land and structural inputs.

In the case of studies which consider housing to be heterogeneous, the price per unit of service relates to the defined characteristics associated with the house. The underlying theoretical construct in these studies is the hedonic price function, which related house price or value as a dependent variable to the housing attributes, as explanatory variables. The hedonic index derived from the hedonic equation, is a measure of the price of the total bundle of attributes or heterogeneous housing, relative to a specified market basket of housing characteristics. (See Goodman and Kawai, 1980). However, many studies using the hedonic price function were concerned with the determinants of

total house price and not the derivation of demand for housing.

Demand Function Specification

Mayo (1981), points out that the apriori specified demand function, the log-linear function, makes a strong assumption that income elasticities of demand for housing services are constant across housing markets. Very few studies on housing have estimated demand functions which are derived from specific utility functions. A large part of the empirical work on housing demand is based on log-linear demand functions. This function form has been used primarily because of its convenience. Ingram (1981) and Murray (1975), derive demand functions associated with a Stone-Geary or displaced Cobb Douglas utility function and a generalized CES utility function, respectively. Although it is theoretically more elegant to specify the utility function from which an estimated demand function is estimated, there is no a-priori reason for selecting a particular utility function.

Freeman (1979), following Rosen, presented a theoretical basis and the assumptions required, in order to use hedonic price equations derived from property value data, to obtain measures of the prices and the inverse demand functions for housing characteristics.

Mayo (1981) and deLeeuw (1971), reviewing empirical work on the demand for housing, draw attention to many of the shortcomings of the studies which view housing as a homogeneous good. The criticism on the narrow view of housing as a homogeneous commodity or service but rather because of the measures of the variables and the specification of the estimated demand equations that are used. Besides the lack of a price

variable and the use of current income, deLeeuw points out that imputed rent for home owners is not added to the income measure.

As Freeman (1979), points out, in order for the inverse demand function for housing attributes to be identified, the hedonic price function has to be non-linear in the attributes. If the hedonic function is linear, then the marginal implicit price of the attribute, derived from the hedonic, is constant and there, a demand function cannot be estimated. In addition to the assumptions about the hedonic, as in all empirical studies of demand, the supply side has to be specified or known in order for the demand function to be identified.

The hedonic technique has been used,

1) to empirically test the importance of workplace accessibility. See Ball (1973), for a review of studies conducted in the U.S. and Great Britain.
2) to investigate the types and importance of local externalities, i.e., noise, air quality, neighborhood features and their effect on the market valuation of housing services. See Freeman (1971), Anderson and Crocker (1971), Kain and Quigley (1970).
3) to provide a description of the components of heterogeneous housing. See Kain and Quigley (1975), Straszheim (1975) and Quigley (1976).

The two approaches to the housing commodity described above, offer different insights into the issues related to housing and urbanization. Studies of demand for the composite commodity, housing, estimate the sensitivity of housing demand to income prices for different categories of households within and across a-priori specified

housing markets. The hedonic studies, on the other hand, like the conventional production theory, attempt to evaluate the effects of the various components of the housing bundle. This method permits not only the assessment of the structural features of a house, its quality and size, but also the effects of the environment within which a house is located.

Home Improvement

Because housing is fixed in location, durable, and because the transaction costs of moving are high, households cannot readily change the consumption of housing services, which results from changes in demand. Home owners change their housing services by making improvements or by moving while renters usually have to move in order to change housing services. As Goodman and Kawai (1980) and Mendelsohn (1977), point out, a house, while providing a stream of services, also has an asset-like quality to it. Home improvement is, therefore, an adjustment of a consumption stream as well as an investment in an asset. Empirical studies on home improvement are few in number. Mendelsohn (1977), using a household utility maximization model found that home improvements are affected by household characteristics; house values and house age. Household characteristics, like income and age, determine the use of hired labor for improvements. However, Mendelsohn did not consider the effects of neighborhood or dwelling characteristics or their changes over time. Strassmann (1980) and Ndulo (1983), using logic analysis, analyzed the relationship between dwelling and household characteristics and the probability of particular types of improvement.

Home Based Production

According to one view of economic history, the different forms of industrial organization for producing goods for the market, especially consumer goods, are reduced to two types, one labelled the domestic system and the other the factory system. The displacement of the former by the latter is usually considered one of the principal features of the process called the industrial revolution. (See Knowles, 1922, p. 86). Most historians admit that this transformation was completed slowly, but gives the impression it was inevitable after the great harvest of inventions in the late eighteenth century, which dramatically changes textiles, metallurgy and energy use.

The term domestic system has been used synonymously with the outwork system or the putting out system. The main feature of outwork was that much of the work done domestically was "put-out" by capitalists from central workshops to be completed by dispersed workers, then "taken-in" by the same capitalists who were responsible for marketing the finished product. But all out-work was not performed in dwellings. This is because, "...the notion of outwork in a capitalistic economy can easily be stretched to cover any work done under subcontract arrangements. Such systems, whereby a major job of work is undertaken by a chief contractor who then sublets it to any number of others on such terms as are mutually agreeable, were, and still are, common; not only in consumer goods industries but also in the making of large and complex producers' goods which rely on highly sophisticated technology and in building and construction." (Bythell, 1978, pp. 13-14). The use of the outwork system in the industrialization of Britain and Western

Europe has been analyzed by Marx (1970, 1971) and by Dobb (1975). They saw it as a transitory form, which was soon to give way to the direct subordination of labor in capitalist production. Nevertheless, in England, until the final quarter of the nineteenth century the outwork system had an important role to play in the mass production of a wide range of consumer goods. Although it had almost disappeared from some sectors in which it had traditionally been important, it had taken firm root in others. During this period, outwork complemented the factory system. Technical progress, while displacing some types of outwork, created a greater demand for other products organized as outwork. (Bythell, 1978, Part One).

The function of the household in the outwork system was to complement a production process, but the household was engaged only in a part. This arrangement enabled a particular stage of production to be completed without investing in a building or plant by the capitalists. The high cost of buildings and the high level of rent aided the survival of outwork. Therefore capitalists were detered from sinking capital into large workshops or factories, especially in the seasonal trades, while at the same time the incentive of housewives and children to offer their services as outworkers rose to supplement income and to ease the pressure that high house rents had placed on working class budgets. (Bythell, 1978, p. 183).

In the context of the LDC's, not very much is known about the phenomenon of home based businesses. For a survey of what is known about home businesses, see Strassmann (1981). For historical reasons, this activity has been expected to disappear or to become relatively unimportant during the process of development. (Hoselintz, 1959).

Meanwhile, research concerned with small firms or the issues of urbanization have noted the widespread existence of home enterprises. See Sethuraman (1981), Farbman (1981), Schmitz (1982).

Some of the studies which encountered home enterprises, point out relationships between the dwelling and the enterprise, which have important implications for both. In a study of Ecuadorean small enterprises (Farbman 1981), the problem of inadequate space and the location of the enterprise at home led to the suggestion that housing designs include space for a business. Meanwhile, renting part of the dwelling to finance home construction has been observed in some low income housing settlements. (See Popko, 1980).

The promotion of home businesses share common problems associated with fostering other small enterprises. For instance, the promotion of cottage industries through subsidies and assured markets for their produce, while suppressing competing factory production, as in the case of the Indian cottage industry, was uneconomical (Dandekar, 1959). Security and assured labor supplied by the household, were important factors for "shop house" producers in Kuala Lumpur, in selecting this arrangement over alternative choices of business and residential location. (Simon and Emrick, 1979). In Hong Kong, the practice of relocating squatters engaged in manufacturing in "flatted factories" was related to the fact that the capital outlay required for a building was beyond the scope of the small industrialist who, therefore, preferred to make a half-way investment in converted domestic property, which can be reconverted to domestic use if the industrial venture failed. (Dwyer and Lai, 1967).

The evidence indicates the possibility of increasing household

income and improving housing conditions through the careful promotion of home based small businesses.

CHAPTER TWO

THE SOCIO ECONOMIC BACKGROUND

Introduction

This chapter provides the background for the discussion on the housing consumption of urban households which follows later. It describes patterns of urbanization and population growth in the past and the socio-economic context within which it has taken place. The general economic conditions in the country provide an appropriate setting for a brief description of housing conditions, especially within the Colombo district.

Urbanization Within a Development Setting

The process of urbanization in Sri Lanka has followed a pattern which is quite different from that of many developing countries at both similar and higher levels of economic well-being. The urban share of the total population has increased from 15.3 to 21.5 percent during the period 1946 to 1981.[1] During the decade 1971 to 1981, the total urban

[1]The figures are obtained from Department of Census and Statistics, 1978, 1982. The definition of an urban area changed after the 1963 census to include areas classified as rural before then and no

population had grown at an annual average rate of only 1.15 percent.

The rate of urbanization of a country can be considered as an indicator of economic growth. The structural transformation of an economy, the shift from agriculture to manufacturing activity is reflected in the expansion and concentration of population in towns and cities, leading to higher levels of urbanization. However, urbanization is not necessarily a phenomenon observed under conditions of modernization and industrial expansion alone. Rural to urban migration has been identified with urban labor market behavior, acceleration of population growth, technological advancement in the agricultural sector, among other factors. Therefore, urbanization has been observed within a complex mix of urban pull and rural push factors. the result has been that in many developing countries, once a process of transformation is underway a large flow of migrants have flocked to the urban centers creating vast settlements of squatters who are not participants in the industrial sector. The flow of migrants from the rural sector is not entirely in balance with the expansion of urban economic activity.

Rapid urban growth, except in cases when accompanied by famine or disruptions caused by other natural disasters or war, is not associated with a stagnant economy. Even though Sri Landa has avoided the problems associated with rapid urban growth, its absence may be the consequences of modest or slow growth and transformation of its economy, or of an egalitarian policy of transferring resources to the rural areas in the form of health, educational and other services.

The district of Colombo experienced the largest net inflow of migrants during the intercensal periods 1946-1971. However,the net

adjustment was made for this addition.

inflow of migrants during the intercensal periods 1946-1971. However, the net migration rate during this period had averaged below 3 percent. During the period 1946-53 it was 2.69 and had declined to 1.16 over 1963-71. Table 2.1 shows the rates of net migration during the intercensal periods for the district of Colombo.

TABLE 2.1

Net Migration Rate Per 100 for the District of Colombo

Intercensal Period	1946-53	1953-63	1963-71
Net Migration Rate	2.69	1.16	1.16

Source: Census of Population, 1971, Sri Lanka, Department of Census and Statistics, 1978.

Note: The net migration rate is expressed as a percentage of net migration of the total district population at the middle of the intercensal period.

It is clear that migration into the district had not reached alarming proportions. However, throughout the period 1946-71 the Colombo district had increased its population through a large inflow of migrants. According to the 1971 census, 16.6 percent of the population of Colombo district had been born in another district.

The sharp decline in mortality rates which began in 1947 led to a doubling of the population during the 25 years, 1946-71. the work force doubled during this period while unemployment reached nearly 15 percent

by 1970 (Department of Census and Statistics, 1973). The rate of unemployment in the rural sector in 1970 was estimated to be marginally lower than that of the urban sector. In many respects, the actual performance of the Sri Lankan economy since 1946, confirm the expectation of slow urbanization. The share of agriculture in national output has declined from 39.1 percent in 1946 to 25.1 percent in 1981. Manufacturing output meanwhile has increased its share from 11.6 to 13.9 percent during the same period. (Central Bank of Ceylon, 1971 and 1981).

Population

The estimated population of Sri Lanka in 1981 was 14.85 million. During the decade 1971-1981 it has increased at an annual rate of 1.58 percent. This was a decline from the rate of 2.29 percent observed for the intercensal period 1963-1971.

The urban share of total population had reached 21.5 percent by 1981. During the decade 1971 to 1981 the urban population had grown at an average annual rate of 1.15 percent which is lower than the rate for the total population. A major reason for the decline in the growth rate of the total population can be attributed to an absolute decline of over 200,000 in the Estate sector population during the past decade.[1] The classification of population centers as urban changed during the different census from 1946-1981. During this period the administrative

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[1] A program of repatriation of estate workers of South Indian origin is currently being implemented.

definition of an urban area has included towns ranging in size of population of 1500 to 500,000. Meanwhile, areas contiguous to urban complexes have been excluded by definition. However, areas whose administrative status changed were treated as urban. Inclusion as urban does not follow a uniform pattern of population size or other urban characteristics. For a further discussion see Gunatilleke (1974).

Adjustments for varying definitions and coverage are thus necessary to obtain the actual trend in urban growth.One such estimate, (see Jones and Selvaratnam, 1970), for the 25 years, 1946 to 1971, indicates that the urban share of the total population increased only 21.3 to 22.3 percent.

The district of Colombo which contains the capital city of Colombo, has maintained an almost constant share of the total population of the country. In 1946 its estimated share of the total population was 21.3 percent, in 1971 the share was approximately the same at 21.1 percent.

TABLE 2.2

Share of Colombo District in the Total Population

	1946	%	1953	%	1963	%	1971	%
Colombo District	1.420	21.3	1.708	21.1	2.207	20.8	2.672	21.1
Sri Lanka	6.557	100.0	8.092	100.0	10,582	100.0	12,689	100.0

Source: Estimated from census data 1946, 1953, 1963 and 1971.

Note: The population is in the millions of persons.

During the intercensal periods covering the years 1946 to 1971 the population of the district grew at average annual rates not very different from those for the entire country. Meanwhile, the population of the city of Colombo has grown at rates below those for the district, while the suburbs of the city grew at consistently higher rates. The growth of the suburbs partly reflects the changes in administrative status of these areas as mentioned earlier. Table 2.3 gives the average annual rates of population growth for the city, its suburbs and the district during the intercensal periods.

TABLE 2.3

Average Annual Population Growth Rates for the Colombo District, The City and Its Suburbs - Percentage

	AVERAGE ANNUAL GROWTH RATE		
	1946-53	1953-63	1963-71
Colombo City	2.4	1.9	1.2
Suburbs	4.5	3.4	3.7
Colombo District	3.4	2.7	2.7

Source: Estimated from census data 1946, 1953, 1963 and 1971.

The administrative district of Colombo spans an area of approximately 792 squares miles which is about 3.2 percent of the total land area of the country. The city of Colombo by 1971 covered 1.8 percent of the area of the district. The national population density per square mile in 1981 was estimated at 594 persons. This is an increase of 16.9 percent over the estimated figure for 1971. In 1971 the density for the Colombo district was 3.374 persons, while the figure for the city was over 39,000. The land area of the city had grown from 13.27 square miles in 1946 to 14.32 in 1971.

Therefore, we observe that the concentration of the urban population is in the Colombo district. The urban share of the total district population is about one half. Meanwhile, by 1971 the city of Colombo contained about a fifth of the districts' population or equivalently, about the same proportion of the national urban population.

Age Structure of the Population

The age structure of the population of Sri Lanka with its high proportion in the young age groups is typical of that of most developing countries. The proportion of the population below 25 years of age in Sri Lanka was about 60 percent of the total in 1971. Declining birth rates due to lower fertility and increased life expectancy at birth as a result of better primary health care are expected to lower the proportion of the young in the total population. However, the young will continue to predominate the age structure of the country.

The age groups that will have the greatest impact on new household

formation would be those in the category 25-34 years. This age group would also critically influence the demand for housing in the future. The growth rate for the population in this age category for the country, during the period 1963-71, had increased to an average annual rate of 2.4 percent, from 1.4 percent during the period 1953-63. However, the increase of total population had fallen from an average annual rate of 2.7 percent during 1953-63 to 2.2 percent during the 1963-71 period.

The average age at marriage had risen from 21 years in 1953 to approximately 23.5 in 1973. The changes in the rates of unemployment, especially an increasing trend observed during the period may have been an important contributing factor in the postponement of marriage and family formation. Yet during this period very important socioeconomic changes had taken place in the country. In particular, female participation in the work force had increased. So had the levels of female and male literacy. Changing expectations and aspirations may very well have had an important role in the increase in marriage age, besides increased unemployment.

The Overall Trends of the Economy

The economy of Sri Lanka has shown a substantial upturn during the 5 year period 1977-81. During the 5 years proceeding 1977 the GNP had grown at an average annual rate of 3.5 percent. Since 1977, the growth rate increased, resulting in an average annual rate of 4.9 percent (Central Bank of Sri Lanka, 1981). The per capita real GNP had grown at an average annual rate of 2.1 percent during the decade 1970-80. However, during the second half of this decade the average growth rate

was higher than that for the first half, 3.0 percent compared with 1.0 percent. Meanwhile, for the 5 year period 1977-81 the per capita real GNP had grown at 3.4 percent (Central Bank of Ceylon, 1981). Therefore, it is clear that the economy experienced a significant spurt of activity during the period 1977-81. The per capita GNP in 1981 at market prices was Rs 5,640. In terms of U.S. dollars this is equivalent to $274 dollars. However in terms of equilvalent purchasing power, as estimated by Irving Keavis and others (Gilbert and Kravis 1954) the real dollar value of the Rupee may have been 100 to 120 percent higher, raising the 1981 per capita product from $274 dollars to about $ 602 dollars.

Nevertheless, this growth has not led to a great structural transformation of the economy. In real terms, while the share of agriculture declined from 28.8 percent of GNP to 25.1 percent during the period 1970-81, manufacturing declined from 16.9 percent to 13.9 percent. The sectors which increased their share of real GNP during this period were mining and quarrying, from 0.7 percent to 3.5 percent and services, from 11.3 percent to 13.7 percent.

The value added in the construction sector which had a share of 5.7 percent of the real GNP in 1970, almost maintained its share with 5.1 percent in 1981. This sector had reduced its share of the real product from 5.7 percent to 4.6 percent during the period 1970-78. A spurt of activity after 1977 helped the sector to almost regain its share of real product.

In 1977 significant changes were made in the exchange rate system. At the start of the year the Rupee was linked to a basket on international currencies. In the middle of March when the Rupee exchange rate to the U.S. dollar was Rs 8.72, the currency was revalued

TABLE 2.4

Sectoral Composition of Gross National Product at Constant (1970) Factor Cost Prices

SECTOR	1970 I	1970 II	1979 I	1979 II	1980a I	1980a II	1981a I	1981a II
1 Agriculture, forestry & fishing	3,732	28.8	4,622	25.1	4,766	24.5	5,097	25.1
2 Mining & quarrying	95	0.7	652	3.5	684	3.5	713	3.5
3 Manufacturing	2,197	16.9	2,659	14.4	2,681	13.8	2,820	13.9
4 Construction	744	5.7	960	5.2	1,066	5.5	1,034	5.1
5 Electricity, gas, water & sanitation	101	0.8	190	1.0	209	1.1	234	1.2
6 Transport, storage and communication	1,258	9.7	1,716	9.3	1,838	9.4	1,957	9.7
7 Wholesale & retail trade	2,533	19.5	3,551	19.3	3,849	19.8	4.034	19.9
8 Banking, insurance & real estate	152	1.2	350	1.9	402	2.1	462	2.3
9 Ownership of dwellings	399	3.1	518	2.8	549	2.8	579	2.9
10 Public administration & Defense	517	4.0	905	4.9	959	4.9	997	4.9
11 Services	1,459	11.3	2,378	13.0	2,572	13.2	2,779	13.7
12 Gross domestic product	13,187	101.7	18,501	100.4	19,575	100.6	20,706	102.2
13 Net factor income from abroad [b]	-220	-1.7	-71	-0.4	-119	-0.6	-449	-2.2
14 Gross National Product	12,967	100.	18,430	100.	19,456	100.	20,257	100.

Source: Central Bank of Ceylon, 1981.

Note: I is the amount in millions of Rupees,
II is the percentage share.
[a] provisional figures
[b] revised figures

by approximately 20 percent. There seemed to be no apparent long term trend of strengthening of the Rupee to justify this action (see Central Bank of Ceylon, 1977, p. 3). When the new government assumed office in August of that year the currency was permitted to depreciate under a "crawling peg" system. By the middle of November the exchange system was reformed, the basic exchange rate and the premium rate under the Foreign Exchange Entitlement Certificate scheme were unified and the Rupee was permitted to float with an initial value of 16 Rupees to the U.S. dollar.

At this time, import restrictions were considerably reduced. The tariff structure, while maintaining protection for particular domestic industries, was adjusted to permit import competition. Exchange control restrictions were reduced substantially. Imports of capital goods up to Rs 700,000 were not subject to controls or restrictions. During the period 1970-77, the slow rates of growth of the economy and per capita income were reflected by low levels of domestic saving and capital formation. In 1970 gross domestic capital formation, GDCF, was 20.3 percent of gross national product. By 1977, this proportion had decreased to 16.8 percent. In 1980 an increase in capital formation, resulting from the new expansionary policies, resulted in the proportion increasing to 33.4 percent. During the decade 1970-80, capital formation had increased by more than seven and a half times in nominal terms. (Central Bank of Ceylon, 1981). In 1970, building and other construction was 38.3 percent of GDCF and the proportion had declined to 27.9 percent by 1980. The changes in the proportion of building and construction which included private as well as public sector residential and other construction are shown in Table 2.5.

TABLE 2.5

Building and Construction as a Proportion of Gross Domestic Capital Formation - Percentage

	1970	1973	1974	1975	1976	1977	1978	1979	1980a	1981a
Proportion of construction in GDCF	13.3	40.7	35.7	31.5	31.6	28.5	25.9	28.3	27.9	33.5
GDP	77.27	5.59	5.61	4.91	5.82	4.11	5.19	7.32	9.42	9.30

Source: Central Bank of Ceylon, Review of the Economy, 1981.

Note: The capital formation figures do not include informal construction. All percentages were calculated from values at market prices.

[a]provisional figures.

Income Distribution

The growth rates of national and per capita income do not reveal the substantial changes that have taken place in the patterns of income distribution as a result of the social and economic policies of successive governments. During the period 1953 to 1969, Sri Lanka had achieved a greater equality in income distribution. The share of the national income received by the highest 10 percent of the income receivers had fallen from 42.5 percent to 29.9 percent during the period 1953-73, while the lowest 40 percent increased their share from 13.0 percent to 15.0 percent. These changes are shown in Table 2.6.

TABLE 2.6

Income Distribution by Spending Units and Households

	Income Receivers			Spending Units-Households		
	1952	1963	1973	1953	1963	1973
Highest 10th	42.5	39.2	29.9	40.6	36.8	28.0
Second 10th	14.2	16.0	15.9	13.2	15.5	14.9
Next 20th	18.3	20.4	23.2	18.4	20.2	21.6
Next 20th	12.0	12.4	15.8	13.3	13.8	16.2
Bottom 40th	13.0	12.0	15.2	14.5	13.7	19.3
Concentration Ration	.50	0.49	0.41	0.46	0.45	0.35

Source: Central Bank of Ceylon, Consumer Finance Surveys, 1953, 1963 and 1973.

Note: The bottom 20th had a share of 2.01, 1.66 and 2.21 for the income receivers for the three years 1953, 1963 and 1973 respectively.

THE NATION

Housing Conditions

The improvements in income distribution discussed earlier seem to be reflected in the improvements in housing conditions. During the

period 1963-71, 69.9 percent of the additions to the housing stock were permanent houses compared with 18.5 percent during the decade 1953-63. the proportion of two roomed houses increased from 69.0 percent in 1953 to 89.6 percent in 1971. Meanwhile, the proportion of houses with over 500 square feet of floor area increased from 24.3 percent of the stock in 1963 to 29.4 percent in 1971.

The national housing stock in 1971 provided an average per capita living space of 75 square feet. However, the distribution of the space reveals a pattern of serious inequality. According to the Socio-Economic Survey of 1969-70 (Department of Census and Statistics, 1973) approximately 7.6 percent of the households occupied 28 percent of the available housing space.

Although significant improvements in housing conditions had taken place during the period 1950-71, according to the 1971 national census of housing, 45.9 percent of the dwellings had wattle and daub or mud walls, 55.1 percent had mud floors, 40.9 percent had palm thatch for roofing.

In 1971, a major portion of the housing stock, 43 percent, was constructed less than a decade earlier, while 8.5 percent was over 50 years old. The housing stock in Sri Lanka is classified into three categories; permanent, semi-permanent and temporary. This is according to the building materials used in the construction of the house; see The Housing Census, 1971 (Department of Census and Statistics, 1977). in 1971, 35.5 percent of the total and 62.8 percent of the urban stock was classified as permanent. The corresponding proportions for the temporary stock for that year was 7.2 and 9.0 percent respectively.

During the period 1963-71, nearly 246,000 housing units were added

to the stock. This represented a net increase of 12.5 percent over the stock of 1963. The net additions to the stock in the following decade was much larger, amounting to an increase of 26.8 percent of the 1971 stock. This meant that the average annual rate of net additions to the stock during the period 1971-81 was higher than that for the period 1963-71; 2.40 percent to 1.48 percent. The rate of increase in the urban stock for the period 1973-81, however, was only 1.92 percent compared with a much higher rate of 3.57 percent during 1963-71.

The average annual growth rate of the rural housing stock, showed a substantial increase during the decade 1971-81 compared with the period 1963-71, 1.04 percent to 2.93 percent. Meanwhile, in the urban sector, the 1971-81 period experienced a sharp decline in the rates of growth of the various components of the housing stock. The largest share of urban housing, the permanent stock grew at a rate of 2.75 percent during 1971-81, compared with 3.84 percent during the earlier period. The semi-permanent and temporary stock growth rates fell sharply from 3.185 percent to 0.05 percent and 1.18 percent to 0.02 percent respectively over the same two periods.

In the rural sector the growth rates increased for the permanent and semi-permanent stock while falling by nearly half for the temporary housing, 2.79 percent to 4.65 percent for permanent, 0.09 to 2.09 for semi-permanent and 3.76 to 1.88 for temporary. Therefore, while the nations total stock grew faster during the 1971-81 period, most of it was accounted for by the accelerated growth in the rural sector. The additions to the stock during this period were primarily permanent housing in the urban and rural sectors. The rural sector's share of permanent housing increased from 66.3 percent to 70.4 percent of the

total permanent stock between 1971 and 1981.

Meanwhile, the average annual rates of population increase during the period 1971-81 for the urban sector was 1.15 percent which was lower than that for the rural sector which was 2.10 percent. (Department of Census and Statistics, 1981). This meant that the additions to the stock kept pace with population increase almost evenly in the two sectors, but growth is not only a matter of number of units.

During the period 1971-81, the share of permanent housing in the total stock increased from 35.4 to 41.8 for the entire stock while in the urban sector it increased from 62.9 to 68.0 percent.

The occupancy rate or the average number of persons per housing unit fell from 5.72 in 1971 to 5.28 in 1981. The urban sector, which had a higher rate experienced a decline from 6.76 to 6.27 during the same period. This is further reflected in the proportion of the housing stock occupied by single households, which increased from 92.4 to 95.2 percent for the total but only from 91.0 to 91.5 percent for the urban sector during the 1971-81 period.

The Colombo District

The housing conditions of the district reflect its predominantly urban features. The housing stock has a larger proportion of permanent houses with better water, sanitation and lighting services than in the rest of the country. The district also has a larger share of rented dwellings than the average for the country. During the period 1971-81, the district boundaries were changed, thus making it difficult to make direct comparisons between the 1971 census data and the preliminary data

for the 1981 census. Therefore, the following discussion pertains to the Colombo district as it stood in 1981.

The proportion of housing stock that was vacant in the district was 2.7 percent compared with 3.9 for the country. The largest proportion of this, 65.8 percent, was not classified by type of structure while 22.5 percent of the structures were permanent. The vacancy rate for the permanent stock was only 0.87 percent, indicating a very "tight" housing market. Therefore, the proportion of the vacant to the total stock for the district, does not reveal the very limited leeway under which the market for permanent housing is operating.

When the district's housing stock is examined by the year of construction, it is observed that more than a quarter of it, 28.1 percent, was built after 1970. However, the corresponding figure for the permanent stock was lower at 23.3 percent. The proportion of both semi-permanent and temporary or improvised houses built after 1970 were 36.8 and 53.3 percent respectively.

Water, Sanitation and Lighting

About one third of all the occupied houses in the district had indoor piped water, 31.1 percent. The proportion for the permanent houses was higher at 39.5 percent. The comparable figures for the nation were 8.0 and 13.6 percent respectively. Only 11.1 percent of the semi-permanent and 10.8 percent of the temporary houses had indoor piped water. The rural sector has a greater proportion of non-permanent houses served by private and shared wells. The squatter shanties which are non permanent structures form a significant share of the Colombo

city housing stock. These households depend on public stand pipes. In the data for the district, nearly half, 47.7 percent, of the improvised or temporary houses are serviced by piped water located outside the premises. In fact, when piped water without reference to location is considered, the temporary houses have about the same access to it as the permanent ones, access being defined as the proportion of homes serviced by piped water. However, the stand pipe may be located more than 100 yards away from the home, it may be crowded at times, many trips have to be made to fetch water, and may be no more convenient than a well even with the additional inconvenience of having to draw water.

About 14 percent of the district's houses were serviced with flush toilets. The proportion for the permanent houses was higher at 19 percent. The comparable figures for the country and its permanent stock were about 4 percent and 8 percent respectively.

About 44 percent of the Colombo district's houses were lit with electric power. The proportion for the permanent houses was higher at 60.7 percent. For the entire country only 15 percent of the total houses and 34 percent of the permanent housing were lit with electric power.

Tenure

The proportion of rented houses in the Colombo district was 28.8 percent compared with 10.1 percent for the country. For the permanent houses, the proportions were somewhat higher at 30.2 and 15.6 percent for the district and the country respectively.

In the Colombo district about a quarter of the semi-permanent and

improvised houses were renter occupied. Owner occupied housing was a much lower proportion of the district's housing stock when compared with the country, 56.0 percent to 69.4 percent.

The proportion of owner occupants was higher for permanent housing, 58.1 percent, compared with 51.8 for semi-permanent and 46.2 for improvised housing.

Number of Rooms

The average number of rooms per house in the Colombo district was 2.6. The permanent houses had a higher average than the other two categories, 3.0 compared with 1.6 for the semi-permanent and 1.4 for the improvised. It is evident from the data for 1981 that were presented that the permanent houses, which form the largest proportion of the district's stock, are superior in many respects to the rest. The non-permanent houses form a considerable part of the total stock of the district and are expected to remain so in the future.

Housing Policy and Recent Government Programs

Housing activity in Sri Lanka was almost exclusively in the private sector during the period before the second world war. There was no public authority which was involved in the regulation and control of housing. Conditions that developed during the war led to the gradual entry of the government into the housing sector.

When building activity was hampered by the diversion of revenues for the war effort1, rent controls were established to prevent the

exploitation of the resulting scarcity by landlords. The Rent Restriction Act of 1942 pegged urban rents on the basis of rents prevailing at that time. Subsequent changes to the act in 1946 and 1948 attempted to regulate the contractual relationship between landlord and tenant and consolidate the prevailing law. Landlords were permitted to raise rents once, up to a maximum of 10 percent over those fixed by the Rent Restriction Act of 1942. There is clear indication that the government was aware of the detrimental effects of the rent laws of 1948 on private housing. The Housing Loans Act of 1949 was introduced to promote private housing. It set up a Housing Loan Fund to be administered by a Housing Loan Board. The Fund was available to companies, cooperative societies, associations of individuals and individuals who were proposing to build or supply materials for a housing scheme. The Rent Restrictions Act was perceived to have reduced the supply of rental housing. The Minister of Local Administration made the following statement while introducing the Housing Loans Bill in 1949: "I would like to point out the serious effect the Rent Restrictions Ordinance has naturally had upon private enterprise in the matter of house building. In fact, for some years past this legislation had had the effect more or less of entirely discouraging private individuals from putting up houses for the working classes and the middle classes...We have, therefore, to consider various methods of stimulating house building in the country to counteract the effects of the provisions of the Rent Restrictions Ordinance." (Marga, 19761, p. 196).

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[1]Sri Lanka, then known as Ceylon, was a British Colony.

Successive administrations have modified and added to the laws governing rents on housing. During particular periods, 1953 to 1961 for instance, some residential premises were exempted from rent control through amendments to the Rent Restriction Act of 1948. Radical changes were introduced through amendments introduced in 1972. Rent increases were permitted on a graded scale, with higher increases on larger houses. Landlords could increase rents by the amount of rates or property taxes payable to the local administrative authority.

Following the Rent Act of 1972, the Government enacted the Ceiling of Housing Property Law, No. 1 of 1973. This law was directed at those who owned multiple houses. The permitted number of houses per family was equal to the number of dependent children plus two. This law also determined the rights of tenants to purchase houses in excess of the number determined by the law at prices set by the Commissioner of National Housing, either outright or on a rent purchase basis.

Land Policies

The private ownership of land was limited to 50 acres (about 20 hectares) per family by the Land Reform Law, No. 1 of 1972. Excess land would be acquired by the Land Reform Commission. In 1966 the Government set up a Land Reclamation Board to reclaim low lying and marsh land in and around the city of Colombo and make it available for residential construction. The extent of land available for reclamation was estimated to be approximately 1700 acres.

For a discussion on the regulation of private housing see Marga (1976, p. 167-175). The Marga Study on Housing (Marga, 1976) classifies

housing legislation chronologically into five phases:

1942-1948 Rents were controlled within the ceiling of 1941 rentals.

1948-1953 Landlord-tenant relations were regulated, tenants given security and the obligations of landlords made enforceable.

1953-1961 New housing and larger houses were exempted from rent control.

1961-1971 The exemption from rent control of houses built after March, 1953 was withdrawn.

1971 and after, The Rent Control Act of 1972 brought all houses under rent control, which was made more stringent.

After discouraging private enterprise from participating in the market for low and middle class rental housing, the Government directly entered this market by undertaking public construction. By the year 1966, it was observed that the output of houses for the low income groups was inadequate and that greater incentives for house builders were necessary. These incentives were in the form of tax concessions. Capital gains and net annual value of homes under 1,000 square feet were exempted from income tax. In addition, these homes were exempted from wealth taxes.

These incentives were withdrawn in 1973. However, the net annual value of a single home owned by a family remained exempt from income tax. The present administration reinstated the incentives by exempting the capital gains and the tax code in summary stands as follows: "individuals who construct their own homes are allowed to deduct the down payment or their cost contribution from their taxable income, over

a five year period. Both the interest and principal payment for a mortgage are also deductible from an individual's taxable income. A total exemption from capital gains for dwellings sold on or after April, 1978 is available irrespective of whether the house sold was constructed, purchased, or inherited by the seller.

For private housing developers, all profits and income from the sale of houses are totally exempt from income tax. For units between 500 and 1250 square feet the exemption is 75 percent and for the remaining units it is 50 percent. The construction costs of employee housing are deductible from the employer's taxable income when the houses are under 1500 square feet in floor area, the sale proceeds are, however, taxable as capital gains.

Companies engaged solely in property development projects recommended by the Urban Development Authority are entitled to a ten year tax holiday. (United States Agency for International Development, 1981, p. 175-176).

The housing policy described briefly above has had its greatest impact on urban housing. Rent controls and the ceilings on the ownership of land and housing property, have discouraged the flow of resources into rental housing, restricting its supply. Meanwhile, housing legislation has tended to strenghen the rights and privileges of tenants. While rents were controlled, tenurial rights were passed on to dependents at the death of a tenant household head.

The regulation of rental housing has resulted in a disparity in the returns to rental housing compared with that for other forms of investment. The nominal return to rental housing was estimated to have been about 4 percent during the period 1953-71. During the same period,

the nominal rate of interest on housing loans had risen from 9 to 12 percent, (Marga, 1974, p. 174).

Within this environment, landlords have resorted to many ingenious methods by which to take advantage of the conditions in the rental housing markets. Advances or key-money, in most cases non-returnable and amounting at times to the rent for up to 3 years, is obtained before tenants move in. Repair and maintenance undertaken by the landlord is exceptional. Because of the difficulty of finding rental homes, tenants occupy homes for long periods of time, often contesting rent increases and holding landlords to the legally approved limits.

In a deliberate attempt to address the problems of housing, the present government is in the process of implementing an ambitious public sector housing program. The National Housing Development Authority was established in 1979 to implement the government's public sector housing program; while the Urban Development Authority was established in 1978 to plan and develop projects in urban areas.

During the period 1971-80, about 228,000 new permanent housing units were added to the stock and were occupied. This meant that an average of about 25,000 permanent units were constructed during the 1963-71 period. The government is attempting to increase this output through a public construction program.

According to the Government of Sri Lanka (1977, p. 36), "between 1963-71 new construction had been on the order of about 25,000 permanent housing units annually, mainly by private individuals, as against a recurrent need on the order of 50,000 units to meet the requirements of population increases alone." Thus, by the 1970's the housing shortage began to manifest itself in the form of overcrowding, high rental and

the rapid proliferation of substandard dwellings. It is against this backdrop that the government soon after assuming office in July, 1977, decided to launch a program to construct about 100,000 housing units.

The government housing program aims to construct 108,000 new units during the period 1980-84, targeted for the low income households. The Urban Housing Program intends to construct about 18,000 two and four-story apartment houses for low income city dwellers. Originally, 36,000 units were to be constructed for renting but rising costs and budgetary constraints have forced a halving of the number of planned units as well as changing the tenure to one of ownership through sale. The planned costs per unit had increased from Rs 25,000 to a range of Rs 100,000-200,000 in current rupees. (United States Agency for International Development, 1981). Therefore, for this type of housing to be affordable to the targeted income groups, a substantial subsidy by the government would be needed.

More than 70,000 housing units are to be constructed under the Aided Self Help (ASH) Program during the plan period. This program provides materials and technical assistance for households to construct their own homes. The cost of building materials are covered by a 30 year loan at subsidized interest rates, while the land is leased on a nominal "ground rent" basis. The ASH program is divided into "low income" and "middle income" sub programs. In order to qualify for the program the following income levels have been established:

Monthly income of Rs 250-550 for the low income program where the ASH units are expected to have a floor area of 392 square feet.

Monthly income of Rs 550-1100 for the middle income program where ASH units are expected to have an average floor area of 570 square

feet.

The low income units are expected to form about 95 percent of the entire ASH program. The income and size norms, along with the monthly repayments are expected to change during the implementation period as resource scarcities are experienced.

The ASH loans are currently repayable over a 30 year period at maximum monthly payments not exceeding Rs 50 for the low income program. An initial deposit of Rs 50, to be deducted from the loan repayment is required from the ASH beneficiaries. The middle income ASH loans do not have a monthly repayment ceiling and are given at a 6 percent annual interest rate. The present value of the return of monthly payments of Rs 50, if a constant annual discount rate of 6 percent is assumed, would only be Rs 8258,8. Meanwhile, the material cost of the average ASH is assumed to be Rs 23,000 (the projected cost for middle class ASH units in 1978; personal communication with Regional Director of National Housing Development Authority). Even on the basis of this rough calculation it is apparent that the resources available for ASH programs would not be regenerative.

The land is leased from the National Housing Development Authority for a fee of Rs 12 a year for a 33 year period. The beneficiary has the option of renewing the land lease.

The ASH and direct construction programs are to be distributed and implemented under many different schemes. The two main categories of ASH projects are ASH and ASH Model Villages. The ASH projects are directed at both the rural as well as urban levels and are limited to loans for beneficiaries for house and infrastructure, building materials and technical assistance for construction. ASH Model Village projects

combine the loans with various non-ASH funded infrastructure and community development projects. For example, running water, electricity, schools and community centers such as health clinics, postal services and marketing facilities.

The Electoral Housing Program expects to construct over 26,000 units. This program is scheduled to construct a designated number of houses annually in each of the 171 parlimentary districts. The number of houses to be constructed had increased from 5 per electoral district in 1978 to 50 by 1983. This program was changed from one of direct construction to ASH in 1981. According to the Central Bank (1981, p. 87-88), the direct construcion category had consumed over 60 percent of the financial resources available to the public sector housing program for the period 1978-81. One of the major reasons for this was the substantial cost overruns resulting from a subcontracting system. (United States Agency for International Development, 1981, p. 93).

The Home Loan Program was begun in 1954 to provide financing for home construction to middle and working class families who owned a building site. This program was administered by the National Housing Department which allocated the National Housing Fund. However, the latter responsiblity of administering and allocating the National Housing Fund was transferred to the National Housing Development Authority in January of 1981.

The National Housing Fund was a major factor in the Nation's housing industry between 1959 and 1970. During the decade of the 70's the fund suffered from unsound lending and collection policies. The high rate of loan default and administrative problems seriously weakened the effectiveness of the program, (United States Agency for

TABLE 2.7

Public Sector Housing Program Progress (1978-81)

Program	Target No. of Units	No. of Units Completed
1) Direct Construction	36,000	7,864
2) Rural Housing	50,000	14,767
2.1) ASH Housing		4,798
2.2) Model Villages		8,959
2.3) Fisheries Houses		1,010
3) Electoral Housing[a]	26,040	6,210
4) National Housing Fund Loans[b]	14,000	28,000
TOTAL	126,040	56,841

Source: Central Bank of Ceylon, Review of the Economy, 1981.

Note: [a]The electoral housing was not a part of the original plan to construct 100,000 units.

[b]The completed units under the housing fund loans include those receiving loans during an earlier period and not necessarily during the plan period.

TABLE 2.8

New Targets for the Public Sector Housing Program

Program	Number of Units
Urban Housing	18,011
Aided Self Help	50,000
Electoral Program (ASH)	20,160
Electoral Program (Direct Construction)	5,880
Housing Loans	14,000
Total	108,051

Source: Government of Sri Lanka, Public Investment Plan, 1980-84.

International Development, 1981, p. 98, 146-149). Through this program, loans for four types of housing activity were provided. They were for new construction, land purchase, home purchase and repair and extension work, were provided.

The housing fund was to be financed by borrowing from the national treasury. The difference in the borrowing rate of the fund and the lending rate, augmented by recovering of outstanding loans was to become a revolving fund. However, since lending rates were effectively lower than the borrowing rates, the fund was decapitalized, leaving no provision for a revolving fund. The new loan activity of the fund was suspended in March of 1980. The collections of the outstanding loans were not being reinvested but used to repay the treasury debt obligations. The reorganization of the fund is expected to lead to a renewal of loans and a total of 14,000 housing units were to be

constructed during the 1980-84 period.

The progress of the government housing program during the period 1978-81 is summarized in the Table 2.7.

The projections for housing units from the Public Investment Plan for the period 1980-84 are shown in the table below. These figures are the new targets for the period 1978-82 and contain units that are

TABLE 2.9

Cost Indices for Selected Building Materials and Construction Activities (1969-1980)

Item	1977	1978	1979	1980		1981	
				1st Half	2nd Half	1st Half	2nd Half
Cement	164	199	292	542	680	680	766
Steel (MS Bars)	255	274	458	484	524	571	573
Bricks (hand-moulded)	156	268	285	396	391	387	389
Asbestos Sheets	286	327	411	570	645	645	610
Timber (sawn)	129	217	378	634	634	814	814
Housing Construction	173	252	347	494	543	610	625
Non-Residential Buildings	199	254	320	437	488	542	555
All Construction Activity	186	247	327	442	497	552	565

Source: Central Bank of Ceylon, Review of the Economy, 1981.

TABLE 2.10

Whole Price Index for Food

Commodity Group	1977	1978	1979	1980	1981
Food	140.8	155.5	161.3	214.2	249.5

Source: Central Bank of Ceylon, 1981.

already completed.

The public sector housing program was part of an ambitious public sector investment projects outlay. But the projected increases in construction activity could not be sustained. The value of output of the construction sector, which increased by 72.5 percent at current factor cost prices in 1980 slowed down and showed an increase of 26.1 percent for the year 1981. In real terms (1970 factor cost prices) the increase during 1980 was only 11.0 percent, while during 1981 construction output had fallen by 3.0 percent. During 1981 a "substantial reduction in applications for approval of building plans for new houses and commercial and industial buildings" occurred (Central Bank of Ceylon, 1981, p. 9).

The spurt of construction activity had reached resource constraints rather quickly. The cost indices for building materials show a rapid increase. It was clear that construction activity could not maintain the pace it had established during the 1978-79 period. The table below gives the cost indices for selecting building materials and different

construction activities. The steep rise in prices after 1979 are clearly observed.

Meanwhile, the wholesale price index for food, with a weight of 67.8 percent, showed an increase over the same period which was not as sharp as that for the total construction sector.

The costs of construction had increased rapidly during the 1977-81 period. The rise in costs for residential construction was higher than that for other types of construction. Among the few building materials considered, cement prices had increased much faster than bricks or roofing material. The building materials considered were subject to prices administered by the Building Materials Corporation as a means of regulating limited supplies.

The government fiscal policies and the manner in which it mobilized the necessary resources have fashioned the environment of the financial markets. Expansionary fiscal activities, especially after 1978, have led to serious inflationary tendencies. The proportion of government recurrent expenditure in GDP at current factor cost prices had risen from an average of 20.17 percent for the 1973-76 period to 22.6 percent for the 1978-81 period. In 1973, the outstanding public debt was 57.3 percent of that years GDP; by 1980 this proportion had risen from 1.4 billion in 1973 to 16.3 billion by the end of 1980. The deficit as a proportion of GDP at current factor cost prices was 7.9 percent in 1973 and had increased dramatically to 26.9 percent in 1980. In fact, during the 1973-76 period this rate averaged 9.6 percent while for the 1978-80 period the average was more than double, 20.5 percent. It is clear that the share of government in economic activity had increased sharply after 1977. Ambitious capital investment programs in housing, agricultural

infrastructure development and in urban development had been undertaken during this period. Government capital expenditure, which had been, on average, 9.7 percent of GDP for the period 1973-76 had nearly doubled to 18.9 percent for the 1978-80 period.

In order to finance the budget deficit the government entered the domestic financial markets regularly. During the 1972-76 period, domestic market borrowings financed an average of over 55 percent of the government's net cash deficit. This rate had fallen to an average of 43.3 percent after 1978. The major reason was the greater availability of foreign finance in the form of aid grants and loans. Nevertheless, the volume of government borrowings from the domestic banking sector had increased rapidly from Rs 668 million in 1972 to Rs 9,195 million in 1980. During the years 1978 to 1980 borrowings from the Central Bank, the largest component of domestic market borrowings, increased as a proportion of the net cash deficit. In 1978, the proportion was very small, 0.52 percent, in 1979 it had increased to 9.4 percent and in 1980 it had reached the very high level of 48.5 percent.

Recognition of the expansionary effects of the governments' fiscal operations, especially the growth of money supply due to accommodating monetary expansion, resulted in a cut of about 25 percent in the planned expenditures for 1981. In addition, further reductions of 3 percent in recurrent expenditure and 10 percent in capital expenditure was proposed (Central Bank of Ceylon, 1981, p. 204). However, despite the

TABLE 2.11

Increase in GDP Deflator Base Period 1970
Percentage

	1973	1974	1975	1976	1977	1978	1979	1980	1981
Rise in deflator	17.6	15.9	6.9	6.4	18.7	7.9	15.4	18.2	20.4

Source: Central Bank of Ceylon, 1981.

recessionary trends in the international economy, an increased quantity of foreign reseves were made available for financing the budget deficit.

The implicit GDP deflator increased from 7.9 percent during 1978 to 20.4 percent during 1981. The increase in the GDP deflator is given in Table 2.11.

The 1973-74 period coincided with the OPEC oil price increase and the world grain shortage. The rise in the deflator after 1979 reflects the inflationary tendencies in the economy.

The narrow money supply (M1) had grown by 26. percent in 1979, 20 percent in 1980 and 9 percent in 1981. The corresponding increases in M2 were 34 percent, 26 percent and 19 percent respectively.[1]

At the end of 1981 the annual lending rates for housing construction were between 14 and 26.5 percent and for home purchases it was similar at rates between 15 and 26.5 percent. During this year,

[1]The high rate of growth of the money supply partly due to the monetization of the government debt is expected to have had a serious inflationary impact on the economy.

12.9 percent of the total loans approved by long term credit institutions were for housing. Nearly 80 percent of all loans approved for housing was for construction and repairs (Central Bank of Ceylon, 1981, p,. 291, 203).

The government had expected to stimulate housing activity in the private sector through various schemes. An output of about 400,000 units from the private sector, matched by the public sector housing sector programs output of over 100,000 units was expected during the 1978-82 period. The serious resource constraints in the construction sector, however, made necessary a change in output mix of the housing program. Housing units scheduled for direct construction were changed to ASH (Central Bank of Ceylon, 1981, p. 87). The effects of high building material costs, combined with high land prices and borrowing rates led to a slowing down of private sector housing activity. In 1981, the Colombo Municipality approved 1,140 building plans compared with 1,134 for the previous year. Nearly one half of the plans approved in 1981 were for improvement and alterations to existing houses. This was a 16 percent increase over the figure for 1980. The intentions of the government were to increase the rate of output of permanent housing during the 1978-82 period. This increase was achieved although it was modest. The output of permanent housing units had risen from over 25,000 units in 1978 to nearly 36,000 in 1980. Both the semi-permanent and improvised housing output had increased as well but not as rapidly as permanent housing. The share of output of permanent housing units in 1980 was 24.2 percent of the total and was higher than the comparable figure for 1978 which was 21.5 percent. During the period 1978-80 over 22,000 permanent units were constructed under government programs.

These do not include houses constructed as workers' quarters by various government departments. The total output of permanent housing during 1978-80 was about 92,000 units.

The public sector housing program has made a significant contribution to the additions in output of permanent housing. However, it has not, as yet, been able to generate and to sustain a similar expansion of private sector output. The effect of increased government investment and the associated construction activity had placed serious constraints on the supply of building materials resulting in steep increases in construction costs. The increases in construction activity had insufficient time for the adjustment of resource supplies to match the increases in demand. The resulting price rises dampened the rises in construction activity and private home building.

CHAPTER THREE

SUMMARY OF SURVEY DATA

Introduction

The objective of this chapter is to highlight the survey findings. It presents data of both household and dwelling characteristics for two categories of households, those with and without home businesses. The sample used for this study precludes direct comparison with available data from other sources (See Appendix A). However, for purposes of establishing the survey data in a general context, appropriate information from various sources will be noted.

The Household

Household Size and Number of Families

The sample average for the number of families occupying a dwelling for all households was 1.31. When the households with and without businesses were considered separately, the averages were 1.34 and 1.30, respectively. This was higher than the averages for the total urban sector and Colombo city in 1971 (Department of Census and Statistics, 1971, p. 25) which were 1.04 and 1.05 respectively.

However, the difference between a family and a household is subject to many interpretations. The family as an entity, is ultimately a notional or subjective one. It can be interpreted by the household in numerous ways according to its socio-economic orientation. The presence of parents, married children, grandchildren and other relatives of the household head, within the household is common. The practice of an extended family living under one roof continues within the modern context. This arrangement may still be a convenient and desirable one for many households. For newly married children, living with parents offers time to consolidate and save in order to rent or to purchase a dwelling and furthermore, to engage in an active search for one, over an extended period.

Consider the case of Mr. W: "After we were married in 1975, we lived with my wife's parents. Both my wife and I are employed. She is a high school teacher and I am an engineer. We tried to rent a home for over two years. We placed advertisements in the newspapers, we let friends and relatives know so that they can search. We visited many places, some were dumps, some not yet completed, all had very high key-money requirements. We concentrated our search to the vicinity of my parents and my wife's parents' home. We could not find an appropriate place. Then we decided to build a home of our own. I obtained money from my parents to buy a suitable building site. We looked for land close to our parents' homes. We liked to continue living in this area. We are accustomed to it and it would be convenient. We know this area, the bus service, the grocery shopping...and our families live here..."

This family was unable to find a rental dwelling and while living

with the wife's parents, purchased a plot of land and obtained a loan of Rs 100,000 at 9 percent annual interest for 15 years from the Peoples' Bank, to construct a house. The construction was delayed due to a building material shortage, loan approval and building permit delays. Finally, in 1981, after actual construction had taken about two and a half years, the family moved into their new home.

The preceding anecdote illustrates the time lags involved in changing tenure and the difficulty in finding appropriate rental units. The possibility of falling back on relatives or family is an important consideration to be taken into account when examining the behavior of households searching for housing.

The average household size for the sample was 6.53 persons. The comparative size for the entire urban sector of Sri Lanka for the same year was estimated as 5.4 (Department of Census and Statistics, 1977). However, for 1977, the average household size for Colombo city and six adjacent towns was estimated as 6.20 (Department of Census and Statistics, 1977). The average size for households with and without businesses was 6.49 and 6.54 respectively.

The difference in the average household size for the two types of households was not statistically significant. The distribution of household size was similar for the two household types. The households with home businesses had a slightly greater proportion of small and large sized households than the households without businesses. Households with 9 or more members accounted for 18 percent of those without businesses and 21 percent of those with businesses. Table 3.1 shows the distribution of household size for the two types of households.

TABLE 3.1

Distribution of Household Size for Households With and Without Home Businesses - Percentages

Household Size	Households With Businesses	Households Without Businesses	Total
2 or less	6.5	2.5	3.4
3 - 5	40.9	38.9	39.3
6 - 8	31.2	40.6	38.5
9 - 12	15.6	13.7	14.2
13 or more	5.8	4.3	4.6
Average	6.49 (0.29)	6.54 (0.13)	6.53 (0.12)

Note: Standard errors in parentheses. The statistical tests for difference in average household size and the pattern of distribution of household size was rejected at the 99 percent significance level.

Relationship to Head of Household

The households contained more than members of a nuclear family. For the entire sample, as many as 48 percent of the households contained one or more other relatives. The average for the sample was 1.39 relatives per household. In fact, as many as 15 percent of the households which had relatives, had five or more. Table 2.2 presents

TABLE 3.2

Household Composition by Relationship to Household Head Averages and Proportions of Household With Each Relation Group

	Households With Businesses		Households Without Businesses		Total	
	1	2	1	2	1	2
Children	2.54 (0.159)	84.4	2.84 (0.085)	90.9	2.77 (0.075)	89.1
Relatives	1.64 (0.201)	50.6	1.31 (0.091)	47.4	1.39 (0.084)	48.1
Servants	0.43 (0.075)	24.0	0.48 (0.040)	27.6	0.46 (0.035)	26.8
Lodgers	0.00	0.00	0.11 (0.031)	4.06	0.08 (0.024)	3.13

NOTE: "1" is the average for all households in that category, standard errors in parentheses.

"2" is the percentage of households with relatives of that group. One lodger was found in a household which had a home based business. The sample sizes for the household categories were the following: 154 households with and 517 households without home businesses.

the household composition for the total and the two subsamples. In addition to the relatives, the households contained servants and lodgers. In the total sample, 26.8 percent of the households had one or more servants. The average number of servants for all households was 0.47. This was equivalent to an average of 1.74 servants for households that had servants. In the sample, 3.1 percent of the households had lodgers, with the average per household amounting to 0.085. As expected, children composed the largest group by relationship to head of household. In the sample, an average of 2.77 children per household was observed. Over half of the households with children, had three or more.

Although the household sizes were similar for the two household types, the composition of the households by relationship to the head of the household was different. The households without businesses had a larger average number of children and a smaller average number of relatives than the home business households. The difference was statistically significant for both children and relatives at the 95 percent confidence level. The difference in the number of servants was not statistically significant. Therefore, the composition of the average household according to the relationship to household head, seems to be different from the two types of households.

The Age Composition of the Household

The average age of the head of household for the entire sample was 53.4 years. The proportion of male household heads was 83.2 percent. The average number of persons per household of under 5 and over 75 years was 0.43 and 0.14 respectively. As many as 68 percent of the households

had no persons of the below 5 years age category. However, of the households which had persons below 5 years, 90.7 percent had three or less. The concentration of household members was in the age category 15-54 years. Table 3.3 provides a breakdown of the households for the entire sample with members in different age categories.

Comparing tables 3.4 and 3.5 reveals an important difference between the households with and without home based businesses. The proportion of households without members in the two age categories 0-5 and 6-14 is significantly higher for the households with businesses

Table 3.3

Percentage of Households With Number of Members by Age Group

Age Group	Number Per Household 0	1	2	3	4	Maximum	Mean
			Total				
0 - 4	68.1	18.8	8.2	3.4	1.5	5	0.52 (0.04)
5 - 14	48.6	25.9	14.8	6.0	4.7	6	0.93 (0.04)
15 - 24	31.9	26.5	17.9	13.6	10.1	8	1.50 (0.06)
25 - 54	3.3	11.8	41.7	21.2	22.1	11	2.64 (0.06)
55 - 74	47.4	31.3	18.5	2.1	0.7	4	0.77 (0.03)
75 +	86.4	12.8	0.7	0.0	0.0	2	0.14 (0.01)

NOTE: Standard errors in parentheses.

TABLE 3.4

Percentage of Households With Number of Members by Age Group

For Households With Home Businesses

Age Group	Number Per Household 0	1	2	3	4	Maximum	Mean
0 - 5	74.1	12.3	7.1	3.9	1.9	5	0.47 (0.077)
6 - 14	57.1	22.7	12.3	3.9	3.8	5	0.75 (0.088)
15 - 24	31.8	27.9	16.2	11.7	12.3	7	1.53 (0.126)
25 - 54	3.9	11.0	37.0	20.8	27.3	9	2.82 (0.128)
55 - 74	50.6	28.6	18.2	1.9	0.6	4	0.73 (0.070)
75 +	85.1	13.6	1.3	0.0	0.0	2	0.16 (0.033)

NOTE: Standard errors in parentheses

at home. In addition, the average number of persons in the age group 15-54 is also higher. In fact, the difference in the average number of persons for the age groups 0-5 and 6-14, between the households with and without businesses, is almost matched by that for the 15-24 and 25-54 age groups. The average number of persons in the age category 6-14 was larger for the households without businesses. The difference was statistically significant at the 95 percent confidence level. The households with businesses had a higher average number of persons in the age group 25-54 and it too was statistically significant at the 95

TABLE 3.5

Percentage of Households with Numbers of Members by Age Group For Households Without Businesses

Age Group	Number Per Household 0	1	2	3	4	Maximum	Mean
0 - 5	66.2	20.7	8.5	3.3	1.4	5	0.54 (0.041)
6 - 14	46.0	26.9	15.5	6.6	5.0	6	0.99 (0.52)
15 - 24	31.9	26.1	18.4	14.1	9.6	8	1.49 (0.065)
25 - 54	3.1	12.0	43.1	21.3	20.5	11	2.59 (0.062)
55 - 74	46.4	32.1	18.6	2.1	0.8	4	0.79 (0.038)
75 +	86.8	12.6	0.6	0.0	0.0	2	0.14 (0.016)

NOTE: Standard errors in parentheses

percent confidence level. As noted earlier, the average household sizes for the two groups were not statistically different.

The Distribution of the Household Population by Age

If the population of two household groups by age category is investigated, the lower share of the age group, 0-14, for those households with home businesses is observed. For the households with businesses the proportion was 18.9 percent compared with 23.36 percent

for those without businesses. However, for the households with businesses the proportion of population in the age group 25-54 was 43.62, while for the households without businesses it was 39.64 percent. The two household groups had a similar pattern of age distribution. However, for the households with home businesses, the population share of the age group 0-14 was lower than that for households without home businesses, 18.90 percent compared with 23.36 percent respectively. The home business households had a higher share of the population in the age group 25-54. These differences were not statistically significant. Table 3.6 gives the complete breakdown.

TABLE 3.6

Population Distribution by Age Group - Percentage

Age Group	Households With Businesses	Households Without Businesses	Total
0 - 5	7.24	8.25	8.03
6 - 14	11.66	15.11	14.33
15 - 24	23.62	22.86	23.03
25 - 54	43.62	39.64	40.54
55 - 74	11.36	12.04	11.88
75 +	2.50	2.10	2.19
Sample Size	154	517	671

NOTE: The hypothesis that the two types of households had the same age distribution of population was not rejected at the 95 percent confidence level. Calculated Chi squared 0.128. Table value for the case with five degrees of freedom is 11.07.

TABLE 3.7

Population Distribution by Age Group for Selected Urban Areas

Age Group	Percentage
0 - 5	8.7
6 - 14	24.6
15 - 24	23.8
25 - 54	34.0
55 - 65	5.1
66 +	3.9

NOTE: Data obtained from "The Family Budget Survey, 1977," Department of Census and Statistics, 1977.

Comparing tables 3.6 and 3.7 directly reveals a large difference for the below 14 years age category. However, our sample covers only permanent dwellings in predominantly residential areas and excludes temporary and semi-permanent dwellings, and this may account for the difference.

The age distribution for the two types of households was similar. However, the distribution masked statistically significant differences in the average number of persons in two age categories, persons aged 6-14 and adults aged 25-54.

Income and Employment

Income

The average household income per month for the sample was Rs 2,635 with a standard error of Rs 147 (US $128.22 and $7.15 respectively). The comparative figures for households with and without home businesses showed a higher average income of Rs 2,830 for those with, compared with Rs 2,576 for those without home businesses. However, if the distribution of income is considered, the concentration of households in the group below Rs 1,500 is marginally higher for those with home businesses. Furthermore, the proportion of households in the income group Rs 1,500-3,000 is lower for those with home businesses. The overall distribution of income was similar for the two types of households. Although a difference in the average income for the two household types was observed, it was not statistically significant at the 90 percent confidence level. Table 3.8 shows the distribution of income for the households with and without businesses.

The average monthly income per household for the city of Colombo and six adjacent towns in 1977 was estimated to be Rs 741 (Department of Census and Statistics, 1977, p. 8). The difference between the present survey figures and those for 1977 may be attributed to many causes. The primary one would be the special emphasis on households in permanent dwellings in predominantly residential areas for this study.

This clearly results in excluding the poorer households. For purposes of comparison, if an inflation rate of 15 percent per year is applied to the 1977 average, a figure of Rs 1,296 (US $63.06) is

TABLE 3.8

The Distribution of Monthly Income for Households With and Without Home Businesses - Percentages

Income Group (in rupees)	Households With Businesses	Households Without Businesses	Total
600 or less	7.8	5.9	6.4
601 - 1000	14.9	15.0	15.0
1001 - 1500	20.1	17.4	18.0
1501 - 2000	8.4	13.0	12.0
2001 - 3000	20.8	20.9	20.9
3001 - 5000	16.9	14.2	14.8
over 5000	11.0	13.4	12.9
Sample Size	154	506	660

NOTE: The hypothesis that the two types of households had the same distribution of monthly income was not rejected at the 95 percent confidence level. Calculated Chi Squared is 0.183. Table value for the case with two degrees of freedom is 5.99.

obtained. This is still only 49.2 percent of the sample average monthly income of Rs 2,635. As the discussion later points out, permanent housing in the urban sector of the district of Colombo from which the study sample is drawn, accounts for about two-thirds of all dwelling

units. The concentration of the lower income groups would be in the non-permanent dwellings. In addition, the elimination of commercial wards from the study sample tends to omit the low income households in permanent housing, especially in the tenements. See Appendix A for sample selection. Even though the households without home businesses had a lower average number of employed members, because they had income from sources other than employment their average household income was similar to that of the home business households.

About one third, 33.1 percent, of the households without businesses had property income from rent and other sources, while only 23.4 percent of the households with businesses had such income. Pensions were a source of income for 23 percent of the non-business households and a proportion half as large, 11 percent, of the households with home businesses had pension earners. Aid in cash from relatives and family was received by 13.5 percent of the non-business households and only 6.5 percent of the home business households. These differences may suggest that a home business often takes the place of other supplements to income that would have been preferred.

In a very few cases, 5 or equivalently 3.2 percent, the home business did not provide employment for household members. These were businesses operated by hired or non-household members. Self employment or own account work was a source of income for only 27.7 percent of the non-home business households.

It is clear that a greater proportion of the non-business households had income from sources other than employment. These sources, on the average, seem to have offset the lower number of employed persons the households without businesses had, compared with

households which had home businesses.

Employment

In the total sample, the average household had 1.93 employed persons (standard error 0.05). The corresponding figure for Colombo city and six adjacent towns was estimated to be 1.77 for the year 1977 (Department of Census and Statistics, 1977, p. 19). When the households with businesses are considered, the average number of employed persons was 2.30 (standard error 0.11). The households without businesses had an average which was lower, 1.82 (standard error 0.06). The difference in the average number of employed persons for the two types of households was statistically significant. The hypothesis that the household with home businesses had a higher average of employed persons was not rejected at the 99 percent significance level.

The home business employed an average of 1.17 (standard error 0.05) household members. If only those working outside the home are considered, the households with businesses had an average of 1.13 (standard error 0.10) employed persons. If the average number of employed persons working outside the home is considered, the difference between the households with and without businesses is statistically significant at the 99 percent level.

Therefore, on the basis of the average figures, the households with businesses have more employed members than those without home businesses. If the employment created by the home business is eliminated, these households would have a significantly lower average employment than the rest of the households. In this simple exercise, we

do not consider the alternative employment opportunity that those engaged in home businesses may have had. If we take into account the fact that some of the home employed could have found other work, that is assume that the average employment without the home businesses, for the two household types was equal, then clearly the home business makes a significant contribution to the average.

The distribution of the number of employed persons was similar and statistically insignificant for the two household types. However, in the case of the households without businesses, 7.6 percent had no income through employment. These households depended on other sources of income, most often pensions, property income and aid from family members.

The home business ensured that at least one member of the household was in the work force and considered as being employed. Among the households with home businesses, over one-third, 36.7 percent had three or more employed members, while for the rest of the households it was much lower at 23.4 percent. The difference becomes more pronounced if the proportion of households with two or more employed persons are considered. The business households had 70.1 percent with two or more employed persons, while the rest had only 49.7 percent in this category. As mentioned earlier, this did not result in a significant difference in the pattern of distribution or the number of members employed in the two types of households. The average number of employed persons for all the households was 0.84 (standard error 0.049). For the households with and without home businesses the figures were 0.88 and 0.83 respectively. This difference was not statistically significant. Therefore, the average work force participation for the two types of

TABLE 3.9

Number of Employed and Unemployed Members for Households With and Without Home Businesses - Percentages

Number of Members	Households With Businesses		Households Without Businesses		Total	
	Employed	Unemployed	Employed	Unemployed	Employed	Unemployed
0	0.0	53.2	7.6	56.9	5.8	56.0
1	29.9	22.7	42.7	20.3	39.8	20.9
2	34.4	14.9	26.3	12.8	28.2	13.3
3	23.4	5.8	12.6	6.6	15.1	1.9
4 or more	12.3	3.2	10.8	3.5	11.1	1.9
Average	2.305 (0.106)	0.88 (0.103)	1.816 (0.056)	0.83 (0.055)		0.84 (0.049)

NOTE: The columns "employed" and "unemployed" are not independent for the total and the households without businesses. This is because the unemployed may be included in both columns employed and unemployed. The households with no employed members may have had both unemployed and those not seeking work.

households was higher for the households with home business primarily because of a higher average number of employed persons. Table 3.9 gives the work force participation by number of members for the two household types.

The average number of persons not seeking employment, which included children, housewives and old and retired persons, was 3.28 for all households. When the households with and without home businesses were compared, the figures were 2.84 and 3.41 respectively. This difference was statistically significant at the 99 percent confidence level. It was observed earlier, that the average household size and the patterns of age distribution for the two types of households were statistically similar. Meanwhile, the average number of persons employed for the two household types was different. Based on the average figures, the two household types are different in terms of the number of members employed as well as those not seeking work. The households with businesses had a higher average number of employed persons and a lower number of household members who were not in the work force.

Income Variation

The survey figures indicate that the variation of household income over time, measured by the previous months' income, compared with the preceeding few months, was higher for households with businesses. Noting the fact that this is indeed a crude measure and subject to various errors, the figures are nevertheless presented in Table 3.10.

TABLE 3.10

Total Household Income Last Month Compared With the Preceeding Few Months Proportion of Households - Percentage

	Households With Home Businesses	Households Without Home Businesses	Total
Higher	7.1	2.3	3.4
Same	81.8	93.8	91.1
Lower	11.1	3.9	5.5

Occupations of the Employed Members

When the types of occupations for the two household categories was compared, the proportion of professional and technical workers for those without home businesses was found to be much higher. For the primary worker, who may not necessarily be the head of the household, the proportion for the households with businesses was 16.3 percent while for those without, it was 27.8. Yet the proportion of labourers for households with home businesses was also lower at 2.0 percent compared with 6.7 percent for those without businesses.

Dwelling Characteristics

The households with home based businesses had occupied their current dwelling for a longer period than those without them. The average period was 23.10 for the former type of households, while it was

20.65 for the latter. The average however, masks the different pattern for the two household types. The proportion of households which had occupied their dwelling for less than 5 years was 18.2 percent, while it was a little more than half that proportion for households with businesses. Table 3.11 shows the distribution of households according to the number of years they have occupied their dwelling.

From Table 3.11 it is clear that the households with businesses have occupied their dwellings longer than those without businesses. The households in the sample had lived in their present neighborhoods for an average of nearly 27 years. The comparable figure for households with businesses was 28.67, while for those without it was 26.37. The average period of occupancy was different between owners and renters. For the

TABLE 3.11

Distribution of Households According to Years of Occupation of Current Dwelling - Percentages

Years Occupied	Households With Home Businesses	Households Without Home Businesses	Total
less than 5	9.7	18.2	16.2
5 - 9	7.8	12.2	11.2
10 - 19	31.8	24.9	26.5
20 - 29	19.5	19.2	19.2
30 or greater	31.2	25.5	26.8
Average	23.10 (1.28)	20.65 (0.77)	21.22 (0.66)

NOTE: Standard errors in parentheses.

total sample, the owners had occupied their houses for an average period of 22.89 years (standard error 0.81).

The households with businesses had an average occupancy period somewhat higher than those without businesses, 25.05 years (standard error 1.65) compared with 22.33 (standard error 0.92). Among renters, a similar difference was observed. The average for all renters was 14.54 years (standard error 1.04). For those with home businesses it was 16.77 (standard error 1.91) compared with 13.62 (standard error 1.24).

The difference in occupancy period between the two types of households was statistically significant for both renters and owners. The hypothesis that the average occupancy period for households with home businesses was greater than that for those without was not rejected at the 90 percent confidence level.

As many as 42 percent of the households in the total sample had no clear idea about the age of their dwelling. The average for those who knew, was 25.2 years. The corresponding figures for the households with and without businesses were 26.6 and 24.8 years respectively. Over half of the dwellings, 55.4 percent, had previous occupants. Similar proportions were observed for the two household types. We have seen that the average household has occupied its dwelling for over two decades. Furthermore, they have lived in the same neighborhood for about 5 years before occupying the current dwelling. This tends to point to the following possibility: given the nature of the housing situation, once a dwelling has been found, the next move would be within the same neighborhood.

TABLE 3.12

Tenure of Dwelling
Proportion of Total Households

	Proportion %
Own - no mortgage	42.5
Own - mortgage	8.5
Renter	20.7
Family Property	24.2
Free	2.8
Other	1.2

TABLE 3.13

Proportion of Occupied Housing Units
By Tenure

Tenure	Urban Sector	Colombo District
Owner Occupied	57.3	58.1
Rented or Leased	28.6	30.2
Free of Rent	6.3	7.2
Other	7.6	1.3
Not Stated	3.0	3.2

NOTE: Data obtained from Census of Population and Housing, Sri Lanka, 1981, Department of Census and Statistics, 1982, p. 13 and 45.

The comparable figures for the permanent housing stock of the Colombo district and the entire stock of the urban sector are given in Table 3.13.

Renters

Among the households which do not rent now, 28.5 percent had rented in the past with 70.3 percent never renting or wishing to do so. The proportion of households which never rented but wished to do so was only 1.2 percent. This means that the households that wish to rent, in time, do find rental units. Those who are discouraged from renting either live with their parents or with relatives. Among those who have rented in the past or are renters now, as many as 41 percent considered postponing to build or buy, as the most important reason for doing so. Locating close to work was the reason for renting for 37.3 percent of the total sample households. As many as 62.5 percent of the households were related or were well acquainted with their landlord. However, about 75 percent of the households considered the landlord to be poor or bad at repair and maintenance. The average rent per month was Rs 231 (standard error Rs 73.7) or US $11.2 (standard error US $4.6).

Physical Characteristics

The average house in the sample was over 2000 square feet with at least one complete bathroom and a flush toilet. It had electricity for lighting but used fire wood as the principal fuel for cooking. The home was constructed with clay brick, had cement floors and a clay tiled

roof. The average lot size for the sample excluding the extremely large values of outliers, lot sizes over 20,000 square feet, was 5292 square feet (standard error 146.8). The floor area of the dwelling was over one-third of the lot size at 2035 square feet (standard error 52.9). The table below gives the distribution of floor area for all the households as well as those with and without home businesses.

For the households with businesses the proportion with floor area less than 500 square feet, was twice that of households without

TABLE 3.14

Distribution of Floor Area - Proportion of Households

Floor Area (Sq. Feet)	With Businesses	Without Businesses	Total
less than 500	10.4	5.2	6.1
500 - 1000	12.3	15.6	14.9
1001 - 1500	20.1	16.7	17.6
1501 - 2000	12.3	15.8	15.1
2001 - 2500	12.3	20.8	18.9
2501 - 3000	13.0	9.1	10.0
3001 - 4000	7.1	7.1	7.2
over 4000	12.3	9.7	10.3
Average	2025.6 (58.40)	2067.3 (121.93)	2035.2 (52.95)

NOTE: Standard errors in parentheses. The hypothesis that the two types of households had the same distribution of floor area was not rejected at the 99 percent confidence level.

businesses, 10.4 percent compared with 5.2 percent. In 1971 only 29.4 percent of the national housing stock had a floor area of over 500 square feet. We observe from Table 3.14 that in the sample 93.9 percent of the dwellings are over 500 square feet. The major reason for this difference is due to the nature of the sample used in this study. The 1971 census estimate contains housing of all types in the rural estate and urban sectors. The survey data used here pertains only to the Colombo metropolitan area permanent housing. The proportion of households with floor area between 1501-2500 square feet for those with businesses was significantly lower, 24.6 percent, compared with 36.6 percent for those without home businesses. However, for the floor area group 2501 and above, the households with businesses have a larger proportion, 32.4 percent, compared with 25.9 percent for those without home businesses. It is therefore clear that for households with businesses, the distribution is more heavily grouped towards the lower and higher floor areas.

Principal Material of Construction for Dwelling

The principal material of construction for the wall was clay brick. The proportion of households with brick for wall material was 70.6 percent for the entire sample. The table below shows the distribution of households by principal material used for construction.

If wattle and daub and metal sheets are considered inferior materials, a greater proportion of the home with, compared to homes without, businesses are of inferior quality.

TABLE 3.15

Proportion of Households by Principal Material of Construction Wall

Material	Households With Businesses	Households Without Businesses	Total
Clay Brick	70.1	70.8	70.6
Cement Block	7.2	6.2	6.4
Cabook Stonea	17.5	20.1	19.5
Wattle & Daub	5.2	2.9	3.4

NOTE: aCabook is a building material quarried from beds of laterite clay. This is a traditional building material used in the Wet Zone of the country. Blocks are cut by hand while the material is relatively soft, but on exposure to air it hardens to a strong brick-like construction material.

TABLE 3.16

Proportion of Households by Principal Material of Construction Roof

Material	Households With Businesses	Households Without Businesses	Total
Clay Tile	70.1	71.4	71.1
Asbestos Sheets	23.4	26.3	25.6
Metal Sheets	6.5	2.3	3.3

Number of Rooms

The average number of rooms for the total sample was 3.12 (standard error 0.06). The figure for Colombo district's permanent housing was 3.0 (Department of Census and Statistics, 1981). However, when the distribution is examined, as much as 66 percent of the households had three rooms or less. When the two types of households are considered separately, for households with businesses the proportion with two rooms or less is much larger than for the other category, 49.3 percent to 33.8 percent.

TABLE 3.17

Distribution of Households by Number of Rooms

	Household Type		
Number of Rooms	With Businesses	Without Businesses	Total
1	18.8	10.4	12.4
2	30.5	23.4	25.0
3	20.8	30.9	28.6
4	13.0	20.7	18.9
5 or more	16.9	14.6	15.1
Average	3.03 (0.16)	3.15 (0.06)	3.12 (0.06)

NOTE: Standard errors in parentheses.

When we combine the information of the distributions of floor area and the number of rooms it becomes clear that there are more households with home businesses concentrated at the lower end. Therefore, as far as housing space is concerned the households with home businesses are distributed differently than those without them. We saw that at the upper end of the scale for housing space, the proportion for those with home businessses was somewhat larger than that for the other category. This is also reflected in the distribution of the number of rooms.

Utilities

The households with businesses have a greater proportion which depend on a public standpipe for water and a communal toilet for sanitary facilities. In fact, it is almost three times the proportion for the households without businesses.

TABLE 3.18

Proportion of Households by Primary Source of Water
Percentage

Source	Household Type: With Businesses	Without Businesses	Total
One or More Complete Bathrooms	50.0	52.2	51.7
Own Tap-No Shower	16.2	9.1	10.7
Public Standpipe	16.2	5.0	7.6
Shared Well	1.9	5.2	4.5
Other	0.0	0.2	0.1

The greater proportion of households with a public standpipe as the primary source of water for those with home businesses may be an indication of the location of these households. The tenements which are predominantly located within the confines of Colombo city do not generally enjoy piped indoor water facilities. Outside of the city, private wells are an important source of water supply. This is reflected in the proportion of households having a private or shared well. When the sanitary facilities are considered we note, once again, the higher proportion of communal toilets for households with home based businesses. These communal facilities are not restricted to tenements. The provision of communal facilities is spread throughout the urban sector. In the case of water, it is more likely to be located on the side of main roadways. Similarly, communal toilet facilities are generally available to the tenements and to the public near buildup urban areas. Table 3.19 provides a distribution of toilet facilities for the sample households.

TABLE 3.19

Proportion of Households by Primary Sanitary Facility
Percentage

	Household Type		
Sanitary Facility	With Businesses	Without Businesses	Total
Flush Toilet	64.3	74.6	72.3
Latrine (outhouse)	2.14	19.3	19.8
None	14.3	5.4	7.5
Other	0.0	0.4	0.1

Location and Access to Services

Transportation

The mode of transport of over half of the primary workers, 54.8 percent, of the total sample, was by public bus. As many as 12.8 percent of them were located at a walking distance from work, while 15.8 percent travelled to work in their own car. A dramatic change in the pattern is observed when we examine the households with and without home based businesses separately. As expected, the major factor affecting the difference is the predominance of workers located at home for the households with home based businesses. However, if we examine the mode of transport for the commuting workers in households with businesses, a proportion similar to that of the total sample, 60.0 percent, use the public bus, while 10.0 percent travel by car and 16.0 percent walk to work.

A similar difference in the pattern is observed for the other workers in the two household categories. We note, therefore, that for workers outside the home, public transportation is the most important mode of travel to work. A significant proportion of the workers for both categories of households are located at a walking distance from work.

TABLE 3.20

Mode of Transport to Work for Primary Workers
Proportion of Workers

Mode of Transport	Household Type: With Businesses	Household Type: Without Businesses	Total
Work at Home	67.1	0.0	16.9
Walk	5.3 (16.0)	12.9	10.9
Bicycle	0.6 (2.0)	3.6	2.8
Motorcycle	3.3 (10.0)	4.4	4.1
Automobile	3.3 (10.0)	15.8	12.6
Public Bus	19.7 (60.0)	55.2	46.1
Transport by Employer	0.6 (2.0)	1.7	1.4
Other	0.0	6.4	5.2

NOTE: (1) The figures in parentheses are the percentages for workers who travel outside the home to work.
(2) The category "other" includes those who travel by train.

Access to Services

The quality of the grade schools within the Colombo district vary markedly. The facilities to teach particular curricula, especially equipment and laboratory space for science teaching, are not evenly distributed. Admission to the government school system is partly controlled on the basis of an area rule. For admission to the first grade, a primary consideration would be whether the student lives within

a one mile radius area from the school. Admission to private and semi-private schools, on the other hand, may have conditions of an initial contribution to the school development fund or that a parent or sibling had attended the same school. However, given the conditions of the housing market, it is not likely that most households consider proximity to superior schools as an important factor in determining where they live. If the concern of the household is to admit a child to a school with greater educational options and a better record of advancing students to the education level, relocating to do so is not a feasible option for most households. The location of schools is expected to be a consideration at the level of admission to the education system, grade 1.

In the total sample, less than 3 percent of the households indicated that they had moved to the present home because of the childrens' education. However, in households with school-going members, more than two-thirds, 68.8 percent, of the students travelled amile or less to school. For households with home businesses as many as 82.1 percent of the students travelled a mile or less, while the proportion for the households without home businesses was only 65.1 percent. Therefore, even though only a small proportion of the households considered location with respect to schools important, most students go to a school within a mile from home.

For over two-thirds of the households, the medical facilities and the grocery stores they used, were located within a mile from home. There were no discernible differences for the two household types. We now have the following picture of the location of households with respect to a few selected services: the majority of households use

medical facilities and grocery stores within a mile from home.

Conclusion

In general, the two types of households and the dwellings they occupied were similar. The typical household was between 6 and 7 persons in size, and lived in a spacious home made of durable materials and services with pipe borne water and electricity. The age distribution and the average monthly income of the two household types was also similar.

However, there were significant differences in some aspects of the household and dwelling characteristics. Household sizes were similar, but those with home businesses had a greater proportion of small and large sizes. Furthermore, while the pattern of age distribution was not different between the two household types, the proportions of those under 15 years of age was lower, and those between 25-54 higher, for the households with home businesses. The average number of persons in the age category 6-14 was lower for the home business households, while the average number between the ages 25-54 was higher. These differences were statistically significant. Finally, the households with businesses had a smaller average number of children and a greater average number of relatives.

The home business households had a significantly larger average number of employed persons and a greater proportion had over 3 employed members. Therefore, the distribution of some household characteristics masked significant differences.

The average monthly household income was Rs 2,635 for the households. Although the households with home businesses had a lower

average it was not statistically significant. However, the monthly income of the home business households was subject to greater variation. Because these households depended to a greater degree on business income the variations are greater. A larger proportion of those without businesses had income from non-employment sources like property income and pensions. Because the proportion of the population over 55 years of age for the two household types was not that different, it might be that those with businesses in this age category had not been in pensionable employment.

The two types of households occupied homes of similar average floor area. But the households with businesses had a higher concentration both at the lower and upper end of the distribution of floor area. A larger proportion of households with businesses had occupied their homes for over 30 years and depended on communal water and toilet facilities. Nearly half of the homes for the business households had two rooms or less while the proportion was much lower for those without businesses.

The two household types when examined in this single time frame of a cross section study appear to be consuming similar housing services. A notable exception was the higher proportion of households with home businesses depending on public standpipes and communal toilet facilities. It may well be that the present position was reached by some households due primarily to the income generated by the home business. The households with home businesses seem to be, in general, at least as well off, in terms of income and housing services, as those without businesses. The importance of the home business to the improvement in housing may be substantial. It may be hypothesized that

a greater proportion of the households with businesses have reached the current housing level through improvements in time.

A careful examination of the home businesses is necessary in order to determine whether it can be accepted. If the two household types have similar incomes and age distributions, we expect their demand for housing services to be not very different. These questions will be examined in later chapters of this study.

CHAPTER FOUR

THE HOME BASED BUSINESS

Introduction

This chapter describes the major findings of the survey related to the home based businesses. It presents data on the type of businesses, the period it has been in operation, the employment provided and its relationship to dwelling or site space.

A wide variety of enterprises located at home was observed in the sample. These ranged from small stores retailing grocery items to well organized production units manufacturing a cigarette substitute, the Beedi.

A Few Examples

The small retail store is a common phenomenon in all residential areas. A particularly tenacious store would evolve from one retailing a limited range of goods. Consider the following actual case: a small store in a suburban residential area opened by retailing cigarettes, candy and pop. It was located in a small wooden structure and the owner-operator lived there. Within a few years he expanded the structure and increased his volume and the range of goods. He began to

retail fresh vegetables and grocery items. His clients were the households in the neighborhood that purchased vegetables, spices and other food items in small quantities on a daily basis. As he expanded his business he rented a permanent structure nearby. He increased the range of goods by including canned items, cereal grain, flour and bread among other things. Within a decade he had hired two workers, purchased a taxi cab operated by a hired driver that he also uses to transport his stock of goods, became a local agent for newspapers and a well patronized store in the locality. The store has become a retailing outlet for the produce of large firms, i.e. pop, cigarettes, toothpaste, jams and preserves, over the counter medication, processed foods, sweets and candy. Although the richer households tend to purchase food and other grocery items in bulk from larger stores or central markets, the practice of storing food over long periods is quite rare. In this neighborhood, most households visit the store many times a week to buy daily consumption items, especially food and drink. The tailoring shop, the auto repair store and the barber shop are another type of business operated from homes in residential areas. As one would expect, the scale of operation for these businesses vary by location. An auto repair shop attracts more than neighborhood clients. The ownership of automobiles is not widespread and therefore, the repair shop develops its clientele through various other means. In many instances the owner or a worker at the shop also serves at a larger firm. Routinely he raids the customers of the larger firm because of his lower prices, by directing the firms' customers to his own shop. After many years of this practice he is able to work exclusively with his own business and be raided of customers by his employees in turn.

International tourism, as a sector of the service economy, has grown at a rapid rate during the last decade. The growth of tourist traffic and earnings during this period has been substantial. During the five year period from 1977-81, the tourist traffic grew at an average annual rate of nearly 24.6 percent, doubling in less than three years. Meanwhile, tourist earnings in U.S. dollars during the same period grew at an average annual rate of nearly 35 percent (Central Bank of Ceylon, 1981, p. 172-182). Given this environment, households have entered the market by providing lodging to tourists. The guest house is a different operation from the large-scale tourist hotel. It is family operated and does not have the same type of high cost services. The clientele of this type of guest house is also different from that of the tourist hotel. The younger tourist, interested in travelling around the country, willing to experience inconveniences related to the lack of air conditioning, hot water and piped in music saves money and stretches out the visit by staying at a guest house. In fact, for some tourists, the need to come into contact with the local culture and escape from the environment of the world wide "chain" hotel may be of primary concern. For these people, the small-scale operation is a highly desirable alternative to the high cost tourist hotel. The phenomenon of taking a few tourists as paying guests has been observed in residential neighborhoods near large tourist hotels.

A large portion of medical care is publicly provided in Sri Lanka. Graduating doctors are entitled to serve an internship at a Public Hospital. However, a thriving private medical care sector exists. Private medical facilities operating out of houses are not a widespread phenomenon. Native medical practitioners, Ayurvedic doctors,

are more likely to operate from home. These establishments, in general, cater to those who seek non-western treatment for particular ailments. For instance, respiratory ailments, sprains and fractures are treated by practitioners who are not necessarily trained in modern medicine. Homopaths, Osteopaths and Ayurvedic practitioners form part of the total health care system. Although training facilities and hospitals for those systems exist and are not necessarily limited to the lower income patronage, the service costs may be lower than the comparable costs for private modern medical care.

Although formal education is primarily a public supported service, tuition classes and special examination oriented training facilities exist throughout the country. Often a teacher has a regular tuition class at home for a few students. Take the case of a grade school teacher who is willing to teach a few students during the off school hours. Not only is she able to attract students from her school, but she can develop a clientele from around the neighborhood of her home. By both students and parents, the extra classes are considered an important ingredient for improving performance at national examinations. Admission to the higher education system in the sciences is highly competitive. Based on the results of a national grade 10 examination, students are admitted to the pre-university grades of 11 and 12. Preparation of students for the grade 12 national examination is a lucrative business opportunity. In the city of Colombo, there are many highly successful businesses which engage in training students for national examinations. These are not schools which have a full curriculum, but rather tuition classes for students who have or are attending regular schools.

Besides training students for national examinations, private tutoring in addition to regular schooling at primary and secondary levels is observed. Daycare centers and Montessori schools for pre grade schoolers exist in residential areas. A young woman who obtains a diploma in the Montessori method starts a school for pre grade school children at home. She may be living with her parents and during the day, the yard and part of the home, can be used for the school. Her training can earn an income without a large investment in space or equipment.

Preparation of food for sale to households or stores as a home based business occurs in residential areas. This activity can be grouped into three broad categories. The first are enterprises which sell prepared food to other households. The second are those selling to other businesses and eating places or restaurants. Third are those which are itenerant vending operations. In the first category are households which sell predominantly to those with higher income as well as to similar income households. Consider a low income household in a suburban residential area. The wife provides domestic help to a few neighborhood households. She works as a cook for part of the day. She also provides meals, cooks in her home to both the households she works at and a few others. For instance, she cooks the midday meal at the employers' home and offers the additional service of providing breakfast or dinner cooked in her own home to this as well as a few other households. Being a domestic help has enabled her to develop another type of service she can readily provide. After obtaining orders for her food in advance she prepares and either delivers it when she goes to work in the morning or makes an additional trip if it is an evening

meal. The scale of operation varies by the enterprise. Many remain personalized and small in scale with an established neighborhood clientele. However, some graduate to preparing for a wider specialized market. This type of activity is not limited to lower income homes. The range of goods vary from simple meals to baked goods and confectioneries prepared for holidays and special occasions.

Types of Businesses

A few of the households which had businesses had more than one located at home. In a few cases the businesses were closely related. For instance, while providing lodging for tourists, a gift shop selling precious stones and jewelry was operated from one home. In another case a travel agency and an enterprise recruiting workers for employment in the Middle-East was operated simultaneously by the head of the household. A cafe and a grocery store operated from a part of the premises, was another dual business enterprise. The distinction of two separate businesses is not entirely clear in these cases. Some of the businesses provided multiple services or produced a combination of goods.

About a third of home businesses, 31.2 percent, were engaged in some type of manufacturing activity. A majority of the businesses in this category were those involved with tailoring, Batik or hand-dying cloth, handlooms and the preparation of food or drink. Stores retailing goods ranging from groceries and dry goods to bakery products comprised about a quarter of all businesses. Other types of activities made up less than ten percent of all businesses. When the primary or the major

home businesses are examined according to two types of classification, the following distribution is observed: The first classification results presented in Table 4.1 identifies the business without reference to a standard code. As a result, a large proportion of the businesses, 15.6 percent were not clearly identified. However, it permitted a close breakdown of the businesses which otherwise would have been classified in the major group of manufacturing.

TABLE 4.1

Primary Home Business by General Type - Percentage

Business Type	Proportion
Store	27.9
Food/Drink Preparation	8.4
Service	11.7
Tailoring	9.1
Other Manufacturing	14.9
Repair	5.8
Lodging	6.5
Other	15.6

In the last category "other", many different types of businesses were included. A few poultry farms, a dairy, and service establishments including astrologers, Ayurvedic and western medical practitioners and teachers were among those in this category.

The "other manufacturing" category included carpenters, an artificial fish bait manufacturing business, an electrical switch board making enterprise, a Beedi wrapping enterprise and a financial

TABLE 4.2

Primary Home Business by Major Industrial Group - Percentage

Major Category	Proportion
Agriculture	2.6
Manufacturing	31.2
Retail Trade	26.0
Hotel - Lodging	7.8
Restaurant	5.2
Educational Service	5.2
Personal Service	6.5
Repair Service	5.8
Medical Service	5.2
Other	4.5
Sample Size	154

NOTE: The last category included a business in transportation, construction, a financial management consultancy, an employment recruitment agency and other unclassified enterprises.

management consultancy. The businesses in the "service" category were predominantly barber shops and laundries. However, it appeared that some of the businesses were not clearly identified because of the nature of the service or the goods produced by them. For instance, businesses which split and sold firewood were not strictly retail enterprises and there, classified as "other".

Period of Operation

The home based businesses were in operation at the present location for an average period of over a decade, 10.4 years (standard error 0.96 years). This seems to imply that the majority of the enterprises are established, viable operations. However, when the age distribution of the businesses is examined a somewhat different pattern emerges. Over half of the enterprises, 51.7 percent, had been in operation at the present location for a period of five years or less. About one-third of the enterprises, 32.2 percent, had operated for fifteen or more years. Table 4.3 gives the age distribution by years in operation at the present location for the home based businesses. The high proportion for businesses which have been in operation for five years or less indicate that, within the prevailing economic environment, many households undertake this endeavor. However, by itself, this information does not present a clear view of the rate of entry for home businesses.

Many of the enterprises which are undertaken will fail or be discontinued. The concentration of firms in the below 5 years age category indicate the volume of entrants to the home enterprises. The process which eliminates the new entrants or determines their

TABLE 4.3

Period the Business Has Been In Existence
At the Present Location: Proportions

Number of years	% of Total Businesses
less than 5	41.6
5-9	24.0
10 - 14	7.8
15 - 19	7.8
20 - 29	8.4
30 or greater	10.4
AVERAGE	10.4 (0.96)

NOTE: Standard error in parentheses.

survivability is complex. The general economic environment, as well as characteristics of the household and the markets it faces, determine how successful the businesses become.

Although the majority of home businesses had begun 10 years prior to 1981, the household had occupied the dwelling for a much longer period. The proportion of households which had lived in the present home for less than ten years and have a business, is only 17.5 percent. Half the households, 50.1 percent, which started a home business during the past 5 years, had lived there for 20 or more years. A small proportion of the households, 6.5 percent, had started the business at the present location while living elsewhere. For these

households, the business was not started as a home business.

Home Businesses and Tenure of the Dwelling

More renters were observed among households with home businesses. Over a quarter, 26 percent, of the home businesses were in rented homes. The proportion of renters, for households without home businesses was lower at 19 percent. The average rent for households with home businesses was Rs 180 (standard error Rs 63), while for the other households it was higher at Rs 252 (standard error Rs 100). In the case of non-home business renters, more than half, 55 percent, of the household heads were related or closely acquainted with the landlord, and 57 percent had a landlord who lived at the same site or in the neighborhood. For the home business renters 62 percent were related or closely acquainted with the landlord, but only 40 percent had a landlord who lived at the same site or in the neighborhood.

The proportion of businesses, which were started from rental houses during the past 5 years, was lower than that for owner occupied home businesses. The renter home businesses had a greater concentration at the higher age groups. The age profile, for the renter home businesses however, was not statistically different from that for the owners.

The different proportions for renters and owners for the below 5 years category is an indication that tenure is an important factor in determining the initiation of a home business. When we examine the proportions of renters in each age category, Table 4.5, we note that it increased with the age category. The data have to be treated with

TABLE 4.4

The Age Distribution of Home Businesses by Tenure
Proportion of Businesses - Percentage

Number of Years	Rented Home	Owned Home
0 - 4	30.0	44.7
5 - 9	25.0	23.3
10 - 15	10.0	6.8
15 - 19	10.0	6.8
20 - 29	17.5	5.8
30+	7.5	12.6
Total	25.9	74.1
Number of Cases	40	114

TABLE 4.5

Proportion of Renters in Home Business Households
By Years in Operation - Percentage

Number of Years	Sample Size	Renters
0 - 4	58	20.6
5 - 9	34	29.4
10 - 14	11	36.4
15 - 19	11	36.4
20 - 29	13	53.8
30 or greater	16	18.2
ALL	142	28.0

NOTE: The proportions relate to renters and home owners only. Among the home owners, those living in family property were included.

caution because of the small number of observations.

The larger proportion of new home businesses among the owner occupants may be due to many factors. The change in economic policies after 1977 may have created new incentives for entrepreneurial activity. perhaps "testing the water" by starting a business at home is easier for owners than renters. We observed that the proportion of renters with businesses was smaller for enterprises less than 5 years, compared with those at higher age categories. This supports the view that renter households are slower in taking advantage of economic opportunities by starting a home business.

Operation and Ownership of the Home Business

More than half of the home businesses, 63.2 percent, were operated by the head of the household. The rest were operated by the spouse, children or relatives. Except for a small proportion, 3.3 percent, the businesses were either the sole proprietorship of one individual or owned jointly by the family. As many as 59.7 percent were family owned.

The Number of Workers

The average number of workers for the business was 3.78 (standard error 0.42). Three businesses with over twenty workers were contained in the sample. The large tourist guest house and precious stone business employed forty workers and was operated by the household head who worked full-time at this. Twenty-three workers were occupied at the artificial fish bait manufacturing enterprise while thirty-one were

engaged in Beedi wrapping (local cigarette substitute) and confectionary business at the same location. The home businesses engaged both part-time and full-time workers. More than half, 56 percent, of the heads of households and 15 percent of their spouses worked full-time at the home business. In addition, 23 percent of the children and 19 percent of relatives of the household head worked full-time with the business. Full-time hired workers were observed in only 30 percent fo the home businesses. The average number of women workers was 0.98 (standard error 0.42). However, in the artificial fish bait enterprise, twenty women were employed, while the Beedi wrapping and confectionary multiple business, fifteen women were employed. When these two cases are excluded, the average falls to 0.76.

Floor Area of the Home Business

Although we use the term home business, in 12.3 percent of the cases, the business was not primarily located in the dwelling. These households used a separate structure within the compound to conduct the major part of their business. The households which used the dwelling located the business primarily at the front part of it. Table 4.6 shows the distribution of the businesses by their location within the dwelling or the compound. All the businesses which occupied another floor of the dwelling were tourist guest houses. The stores were predominantly located in the front part of the house. The motor and bicycle repair businesses, carpentry shops and firewood stores were primarily located in separate structures.

TABLE 4.6

Proportion of Business by Main Location - Percentage

Location	Proportion	Number of Cases
Everywhere	1.3	2
Front	49.4	76
Back	11.7	18
Side	11.5	17
Upstairs or another floor	5.8	9
Separate structure or outside	12.3	19

Floor Space and the Business

When the distribution of floor area is examined, it is observed that more than two-thirds, 71.4 percent, of the businesses have less than 400 square feet. Many of the businesses do not use the space exclusively for the business. For instance, those engaged in the preparation of food, tailoring and private tuition activity were found to use part of the home only when needed. For businesses which involved stocking of goods as in stores, room for raw material and equpment as in carpentry, repair shops and eating houses, the household set aside space. The exclusive use of the floor area for the business was observed in less than half, 47.4 percent, of the households. The rest used the space for the business only when it was in operation. Table 4.7 gives the distribution of floor area for the businesses. When the relationship between the dwelling floor area and the business floor area

TABLE 4.7

Distribution of the Floor Area of the Home Business
Percentage

Floor Area (sq. ft.)	Proportion of Home Business
less than 100	20.1
100 - 199	24.7
200 - 399	26.6
400 - 599	13.0
600 - 999	4.5
1000 - 1999	4.5
greater than 2000	6.5

is examined jointly, it is observed that only 10.4 percent of the businesses are in homes of less than 500 square feet of floor area. About one-third, 32.4 percent, of the businesses were operated by households occupying dwellings larger than 2500 square feet. Of the 28.5 percent of businesses using over 400 square feet of floor area, 64 percent (18.2 percent of the total) were located in homes of over 2000 square feet. The businesses occupying more space were in homes with more space. A not very surprising relationship.

Reasons for Locating the Business at Home

For more than half of the households, 54.2 percent, the saving of cost for space elsewhere was a reason for locating the business at home. Making use of the neighborhood market was a reason for 48.4 percent, while making the home space productive appeared to be a consideration for 42.5 percent of the businesses. About 40 percent of the households, considered the convenient employment of the household head as a reason. These reasons are nevertheless related and the general motivation for locating at home cannot easily be ascertained from them. For over two-thirds of the businesses, 70.3 percent, the most important reasons for locating the business at home were those related to cost savings on space, advantage of a neighborhood market and the convenience of employment for family members. The latter accounted for 27.8 percent. As many as three-fourths, 75.3 percent, of the home businesses claimed that the enterprise would not exist if it were not possible to operate it at the present location. A proportion of 16.9 percent would have rented, while 4.5 percent would probably purchase premises to continue the business. Therefore, in the perception of the household, the advantage of location was a very important factor in determining the existence of the home business.

This point is confirmed by the large proportion of businesses, 82.5 percent, which sold the major part of their goods or services either at home or in the neighborhood. As many as two-thirds sold directly from the home. Many of the businesses, 46.4 percent, did not perceive serious competition for their goods or services from others. More than one-third, 35.9 percent, claimed serious competition from enterprises

similar in scale or operation, while for 12 percent, it was from larger enterprises. Less than 1 percent of the enterprises claimed that branches of foreign firms offered serious competition.

Business Earnings and Its Share in Total Household Income

For purposes of this study, information on the net business earnings of each household was obtained. As a wide range of businesses with different scales of operation and accounting practices were sampled, information on earnings should be treated with caution. The major problem stems from the fact that many of the businesses did not keep regular accounts of their transactions. The information depended on the operator's memory of the past months earnings. A single measure of the range of net business earnings and not separate measures of total revenue, raw material and non-labor input costs, was obtained.

Net business earnings per month varied widely across the sample. More than half the businesses, 60 percent, earned over Rs 500, while 28 percent earned less than Rs 350, 20 percent earned over Rs 1750. Table 4.8 gives the distribution of monthly earnings of the businesses.

Proportion of Household Income from Business

A quarter of the businesses provided the household with its only source of income. In this category of businesses, none has earned less than Rs 225, while 45 percent earned over Rs 1150.

The average business accounted for more than half, 54 percent, of the total household income. About one-third, 34 percent, of the

TABLE 4.8

The Distribution of Monthly Net Business Earnings

Earnings Range (in rupees)	Proportion of Businesses
less than Rs 150	2.5
151 - 225	9.1
226 - 350	16.2
351 - 500	11.7
501 - 750	13.0
751 - 1150	17.5
1151 - 1750	8.4
1751 - 2500	9.7
over 2500	11.7

NOTE: In a few casts there were multiple businesses on the premises.

businesses contributed 30 percent or less to the household income. Table 4.9 shows the distribution of the share of business income, in total household income.

When the relationship between the business earnings and its share in total income is examined jointly, we observe the following relationship. The businesses which have higher earnings, contribute a greater share to household income. Among the businesses which earn less than Rs 500, as many as 83 percent contributed half or less to the total household income, while 13 percent generated the entire household income.

TABLE 4.9

Distribution of the Share of Business Income in Total Household Income - Percentage

Business Income Share of Total Income	Proportion of Business
10 or less	9.7
11 - 20	11.1
21 - 30	13.0
31 - 40	11.0
41 - 50	12.3
51 - 60	7.2
61 - 70	0.6
71 - 80	4.5
81 - 98	5.3
99 and above	25.3

NOTE: Average share 54.1 (standard error 2.68).

For the business earning range of Rs 500 - 1150, 57 percent of the businesses contributed half or less to the total household income, while nearly one-third, 32 percent, generated the entire household income. At the earning level of Rs 1150 and above, 41 percent of the businesses generated the entire household income and only 21 percent contributed half or less to it. Table 3.10 gives the joint distribution of the business earnings and its share in total household income.

TABLE 4.10

Share of Business Earnings in Total Household Income by Business Earnings

Income Share Group	Business Earnings Group (in Rs.) 000-225	226-350	351-500	501-750	751-1150	1151-2500	over 2500
0 - 10	55.5	8.0	5.6	5.0	3.7	0.0	0.0
11 - 25	27.8	28.0	38.9	20.0	14.8	3.6	5.6
26 - 50	16.7	40.0	33.3	30.0	40.7	14.3	22.2
51 - 75	0.0	0.0	5.6	10.0	3.7	32.1	22.2
76 - 90	0.0	4.0	0.0	5.0	3.7	3.6	16.7
91+	0.0	20.0	16.1	30.0	33.3	46.4	33.3
All	100.0	100.0	100.0	100.0	100.0	100.0	

NOTE: 1) The shares are in terms of percentage of total income.

2) In the 91+ share group, of 42 households, 39 were in the 99 percent group.

A majority of the businesses did not provide the households with its only source of income. The business earnings were an addition to and not the only form of household income. (See Table 4.10).

Nearly 64 percent of the households had members who earned income outside the home business. Over half of the households, 51 percent, had workers earning wages and salaries at an occupation. Property income was received by 11 percent and income from other sources, mainly aid from friends and family, was available to about 6 percent.

Total household income and the share of business earnings were

inversely related. This meant that the households with lower total income tended to depend more on the business earnings than the households with higher income.

The home business households were grouped into three categories based on total monthly household income, those with income less than Rs 1000, those between Rs 1,000 and 2,000 and Rs 2,000 and above. The proportion of households in each category depended on the business income in the following way. Among the low income households, 51 percent obtained 75 percent or more of the total household income from the business. The corresponding proportions of households in the other two income categories, which depended on the same proportion of income from the business (75 percent or more), was 34 percent and 21 percent respectively. The proportions of households in each income group earnings 25 percent or less from the business were the following: 14 percent for low, 27 percent for middle and 36 percent for high, see Table 4.11.

TABLE 4.11

Share of Business Income in Total Household Income
At Different Income Levels - Proportion of Households

Business Share Percentage	Less Than Rs 1,000	Between Rs 1,000 - 2,000	Equal/Greater Than Rs 2,000
25 or less	14.2	27.2	36.0
25 - 50	31.4	29.5	26.7
50 - 75	3.0	9.2	16.0
75 or greater	51.4	34.1	21.3
Sample Size	35	44	75

The relationship between the dwelling and business floor space was noted earlier. The households with smaller houses obviously had less floor area for a business. Among the households which used less than 400 square feet for the business, 31 percent obtained 75 percent or more of household income from the business. Similar proportions were observed for businesses using more space. Business floor space by itself did not account for the differences in business earnings. Substantial incomes were earned by businesses using 200 square feet or less. The proportion of businesses using 200 square feet or less which earned over Rs 1150 was 19 percent. For those with floor area between 400 and 600 square feet, the proportion was higher at 32 percent. The business floor area and earnings from the business were not statistically related at the 90 percent significance level. Table 4.12 gives the distribution of businesses by floor area and income range.

TABLE 4.12

Business Floor Area and Business Income - Proportion of Households

Business Income (in rupees)	Business Floor Area - Square Feet				
	100 or less	101-200	201-600	over 600	TOTAL
500 or less	61.3	52.6	36.6	15.9	39.6
501 - 1150	25.8	23.7	36.6	34.1	30.5
over 1150	12.9	23.7	26.8	50.0	29.9
Total	100.0	100.0	100.0	100.0	100.0
Sample Size	31	38	41	44	154

Although the relationship between business floor area and business earnings was not statistically related, a marked difference in the pattern of business income distribution was observed between the households using 100 square feet or less and those using over 200 square feet. The proportion of households earnings Rs 500 or less decreased with increasing floor area category, while an inverse relationship was observed at the upper income level.

Business Earnings by Years in Operation

The new home businesses, those less than 5 years in operation, were evenly distributed over the earnings range. A pattern of concentration across income groups was not observed. While 45 percent of the new businesses earned Rs 500 or less, a very small proportion, 3.1 percent, earned Rs 100 or less.

Among the businesses earnings more than Rs 750, a large proportion were new ones, see Table 4.9. This was also the case for the earnings group Rs 151-500. The proportion of new businesses among those earnings over Rs 750 was 38 percent. This was equivalent to 44 percent of all the new businesses. Only 15 percent of the businesses earnings over Rs 750 had been in operation for over 20 years. More than half, 51 percent, of the businesses which have been in operation between 10 and 30 years had earnings which ranged from Rs 226-750.

The age distribution of the businesses show a sharp concentration at the lower end and one of lesser degree at the upper end. This is a reflection of the rate of entry and the rates of failure at the different age levels. The failure rate is expected to be highest within

the first five years. This is possibly different across the businesses. This means that we would expect a different age pattern according to the type of business activity. However, even within a business category, various size or scales of operation are expected leading to a further dimension for the failure rate. The overall age structure masks these distinctions. What seems like a heavier concentration of higher earning of new businesses in the total is due primarily, to the greater proportion of new firms. When the cross tabulation of earnings and years in operation was examined a significant relationship, based on the Chi-squared statistic with 95 percent confidence, was not observed. In the sample, business earnings are not systematically related to the years in operation for all businesses.

TABLE 4.13

The Business Earnings by Year in Operation - Percentage

Earnings Range (in rupees)	Years in Operation 0-4	5-9	10-14	15-19	20-30	30+
less than 225	15.6	8.1	0.0	8.3	7.7	18.8
226-350	17.2	8.1	25.0	8.3	38.5	12.5
351-500	12.5	10.8	8.3	8.3	23.1	6.3
501-750	10.9	18.9	16.7	25.0	0.0	6.3
751-1150	12.5	24.3	16.7	25.0	0.0	31.3
1151-2500	20.3	16.2	25.0	8.3	0.0	6.3
over 2500	10.9	13.0	8.3	33.3	15.4	18.8
All Groups	100	100	100	100	100	100
Sample Size	64	37	12	12	13	16

NOTE: The Chi-squared statistic, when the earnings were expanded to ten groups, was 44.69 with 45 degrees of freedom. The hypothesis of independence of earnings and age was not rejected at the 95 percent significance level.

Differences Between Types of Businesses

In this section the differences between selected categories of businesses are examined. The simple classification of Table 4.1 is used for the purpose.

Period of Operation

Retail stores were more than a third, 34.0 percent, of the businesses in operation for less than 5 years. More than half of the retail stores, 51 percent, were less than 5 years old. Meanwhile, 64 percent of the tailoring firms and 46 percent of "other" businesses were of the same vintage. The proportion of all businesses less than 5 years in operation was found to be almost 42 percent (see Table 4.3). The age distribution of the different businesses is given in Table 3.14. The age distribution for service and food preparation enterprises showed the greatest deviation from the average for all businesses.

TABLE 4.14

Age Distribution by Type of Home Business
Proportion of Businesses

Age Distribution	Type of Business							
Years in Operation	Store	Service	Food	Tailoring	Manufacturing	Repair	Lodging	Other
0 - 4	51.2	15.4	27.8	64.3	34.8	44.4	30.0	45.8
5 - 9	20.9	7.7	27.8	7.1	21.7	33.3	60.0	29.2
10 - 19	9.3	30.8	16.7	14.2	21.7	11.1	10.0	16.7
20 or more	18.6	46.1	27.7	14.4	21.8	11.2	0.0	8.4
Number of Cases	43	13	18	14	23	9	10	24

Tenure of Dwelling Among Businesses

About a quarter of the home businesses were in rented dwellings (see Table 4.4). The proportions of the different businesses in rented homes varied considerably. Because of the small number of cases for the different businesses, the variation in the proportion of rented dwellings may be subject to substantial errors. Six out of the 14 tailoring enterprises, or 43 percent, were in rented premises. The proportion for the other businesses were the following, 19 percent for stores, 33 percent for food preparation, 36 percent for tailoring, 26 percent for manufacturing, 33 percent for repair, 10 percent for lodging and 21 percent for other businesses.

Business Floor Area by Business Type

More than half of the stores, 58 percent, half of the enterprises perparing food and 7 of the 9 repair businesses, used less than 200 square feet of space for the business. This was a larger proportion than that for all businesses considered together, using less than 200 square feet (45 percent). More than 90 percent of the stores used 600 square feet or less of the dwelling space. The corresponding proportion for the service enterprises, food preparation businesses and manufacturing businesses were 85 percent, 89 percent and 83 percent respectively.

Business Income

Among stores nearly 40 percent contributed more than 75 percent to the total household income. In fact, more than a third, 35 percent of the stores, generated incomes which were over 90 percent of the total household income. A similar relationship between the business and the total household income was observed for manufacturing and service enterprises. In the case of the repair enterprises, 5 out of the 9 observed, generated over 90 percent of the household's total income. Table 4.15 gives the distribution of the share of the business earnings in total household income for the different types of businesses.

TABLE 4.15

Share of Business Earnings in Total Household Income by Business

Income Share Group	Store	Service	Food	Tailoring	Manufacturing	Repair	Lodging	Other
0 - 25	23.3	23.1	39.0	42.8	21.7	22.2	50.0	25.0
26 - 50	32.6	30.8	28.0	28.6	17.4	22.2	40.0	29.2
51 - 75	4.7	7.7	5.6	14.3	17.4	0.0	10.0	25.0
76 - 100	39.4	38.5	27.4	14.3	43.5	55.6	0.0	20.8
Number of Cases	43	13	18	14	23	9	10	24

Business Earnings by Business Type

When the distribution of business earnings by business type is examined, we note that the food preparation and the tailoring enterprises are clustered around the lower end while the repair, lodging and other businesses are clustered at the highest level on income. A part of the difference in the distribution of earnings may be due to the small number of cases observed for particular businesses. About 62 percent of the stores earned Rs 750 or less per month. For the category "other" the corresponding proportion was about one-quarter for the same income category. In manufacturing and lodging a similar proportion was observed. About 83 percent of the businesses preparing food and 57 percent of the tailoring businesses generated monthly incomes of Rs 750 or less. If we assume the income distribution to be correct,

TABLE 4.16

Distribution of Business Earnings by Business Type

Type of Business	Business Earnings Range (in rupees)				
	350 or less	351-750	751-1750	over 1751	Total Cases
Store	25.6	37.2	25.5	11.7	43
Service	23.0	30.8	23.0	23.2	13
Food Preparation	61.0	22.2	5.6	11.2	18
Tailoring	42.8	14.3	42.9	0.0	14
Manufacturing	17.4	13.0	39.1	30.4	23
Repair	11.1	55.5	22.2	11.2	9
Lodging	10.0	20.0	20.0	50.0	10
Other	25.0	8.3	25.0	41.7	24

manufacturing, lodging and the businesses in the other category and to a smaller extent the service enterprises can be considered as having a higher income potential.

Conclusion

Many different types of businesses were operated at home. Nearly two-thirds of all the businesses had been in operation for less than 10 years. The most frequent type of business was a retail store.

Nearly one-third of the businesses contributed over 75 percent to the total monthly income of the household, while almost half of all the businesses earned over Rs 750 a month. There were significant differences in the distribution of earnings among different types of businesses.

When the floor area and the income generated by a business is considered, it was found that about a third of all the businesses used 600 square feet or less and earned over Rs 750 a month. The businesses with large floor areas were concentrated at the upper end of the earnings scale.

The most important feature of the home business was its seeming ability to generate a significant income by devoting a part of the home for productive purposes. Clearly, the earnings of the businesses are dependent on many factors other than the floor space devoted to them. But the fact that, by using a part of the home for a business, about 42 percent of the households more than doubled the total monthly income, is very important. However, in the absence of the home business, the households may have been able to generate income through other sources,

especially wage employment. Nevertheless we can assume that the home business was the best income source among alternative opportunities.

CHAPTER FIVE

HOME IMPROVEMENT

Introduction

The owners in the sample had occupied their home for over two decades, see Table 3.11. This is a clear indication that the types of households encountered do not readily reenter the housing market, nor relocate in order to change and improve their housing consumption. However, household characteristics related to income, household size and age composition are expected to change during a period as long as 20 years.

The demand characteristics of the household for the different components, which collectively define the total housing service, change over time. Because a home has the important feature of spatial immobility, the household cannot change the location aspects of the home unless it moves to another one.

The location of the home affects the household in numerous ways. Those which are discussed in the literature, (See Alonso 1964 and Muth 1969) relate to the access to services and employment. However, under conditions where relocation in order to enjoy better access, incurs very high transaction costs, the households desire or willingness to move is not reflected by its behavior. Changing the location as the demand for

the housing services change was not an option for most of the sampled households. The lack of interest shown in moving may be masking the inability imposed by economic constraints to do so. However, a household is able to make some adjustments to its consumption of housing services without changing the location. These changes relate to both the quality and the quantity of a few aspects of housing services. The households which have realized or effected their increased demand for some housing services are observed in the sample.

Almost half the owners had made some type of improvement during their period of occupancy. This is a reflection of the changes in demand for housing services that have been met by the household. Many factors are expected to determine the household's demand for additional housing services. The characteristics of the household, especially those related to income, size and age distribution of its members figure prominantly. In addition, the nature of the home, its physical features of space, utilities, the quality of the materials of construction, when it was initially occupied and yard space for addition of rooms, determine or affect the types of changes demanded by the household over time. What is observed however, is the result of the interaction between the households demand for and the supply of, the various improvements.

Frequency of Different Categories of Home Improvement

Nearly 15 percent of the owner occupants had increased the living space of the home. Among those who increased space, nearly 60 percent improved their utilities. These included water service, kitchen and

toilet facilities. As many as 20 percent improved all utilities as well as space. About a quarter, 26.7 percent, of the households had improved water, toilet or kitchen facilities.

About 60 percent of the households had occupied the home when it had less space and was not painted, not plastered on the outside or with part of the home lacking an inside ceiling. As many as 25 percent of the owners had made all these improvements during the period of occupancy.

About half the households adding space has improved the construction material of the roof, floor or walls. The proportion of households making all these material improvements and adding space was 15 percent. Therefore, the households adding space seemed to have been involved in a variety of other improvements as well. The proportion of households that had moved into an unfinished home was 31 percent. These occupants had either plastered, painted or installed a ceiling for a part or all of their dwelling. The proportion of households which changed to better quality building materials for a part or all of their home was 16.5 percent.

We observed that a majority of the tenants' homes had not teen maintained or improved at the landlord's expense. Most of the tenants considered the landlords record of maintenance to be very poor. As many as 77 percent of the rented homes had not received any maintenance by the landlord during the period of occupancy. The landlord's reluctance to maintain could be attributed to a variety of reasons. The legal environment which prevailed was a primary factor. Rent controls, promotion of tenancy rights and limits to the ownership of housing property seriously eroded the possible return on rental housing.

General economic conditions and the policy framework within which housing markets operate, have not enabled either private or public home building to meet the demand. The relocation costs for renters are high. The existing conditions in the housing markets have resulted in very large premiums or initial down payments (key money) to be made before a household begins its tenancy.

Within the rental market the average period of occupancy was not as high as in the case of owners. Nevertheless, the households experience the same type of increases in demand for housing services over time. The size of the household increases, the earnings increase as family members enter the workforce and as the employed move up in the life cycle.

The proportion of renters making home improvements is expected to be lower than for owner occupants. As many as 8 percent of the renters had added living space to their home.

As many as a fifth of the renters had finished the inside of the home by painting, plastering or both. The proportion of owners who had made these improvements was higher at 28 percent.

The proportions of rented dwellings which were improved during the current tenant's occupancy with better kitchens, water supply, toilet facilities were under 10 percent. Similar proportions were observed for the improvements in building materials. Therefore, rental dwellings are observed to have been improved during the current tenants occupancy.

The proportion of homes which have been improved, for renters and owners show the expected difference. The owner occupied homes have a greater proportion of improved ones than the rented ones. However, we have observed that the large majority of rented homes have not been

maintained or repaired during the current tenancy. It is therefore, inconceivable that the improvements, even though they relate to a small absolute number of rented homes are carried out by the landlord. In fact, the most important observation is not the difference in the proportion of improved homes among owners and renters but rather the presence of a significant proportion of rented homes improved by the occupants.

Except for the improvements related to inside and outside plaster and paint, where between 17-20 percent of it was landlord financed, all others were occupant financed. The small absolute number of renters making home improvements does not enable a detailed analysis of these households. The reasons for the occupants to improve rented homes may be related to the legal environment within which the rental market has operated. The renters that have made improvements may be in the process of contesting their tenurial status. A limit on the ownership of housing property was written into the law in 1973, (see The Ceiling on Housing Property Law, No. 1, Government of Sri Lanka, 1973). Tenants were given first rights to purchase homes which are over the permitted number for the landlord. Improvements may have been made in anticipation of the transfer of ownership or to strengthen the case for it.

It is also possible that tenants improved out of dire need and because of the improvements made, bargained against rent increases. Therefore, we expect the renters who improved with their own resources to have recovered the costs or part of it in some form by negotiating with the landlord.

During the period of occupancy the household undergoes changes in

its size and age composition. The household members who initially occupied the home get older, new children are born or children get married. New members join the household, who are relatives and spouses of children who marry.

Meanwhile, the household income changes as a result of members entering the workforce and as the earning of those already employed change. Clearly, all households would not follow the same pattern of change in composition and income. However, we can generalize the households as traveling through a life cycle in composition and earnings.

All households are not expected to begin occupancy of a home at the same point in the life cycle of the household composition or total income. The relationship between point of occupancy, household size and income is expected to be complex. Therefore, the changes in demand for housing space are not clearly reflected by the period of occupancy alone.

The observed improvements by period of occupancy are an indication of the relationship between the changes in demand for the services of the different components of the housing bundle as a result of changing income and composition of the household and the supply conditions associated with the services. Households which have occupied houses for a longer period are expected to be a larger proportion of those which have made improvements.

Among the owner occupants, only 16 percent of those who had made space improvements had lived less than 10 years in the home. About 60 percent of those who added space had lived twenty or more years in the home. The tendency for improvements to be made as the household

TABLE 5.1

Distribution of Owners by Space Addition and Years of Occupancy
Percentage of Households

Years of Occupancy	Owners Adding Space	Owners Not Adding
0 - 4	7.9	14.7
5 - 9	9.2	9.0
10 - 20	23.7	26.2
21 - 30	19.7	19.4
30 and over	39.5	30.7
SAMPLE SIZE	76	428

NOTE: The Chi-squared statistic for the appropriate contingency table when the occupancy periods are divided into three groups was 3.24 with 2 degrees of freedom. Therefore, on the basis of the data, the hypothesis that the proportions in the occupancy period group do not differ by whether the household had or had not made space additions, is not rejected at the 95 percent significance level. This means the observed difference in the proportions of owner occupants who added space in the lowest and highest occupancy period groups, given the data, is not statistically significant.

characteristics change over time is demonstrated by this information presented in Table 5.1.

From Table 5.1, we observe that the greater proportion of home owners who have added space have lived 20 or more years in their homes. Although a uniformly increasing pattern was not expected, the tendency for improvements in space with longer periods of occupancy is shown in Table 5.1.

Improvements and Businesses in Owner Occupied Homes

The owner occupants with home businesses that had made at least one type of improvement was 54.4 percent of all home business households. The corresponding proportion for owner occupants without home businesses was only 46.5 percent. However, there is no significant statistical relationship between households that make any type of improvement and the presence of a home business.[1]

The proportion of owner occupants adding rooms for households with home businesses was 23.3 percent. The corresponding proportion for non home businesss owners was significantly lower at 12.8 percent. The hypothesis that room addition was unrelated to the presence of a home business for owner occupants was tested for the sample data.

The hypothesis of independence between room addition and the household types was rejected at the 99 percent level. This means that the proportion of owner occupants with home business adding rooms is

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[1]The Chi-squared statistic with one degree of freedom was 2.01 for a contingency table for all owners by home improvement and home business.

TABLE 5.2

Households With and Without Home Businesses by Room Addition For Owner-Occupants - Percentage

Added Rooms	With Home Business	Without Home Business
Yes	23.3	12.8
No	76.7	87.2
Sample Size	103	406

NOTE: Chi-squared statistic with 1 degree of freedom from the equivalent contingency table was 7.12. The table value at 99 percent significance level is 6.63.

statistically different from that for households without home businesses. None of these differences were statistically significant on the basis of Chi-squared statistics derived from appropriate contingency tables.

A tendency for owner occupants with home businesses to at least make as many improvements as those without businesses is observed. More importantly, a greater proportion of households with home businesses have added rooms compared with those without home businesses. These tendencies have to be accepted with caution, the absolute numbers of households making improvements in the case of those with home businesses is well under 25 for some types of improvements.

Addition of Space, Household Size, Floor Area and Income

The household's demand for space is expected to grow with increased income and household size. The space additions observed are distributed over the period of occupancy. During this period the household size might increase as a result of new children born and relatives joining the household. The household income increases that occur are due to increaed earnings as well as additional sources of income, mainly family members joining the workforce. As the household size increases in time and changes age composition, the nature of its demand for housing services is expected to change. Those households which need more space and are able to afford it are most likely to add rooms. Only those households which were able to increase space are observed. Among the households which increased space, nearly a third had a home with floor area of less than 1500 square feet; 30 percent had a floor area between 2000 and 2500 square feet. No clear relationship between floor area and space addition, which obviously adds to the floor area was observed (See Table 5.3).

Among the households that had added rooms, about 16 percent had a total household income of less than Rs 1000. The proportion of owners who did not add space in this income group was 19.5 percent. The proportion of owners who added rooms in the highest income group, Rs 5000 and above, was a quarter of all households in that income category. More than half, 58.2 percent, of the owners who added rooms had a total household income over Rs 2000. The hypothesis that the distribution of household income was the same for owners who did or did

not add rooms was not rejected at the 90 percent significance level.[1] Therefore, households which added rooms and those that did not do so, have a statistically similar pattern of income distribution. Hence, the home business, not resulting from income differences, mattered.

As many as 35.4 percent of the owner occupants that had added rooms in the past have a household size now of either 5 or 6 persons. Nearly 60 percent that added rooms have a size between 5 and 8 persons. We expect the household size to be an important factor in determining the demand for additional space. However, actual additions take place at different stages in the housholds size according to the households' ability to make such improvements. As noted earlier, household size and

TABLE 5.3

Floor Area by Owner Occupants Adding Rooms
Percentage of Households

Floor Area	Added Rooms	Not Added Rooms
less than 1000	12.2	16.2
1000 - 1499	20.7	16.9
1500 - 2499	30.5	36.1
2500 - 3999	18.3	19.2
above 4000	18.3	11.6
Sample Size	82	449

[1]The test was based on a Chi-squared statistic derived from a contingency table of income groups and households according to whether they added rooms. Chi-squared statistic with 6 degrees of freedom was 8.86.

income are interrelated. The households which have added space are not concentrated at the larger sizes but at the intermediate levels. This may be due to a variety of reasons. The larger households may very well have the desired space. Large dwellings may raise the household size. For instance, married children can live with their parents because the home already had adequate space to accommodate them. When we examine the reasons which led owners to add rooms, the increased household size and space needs emerge as important. Nearly 80 percent of all those who added rooms had done so because of children or relatives. Children alone accounted for 93 percent of these. A small proportion of the households had added rooms primarily to rent out or as an investment. There were no differences between the households which had or did not have home businesses; as far as the reasons for adding rooms are concerned.

Addition of rooms for children does not necessarily translate into a clear relationship between household size and room additions. Rooms may be added when children get older or when they marry as well as when new members are added to a household.

The Financing of Additional Rooms

The most common way in which households financed additional rooms was through household saving. More than two-thirds, 67.7 percent, financed the additions through saving. Institutional finance was obtained by 17.2 percent of the households. A small proportion of the households, 10.8 percent, had added rooms with household labor after purchasing the necessary materials for cash.

The absolute number of households with home businesses which had added rooms was small. Therefore, the pattern of the financing of room additions for these households has to be treated with caution. The differences in financing between the households with and without businesses do not appear to be great. Table 5.4 gives the method of financing of the room additions for the households with and without home businesses. The differences may be attributed to the small sample size of the households with home businesses.

TABLE 5.4

Method of Financing Room Additions for Households With and Without Home Businesses - Percentage

Type of Financing	Proportion of Households With Business	Without Business
Landlord	0.0	1.6
Self Help Labor (paid cash)	13.3	9.5
Savings	63.3	69.8
Loans from Relatives and Friends	0.0	3.2
Institutional Loan	20.0	15.9
Other	3.3	0.0
Sample Size	30	63

NOTE: All households which added rooms were included. There were 11 rented homes, six among those with home businesses which added rooms. Only in one case had the landlord arranged for it. Six renter occupants had financed the addition with household savings, while the remaining 4 used self-help labor and paid cash for materials.

Households with home businesses had depended on savings as the primary source of finance for room additions. It should be noted that these households may not have had a home business at the time of the addition. We observed that about 45 percent of the home businesses in owner occupied dwellings have been in operation for less than 5 years. It was also noted that over 90 percent of the households with businesses that added rooms had occupied the dwelling for over ten years. No data on the time the room additions was made is available.

Relationship Between Adding Rooms and Other Improvements

When all the owner occupants are considered, those that added rooms seem to have a greater tendency for making other types of improvements. Although the interaction between different types of improvements may be complex, only a particular form of it is investigated here.

It was noted earlier that as many as 20 percent of the owner occupants had added rooms and improved the kitchen, obtained more convenient water and a better toilet. As many as over a third of the owners, 36 percent, making at least one of the improvements related to the kitchen, water service or toilet, had added a room.

The relationship between the improvements considered in Table 5.5, utility improvements and the addition of rooms is statistically strong. A contingency table based on the data yielded a high Chi-squared statistic of 63.36 with 3 degrees of freedom. This meant that the hypothesis that room additions and utility improvements are unrelated is rejected at the 99 percent significance level. The Gamma

TABLE 5.5

Room Addition by Improvement in Kitchen, Water Service and Toilet for Owner Occupants
Percentage

Improvements	No Rooms Added	Rooms Added
None	82.0	43.9
1	8.9	18.3
2	5.6	18.3
3	3.6	19.5
Sample Size	449	82

NOTE: Under the column "improvements", the numbers refer to how many of the mentioned improvements and not a particular type, were made.

statistic was 0.66.

More than a quarter of the owner occupants, 28 percent, who had finished their home by either painting or plastering the inside or the outside or by installing better quality doors or windows had also added rooms. Among those owner occupants who added rooms, nearly 55 percent had made some type of finish improvement. Once again the hypothesis that rooms addition and improvements in the finish are independent, is rejected with 99 percent statistical significance. Table 5.6 presents the data which relates room addition with finish type improvements.

The proportion of owner occupants who had added rooms and made improvements in the building materials of the home was 44 percent. Among the households that improved building materials with better quality roofing, walls or flooring, 42 percent had also added a room.

Table 5.6

Room Addition by Improvements in Finish for Owner Occupants
Percentage

Improvements	No Rooms Added	Rooms Added
None	74.2	45.1
1	7.3	9.8
2	14.7	22.0
3	3.8	23.2
Sample Size	449	82

NOTE: The Chi-squared statistic with 3 degrees of freedom for the contingency table based on the data above was 40.64. The Gamma statistic was 0.54.

In this case too, the hypothesis that the improvements in building materials was independent of room additions, was not accepted at the 99 percent level.

It is clear that the addition of rooms and the few types of improvements considered are statistically related. Owner occupants who added rooms are more likely to make the other types of improvements as well. By itself, the information presented does not establish a direct link or causality between the improvements and room addition. However, it may be the case that once a room is added the household is better able to plan and execute other types of improvements because of the information it gained during the process. The data used does not permit

TABLE 5.7

Room Addition by Improvements in Building Materials for Owner Occupants, Percentage

Improvements	No Rooms Added	Rooms Added
None	88.9	56.1
1	6.9	14.6
2	2.0	4.9
3	0.9	9.8
4	1.3	14.6
Sample Size	449	82

NOTE: The Chi-squared statistic with 3 degrees of freedom for the corresponding contingency table was 76.62. The Gamma statistic was 0.71.

the identification of the timing sequence of the different improvements undertaken by some of the households. Often improvements are undertaken in packages or bundles and not singly. That is, households improve the home in several ways simultaneously.

Conclusion

Given the average age of the housing stock, home improvement in Sri Lanka, as observed by the sample data, does not seem to be as widespread or as extensive as one would expect. One of the most important improvements, the addition of rooms, was undertaken only by about 15

percent of the owner occupants. This indicates that the housing stock is upgraded in size very slowly compared with some other countries for which data are available. (Strassmann 1982, 1983). Besides resource constraints and costs, slowly rising household incomes may account for this apparently low volume of home improvement.

In addition to these factors it may well be the case that in Sri Lanka, household tastes favour the initial acquisition of a completed bundle of housing which meets long term housing demand. Such a situation would be enhanced by the subsidized credit for housing, along with a welfare system which provided subsidized food, health education and transportation services which have prevailed since the early 1950's.

The pattern of upgrading and improvement observed is consistent with the view that those who acquire housing services through ownership do so within a long range perspective. One must also take into account the environment within which housing is acquired by owner occupants. This is unlike the case of Cartagena (see Strassmann 1982) where many households received transitory incomes and financial institutions build unfinished expandable houses. In Sri Lanka incomes rose slowly and housing loans were tied to the completion of dwellings. Public housing programs including the recent ASH schemes promoted completed dwellings, discouraged additions, and had plot sizes which effectively eliminated the possibility of ground level additions.

Meanwhile, intermittent building material shortages and the long time lags involved in obtaining building permits and loan approvals are expected to induce the households to avoid the attempt to purchase a bundle of housing to which incremental additions are made over time. Insofar as these patterns are different from conditions in other

developing countries, they may reflect the low rates of population growth and of rural-urban migration of Sri Lanka which, in turn, generate less pressure to transform the urban housing stock.

CHAPTER SIX

DEMAND FOR HOUSING

Introduction

In this chapter we study the demand for housing in the metropolitan market. We are interested in how income and household characteristics affect demand. The case for home owners as well as renters is examined. Where the data permit, we study the households with and without home businesses separately.

Theoretical Framework

We assume that the housing consumption decision for the household can be formulated as one of utility maximization subject to a budget constraint. According to standard practice, following Muth (1960) the household maximization problem is given by:

$$\text{MAX, } U(H,X) \tag{6.1}$$

$$\text{subject to: } Y = PH^{H} + X \tag{6.2}$$

Where H is housing assumed to be a homogeneous service, X is all

other goods, P_H is the price per unit of housing and the price of X is normalized to one.

The demand for housing, H, is derived from the first order conditions and is given by:

$$H_D = D(Y, P_H) \tag{6.3}$$

However, since we are interested in the effect of demographic variables on the demand for housing, we assume the existence of a demand function of the following form (Carliner 1973, Mayo 1981):

$$H_D = D(Y, P_H, T) \tag{6.4}$$

Where T is a vector of demographic variables. As Mayo (1980) points out, except in the case where a Stone-Geary utility function is assumed, how the demographic variables enter the utility function is not clear. In a Stone-Geary utility function, the shift parameter can be considered as a minimum level of housing consumption associated with household size. In addition to the utility maximizing household we make the following assumptions:

1) the housing market is in equilibrium,

2) the durable good housing is homogeneous and produces a homogeneous service (Olsen 1960),

3) the market value of a house in the case of homeowners, measures housing demand (Muth 1960, Winger 1968),

4) each household faces a perfectly elastic supply of housing services (deLeeuw 1971),

5) the relative price of housing services is constant throughout the market. This assumption is implicit in the numerous studies of housing demand that do not include the relative price of housing (see Mayo 1981 and deLeeuw 1971).

Empiricial Specification

In order to analyze the demand for housing, we estimate equation (6.4) using the following two functional forms:

a) Log-linear (Natural log of continuous variables)

$$Ln(H_D)_i = A_0 + A_1 ln Y_i + A_2 ln(HSIZE)_i + A_3 ln(AGE\ 1)_i + A_4(S_1)_i + E_i \quad (6.5)$$

Where H_D is housing demand measured by house value for owners and monthly rent for renters, Y is monthly total household income. HSIZE is the size of the household, AGE 1 is the age of the household head, S_1 is a dummy variable for the sex of the household head, E is the stochastic error.

The log-linear functional form is convenient and widely used (see Mayo 1981). In addition to all the assumptions made earlier, the log-linear form assumes that the income elasticity is constant throughout the housing market.

b) linear

$$(H_D)_i = b0 + b1Y_i + b2(HSIZE)_i + b3(AGE\ 1)_i + b4(S1)_i + E_i \quad (6.6)$$

This functional form gives variable income elasticities.

The value of the house is the price at which household assumed that they could sell their homes in the market. As noted previously, the

variable that consumer theory relates to demand, is the quantity of services per unit time. We assume that housing service units are homogeneous, that the relative price of housing service units is constant throughout the area, and that housing reflects the value of the flow of housing services.

The total household income per month is an estimate of the household's disposable income. For home owjners we do not adjust income with the imputed rental value of their homes. This omission is expected to bias the income elasticity of demand for home owners away from unit (deLeeuw 1971, p 3). Current rather than permanent income is used.

The household size is the number of persons who live in the dwelling on a regular basis. All household members were given equal weight. Therefore, we do not take into account the effect of the age composition of the household on housing demand. One might expect larger households to demand more housing when income is held constant if additional space were more urgent than other needs.

Home Owners

The average owner occupant household, had lived in its home for nearly twenty-three years; the household head was male and over 53 years in age; the total household income was over Rs 2,600 (U.S. $127) and the household had six or seven members. This household occupied a dwelling worth about Rs 518,000 (U.S. $25,300) in estimated market price.

There were no major differences between owners with and without home businesses. However, the households with businesses had occupied their homes for a longer time. The difference in years occupied was

TABLE 6.1

Household Characteristics of Owner Occupants With and Without Home Businesses
Variable Means and Standard Deviations

Variable	Households With	Households Without	Total
Total Household Income per Month in U.S. $'s	122.23 (141.96)	128.98 (169.10)	127.50 (163.76)
Age of Household Head	54.93 (12.57)	53.05 (13.19)	53.43 (13.07)
Years Home Occupied	25.04 (16.79)	22.33 (18.33)	22.89 (18.04)
Household Size	6.32 (3.10)	6.47 (2.65)	6.44 (2.75)
Proportion of Male Household Heads	0.83 (0.37)	0.83 (0.39)	0.83 (0.38)
Value of Home in U.S. $'s	24,590 (38.180)	25,385 (38,546)	25,230 (38,434)
Sample Size	103	396	499

NOTE: Standard errors in parentheses.
$1 U.S. = 20.5 Sri Lankan Rupees (Central Bank of Ceylon, 1980). In terms of equivalent purchasing power, as estimated by Irving Kravis and others, (Gilbert and Kravis, 1959) the real dollar value of the Rupee may have been 100 to 120 percent higher, raising 1981 per capita product from $274 to $603.

statistically significant. The means of variables are shown in Table 6.1.

Income Elasticities

We begin by presenting the results of the estimated equations for all owner occupants. Because of its convenience the log-linear equation (6.5) results are discussed first. The income elasticity for all owner occupants was 0.940 (standard error 0.053). Household size had a negative impact on demand. This particular elasticity was -0.394 (standard error 0.098). The zero order partial correlation coefficient between sale price and house size was, however, not significantly different from zero. See Appendix B. Age of the household head had a positive effect on housing demand. The elasticity of demand with respect to the household head's age was 0.315 (standard error 0.164). This elasticity means that given other things, households with heads aged 50 years will consume about 3 percent less of housing services than households with heads of 55 years. The dummy variable for sex of the household head was not significant.

When the households with and without businesses were examined separately, it was noted that the income elasticities were not very different, 0.953 (standard error 0.121) and 0.941 (standard error 0.059). In the case of the households with a business, income was the only significant variable which explained housing demand. The hypothesis that all the regression coefficients for the two household types are equal for each variable, was not accepted at the 95 percent significance level. This indicated that for the home owners the two

household types do not have a similar structure of demand (see Dutta 1975, p. 177).

In the case of the households without businesses, in addition to income, the household size elasticity affected demand significantly. The elasticity of demand with respect to household size was larger than that for all home owners. The negative relationship between household size and demand cannot be traced to a negative correlation between household size and sale price of the home. The zero order partial correlation coefficient between household size and sale price of the home was non-negative and significantly different from zero at the 0.10 level. (See Appendix B). The $\bar{R}^2$ statistics indicating the fit of the regression was similar in the case of households with and without home businesses.

We relax the assumption of a constant income elasticity and estimate a linear specification for the demand equation as in (6.6). For the case of all home owners the elasticity at the mean value of the observations was 0.746. The income elasticity is derived from the estimated equation of the form (6.6), in the standard way. The household size and the age of the household head coefficients yielded elasticities of demand which were -0.322 and 0.398 respectively.

The income elasticity for households with home businesses was 1.027. For the households without businesses it was lower, 0.694. Both estimates were computed at the means of the respective household categories. The means of household income and house value were not statistically different for the two household types.

As we observed in Chapter Three, the owner occupants are a group with great variation in income and household characteristics. The sale

TABLE 6.2

Regression of Property Value on Income and Demographic Variables For Households With and Without Home Businesses
Log-Linear Model

Independent Variable	Households With Home Businesses	Households Without Home Businesses	Total
Total Monthly Income[a]	** 0.953 (0.121)	** 0.941 (0.059)	** 0.940 (0.053)
Household Size[a]	0.221 (0.186)	*-0.474 (0.117)	*-0.394 (0.098)
Age of Household Head[a]	0.542 (0.387)	0.283 (0.182)	* 0.315 (0.164)
Sex of Household Head Male = 1	-0.082 (0.252)	-0.123 (0.122)	-0.122 (0.109)
Constant	* 3.571 (1.754)	* 5.257 (0.830)	* 4.977 (0.748)
R2	0.397	0.391	0.389
$\bar{R}^2$	0.372	0.387	0.385
F - Statistic	16.11	84.06	105.09
Sample Size	103	396	499

NOTE: a) All continuous independent variables are in the form of natural logarithms, dependent variable is the natural log of sale price in Sri Lankan Rupees.

Standard errors are in parentheses.

** Denotes coefficient significantly different from zero at the 0.01 level.

* Denotes coefficient significantly different from zero at the 0.10 level.

price of the home as seen in Table 6.1 is highly skewed in distribution. Therefore, the cross section of home owners is expected to produce heteroskedasticity in the two estimation equations. Appendix C presents the results of the tests for heteroskedasticity. The owner occupants with and without businesses were separated into three income groups. Those below, around and above the average level of monthly income. Then the two models of demand, the log-linear and linear model, were inspected for the presence of heteroskedasticity. On the basis of the tests it was found that in the linear model for all owners and those without home businesses, the null hypothesis of no heteroskedasticity could be rejected at the 0.15 level of significance. In addition, when the owners were grouped by income level, the null hypothesis of no heteroskedasticity using the linear model could be rejected at the 0.15 level of significance for owners with income over Rs 3,000.

This meant that in the cases where heteroskedasticity could not be rejected, the coefficients were unbiased and consistent, but not efficient. Therefore, the estimated standard errors of the coefficients in these cases were incorrect and conclusions based on them might be incorrect to a somewhat greater extent. Although a few methods for estimating efficient standard errors of the coefficients, in the presence of heteroskedasticity are known, the attempts to implement them were unsuccessful. For the estimated models where heteroskedasticity was present (the last two columns of Table 6.3), the standard errors, significance of the coefficients, and the F-Statistic, are not presented. Nevertheless, the $\bar{R}^2$'s indicate that 35 to 39 percent of the variance is explained compared with 57 percent for home businesses.

TABLE 6.3

Regression of Property Value on Income and Demographic Variables For Households With and Without Home Businesses Linear Model

Independent Variable	Households With Home Businesses	Households Without Home Businesses	Total
Total Monthly Income	**207.07 (17.61)	136.83	147.60
Household Size	* -31915.94 (16597.85)	-23436.02	-25940.27
Age of Household Head	5420.37 (4068.80)	3529.34	3864.12
Sex of Household Head	103000.98 (136862.25)	51997.08	-21394.12
Constant	-195816.40 (273956.56)	160705.17	109684.16
R2	0.588	0.357	0.391
$\bar{R}^2$	0.571	0.351	0.386
F - Statistic	34.9		
Sample Size	103	396	499

NOTE: The dependent variable is sale price of home in Sri Lankan Rupees.
Standard errors are in parentheses.
** Denotes coefficient significantly different from zero at the 0.10 level.
The elasticity estimates for the independent variables Xi are calculated using the formula $\frac{\partial H}{\partial Xi}\frac{\bar{X}}{H}$ where $\frac{\partial H}{\partial Xi}$ is the regression coefficient of the independent variable Xi.
For the regression on all owners and those without businesses, the null hypothesis of heteroskedasticity could not be rejected at the 0.15 level. Therefore, the significance of the coefficients cannot be tested on the basis of standard errors obtained from the OLS regression. The estimated standard errors for the coefficients, using OLS, in the case of these two regressions are not efficient

Income Elasticities for Different Income Groups

In this section we examine the demand for housing at three levels of income. One main concern is to obtain estimates of income elasticities within the income groups. The following three income levels were considered:

Low: less than or equal to Rs 1500 (US $73.17)

Medium: Rs 1501 - 3000 (US $73.17 - $146.34)

High: Rs 3001 and greater (US $146.34)

These levels were designed to capture households below, around and above the mean income observed for all households in the sample. The low income level is equivalent to about 50 percent or less of the per capita GNP of Sri Lanka in 1981.

We observe from Table 6.5 that the income elasticity using the log-linear model, increases as we move from the low to the high income group of home owners. The value for the elasticity was 0.84 (standard error 0.14) for low income, 0.90 (standard error 0.38) for middle income and 1.02 for the high income owners. However, when we take the standard errors into account, the pattern is less clear.

The elasticities at the means for each income group, using the linear model were as follows, 0.74 for low, 0.80 for medium and 0.75 for high. The regression coefficients from which these elasticities were computed were significant at the 0.10 level in all three cases.

The fitted equations for the middle income group, for both the linear and log-linear models, have lower R2 and $\bar{R}^2$ values compared with the other income groups. Therefore, for the home owners of middle income, the variables used do not explain very much of the variation in

TABLE 6.4

Household Characteristics of Owner Occupants in Different Income Groups Variable Means and Standard Deviations

Variable	Income Group Low	Middle	High
Sale Price of Home in US $'s	10,240 (9,271)	26,402 (31,084)	55,918 (62,683)
Total Monthly Income in US $'s	48.20 (17.08)	115.90 (21.65)	318.63 (277.32)
Age of Household Head	52.70 (12.92)	54.56 (13.10)	53.18 (13.36)
Household Size	6.00 (2.69)	6.52 (2.77)	7.26 (2.64)
Years Home Occupied	25.79 (19.45)	22.97 (17.27)	16.52 (14.17)
Sample Size	226	168	105

NOTE: 1 US $ = 20.5 Sri Lankan Rupees in 1981.

the dependent variable.

For all owner occupants, the average of the ratio of value of the house to annual income was 18.1 years (standard error 0.85). This is six times the rule of thumb value of about 3, for developed countries. The average ratio for low and middle income owners was 18.7 years (standard error 1.16) and 19.1 (standard error 1.72) respectively. For the high income owners the ratio was somwhat lower at 15.4 (standard error 1.57) but the difference was not statistically significant at the 0.25 level.

TABLE 6.5

Income Elasticities for Home Owners by Income Group
Log-Linear and Linear Model

	Income Group		
	Low	Middle	High
LOG-LINEAR MODEL			
Elasticity	0.84	0.90	1.02
	(0.14)	(0.38)	
R2	0.155	0.082	0.221
$\bar{R}^2$	0.139	0.065	0.190
F - Statistic	10.1	4.8	
LINEAR MODEL			
Elasticity at mean	0.73	0.80	0.75
R^2	0.105	0.063	0.347
$\bar{R}^2$	0.089	0.040	0.320
F - Statistic	6.5	2.7	13.3
Sample Size	226	160	105

NOTE: Standard errors are in parentheses.
In the log-linear case, the income elasticity is obtained directly from the regression coefficients.

The specified models best explain the housing demand of low and high income owners. This is particularly interesting when a few of their household characteristics are compared. The age of the household head is not very different among income groups. But the average household size increased with the income level, and the average period of owner occupancy was much less in the case of the high income group.

Those in the high income group had a larger average household size and had been owner occupants for a substantially shorter period of time than the other households. The reason for the low fits for the middle income households, cannot be readily traced to differences in household characteristics.

Household Size - Demand Elasticities

As observed by others, for all owners and for owners of different income groups, as household size increased the demand for housing decreased, giving a negative elasticity. The household size elasticity from the log-linear model, for the three income groups was as follows, -0.391 (standard error 0.137) low, -0.382 (standard error 0.165) medium, and -0.534 for high income households. The coefficients were significantly different from zero at the 0.05 level in the cases where heteroskedasticity was not present.

The fall in the demand for housing services, ceteris paribus, as household size increases, may be explained in the following way. Housing expenditure is a small part, less than 10 percent, of total household expenditures for all income groups. (See Department of Census and Statistics, 1976, p. 22-25). Therefore, the pressure of non-housing on total expenditures is large. Meanwhile, the larger households demand a greater quantity of housing service but of lower quality in order to meet non-housing consumption demand. Therefore, the value of housing services demanded by the larger household is lower because of lower quality. Because we do not differentiate housing services into a quality and quantity component, this is not captured in our measure of

housing services. Some larger households may be found in the smaller homes of lower value for each income group.

Demand of Owners With and Without Businesses at Different Income Levels

The income elasticity for owners with businesses using the log-linear model was 1.34 (standard error 0.45) for the high income group. For those without businesses in this income group, the income elasticity was 0.95. The elasticity coefficient for income was significant at the 0.025 level for those with home businesses.

The income elasticity for households without home businesses in the middle income group was 0.86 (standard error 0.42) and for the low income group it was 0.92 (standard error 0.15). For the owners with home businesses in these two income groups the estimated equations using the log-linear model, were insignificant at the 0.20 level based on the overall F-statistic. Therefore, a comparision between owners with and without businesses in these two income categories is not possible.

However, when the linear model was used, the estimated income elasticity at the mean was 0.62 for the owners with home businesses in the low income group. In this case the overall regression and the income coefficient from which the elasticity was computed were significant at the 0.15 level. For those with home businesses at the middle income level the linear model provided an estimate of 1.83. The regression was significant at the 0.25 level and the income coefficient at the 0.10 level.

The best regression fits were obtained for the owners in the high income group. The linear model gave a better fit based on adjusted R^2

($\bar{R}^2$) , for both the owners with and without home businesses. The most important difference between the two types of owners was that those with businesses had lived in their home for an average of 23.5 years (standard deviation 15.4) while the other had lived for an average of only 14.9 (standard deviation 13.4).

On the basis of the regression results, no definite statement can be made about the differences in the income elasticities for the owners with and without home businesses. The seemingly wide variation of the estimated elasticities is not particularly significant when the standard errors of the estimates are taken into account.

When the elasticity from the log-linear equation estimated for all owners with businesses is compared with those obtained for owners without businesses, we obtain the following; for all home businesses 0.95, (see Table 6.2), without home businesses low 0.91, medium 0.86, high 0.95, (see Tables 6.7, 6.8 and 6.9), and for all owners without home businesses 0.94 (see Table 6.2).

The regression fits based on $\bar{R}^2$ values, were higher for owners with home business at the high income level than for owners without home businesses. (See Table 6.9). The linear model fits the data better for both groups of owners and in addition, the model for the owners without businesses has no heteroskedasticity.

Housing Demand of Renters

The average household had occupied their rented dwelling for 14.5 years (standard deviation 12.1). The average household size was comparable to that of all owners and was 6.58 (standard deviation

TABLE 6.6

Characteristics of Owner Households With and Without Home Businesses
By Income Group
Variable Means and Standard Deviations

Value of House in US $'s	Income Group Low	Medium	High
With	9,674	25,030	60,182
	(9,510)	(25,575)	(67,631)
Without	10,391	26,762	54,915
	(9,226)	(32,455)	(61,845)
Age of Household Head			
With	53.75	57.83	52.70
	(13.23)	(13.08)	(9.19)
Without	52.44	53.71	53.29
	(12.86)	(13.02)	(14.21)
Household Size			
With	5.91	6.20	7.50
	(3.11)	(2.80)	(3.43)
Without	6.02	6.61	7.20
	(2.58)	(2.78)	(2.45)
Years Home Occupied			
With	25.35	25.49	23.50
	(18.04)	(22.31)	(15.45)
Without	25.91	22.31	14.88
	(19.86)	(17.56)	(13.43)
Monthly Income In US $'s			
With	47.13	120.34	307.31
	(16.04)	(20.50)	(238.72)
Without	48.47	114.72	321.28
	(17.29)	(21.85)	(286.83)
Sample Size			
With	48	35	85
Without	178	133	85

NOTE: Standard deviations in parentheses.
1 US $ = 20.5 Sri Lankan Rupees.

TABLE 6.7

Income Elasticities of Demand for Owners With and Without Home Businesses - Low Income Group (Rs 0-1,500)

	With Businesses	Without Businesses
	Log-Linear Model	
Elasticity	a0.61 (0.35)	0.91 (0.15)
R^2	0.070	0.194
$\bar{R}^2$	0.028	0.180
F - Statistic	1.68	13.90
Sample Size	48	178
	Linear Model	
Elasticity at mean	0.62	0.78
R^2	0.121	0.110
$\bar{R}^2$	0.062	0.089
F - Statistic	2.03	5.33
Sample Size	48	178

NOTE: [a]The only independent variable used was income, the coefficient was significant at the 0.20 level.

Standard errors in parentheses.

TABLE 6.8

Income Elasticities of Demand for Owners With and Without Home Businesses - Middle Income Group (Rs 1,501-3,000)

	With Businesses	Without Businesses
	Log-Linear Model	
Elasticity	a	0.86 (0.41)
R^2	--	0.100
$\bar{R}^2$	--	0.071
F - Statistic	--	3.51
Sample Size	35	133
	Linear Model	
Elasticity at mean	b1.83	c0.65
R^2	0.104	0.059
$\bar{R}^2$	0.048	0.030
F - Statistic	1.86	2.02
Sample Size	35	133

NOTE: athe regression was not significant at the 0.25 level.

[b]the income coefficient was significant at the 0.25 level.

cthe coefficient from which the elasticity was derived was significant at the 0.25 level.

The low significance of the regressions and their poor fits may be due to the way in which the sample was derived. Perhaps the range for the middle income group was too narrow. However, the data in Table 6.6 show that there is considerable variation within this group.

TABLE 6.9

Income Elasticities of Demand for Owners With and Without Home Businesses - High Income Group (Rs 3,001 and above)

	With Businesses	Without Businesses
	Log-Linear Model	
Elasticity	1.34 (0.45)	0.95
R^2	0.374	0.195
$\bar{R}^2$	0.257	0.165
F - Statistic	3.20	
Sample Size	20	85
	Linear Model	
Elasticity at mean	1.05	0.70
R^2	0.606	0.308
$\bar{R}^2$	0.500	0.283
F - Statistic	5.77	12.04
Sample Size	20	85

NOTE: Standard errors in parentheses.

The elasticity coefficients in the log-linear case for those with businesses and the income coefficient in the linear case were significantly different from zero at the 0.05 level for all the regressions.

3.95). The household head had an average age of 49.65 (standard deviation 11.85) which was lower but not statistically significant from that of all owners. The average rent was US $11.38 (standard deviationj 42.5) per month and the total income was US $93.23 (standard deviation 120.07).

Renter Demand Elasticities

The income elasticity for all renters using the log-linear specification was 0.86 (standard error 0.096). As in the case of owners the elasticity with respect to household size was negative, and had a value of -0.54 (standard error 0.15). The age of the household head had a negative impact on the housing demand of the renters. The age elasticity was -0.70 (standard error 0.30). This phenomenon may be attributed to the relative fixity of rental values due to rent controls. The households with older heads may have been renters for a longer period of time. In fact, the simple correlation between years occupied and the age of the household head was 0.71. In the case of the linear model, the age was a significant variable. Meanwhile, the linear model fitted the data better for all renters than the log-linear model. Adjusted R2 values were 0.734 compared with 0.401. (See Tables 6.11 and 6.12).

Renters With and Without Businesses

The income elasticity for renter households with businesses was lower 0.67 (standard error 0.177) than for the renters without businesses 0.95 (standard error 0.114). For the renters with businesses

TABLE 6.10

Characteristics of Renters With and Without Businesses
Variable Means and Standard Deviations

	With Business	Without Business	Total
Monthly Rent in US $'s	8.78 (19.45)	12.44 (48.92)	11.38 (42.5)
Monthly Income in US $'s	85.46 (80.43)	96.39 (133.12)	93.23 (120.07)
Years Occupied	16.77 (11.78)	13.62 (12.19)	14.53 (12.12)
Household Size	6.42 (4.63)	6.64 (3.67)	6.58 (3.95)
Age of Household Head	46.92 (10.17)	50.76 (12.34)	49.65 (11.85)
Proportion of Male Household Head	0.87 (0.33)	0.85 (0.36)	0.85 (0.35)
Sample Size	40	98	138

NOTE: Standard deviations are in parentheses.

1 US $ = 20.5 Sri Lankan Rupees.

TABLE 6.11

Regression of Monthly Rent With Income and Demographic Variables For Households With and Without Home Businesses

Log-Linear Model

Independent Variable	Regression Coefficients With Businesses	Without Businesses	Total
Monthly Income[a]	** 0.669 (0.177)	** 0.951 (0.114)	** 0.860 (0.096)
Household Size[a]	-0.304 (0.271)	** -0.731 (0.196)	** -0.545 (0.155)
Age of Household Head	-0.803 (0.661)	* -0.715 (0.340)	* -0.696 (0.300)
Sex of Household Head Male	0.186 (0.458)	* 0.409 (0.241)	0.316 (0.212)
Constant	3.130 (2.795)	1.488 (1.595)	1.771 (1.362)
R^2	0.332	0.472	0.419
$\bar{R}^2$	0.272	0.450	0.402
F Statistic	5.87	20.83	23.99
Sample Size	40	98	138

NOTE: [a]Natural logarithm of variable.
The dependent variable was natural logarithm of monthly rent in Sri Lankan Rupees.
Standard errors are in parentheses.
Income was measured in Sri Lankan Rupees.
** Coefficient significantly different from zero at the 0.01 level.
* Coefficient significantly different from zero at the 0.10 level.

the other coefficients were not significantly different from zero at the 0.10 level. for those without businesses, household size and age of household head had a negative impact on demand. Meanwhile, male headed households demanded higher valued housing services than female headed households.

The linear model produced a much higher income elasticity for all renters. The income elasticity evaluated at the mean for all renters was 2.54. The households with businesses had an income elasticity of 1.24 and those without businesses a higher elasticity of 2.56. In the case of renters, the results support the view that households with home businesses have a lower income elasticity than the households without businesses. The null hypothesis of equal regression coefficients for renters with and without home businesses was not accepted at the 0.05 level in both the log-linear and linear specifications.

Renters at Different Income Levels

The renters at the low income level had an estimated income elasticity of 0.787 (standard error 0.183). At the high income level the corresponding figure was 1.51 (standard error 0.573). There was a significant negative impact of the age of the household head on the demand for the low income group. The head age elasticity was -0.743 (standard error 0.351). For the renters in the high income group, it was the household sizse and not the head's age that had a significant negative impact. The household size elasticity was -1.073 (standard error 0.420). The above mentioned elasticities were obtained from the log-linear model. The linear model results for the income elasticity, at the mean, for each income group were as follows; 1.075 for low and

TABLE 6.12

Regression of Monthly Rent With Income and Demographic Variables For Households With and Without Home Businesses

Linear Model

Independent Variable	Regression Coefficients With Businesses	Without Businesses	Total
Monthly Income	** 0.128 (0.041)	** 0.331 (0.018)	** 0.310 (0.016)
Household Size	* -25.292 (14.764)	** -43.356 (12.470)	** -48.303 (10.043)
Age of Household Head	-0.851 (5.820)	-2.500 (3.694)	-1.900 (3.261)
Sex of Household Head Male	a	a	-19.355 (110.368)
Constant	158.332 (288.805)	15.925 (203.154)	69.100 *(209.465)
R^2	0.212	0.810	0.745
$\bar{R}^2$	0.147	0.804	0.737
F - Statistic	3.24	133.95	97.24
Sample Size	40	98	138

NOTE: Dependent variable was monthly rent in Sri Lankan Rupees.
Standard errors in parentheses.
aThe variable did not enter the regression.
** Denotes coefficient significantly different from zero at the 0.01 level.
* Denotes coefficient significantly different from zero at the 0.10 level.

TABLE 6.13

Income Elasticities of Demand for Renters by Income Group

Log-Linear Model

	Low	Income Group aMiddle	High
Income Elasticity	0.787 (0.183)	___	1.511 (0.573)
R2	0.276	---	0.579
$\bar{R}^2$	0.239	---	0.450
F - Statistic	7.61	---	4.48
Sample Size	85	35	18
	Linear Model		
Income Elasticity at Mean	1.072	---	2.785
R2	0.309	---	0.891
$\bar{R}^2$	0.274	---	0.857
F - Statistic	8.94	---	26.45
Sample Size	85	35	18

NOTE: aFor the middle income group the overall regression was not significant
Standard errors are in parentheses.

TABLE 6.14

Income Elasticities of Demand for Renters With and Without Home Businesses - Low Income Group (Rs 1,500 or less)

Log-Linear Model

	With Businesses	Without Businesses	Total
Income Elasticity	* 0.398 (0.220)	** 1.013 (0.256)	** 0.787 (0.184)
R2	0.315	0.305	0.262
$\bar{R}^2$	0.218	0.254	0.234
F - Statistic	3.23	6.04	7.61
Sample Size	25	60	85
Linear Model			
Income Elasticity at Mean	* 0.392	** 1.258	** 1.075
R^2	0.308	0.373	0.301
$\bar{R}^2$	0.170	0.328	0.275
F - Statistic	2.23	8.20	8.94
Sample Size	25	60	85

NOTE: Standard errors in parentheses.
* Coefficient significantly different from zero at 0.20 level.
** Coefficient significantly different from zero at 0.01 level.
In the linear case the elasticity is computed at the mean.

2.78 for high income. In both the linear and log-linear model, the middle income regressions were not significant at the 0.20 level. The small sample of high income group renters, precludes the ready comparison between high and low income renters. The effect of demographic variables on demand for the different income groups cannot be clearly identified.

When the renters in the low income category are examined for those with home businesses the most significant variables which affects demand were the age of the household head and income. For those without home businesses, income and household size played the dominant roles. The renters with businesses had an income elasticity for the log-linear model which was 0.398 (standard error 0.220) while for those without businesses it was much higher at 1.013 (standard error 0.256).

Conclusion

The income elasticity of demand for all owner occupants in the metropolitan permanent housing market, was close to 1. When the owner occupants with and without home businesses were examined separately, the income elasticity was similar and remained almost unchanged. However, when the owners were put into three income categories, high, medium and low, the indication was that the demand of the low income owners was not as sensitive to income as those in the middle and high income groups. Furthermore, the demand of owners with home businesses in the low income group seemed less sensitive to changes in income than the owners without businesses in this income group. In the high income group owners with businesses seemed to have an income elasticity at least as high as those without businesses.

Therefore, based on the regression results, the owners with businesses at the low income level, do not quite match the housing demand of their counterparts without businesses, while at the high income level they do at least as well. The home business income as a share of total household income was observed to be a higher proportion for the low income households (see Chapter 4). Therefore, the effect of the home businesses on housing demand may be greater for the low income group.

An interesting feature of the owner occupants demand, was the negative effect of the household size variable. This pattern was observed for owner occupant households without businesses in all three income groups. It is not possible to draw a clear conclusion about the extent of crowding from this relationship. At each income level larger households may be occupying larger houses of lower value. The expected sale price as a measure of housing services does not take into account the differences in size or quality of the occupied homes.

For renters, the income elasticity of demand was lower than that for all the owners as a group. Renters with home businesses had a lower elasticity than those without businesses. As in the case of owners, household size had a negative impact on demand. Furthermore, the age of the household head had a significant negative impact on demand. For the renters, the same reasoning as in the case of owners can be applied to explain the negative relationship between demand and household size. Larger households may be occupying rental homes, which are older and lower in rental values, and not necessarily smaller in size. The negative relationship between demand and age of the household head may be attributed to the fact that these renters have occupied homes longer and their rental values have not adjusted to market conditions. The

legislative context within which the rental market operates has made it difficult for rents to be raised or for renters to be evicted. Therefore, the older households may be occupying rental units whose rental values were fixed at an earlier period. In fact, the negative relationship between rent and age of the household is an indication of the increase in rent experienced by newer renters. The rental marke price adjustments, may be sharp increases rather than gradual ones. Renters occupy homes for long periods, and it may be quite possible that due to the effects of regulations and rent controls that rents do not change very much during a particular occupancy. When one set of occupants move, the rents may sometimes illegally increase substantially for the new occupants.

CHAPTER SEVEN

DETERMINANTS OF DWELLING PRICE AND THE DEMAND FOR HOUSING SPACE

Introduction

In this chapter the market price of the home and the demand for one of its attributes, floor area, are examined. The assumption that the service derived from a house is homogeneous is relaxed, and the complexity and heterogeneity of the housing service is taken into account.

As in the case of other durable goods, a house is valued for the services derived from it over its economic life. In a perfectly competitive housing market, the housing services are capitalized into the value of the house. Neither the quantity nor the price of the different services produced by a dwelling are readily observed. In order to assess the relative contribution of the different components of the housing service to the value of the home, the method of hedonic indices is used in this chapter. Following the work of King (1976), Lucas (1975) and Rosen (1974), the housing commodity is assumed to be made up of different attributes or characteristics. Furthermore, a unit of attribute is assumed to produce a unit of associated service and the observed quantity of the attribute is used as a proxy to represent this service (Witte et al 1979, Straszheim 1975). The coefficients of the

hedonic price function give the marginal weights of the different attributes. The weight for the attribute floor area is used to derive the demand for the service obtained from this attribute.

Methodological Framework

The interaction of supply and demand in a perfectly competitive housing market determines the equilibrium price and quantity of housing services. The market price is influenced by the composition of the attributes which make up the housing commodity (Lucas 1975, Rosen 1974).

At equilibrium when the housing market clears

$$Q_D = Q_S \tag{7.1}$$

where Q_d is total market demand and QS is total market supply. The resultant equilibrium price is related to the specified attributes through the hedonic price function (Butler 1982, Ellickson 1981):

$$P_i = P(Z_{1i}, Z_{2i}, \ldots . Z_{Ki}) \ (i = 1, \ldots . N) \tag{7.2}$$

where P_i is the equilibrium price and Z's are the different attributes of the house. Based on the hedonic hypothesis the house is valued for the utility bearing services derived from the attributes. The hedonic prices are defined as the implicit prices of the attributes, revealed to the economic agents through the observed prices of the differentiated product housing, and the specific amounts of characteristics associated with it. When total housing commodity is in equilibrium, the various

components of the bundle, the attributes, are themselves in equilibrium

$$Q_D(Z_i) = Q_S(Z_i) \quad i = 1,....K \tag{7.3}$$

The implicit price of a particular attribute is derived from (7.2) as

$$\frac{\partial P}{\partial Z_i} = MP_i \tag{7.4}$$

where MP_i is the marginal zrice of the attribute Z_i (Nelson 1978, Freeman 1979, Rosen 1974).

The marginal price of an attribute gives the change in value of the total housing commodity due to a change in the quantity of service associated with that particular attribute, while everything else remains unchanged. Alternatively, it is the increase in expenditure on housing that is required to obtain a house with one more unit of a particular characteristic, holding other things constant.

The marginal price information derived from (7.2) is used to estimate the demand for housing space. This relationship is hypothesized to be as follows:

$$HP = f(Y, Z, T) \tag{7.5}$$

where Y is the household income, Z the quantity of housing space, T represents a vector of household variables which influence tastes and preferences.

The hedonic price function describes the competitive equilibrium of both buyers and sellers. It guides both consumer and producer choices

regarding the bundles of characteristics which are bought and sold. The market clearing prices P(Z) where Z = Z(Z1....ZK), are determined by the distribution of consumer tastes and producer costs.

Empirical Specification

The appropriate functional form for the hedonic price function (7.2) cannot be specified in a a-priori way. The use of a non-linear form is needed to derive the marginal prices necessary to estimate demand functions for each attribute separately, (Rosen 1974, Freeman 1979). The log-linear form was chosen in order to obtain the information for estimating the attribute demand functions (Nelson 1978). This functional form has the advantage of not placing too many restrictions on the hedonic prices (Rosen 1974). Unlike the linear case where marginal prices are constant and the semi-log case where marginal prices decrease with increased quantity of characteristics in the log-linear case the marginal prices may be increasing, decreasing or constant depending on the ratio of $\frac{Pi}{(Zj)_i}$, where Pi is the house value and Z_j the quantity of the j^{th} characteristic. In the estimated log-linear hedonic function the price of the house is regressed against the attributes of the house. These attributes are grouped into three categories, space, structure and services to the house. The attributes related to location and neighborhood were not included due to the limitations of the data.

The functional form of the estimated equation was the following:

$$\text{Ln } P_i = a_0 + a_1 \text{ ln DWAR}_i + a_2 \text{ lnDAGE}_i + a_3 \text{ lnSITAR}_i + a_4 \text{lnNRM}_i + a_5 \text{ WM1}_i + a_6 \text{ WM2}_i + a_7 \text{ RM1}_i + a_8 \text{ SA1}_i + a_9 \text{ S42}_i + E_i \quad (7.6)$$

where P is the price represented by the property value of the house, DWAR is the dwelling floor area, DAGE the age of the house, SITAR the area of the site, NRM the number of rooms. The attributes for which continuous measures are not available, are in dummy variable form.

The dummy variables were as follows: WM1 is wall materials of clay or cement or brick, WM2 adobe or cabook stone, RM1 is roof material, clay tiles or asbestos cement sheets, SA1 flush toilet, SA2 pit latrine, the stochastic error term is given by E_i.

The implicit price for DWAR is given by the expression:

$$MP_i = a_1 \frac{P_i}{DWAR_i} \qquad (7.7)$$

where a_1 is the estimate of a1.

The inverse demand function for DWAR is given by:

$$MP_{DWAR} = b_0 + b_1 DWAR_i + b_2 Y_i + b_3 HHSZ_i + b_4 AGE1_i + E_i \qquad (7.8)$$

where MP_{DWAR} is the marginal price or implicit price of DWAR the dwelling floor area, Y is monthly household income, HHSZ is household size, AGE1 is age of household head and E is stochastic error. The income and price elasticity of demand for floor space is obtained from (7.8) in the following way:

$$\frac{DWAR}{MP} = \frac{1}{b_1}$$

The price elasticity is therefore,

$$\frac{1}{b_1}\frac{MP}{DWAR}$$

Empirical Results

The estimated equation for the hedonic price function (7.6) relates the expected sale price as the dependent variable to the defined attributes. The sale price given by the owners is primarily the household's perceived value of the dwelling. Because other sources of data on sale prices or values of homes were not available it is not possible to check if the market value is close to the price that households gave. One major problem of the household's perceived sale price is that in many cases the household may not have contemplated a sale and is therefore unaware of prevailing market prices. However, for our purposes, we assume that the owners are aware of the potential market price of their homes.

The average sale price for the owners included in the hedonic regression was Rs 504,963 (US $24,632) with a standard derivation of Rs 613,148 (US $29,909).

The floor space of the dwelling is the total floor area which includes kitchen, bathroom, patios and verandas. Many homes in Sri Lanka have open front porches or patios. Among the older homes a large part of the covered area consists of a finished cement floor that is not surrounded by four walls but that is used as a sitting room, where furniture is placed during the day and taken into the house at night.

The site area is the size of the lot containing the home. In cases

where a family owned property contains more than one dwelling the site area associated with a particular house is not clearly identified. For instance, if on a large property a second house is built for a child of the household head, the second house is built for a child of the household head, the second home may not have a clearly identified site area and the two homes share the total site. In some homes, thje site area is used for a small garden, to dry clothing and sometimes to cook food on an open fire. Outside the municipal limits of Colombo city, the yard contains the septic tank for the toilet, in some cases a pit latrine if there is no pipe-borne water, a private well and an area to dump and burn garbage. In addition to the space used for these services, in many cases the yard is used for poultry farms, a garden plot or a smallbusiness located in a separate structure. Produce from the garden and the poultry farm may either be primarily for household consumption or for sale to neighbors or small stores nearby. The yard area in excess of the floor area of the dwelling obviously offers the opportunity for expansion and addition to the home.

The estimated equation had a positive relationship between value of the house and the floor area (0.66) and the site area (0.067). (See Table 7.1). However, while the estimated coefficient for floor area was significant at the 0.01 level, the site area was significant only at the 0.30 level. On the basis of the results, a one percent increase in floor area, ceteris paribus, is expected to increase the value of the house by nearly two-thirds of a percent.

Structure

The structure of the house is expected to affect its value. The contribution of the structure to value was examined in terms of the types of materials used for the wall and roof as dummy variables, the spatial arrangement of the house given the number of rooms and the age of the house.

Number of Rooms

The number of rooms in a home, excluding toilets and kitchen, is expected to influence its value. The arrangement of a home into rooms is desired because of the privacy offered to the members of the household. Considering the large average household size encountered among owner occupants, it is expected that the number of rooms is an important determinant of home value. It was observed in Chapter five, that only a small proportion of owner occupants that added rooms. They were added primarily because of children or other relatives of the household head. Meanwhile, observation of a housing scheme, where a number of families had formed a building society and had obtained loans from the national housing fund in 1956, showed that the initial space of the home in all but one of 13 homes had been changed during the course of 15 years. Twelve of the households had converted the garage space into a room. The converted space in some of the cases was combined with a part of the home to form an apartment for rent. The conversion of space was therefore, not only for consumption but also as an investment which provided additional income for the household. Therefore, the way

in which space is organized into rooms is expected to have a substantial impact on house values. However, it has to be kept in mind that the number of rooms does not take into consideration the possible variation in the size of the rooms. Two homes with equal floor area may not be internally organized in the same way. One may have passages, porches, extra bathrooms and an extra kitchen. The number of rooms including bedrooms and other rooms for this home may be smaller than the other.

The estimated coefficient of the number of rooms in the hedonic regression was 0.495 (standard error 0.121), and significantly different from zero at the 0.01 level. This meant that if the number of rooms is increased from two to three, ceteris paribus, the value of the home increased by nearly 25 percent.

Age of the Dwelling

Older houses are expected to be lower in value than similar homes of a more recent vintage. A house, like other durable goods, is expected to depreciate in value during its economic life unless it is well maintained, expanded or even improved. A complicating factor is the tendency of land values to increase over time. Since a house is associated with a site, the decline in value of the house may be partly offset by rising land prices. Although conceptually a house can be separated from the site on which it is located, the property value relates to both the house and the site. Therefore, the interpretation of the age variable of the house is not as straight forward as it seems.

The estimated coefficient for age of the house was negative, -0.057 (standard error 0.051) and significantly different from zero at the 0.30

level. One interpretation of the coefficient is that it is the overall decline in the value of the property with age and not the decline in value of the house due to depreciation. That is the scarcity of land does not completely offset the depreciation of a home in the market that was studied.

Wall and Roof Materials

The quality or type of material used to construct a home is expected to affect its value. Better quality materials command a higher price for the home. if the walls are made of brick or cement blocks, everything else held constant, the value of the house increases by about two-thirds. The coefficient for the dummy variable of this type of wall material was 0.513 (standard error 0.329) and significantly different from zero at the 0.15 level. The effect of the dummy variable in absolute terms is equivalent to multiplying the value by 1.67. The coefficient for the dummy variable describing adobe or cabook stone walls was 0.38 and not significantly different from zero at the 0.30 level. The coefficient for the dummy variable describing roof materials was insignificant even at the 0.50 level.

Most middle and upper income homes are built with durable wall and roof materials. The type of roof material used has an impact on the design and structure of the dwelling. For instance, a clay tiled roof requires a greater roof pitch angle and more wood as cross beams to lay the tiles. Meanwhile, the asbestos cement sheets have been subjected to price controls at various times and often serious supply problems are encountered. The properties of asbestos sheeting and clay tile in terms

of protecting the interior of the home from heat are also different. The asbestos sheet tends to contain the heat within the home more readily, however, it is stronger and more durable material than the clay tile. The supply conditions are expected to play an important role in the households' choice of building materials. Cabook stones are quarried most often at the construction site and are not as readily available as clay bricks. Meanwhile, cement prices and its availability seriously affect the time taken to construct a home.

Services to the Home

Nearly 90 percent of the owner occupants had electricity for lighting. About 10 percent used electricity for cooking. However, there is serious concern about the nature of electric power supply. Over the last few years the suburbs of Colombo have experienced power shortages during the dry season. The reservoirs connected to the hydro-electric stations have dipped below normal levels due to periodic droughts in the catchment areas. Although new hydroelectric plants are being added to the national power grid, the demand for electric power has also been increasing. Meanwhile, the rationing of kerosene is prompting some of the middle and upper income households to diversify the power used for cooking and to have a range of substitutes readily available. In fact, in some middle and upper income homes, kerosene, electricity, bottled gas and at times firewood are used for cooking. An electric stove is used sparingly, usually when the household supply of kerosene or bottled gas is exhausted. However, for most homes the luxury of multiple stoves is not a feasible option.

The water supply in Colombo shares the problem of shortages, rationing and frequent cuts during droughts. Connections to the water main are available only within Colombo and a few suburbs. The practice of a private well with a pump or a shared well for a group of households, is common outside the city limits. These households have indoor piped water. Piped water from a private or common well, shares the problem of uncertain supply of the water main. In some homes a dual supply based on a private well and a connection to the mains is observed. Due to these complicating factors, the effect on value of the different types of supply cannot be easily assessed. Piped water does not necessarily mean greater convenience compared with a well. A connection to the main city supply may mean having to visit friends for a bath during periods of water cuts. However, the water shortages do not affect all parts of the metropolitan area equally. The sample data precluded the investigation of these effects of water service.

Outside the city limits of Colombo, toilets are not connected to a main sewerage plant. The toilets are connected to a private disposal system located within the site of each home. The qualitative differences between types of toilet were captured by using dummy variables. No distinction was made between a public sewer connection and a private septic tank connection. The coefficients for the two types of toilet facilities were quite insignificant. The dummy variables were constructed such that the base was a communal toilet or an outhouse.

Access and Neighborhood

The estimated hedonic function did not include access variables. Most studies using this method employ variables describing the access to workplace. This is usually done by including the time taken by the household head to get to work by by assuming the location of the workplace and taking the distance from there to the home as a measure of access. The primary motivation of these types of study is to describe the pattern of location of different households and to obtain rent gradients. House prices are expected to change according to the access to work associated with the location (see Wabe 1971, Evans 1973). The price distance relationship was not examined in the present study. Access to work is not merely a matter of distance or time but also has features of quality and mode of transportation. This complication, together with the fact that specific neighborhoods could not be identified due to limitations in the data, prevented the examination of house values by location.

The Demand for Space

According to the hedonic function, floor area of the dwelling is the attribute which makes the greatest contribution to value. In accordance with the discussion on the demand for space, the equation (7.8) was estimated. The hedonic price function in log-arithmic form is expected to provide the necessary information to identify and estimate the space demand equation (Freeman 1979, Harrison and Rubinfeld 1978).

The marginal price of space is the amount of money the household is

willing to pay for an additional unit of space, while holding other things constant. The marginal price is expected to decline, ceteris paribus, with the increase in the quantity of space consumed. Meanwhile, a positive relationship between marginal price and household income is expected. It was observed in Chapter Six that the relationship between household size and house value or homogeneous housing services consumed, was negative. We expect, in the case of space, the relationship to be one where household size is negatively related to marginal price because, ceteris paribus, larger households demand more space.

The relationship between marginal price and age and sex of the household head is not certain. Households with older heads may have already obtained the space needed and therefore place a low value on extra quantities of this attribute. On the other hand, because it is cheaper to add space than building a complete house and because it is more likely for households with holder heads to have married children who themselves are in need of housing, age and marginal price can have a positive relationship. In Sri Lanka, the practice of different generations living in the same house is common. Therefore, it is conceivable that as a household head gets older, the demand for space increases because of the change in the composition of the household.

Empirical Results

The average marginal price or implicit price for space was Rs 149.53 (standard deviation 129.6), for the owner occupants. The market income elasticity of demand for space was high at 2.35 and the price

elasticity was very large at -5.88. The coefficients from which the elasticities were derived were significantly different from zero at the 0.05 level. (See Table 7.3).

The household size elasticity evaluated at the mean was -1.13. This is different from the result that was expected. The negative relationship indicates serious crowding and that the larger households are perhaps concentrated in houses with smaller floor areas. In that sense, it is not clear if the household size elasticity can be interpreted as a demand for less space by the larger households. Once again, if the importance of non-housing consumption is taken into account, the fact that at the same income a larger household is effectively able to demand less housing, including space, is not particularly surprising.

The elasticities mentioned above would change in magnitude when we move away from the mean values of the variables. This is a well known property of linear demand functions.

Conclusion

The floor area and the number of rooms in a dwelling had the largest and most significant impact on the value of dwellings. A house which is double the floor area of another, ceteris paribus, will be about 65 percent higher in value. Considering the fact that the average number of persons per household for the owner occupants was over six, and that rental homes are quite difficult to obtain, it is easy to reconcile the high value placed on the size of a dwelling. A home with large floor area enhances the possibility and convenience for married

TABLE 7.1

Regression of Property Value on Attributes of the Dwelling

Independent Variable	Estimated Coefficient	
SPACE		
Floor Area	** 0.655	(0.095)
Site Area	0.067	(0.060)
STRUCTURE		
Number of Rooms	** 0.495	(0.121)
Age of Dwelling	-0.057	(0.051)
WALL MATERIALS		
WM 1	* 0.513	(0.329)
WM 2	0.308	(0.340)
ROOF MATERIALS		
RM 1	0.143	(0.283)
SANITARY FACILITIES		
SA 1	0.070	(0.567)
SA 2	-0.526	(0.567)
CONSTANT	** 6.142	(0.892)
Sample Size	319	
$\bar{R}^2$	0.513	
F - Statistic	38.28	

NOTE: Standard errors in parentheses.
** coefficient significant at 0.01 level.
* coefficient significant at 0.15 level.

TABLE 7.2

Regression of Marginal Price of Housing Space on Income and Demographic Variables

Independent Variable	Estimated Coefficient	
Floor Area of Dwelling	** -0.012	(0.005)
Household Income	** 0.022	(0.002)
Household Size	* -4.440	(2.361)
Age of Household Head	0.302	(0.509)
Sex of Household Head - Male	-10.264	(19.112)
Constant	**136.469	(35.081)
Sample Size	319	
$\bar{R}^2$	0.211	
F -Statistic	18.07	

NOTE: Independent variable is the marginal price of floor area for each household.

Standard errors are in parentheses.

** denotes coefficients significantly different from zero at 0.05 level.

* denotes coefficients significantly different from zero at 0.10 level.

TABLE 7.3

Average Marginal Price and a Few Elasticities for Floor Area

Average Marginal Price in US $'s	7.29 (6.3)
Price Elasticity	-5.88
Income Elasticity	2.35
Household Size Elasticity	-1.12

NOTE: Standard deviation in parentheses.

Elasticities are calculated at the mean of the variables.

The elasticities are calculated from the estimated equation as follows:

$$\text{Price Elasticity} = \frac{1}{b_1}\ \frac{\overline{MP}}{\overline{DWAR}}\ ,\ \text{Income elasticity} = \frac{-b_2}{b_1}\ \frac{\bar{Y}}{\overline{DWAR}}\ ,$$

$$\text{Household Size Elasticity} = \frac{-b3}{b_1}\ \frac{HHS2}{\overline{DWAR}}\ .$$

children to continue living with parents and offers more time for them to search for a rental home or save to purchase or construct a home. Multi-generations occupying a dwelling, as a traditional cultural practice, may have many advantages in terms of economies of scale in the consumption of housing as well as other goods and services.

The presence of multi-generations combined with the large size of the household, makes the number of rooms in a dwelling an important factor determining its value. More rooms offer greater privacy and convenience for a large household. A house with 3 rooms, but similar in all other aspects to another one with only 2, would be about 25 percent higher in value. Therefore, space and its internal organization seem to be the most valuable attributes of a home. However, given the importance of space and rooms, the site area is expected to be an important aspect of value. A large site area offers the opportunity for additions and expansions. Yet the frequency of expansion and addition was observed to be not very high. (See Chapter 5). Nevertheless, a large site is generally considered an asset. The fact that it did not figure prominently in the hedonic price function is rather surprising.

The value of the house included the site area as well. Although the differences in value due to location were not considered here, in general, land prices are expected to vary by location. Therefore, similar houses at different locations may have different values or market prices. As in the case of most residential and urban areas, due to many reasons land prices are not uniform across the market. The quality of the services or the characteristics of the neighborhood associated with the house are generally expected to affect its price.

The intra-urban variations in land prices may also be due to factors other than access and quality of services. For instance, particular neighborhoods may have high land prices due to the high status associated with those already living there.

The hedonic price equation indicates the relative contribution of the different attributes of the house to its total value. It enables us to assess how different attributes of the house are currently valued in the market.

CHAPTER EIGHT

SUMMARY AND POLICY RECOMMENDATIONS

Urbanization has been taking place at a slow rate in Sri Lanka. Therefore, the proliferation of substandard housing and squatter settlements, which characterize many rapidly urbanizing LDC's has been avoided. The slow transformation of the economy and modest economic growth coupled with a social welfare program of wide scope and policies directed at improving living standards in the rural sector have contributed to the low rate of urbanization. Meanwhile, over the years the housing stock has shown modest improvements. The quality of materials used, the services and amenities available to the dwellings have steadily improved. Nevertheless, by most standards a large part of the national housing stock can be considered as inadequate in meeting the needs of households.

This study has focused attention on the Colombo metropolitan housing market. The households occupying permanent dwellings in predominantly residential areas were examined.

The urban sector contains a higher proportion of permanent dwellings than the rural sector. However, a significant part of the urban permanent housing stock is comprised of row houses or tenements and subdivided old homes. The tenements in general offer a poor quality of housing service. They are in highly congested locations, and most

often have no individual yard areas and are serviced by communal water and toilet facilities. In addition to this, many of the tenements, especially within the city of Colombo, are over 50 years old and have been poorly maintained.

The survey data clearly show the wide differences in the size and quality of the urban permanent dwellings, as well as the services available to them. Although the average floor area was over 2000 square feet, including verandahs and porches, one out of every five permanent homes had 1000 square feet or less of floor space. The exclusion of commercial areas, which contain a large proportion of old subdivided homes and tenements is expected to have produced a high average floor area. When the commercial areas are included, the average size and quality of the dwellings and the quality of the amenities available to them would clearly be lower than what was observed. Nevertheless, the results of this study show that the residential areas of the Colombo metropolitan region contain permanent dwellings with wide variations in size, quality and associated services.

The way in which households use their homes to generate income and create employment has not been carefully studied in Sri Lanka or elsewhere. The census data of 1971 indicate that in the urban sector or the Colombo district, an area partly covered by the survey employed for the present study, less than 5 percent of the dwellings were used for businesses as well as residential purposes, one fourth as many as found in the survey. About one out of every five households in the sample used their home and site area to produce goods or services and generate income. Clearly, the definition of a business has a large influence on the data. The official figures may not have included unregistereed and

small part-time enterprises. In addition, household activities which generate income but not obvious and clearly visible, may not have been reported by the household. The response to the direct question of whether the household is engaged in income producing activities at home would have produced different results.

A wide variety of enterprises were located at home. A majority of them used part of the home while others used the site where a separate structure was made for the business. How the home was used, depended on the scale and type of business. Retailing and manufacturing and those provided lodging needed exclusive space for the enterprise, while tailoring, food preparation and educational services needed space only during periods of operation. As many as a quarter of the households depended exclusively on the income generated by the home business, and an additional 15 percent obtained half or more (but not all) of the total household income from the home business. The households which had larger homes had businesses which used more space. Nevertheless, about 45 percent of the businesses used less than 200 square feet of floor area. However, a small business area was capable of generating a substantial income. Clearly, the type of enterprise is an important determinant of the income generated by the home business. Over a third of the businesses with 400 square feet or less of floor space earned over Rs 750 (US $36.60) per month.

Small enterprises in general are expected to have a high failure rate. A large proportion, 41 percent, of businesses that were observed had begun operating less than 5 years prior to the date of the survey. This may be partly due to a better economic environment, as shown by the higher rates of economic activity and growth after 1977. On the other

hand, a higher failure rate in the early years is not inconsistent with the data. For instance, if after a period of about 10 years many businesses cease to exist, then the proportion of businesses of 5 or less years in operation in a cross section would be higher than for the later years. Nevertheless, among the more than 40 percent of businesses less than 5 years in operation, more than half earned incomes of over Rs 500 (US $24.40). Clearly, most home businesses simply in terms of the earnings cannot be considered marginal entities. Obviously some of the new home businesses, even though they provide a substantial part of the household income, may fail due to many reasons. However, while they are in operation, the home business is an important supplement to, and in a substantial number of cases the only source of household income.

About one in five of the home businesses was operated from a rented dwelling. The proportion of new home businesses in rented dwellings was smaller than for other forms of tenure. That a substantial number of home businesses operated in rented dwellings may seem surprising until one notes the long average period of occupancy for renter households. The legal environment related to housing strengthened the tenurial rights of renters and imposed rent controls. Meanwhile, the ceiling on the ownership of housing property has given renters the opportunity to purchase the dwellings they occupy at prices determined by the government. Perhaps renters in the process of obtaining ownership as in the case of tenement dwellers, may behave like owners regarding the operation of a home business. On the other hand, those who have occupied a rented home for a long period may feel secure about continuing to live in the current home and therefore inclined to take advantage of economic opportunities by starting a business at home.

The nature and extent of home improvement among owner occupants was not what was expected given the long average period of occupancy. Space addition was undertaken by only about a fifth of the households, with the proportion larger for those with home businesses than for those without home businesses. Making improvements over a period of time may have been considered inconvenient because of uncertain raw material availability and delays in obtaining building permits. Therefore, it is quite possible that most owners purchase as much housing as possible at the initial period. However, a substantial volume of modifications to dwellings in the form of subdividing, converting porches, garages and passageways into rooms may be taking place. The present study may not have captured such activity and thereby underestimated the frequency of home improvement.

The sensitivity of housing demand to changes in income for owner occupants measured by the income elasticity was close to unity. Among the owner occupants those with and without home businesses had similar income elasticities of demand. The impact of household size on demand was not positive. The use of occupant estimated market value as a measure of the volume of homogeneous housing service, leaves much to be desired in a situation where many owners had not comtemplated selling. In the case of renters, the income elasticity seemed to be lower for households with businesses than for those without businesses. The demand elasticity for all renters was similar to that of all owners.

According to the hedonic price function the floor area was the most important attribute of a dwelling. The floor area, site area and the number of rooms accounted for a large part of value. The demand for space, derived using information from the hedonic price function, was

highly sensitive to prides and household income.

Recommendations and Suggestions for Policy Formulation

This study focused its attention on a part of the Colombo metropolitan area housing market. Its contribution is in increasing the knowledge of the behavior of those occupying permanent houses. The study of home businesses draws attention to a phenomenon which has not been the subject of careful investigation before. In order to gain a better understanding of urban housing in Sri Lanka, further research, covering all types of housing both in Colombo as well as other urban areas is needed. Home businesses, in different locations for all types of housing need to be studied carefully.

Most residential neighborhoods in the Colombo metropolitan region contain small stores, repair shops and agricultural units. Meanwhile, these neighborhoods contain a mixture of households occupying different types of dwellings. Even in the high income residential locations, pockets of squatters in improvised and non-permanent dwellings are observed. Some of these households find employment within the neighborhood through home businesses. For instance, small shops, repairing bicycles or motor cars and shoes or retailing grocery items or selling prepared food or drink are common even in high income residential areas.

In this type of an environment, standards of urban development based on building codes and zoning ordinances obtained from other countries is not appropriate. Even in residential areas, many types of small businesses operated from homes, would have to be tolerated. These

businesses, in many cases, enable the households to afford their present housing.

Home based businesses were observed at all levels of household income. This phenomenon was not limited to poor or otherwise disadvantaged households. A large proportion of the households earned a major share of the household income from the home business. Meanwhile, the frequency of space addition was higher for those with home based businesses.

The careful promotion of home based business offers the opportunity for some households to afford housing they would otherwise be unable to obtain. One type of enterprise, often not regarded as a home business, is the provision of lodging. By taking in lodgers a household is able to afford to finance house payments as well as additions and improvements. Current government policy prohibits those occupying public housing from taking in lodgers. This is a short sighted view and a misplaced concern about equity. The argument that those privileged to have public housing should not be encouraged to increase their income by taking in lodgers because public housing is subsidized, begs the question, why not raise payments and encourage the households to be enterprising so that the higher payments are met?

Even in the case where squatters or shanty dwellers have been provided public housing, taking in lodgers, adding to the house or changing the internal space is forbidden. If the government regards public housing as any landlord would it is easy to understand why it does not wish for the houses to be changed by the current tenants. However, the public housing projects, particularly for the low and middle income households, intend to transfer ownership to the occupants

under various rent-purchase schemes. Squatters are transformed into tenants who will eventually own permanent homes. If the housing agencies are concerned about housing payments, the prohibition of some home based activities like taking in lodgers is self defeating.

The home based enterprises share many of the problems associated with small enterprises. They need credit, access to markets and raw materials, and space. Some of the home businesses may not be economically viable. Financial assistance alone would not make them successful and self sustaining. Small scale credit programs, extension and training services as in the case of agriculture, may greatly enhance the performance of small businesses. A viable and healthy small home business might spell the difference between poor and modest housing, low recovery rates on housing finance and high rates of recovery.

One of the major issues confronting the housing sector relates to the current situation of housing finance. The volume of available financial resources and the nature of access to it by households of different income levels, leaves much to be desired. The few studies of housing in Sri Lanka that were encountered, stess the need for creation of financial institutions specifically associated with housing. Since the prevailing conditions discourage the private sector from entering the rental housing market, most households not currently occupying homes are forced to fall back on either their own financial resources or whatever they can borrow, in order to construct housing. Only a very few households have the resources to build their own homes. In addition to this, the low income households have poor access to sources of formal credit.

The private sector has to be given incentives to produce housing

for the low and middle income households, and resources have to be generated on realistic terms. Clearly the current pattern and volume of housing finance and construction leaves much to be desired in terms of both the quantity and quality of housing produced. It is a change in the mix of housing that policy makers need to address carefully. Therefore, besides broadbased credit, policies to develop land and sites have to be undertaken. In the various public housing programs, experimentation with core housing and with serviced sites coupled with aid to small businesses is warranted. Moving away from providing finished dwellings or extending the time limit on the completion of construction in Aided Self Help housing schemes, may enhance the spread of limited financial and material resources.

APPENDICES

APPENDIX A

THE SRI LANKA URBAN HOUSING SURVEY 1981

The survey was undertaken by the Marga Institute of Colombo, Sri Lanka and sponsored by the Bureau of Science and Technology of the United States Agency of International Development. The household interviews were carried out during the period 15 June to 31st July of 1981. The were conducted in English and the local languages, Sinhala and Tamil.

Sample Size

The sample size was determined on the basis of time and cost considerations. A total of 671 households was considered adequate to obtain efficient coverage of the sample area.

Sample Area

The sample was confined to the greater Colombo metropolitan area. This included Colombo city and the suburbs around it. For purposes of the survey a selection of the administrative bodies, that is, the Municipal, Urban and Town Councils, defined the greater Colombo metropolitan area. These administrative units were expected to

represent the salient urban features of the metropolis.

Sampling Design

The total sample was distributed among the administrative units, according to their relative proportions of housing units, recorded in the pre-listing for the national Census of Population and Housing in 1981.

Each administrative unit or local authority is comprised of a number of wards. Thes are area demarcations used for the formation of census tracts and more importantly as electoral areas for the local authorities. In selecting the sample, predominantly commercial wards within the local authorities were excluded. A ward where over 50 percent of the buildings were business premises was considered a commercial ward. This exclusion applied mainly to the Colombo municipal council. This was equivalent to giving all residential units of commercial wards a zero weight in the sampling process.

The sample was assigned to the remaining wards, which were predominantly residential in nature. The sample proportions for each ward were derived from the population proportion for that ward obtained from the census pre-listing information. Using these weights the sample size for each ward was calculated.

The wards were classified into three groups in the following way:

(i) If over half of the housing units had an assessed rental value over Rs 500 a month, the ward was an upper level housing ward.

(ii) Between Rs 100-500 a month, the ward was a middle level

housing ward.

(iii) Under Rs 100 a month, the ward as a lower level housing ward.

These norms were developed by the Marga Institute based on the prices prevailing in mid-1981. The sample was thus stratified by assessed rent.

Selection of the Individual Households Within Wards

The assessment registers of the various local authorities were used to pick the sample households. These registers contained information on the location and tax assessment of each household in a ward.

The register was used in the following way. First, a street within a ward was picked at random, then the register was scrutinized until the selected street was encountered. The first house which matched the ward classification in assessed tax was selected.

In this way the register was studied street by street until the sample size for that ward was picked. Because the sample was stratified by assessed tax it automatically selected permanent housing. This is due to the fact that the registers do not include temporary or substandard housing.

The sample represented a population of households living in permanent housing in predominantly residential locations. It does not represent all types of housing in the Colombo metropolitan area.

APPENDIX B

TABLE B.1

Zero Order Correlation Coefficients of Variables; All Owner Occupants

THING	0.616			
HHLDSZ	0.005	0.143		
AGE 1	0.065	0.014	0.095	
YRSOCCP	-0.040	-0.133	0.025	0.382
	SALEPR	THING	HHLDSZ	AGE 1
SAMPLE SIZE	499			

NOTE: THING, total household income per month,

HHLDSZ, total household size,

AGE 1, age of household head,

YSROCCP, years home occupied,

SALEPR, expected sale price of home

TABLE B.2

Zero-Order Correlation Coefficients of Variables

Owners Without Businesses

THING	0.589			
HHLDSZ	0.017	0.150		
AGE 1	0.074	0.031	0.107	
YRSOCCP	-0.050	-0.150	0.036	0.420
	SALEPR	THING	HHLDSZ	AGE 1
SAMPLE SIZE	396			

TABLE B.3

Zero-Order Correlation Coefficients of Variables

Owners With Businesses

THING	0.750			
HHLDSZ	-0.033	0.118		
AGE 1	0.031	-0.063	0.062	
YRSOCCP	0.005	-0.039	-0.007	0.204
	SALEPR	THING	HHLDSZ	AGE 1
SAMPLE SIZE	103			

APPENDIX C

TEST FOR HETEROSKEDASTICITY

The Models Used

The two models used were demand equations derived from aggregate utility functions.

Model I - Log-Linear

$$\ln P_i = a_0 + a_1 \ln Y_i + a_2 \ln HSZ_i + a_3 \ln AGE_i + a_4 S_i + E_i \qquad (A)$$

P Sale Price of Home

Y Total Household Income

HSZ Household Size

AGE Age of Household Head

S Sex of Househol Head

Model II - Linear

$$P_i = b_0 = b_1 y_i + b_2 HSZ_i + b_3 AGE_i + b_4 S_i + E_i \qquad (B)$$

The data used to test these models were obtained from a household sample survey.

The two models were tested for the following groups of households.

A) All home owners.

B) All home owners with home based businesses.

C) All home owners without home based businesses.

D) Home owners at three levels of income.

When the twelve equations were estimated the correlation matrix of the independent variables was examined. By observation, serious multicollinearity was ruled out.

The major concern however, was to test for the presence of heteroskedasticity. The method proposed by White (1980, p. 817-838) was used for all twelve equations. A brief description of the application of White's method to the estimated equations follows.

Given a properly specified model,

$$Y = XB + E \qquad (i)$$

X(1xK) and B, unknown finite (K x 1) vector with (X_{iEi}) a sequence of independent, not necessarily identically distributed random vectors.

The derived regression equation

$$E_i^2 = AO + \sum_{j=1}^{K} \sum_{k=j}^{K} A_s X_{ij} X_{ik} \qquad (ii)$$

yields a test statistic

$$nR^2 \sim \chi^2 \; K(K+1)/2 \qquad (iii)$$

where n is the number of observations, R2 the coefficient of determination for the estimated equation $\chi 2$ is the Chi squared

distribution (ii) and K the number of independent variables or estimated coefficients in equation (i). This statistic is then used to test the null hypothesis of heteroskedasticity.

The appropriate equations for the two models to test for heteroskedasticity are the following:

Log-Linear Model

Compute E_i for each of the household groups using appropriate estimated values of the bi then estimate the following regression.

$$E_i^2 = a0 + A1\ln Y_i + A2\ln HSZ_i + A3\ln AGE_i + A4S_i + A5(\ln Y_i) + A6(\ln HSZ_i)^2 + A7(\ln AGE_i)^2 + A8(\ln Y_i)(\ln HSZ_i) + A9(\ln Y_i)(\ln AGE_i) + A10(\ln Y_i)(S_i) + A11(\ln HSZ_i)(\ln AGE_i) + A12(\ln HSZ)(S_i) + A13(\ln AGE_i)(S_i) \quad (C)$$

Linear Model

For the linear model, the appropriate change of variables actual values instead of the ln(variable) values were used.

The test for the joint hypothesis that all coefficients are simultaneously zero is equivalent to the test using the statistic given by (iii).

Test Results

We note that the test statistic described by the expression (iii) is equivalent to the F-statistic for the overall regression significance. That is, we can test for all regression coefficients being simultaneously not different from zero, for equation H.

On the basis of the tests, homoskedasticity is not rejected for

either model in the case of all owners with businesses, for all low and middle and low income owners and the log linear model for all owners and those without businesses.

TABLE C.1

Table of F-Statistics by Household Category and Model Type

Household Category	Model	
	Log-Linear	Linear
With Home Business	0.53	0.69
Without Home Businesses	1.42	1.60a
All Owners	1.39	1.67[a]
All Owners of Income		
Rs 1500 or below	1.39	0.85
Rs 1501 - 3000	0.52	0.52
Rs 3001 and above	2.32a	0.48

NOTE: The F-statistic of the regression models enable the test of the null hypothesis, that all regression coefficients are zero simultaneously. If the null hypothesis is not rejected homoskedasticity is not rejected. This is equivalent to the test statistic given by (iii).

[a] denotes that the null hypothesis of homoskedasticity is rejected at the 0.15 level of significance.

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