

**HOUSING PRICE BEHAVIOUR IN THE URBAN INDIA:
A CASE STUDY OF BHUBANESWAR**

*Dissertation submitted in partial fulfillment of the requirements for the
Degree of **Master of Philosophy** in Applied Economics of the
Jawaharlal Nehru University*

Mantu Kumar Mahalik

**M.Phil Programme in Applied Economics
2006-08**

Centre for Development Studies

Thiruvananthapuram

June, 2008

I hereby affirm that the work for this dissertation, “Housing Price Behaviour in the Urban India: A Case Study of Bhubaneswar”, being submitted as part of the requirements of the M.Phil Programme in Applied Economics of the Jawaharlal Nehru University, was carried out entirely by myself. I also affirm that it was not part of any other programme of study and has not been submitted to any other University for award of any Degree.

June, 2008


Mantu Kumar Mahalik

Certified that this study is the bona fide work of Mantu Kumar Mahalik, carried out under our supervision at the Centre for Development Studies.



N. Vijayamohan Pillai

Associate Professor



Hrushikesh Mallick

Lecturer



K. Narayanan Nair

Director

Centre for Development Studies
Thiruvananthapuram - 695 011

DEDICATED
TO MY
ESTEEMED PARENTS

Acknowledgement

I am privileged to have this opportunity to put forward my deepest gratitude and profoundest indebtedness to my esteemed Supervisors Vijayamohanan Pillai and Hrushikesh Mallick at Centre for Development Studies, for being instrumental in shaping my work with their valuable suggestions and incisive comments. I acknowledge them for the considerable time devoted to me for this piece of work.

I would like to convey my sincerest thanks to Prof. P. R. Gopinathan Nair, for his valuable suggestions and painstaking efforts during the whole work of the thesis. I am also thankful to Dr. G. Gopikuttan for his constructive idea and instinctive help. I feel great pleasure to convey my sincere thanks to other faculties of CDS; Prof. K. K. Subramanian, Dr. U. S. Mishra, Prof. K. Pushpangadan, most of whom also taught us during the course-work and made our concepts in the subject clear.

I wish to thank to the administrative, library and computer center staffs for providing me with the necessary facilities to complete this investigation. And my regards to Anil who helped me a lot in the collection of secondary data, which was useful during my whole tenure of this study. I am especially thanks to Mr. S. Nair (Registrar, CDS) and Mr. Phil Roy (Administrative Officer, CDS), who have been very helpful during the entire period of stay. I am also thankful Ms. Anita Madam (CDS Library).

I thank households as well as house contract builders of the survey areas such as Saheed Nagar (Slum Area), V.S.S Nagar, and Jaydev Vihar in Bhubaneswar for their cooperation with me.

I owe a special debt to my Sir Anant Kumar Roy at Avana Belabhomi College, Balasore who built my foundation in economics. I am indebted to him forever.

I do express my deep sense of indebtedness to Harendra Bhai, Arun Bhai, Nilu Bhai, and Tophan Bhai for their timely financial support through out my study.

I am also deeply grateful to my other seniors at the Centre: Rudra, Braja, Amarendra, William, Salini, Priyajit, Varinder, Prabhu, Prabhat, Nirmal, Suma, Rijesh, Dinesh, Indu, Rajeev, Syam, Beena, for their cooperation and encouragement.

I thankful to my friends and juniors whose direct and indirect help enabled me complete this work. I would like to mention: Rikil, Inder, Atish, Binoy, Anoop, Bharat, Minu, Mithun, Sravanthi, Rajesh (Sir), Rajesh, Lucca, Manju, and Juniors: Khanindra, Yadwendra, Jatinder, Anand for their help and encouragement.

Last but not the Least, I express my sincere gratitude and hearty indebtedness to my parents who have gladly accepted all sufferings for enabling me to reach the present stage of my life. I am very much grateful to my brothers 'Sanjaya Bhai and Litu' as a constant source of encouragement and financial support in process of work. I owe them a lot.

Mantu Kumar Mahalik

Housing Price Behaviour in the Urban India: A Case Study of Bhubaneswar

Mantu Kumar Mahalik

M.Phil Programme in Applied Economics, Jawaharlal Nehru University, (2006-08)

Centre for Development Studies

Abstract

Housing as an emerging and important sector in India has registered an enormous growth and development in terms of number and quality during the past one and a half decade. The past couple of years since the early 1990s have seen a fast transformation of the housing sector into a crucial segment of the economy mainly because of the financial liberalization process, rapid economic growth and urbanization. The acceleration in the growth of housing sector over a few years has been due to the rising demand for housing, and a surge in housing prices in the urban areas. The shortage has also led to significant expansion of slums in the urban areas of India. Against this backdrop, the present study attempts: first, to examine the housing price behaviour in India in general and in Bhubaneswar, the Capital City of Orissa in particular; second, to examine the determinants of demand for and supply of housing in the urban areas; and finally, to examine the role of the government in the provision of housing services to the urban poor households. The study, in order to analyse the proposed objectives, basically relies on secondary sources of data for addressing the issue at the macro level. The secondary sources of data are supplemented by primary sources by conducting a sample survey in Bhubaneswar. The study employs time series techniques and some descriptive statistics in analysis. The study suggests that effective Government's intervention is necessary at the grass root level in the urban housing market for the welfare of the urban poor dwellers in particular, which in turn will improve the status of the economy in general.

Contents	(iv-v)
List of Tables	(vi-ix)
List of Figures	(x)
List of Appendix	(x)

TITLE OF THE CHAPTERS	Page No.
Chapter 1: Introduction	1-29
1.1 Introduction	
1.2 Background	
1.3 Policy Changes in India	
1.4 Review of Literature	
1.5 Objectives of the Study	
1.6 Data Source, Methodology and Chapter Scheme	
Chapter 2: Housing Scenario and Policies	30-52
2.1 Housing Scenario	
2.2 Housing policies	
2.3 Conclusion	
Chapter 3: Housing Price Dynamics in India	53-85
3.1 Introduction	
3.2 Analytical Framework	
3.3 Theoretical Causal Relationships	
3.4 Data Sources and Descriptions	
3.5 Methodology	
3.6 Empirical Results and Discussions Using Quarterly Data	
3.7 Empirical Results and Discussions Using Annual Data	
3.8 Conclusion	

Chapter 4: Determinants of Demand for Housing: 86-126

Micro Evidence

4.1 Introduction

4.2 A Profile of the Study Area

4.3 Hypotheses

4.4 Survey Areas

4.5 Results

4.6 Sources of Housing Finance in Bhubaneswar

4.7 Quintile Distribution of Housing Demand in Bhubaneswar

4.8 Multiple Regression Analysis

4.9 Conclusion

Chapter 5: Determinants of Supply of Housing: Micro 127-153

Evidence

5.1 Introduction

5.2 The Transformations in the Housing Supply Market

5.3 Studies on Housing Supply Determinants

5.4 Survey Areas

5.5 Results of the Survey

5.6 Conclusion

Chapter 6: Conclusion and Policy Implications 154-184

6.1 Summary

6.2 Policy Implications

6.3 Limitations of the Study

References

Appendices

LIST OF TABLES
Title of the Table

SL. No.	Title of the Table	Page No.
2.1	Trends in the Share of Various Classes of Cities in Urban Population in India	33
2.2	Comparative Perspective of Housing shortage in Orissa as against National	35
2.3	Distribution of Households having access to basic amenities during 1991 - 2001 in Urban Areas	36
2.4	Distribution of Households having access to basic amenities during 1991 - 2001 in Rural Areas	36
2.5	Different Housing Scheme of the Government of India	47
2.6	Achievement under EWS and LIG Housing Schemes in the State of Orissa.	50
3.1	Result of ADF and PP Tests for Unit Root.	63
3.2	Selection of Lag Length	64
3.3	Johansen Co-integration Rank Test	65
3.4	Bivariate Granger Causality Test	67
3.5	Diagnostic Checking Criteria	68
3.6	Variance Decomposition of Housing Prices	70
3.7	Results of Unit Root Tests	74
3.8	The VAR Selection of Lag Length	75
3.9	Johansen Cointegration Rank Test	76
3.10	Granger Causality Test	78
3.11	Diagnostic Checking Criteria	79
3.12	Variance Decomposition of Housing Prices	80
4.1	Sample Areas of the Study	92
4.2	Sex-wise Distribution of the population of the sample households	93
4.3	Households Assets	93
4.4	Distribution of Households by Consumer Durables	94
4.5	Distribution of Households by Type of Materials for Wall	94
4.6	Distribution of Households having type of roof	95
4.7	Distribution of Households according to lighting facility	95

TABLE CONT...

4.8	Distribution of Households having cooking facility	95
4.9	Distribution of Households having Toilet facility	96
4.10	Distribution of Households having Water Provision Facility	96
4.11	Distribution of Type of Roof and Type of Wall	97
4.12	Distribution of Type of Roof and Type of Lighting	97
4.13	Distribution of Households type of roof versus type of drinking water	98
4.14	Distribution of Households type of roof houses versus type of toilet	98
4.15	Distribution of Households type of roof houses versus Cooking	99
4.16	Distribution of Households type of roof houses versus Cooking	99
4.17	Motivation factor of households	100
4.18	Distribution of Households under different schemes	102
4.19	Distribution of Households according to loan default	102
4.20	Distribution of Households by Own Source of Financing Houses	104
4.21	Percentage Distribution of Households Which Spent from Bank Savings (deposits) on Houses	105
4.22	Distribution of Households borrowed money from co-operative banks	106
4.23	Loan from the General Provident Fund (GPF)	107
4.24	Loan from the Other Sources	108
4.25	Amount of Borrowings from the Relatives	109
4.26	Borrowing from the Relatives	111
4.27	Money from own sources spent for housing construction	112

TABLE CONT...

4.28	Distribution of Household Expenditure versus Income in Developed Areas	114
4.29	Distribution of Household Expenditure versus Income in under developed Area.	115
4.30	Distribution of Household Expenditure versus House Size in Developed Areas	115
4.31	Distribution of Household Expenditure versus House Size in Underdeveloped Area.	116
4.32	Distribution of Household Expenditure versus Household's Size in Developed Areas	117
4.33	Distribution of Household Expenditure versus Household Size in Underdeveloped Areas	118
4.34	Distribution of Household Expenditure versus Education levels in Developed Areas	119
4.35	Distribution of Household Expenditure versus Education levels Underdeveloped Areas	119
4.36	Distribution of Household Expenditure versus Religion in Developed Areas	120
4.37	Distribution of Household Expenditure versus Religion in Underdeveloped Area	121
4.38	Distribution of Household Expenditure versus Religion in Underdeveloped Area	121
4.39	Distribution of Household Expenditure versus Caste in Underdeveloped Area	122
4.40 (a)	Demand for Housing: Model 1	124
4.40(b)	Demand for Housing: Model 2	124

TABLE CONT...

5.1	Whole Sale Price Index and Growth Rate of Building Material Prices	135
5.2	Average Price of Basic Building Material Prices in Metro Cities During 2000 (Rs.)	136
5.3	Average Wage Rates of Building Workers in Selected Cities during 2000 (Rs. Per Day)	137
5.4	Name of Builders and Land Developers in Bhubaneswar	139
5.5	Number of Houses Constructed in Bhubaneswar over the Period	140
5.6	Location and Built-in Areas in Bhubaneswar during (1990-95)	141
5.7	Location and Built-in Areas in Bhubaneswar during (1996-2000)	142
5.8	Location and Built-in Areas in Bhubaneswar during (2001-2005)	142
5.9	Location and Built-in Areas in Bhubaneswar during (2005-2007)	143
5.10	Distribution of Builders and Buyers During 1990-1995 to 2005-07	144
5.11	Housing Schemes Implemented by the Orissa State Housing Board (Till 2000-2001)	144
5.12	Trend in the Prices of Land across different Locations in Bhubaneswar during 1990-1996 to 2005-07 (Rs.) [Per Sq. feet]	145
5.13	Cost of Materials and Labourers in House Construction	147

LIST OF FIGURES

SL. No.	Title of the Figure	Page No.
2.1	Access to Urban Services by Regions, 2004 (Percentage)	31
3.1	(a to f): (Top to Bottom Row-Wise): Impulse Response Functions	73
3.2	(a to f): (Top to Bottom Row-Wise): Impulse Response Functions	83

LIST OF THE APPENDIX

SL. No.	Title of the Appendix	Page No.
A.1	Coverage Aspects of Survey Questionnaire on determinants of housing demand at the micro level.	28
A.2	Coverage Aspects of Survey Questionnaire on determinants of housing supply at the micro level.	29
A.A	Questionnaire on Determinants of Demand for Housing: Micro Evidence	174 -180
A.B	Questionnaire on Determinants of Supply for Housing: Micro Evidence	181-184

Chapter 1

INTRODUCTION

1.1 Introduction

Housing embodies concepts such as comfort, safety, identity and above all, it has central importance to everyone's quality of life with considerable economic, social, cultural and personal significance. Access to safe, healthy shelter and basic services is essential to the overall (physical, psychological, social and economic) well being of a person (Nair 2006). Moreover, housing constitutes an important need of human life that most people aspire to acquire as one of the keys to peace and happiness. The awareness about the importance of housing is now so firmly embedded in the social and economic fabric of all nations that it can no longer be treated either purely as an economic or a social good; it refers to both (Gopikuttan 1988).

A housing unit is not a single dimensional good. Rather, it represents a composite of a number of attributes, including number of rooms, interior size, architectural qualities, condition of structure, lot size, neighborhood amenities and accessibility (Segal et al. 1977).¹ It is a source of personal wealth for the private sector households. . A substantial proportion of households' income is allocated for the investment in housing. Housing also gives rise to income for the owner households in the form of rent, which constitutes a source of the household sector's savings. Thus, as an essential good, housing accounts for a large share of household expenditure and as an asset, it constitutes a significant part of economic activity. World Bank (1975) estimates that average housing expenditure in developing countries ranges from 15 per cent to 25 per cent of their monthly income. Furthermore, according to

¹ According to Bourne (1981), 'Housing' must be defined as a multidimensional entity or bundle. It is clearly both an economic or merit good and social necessity, which delivers a wide range of benefits or services to its owners and occupants.

U.N. data, an average of 4 per cent of GDP in developing countries is spent on new housing construction (Tiwari and Parikh 1997).

Housing as an emerging and important sector in India, has registered enormous growth and development in terms of number and quality especially during the past one and a half decade (Gopikuttan et al. 2006). Its economic importance in India can be understood from the estimate that for every Indian Rupee (INR) invested in the construction of houses, INR 0.78 is added to the gross domestic product of the country, because of its linkages with various other sectors of the economy, which provide goods and services (Palanisami and Others 2007). According to National Building Organisation (NBO 2006) estimates, the housing sector contributed 4 per cent to India's Gross Domestic Product (GDP) at factor cost in 2003-04 at constant price. The contribution of housing in urban areas to GDP in 2003-04 (at 1993-94 constant prices) was 3.13 per cent amounting to Rs. 34489 crore. The annual growth of national and urban residential housing prices has already been at 2.75 per cent to 2.77 per cent and 3.44 per cent to 3.43 per cent respectively during 1994-1995 and 2003-2004 (with the base year 1993-1994). This shows the situation of housing price boom and its significant economic contribution in developing countries like India. In this context, the real question arises whether boom in housing activity is either preceded or followed by general business cycles in a market economy. Leamer (2007) observed the role of construction sector activities, housing segment in particular, as a major contributor to the US business cycles, as a downturn in the housing sector precedes the downturn in overall output of the US economy. Housing has a volume cycle, not a price cycle, as house price is downwardly rigid. With a decline in sales volume comes a decline in jobs in construction, finance and real estate brokerages. This implies the construction sector has relatively a powerful impact on the US economic growth in the short run than long run growth.² In this context, looking at the Indian data, it is found that most often, the rise in the growth rate of GDP is preceded by a rise in real growth rate of housing sector output during 1994-1995 to 2003-04 except for a few divergence between them in 2003-04, implying that a better performance in housing sector can get reflected in the rising growth rate of GDP in the subsequent period. This

² Housing sector has widely recognised as business activity in the US economy. It is the outcome of business cycles.

indicates the importance of the dwelling sector in the overall growth rate of an economy (National Building Organisation 2006).

One of the key debates in the context of the process of development is whether capital should be targeted toward plant and equipment, or it should be allowed to flow to housing sector. Mortgage markets in some countries like the US have been stunted because of sub-prime crisis as a matter of policy capital flows to Plant and Equity. The sub-prime crisis is the upshot of home loan default arising out of sub-prime credit in US. The sub-prime credit refers to extension of credit facilities to borrowers who have deficient credit history or inadequate credit documentation. The interest rate applicable in the sub-prime market is higher because of the higher risk involved in lending to individuals who do not show adequate creditworthiness (Saraogi 2007). At present, a developing country like India, does not have a vibrant sub-prime credit market.

1.2 Background

However, given the above ongoing debates, the past couple of years since early 1990s have seen a fast transformation of the housing sector into a crucial segment of the Indian economy (Augusty 1990, and Gopikuttan et al. 2006). The major changes witnessed in the housing industry in India are due to the spectrum of fundamental changes: such as new economic reforms, change in the designing of a shelter policy, the organization of the housing finance market, the introduction of fiscal incentives, increased public investment, legal reforms and other initiatives such as change in the form of housing supplying clients, change in the use-of building material compositions, emergence of contracting system, role of new technology, change in the role of the government and change in the form of urban land ceiling and regulation act (Augusty 1990, Gopikuttan 1988, Mahadeva 2006, and Pavananthi, Suresh, and Satyamala 2008). The other major change also witnessed in the housing industry is the recognition of industry status itself. Five years ago, the real estate activity particularly housing segment was considered to be a speculative activity with other negative connotations. This is not the case any longer. The Government has made it mandatory that 3 per cent of the incremental deposits of the commercial banks as compared to 1.5 per cent would be deployed to the housing industry for the employment generation

and economic development and that individual housing loans upto Rs. 10 lakh extended by them will form a part of the priority sector lending as compared to the earlier limit of Rs. 5 lakh in India (Government of India 1999-2000) (See: www.bseindia.com and www.urbanindia.nic.in). Along with this change, the Indian housing industry is highly fragmented, with the unorganized sector, comprising small builders and contractors, who primarily construct houses on a contract basis with individual owner households, accounting for a large part of over 70 per cent of the housing units and the organized sector including government affiliated entities accounting for the rest. The real estate developers in the organized sector are actively considering the consumer aspect of houses like townships, multiplexes, theater and shopping malls to drive their business prospects and the state has emphasized on the welfare aspect of housing provision in an economy like provision of housing services to the urban poor (See: www.valuenotes.com).

It is common knowledge that the term realty refers to real estate. Real estate is nothing but immovable property in the form of land and buildings. In other words, the term 'real estate' covers residential housing, commercial offices and trading spaces such as theatres, hotels and restaurants, retail outlets, industrial buildings such as factories and government buildings. Real estate involves the purchase, sale and development of land, residential and non-residential buildings. The activities of the real estate sector also encompass the housing and construction sector. Real estate is a major employment driver, being the second largest employer, next only to agriculture in India. This is because of the chain of backward and forward linkages that the sector has with other sectors. About 250 ancillary industries such as cement, steel, brick, timber, building material etc. are dependent on the real estate industry (See: www.valuenotes.com).

It is the best source of long-term investment. The elements of final real estate market, which need to be examined prior to a detailed study of analytical techniques, are those of supply and demand for housing. The demand for real estate is stimulated by six principal uses, i.e., residential property, retail, financial and office, wholesale, industrial property, and public and quasi-public. The supply of real estate is compounded by public sector, private builders, homeowners and others. Real estate as an economic good has five distinguishing characteristics from other economic goods, and these characteristics cause each market transaction to be a unique bargaining situation that produces many frictions in the market

place. The characteristics of real estate are immobility, longevity, high cost, dependency and uniqueness all of which influence real estate value (Guntermann et al. 1943). Moreover, it is observed that both house and real estate are often used interchangeably in common parlance. In general all the above factors (characteristics) together accounted for the very transformation of the housing sector into the developed one and helped the housing sector to grow much faster.

According to National Building Organisation (NBO 2006) estimates, around 10.6 million cases of housing shortage in 2001 are experienced by the major part of the population in the urban areas of India. Housing shortage refers to a situation where the number of households exceeds the number of housing stock units. Alternatively, this implies urban housing shortage in India is due to the demand for housing exceeding the supply of housing. So, the final consequence of housing shortage leads to surge in housing prices in the urban areas. Hence, it is important to investigate the causes of housing prices rise. Is it predominantly due to demand side factors or supply side factors, or both? While discussing the determinants of supply and demand in the housing market, it may be helpful to look into the market for other durable goods and the structure and composition of factors influencing their demand and supply. At the same time, it should be borne in mind that since housing is a basic necessity for human existence in various types of socio-economic situations, there exist various types of demand for and supply of housing. Demand for housing depends upon demographic, social, and economic factors. The specialized literature identifies three concepts of housing demand: political demand, potential demand and effective demand. Thus, political demand represents the government's intervention in the housing market through various social policies and programs in order to provide subsidized housing to the poor households in both urban and rural areas. Potential demand is affected by demographic and social factors, especially those related to migratory movements and households' funds creation. Effective demand is the materialization of potential demand in the market and depends on economic factors such as households' income, household's wealth, and the cost of use of housing. Therefore, the potential demand guides the market in the long run, whereas effective demand is responsible for the evolution of the market in the short and medium terms (Marisol and Amaia 2008). Broadly speaking, the demand for housing comes

from four agents: one who takes the house on rent, landlord (for renting), house builder and owner-occupied household (for own use).

Housing demand was triggered by population growth, employment generation, increase in per capita income, favourable financial conditions (including low rate of interest on borrowed funds), the households' asset base (including durable assets like land and gold), fiscal incentives in terms of reduction of taxes, taste and preferences of the households, speculative activity, household's formation, migration of people from rural to urban areas, city size, quality of locations in terms of better urban governance and infrastructure development, attributes of house, price of house, price of substitute assets and population growth. These factors are responsible for the rising demand for housing in the urban areas (Broune 1981, Gopikuttan 1988, Gupta 1985, Joshi 2006, Kapur 2006, Kumar 1989, Marisol and Amaia 2008, and Mehta and Mehta 1987, Naylor 67).

On the other hand, the supply of housing comes from four agents: private house builders, homeowner-cum-contract builders, public agencies and others. The partial list of determinants of housing supply which affect builders' decision to invest on housing in the urban areas are house builders/developer costs of construction including material costs plus labour cost, land price, credit availability, brokers cost (as an intermediary to the seller), transaction cost (including enquiry cost), urban land ceiling and regulation act, zoning and technology play a role (Glaeser and Gyourko 2002, Gopikuttan 1988, Joshi 2006, Kumar 1989, Kundu et al. 1977, Nair 2006, Naylor 1967, United Nations Human Settlement Programme (UNHSP 2003).

However, the housing market witnessed a boom in India in the early 1990s riding on the back of a booming stock market, general mode of economic growth and liberalization process that was kicked off in 1991. Therefore, we have been realizing dramatic escalation of housing price especially during the past 2-3 years on the back of increasing demand led by low interest rates, population growth, credit availability and increased income due to booming of the service sector (Joshi 2006). In addition, the housing price boom arises due to the speculation by investors. When an investor purchases a house and expects a high return in the future, he will withhold present sales for future sales. As a result, the present high demand for housing outweighs the supply of housing due to the inelastic nature of housing

supply in the short and medium terms (Gopikuttan et al. 2006). This implies housing supply is increasing disproportionately to its rising demand mainly due to the inelastic nature of housing supply. Besides speculation factor, the inelastic nature of housing supply is surrounded by the other potential important factors such as time factor, land, building materials and labour in the production process. At present, all the housing inputs including land, labour and materials have become marketable commodities and their supply have shown scarcity in nature. Finally it has become the most expensive item for the builders, which forced them to limit their production capacity as well as scale intensity. In addition, even if they are more exposed to the financial institutions against the asset base for their building financing but they failed to increase their production capacity due to the short time horizon and rising costs of construction and land prices.

Such a situation leads to rise in the current housing prices in the urban areas of India. The housing price rise has generated much debate. The debate centers on the process and the conditions that have been created in specific urban cities of India. If the housing price rise continues, there would seem to be absolutely no hope of ever obtaining decent accommodation for the low-income category of the population in the urban areas. It is because the poor people can not afford the high cost housing for their living in the urban areas (Kannan and Spence 1975). The shortage has also led to significant expansion of slums in the urban areas of India (Gupta 1985). In this context, it is essential to understand and analyse the entire gamut of urban housing price behaviour in India

I.3 Policy Changes in India

In recognition of the critical role of the financial markets, with the initiation of structural reforms in the early 1990s in India, a process of phased and coordinated deregulation and liberalization of financial market began. Financial markets in India, prior to the early 1990s, were marked by administered interest rates, quantitative ceilings and current and capital accounts restrictions. As a result of various reforms in the early 1990s, the financial markets have transited to a regime characterized by market deregulated interest rate and exchange rates (Rakeshmohan 2007). It is clear that the term financial liberalization minimizes the substantial role of government intervention in setting interest rates and

maximizes the role of monetary policy in maintaining price and financial stability in the economy (Cho and Khatkhate 1989). It could be hypothesized that a free market economy results in inflow of capital into domestic economy because of relaxation of policy, which leads to increase in financial resources (liquidity) available in resource constrained developing economy. This may lead to reduction in interest rates. Lower interest rates stimulate consumption and investment demands in the economy. Increased consumption and investment mean higher aggregate demand as well as resulting increased personal income, wealth and employment. In terms of housing market, lower interest rates imply lower credit costs; and, in theory, lower credit costs should stimulate the demand for housing (Naylor 1967).

Besides domestic policy changes, there are also significant policy changes observed in the external sector. The regulated mixed economy of India, has moved to gradual economic reforms and since 1991 liberalisation, the economy has been integrating with the rest of the world (financial integration). Gradual economic reforms have eased the transition from a regulated economy to an open economy with full convertibility of current account as well as partial convertibility of capital account on the balance of payments. However, the convertibility process may result in external shocks, which may influence housing prices in an economy. It is observed that the items in the current account of the balance of payments like remittances from abroad have constituted a major source of households' savings, which leads to rising housing demand (Gopikuttan et al. 2006). As per partial capital account convertibility, the non-debt creating capital flows like Foreign Direct Investments (FDIs) are allowed upto 100 per cent under the automatic route in townships, housing, and build-up infrastructure (National Housing Bank 2005). The liberalization process reveals the relaxation of various quantitative restrictions on the entry of overseas investors. Ultimately, this process increases the entry exposures of foreign investors into the domestic economy. As a result, foreigners tend to invest their resources in the real estate in the form of buying and selling of residential property besides investing on equity shares. Although both the markets reflect the asset-price volatility behaviour, they can better under-price the risk involved in the real estate sector than equity market. Under-pricing of risk means that less risk is involved in real estate investment because of redeployability of land. Because of this, the frequent entry of FDIs into the housing sector raises the demand for housing for

commercial and business purposes. The main motive of foreign investors is to reap more profit from investments in India's real estate sector. The increased demand thus leads to rise in housing prices in the domestic economy. In this context, it is relevant to understand the role of policies and external factors in influencing the housing market situation in India.

I.4 Issues of Urban Housing in India

Great concern has been expressed over the need to conserve housing stocks in the context of growth of cities, income expansion, changes in relative prices, rapid increase in population, economic activity, commercialization and urbanization process (Guntermann et al. 1943). The Indian economy has already gone through the International Year of Shelter (IYH 1987-88), which suggests, 'A decent housing for all within their financial means and at convenient location'. This goal has been announced again and again over the past 60 years in India. Yet, a major section of the total population still lives in substandard houses. As per a recent statistical estimate, around 25 million cases of housing shortage are experienced by the major part of the population in the urban areas of India (Government of India 2007). This implies that urban housing shortage in India is due to the demand for housing exceeding the supply of housing. So the final consequence of urban housing shortage is the surge in housing prices, which forces the urban poor households to live in slum areas. In this context, the study raises the question - Is there a housing crisis in urban India? It is clear that we have been adequately supplying standard shelters for those who have the ability to pay but what happens those who can not afford it. Since independence, housing has been considered a basic human need along with food and cloth (Government of India 1980). The national Government is not able to take major steps in favour of the urban poor because of paucity of funds. In this regard, the economy has followed a liberalization process since 1991 in order to make the transition path easier via the market mechanism. The main logic behind the market economy is that there is free play of market forces, which determines the demand for and the supply of housing. Thus, the housing activity is exercised purely by the private potential agents who have enough resources to produce adequate supply of housing for mitigating effective demand and political demand (Kumar 1989). Adequate supply of housing refers to the number of person per room, structure of houses and location (United Nations 2002). The problem is that private enterprise is not supplying newly constructed

housing for at least half of the population in India. In a fundamental sense, housing crisis constitutes housing shortage, substandard houses and poor housing condition. Housing shortage occurs when the number of households exceeds the number of housing units, substandard houses imply deteriorated houses, which lack housing facilities (dilapidated), and housing condition refers to housing amenities like water, electricity, toilet and sanitation (National Sample Survey Organization 58th Round, 2002). Therefore, it is clear that housing crisis refers to the need for housing and the number of housing deficit families constituting non-economic demand (Guntermann et al. 1943). When there is housing shortage in an urban area, it implies that there exists the central problem in housing supply especially for the urban poor. The problem of housing is not only the problem of shortage in terms of number of units; it is also a problem of inadequacy of standard (Gopikuttan 1988). On the other hand, the housing problem is viewed not only as problem of inadequate supplies but also deficiencies on the demand side (potential/effective demand). Even if poor people are expressing their need in relation to their want, they may not be able to access the formal housing market due to their lack of purchasing power. The formal housing market refers to the market in which the housing production activity is exercised by agents like public and private ventures subject to certain Governments' rule and regulations (United Nations 2002). This market does not consider their non-economic demand for housing as it considers only effective demand for housing. Hence it is clear that there is visible non-affordability on the part of poor households in the urban housing market, which is an indication of market failure. In this scenario, there is a clear justification for the government intervention in order to reduce the divergence between need and demand on the part of the poor households in the Indian urban housing market. Government should come forward with superior mechanisms in terms of housing service packages (upgrading urban housing schemes) for reducing the divergence between the need and the demand for housing. The housing service package contains the sites and services of the house especially for the economically weaker sections of the society. Thus, the housing schemes should be oriented more towards catering to the demand for housing of the urban poor in India. At the scheme level, the need for housing of a household can be related to the income of the households rather than to their size (Wadhwa 1988).

In addition, the main concern has been addressed in many of the literatures towards urban poor in India. If the financial institutions were to be oriented towards the urban poor, then they would have to include various housing finance programs including home up-gradation and infrastructure development. If the proposed housing finance programs would include home up-gradation and rehabilitation within their scope, they would be able to serve a much larger proportion of lower and middle-income households in an urban city than at present. In a country like India where most of the private sector housing for the higher income groups is more or less self-financed through equity contributions and a large segment of this group has access to the existing financial institutions, it is imperative that housing financial institutions must address themselves to the unreserved group of urban poor and broaden their horizons of housing finance (Mehta and Mehta 1988).

1.5 Literature Review

The present section surveys the existing studies on 'urban housing price behaviour' in the context of India and abroad as this study specifically intends to address the issues in housing in the urban cities owing to growing urbanization and migration of the people from rural to the urban areas. The survey is done with an aim to get an insight about the demand and supply factors responsible for soaring housing prices in the urban places.

As a specialized branch of modern economics, studies on urban housing prices are relatively recent. The literature on the subject has, however, expanded greatly from 1960s. Most of the studies relate to the market economy in which housing is also considered as a marketable durable good, as any other (Riddel 2000, 2004). The present section attempts to enquire a comprehensive existing literatures regarding urban housing price behaviour in a developing country like India. To understand the urban housing price behaviour, it is important to analyse the conventional fundamental factors and transition specific factors related to the housing market. The market fundamentals comprise of factors influencing the demand for housing and supply of housing in an economy. The study analyses the existing theoretical as well as empirical literatures on the urban housing market at the macro as well as micro levels.

1.5.1 Macro Economic Studies

Much emphasis has been laid on developing a sound residential location theory, in the present century. In the literature on urban economic conditions, it is generally accepted that the pioneering work on the relationship between land price and land use is that of Hurd (1903). Hurd theoretically argued that land price depended upon relative locations, considering the land as an important factor in the process of housing production. As an early example given by DiPasquale and Wheaton (1994), point out that land is an important input in the process of production. Since the early 1960s, the researchers like Alonso (1964) and Muth (1975) have produced improved versions of Hurd's neo-classical work. Their main emphasis has been upon residential land use and determination of land prices in terms of locations relative to the city centre. They pointed out that land price is found to be high near to city center compared to periphery of city. Wagner (1984) tries to assess the influence of parcel size (square meter) on land prices. The data set consists of 6,100 transactions of vacant lots covering the period from 1955 to 1978 in urban city of Bogotá, Colombia. The empirical evidence indicated that the land price-lot size relationship is not constant, varies depending on locations. Finally, it was found that land price is positively correlated with the location near to city centre than to the periphery. The same phenomenon is supported by Dam, Visser, and Hooimeijer (2005). They observed that house prices differ according to the geography in Netherland and pointed out that rising housing price is positively correlated with near to the residential functional characteristics such as closer to working place, transport and infrastructure facilities. United Nations Human Settlement Programme (2003) also recognized the real factors behind the urban land price escalation. Most urban cities have no strategy for the timely provision of land based on projections of household formation. The development of land can be a bureaucratic triangle involving dozens of agencies, each with their own requirements, delays and bribes. This is reflected directly in unreasonably high formal land prices that would lead to housing price rise.

Mitra (1990) has studied urban land price across metropolitan cities in India, based on the time series data spanning from 1971 to 1983 in order to understand the residential land price behaviour. He found that price per unit square of land is positively related to in-migration rate, city size and the level of industrialization and also commercialisation across metropolitan cities of India. In addition, in big metropolitan centres, the rise in land prices

has been the most rapid. The rise in land prices has been aggravated by speculation, which in turn has been fuelled by black incomes (Kumar 1989).

Mehta and Mehta (1987) observed that the demand for housing has been rising in Ahmedabad, the metropolitan city of India due to expansion of economic activities, growth of population, the process of rapid urbanization, and speculative activity. These factors, which together push up prices of land and also construction costs, limiting the supply of housing, thereby, leading to rising demand for housing. In another way, the rising demand for housing in an urban area is only due to commercialisation process of housing market. The establishment of commercialisation process is very often supplemented by the commodification of Indian housing market.

The demand for housing is attributed to rising permanent income of the household in the urban areas of developing countries (Friedman 1957). The same reasoning is supported by the Malpezzi and Mayo (1987). They argued that current income is inappropriate while estimating the demand for a durable good. So, the permanent income is more closely related to the demand for housing. This is because housing consumption depends upon the long-run decisions of the households.

A study by Gupta (1985), on urban housing in India for the period from 1960-01 to 1970-71, focused on the demand for housing with consideration of three major factors, that is, urban population, household size and household income. The result shows that the demand for housing is positively related to the growth of population, household size and household's income. Supporting to Gupta's findings, the age of the household's is considered as the potential determinant of the rising demand for housing in India (Real Estate Plus 2007). A critique, by malpezzi and mayo (1987) pointed out that the demand for housing in developing countries is supplemented purely by a set of demographic characteristics such as household formation, age and household sex also.

In another study, Berg and Berger (2005) found that changes in economic policy have resulted in a more market driven demand for housing investment in Sweden during 1980s and 1990s. Further they examined the investment theory of Tobin's Q with respect to housing investment by using the quarterly data from 1993 to 2003. They used policy

changes, as dummy variable and used investment theory of Tobin's Transparent Q theory. Q theory implies that the ratio of housing price inflation to construction price inflation in relation to housing investment (housing starts). The result of their study indicated that a high degree of correlation between Q theory and the logarithm of housing investment. It is clear that when asset price inflation exceeds the construction price inflation ($Q > 1$), signaling the presence of high demand for housing outpaced the supply of housing. In this situation, the owner-occupied household or house builders will be more interested to raise the investment on housing asset with an expectation of getting high profitability in the long run.

Siedenburg (2007) in his study for the case of the US analysed the relationship between housing boom and financial deregulation, based on quarterly data spanning from the 1960s Q_1 to 2006 Q_1 . He found that the housing market boom (high residential investment and housing price) depends on the degree of financial deregulation and the flexibility of the mortgage lending market. The liberalized financial sector helped to sustain the boom in residential investment by providing increased financing to many marginally qualified borrowers through innovative mortgage backed by loan agreements (securitisation). Rising housing price implies larger collateral values for homeowners, which enable them to increase consumption expenditures. In this context, Chandrasekhar (2007) has pointed out that the soaring demand for housing in the urban areas was due to the lower interest rates on housing loans in India. The rapidly growing Indian economy, along with increasing income levels, rapid urbanization and changing lifestyles, have led to a boom in the premium segment of the real estate market. And also a favourable government policy, which is more suitable for the entry of financial institutions into the housing activities for the purpose of providing loans, has facilitated the growth of housing in urban areas.

The study by Leung (2004), housing price inflation is the result of the liberal lending structure of the residential mortgage market. It is in a sense that increased competition among the financial institutions has lowered the interest rate on housing, thereby resulting in a greater demand for housing. They may also create financial instability, because a fall in real interest rate is attributed to incidence of high housing price inflation, thereby leading to high general inflation in the economy. Therefore, the rational investors would be interested to invest their whole portfolios on real estate not only because of low real interest rate in the bank but also low-risk involved in the real estate sector.

Like the stock market price bubble, there are periods of housing price bubble. A housing price bubble is a part of economic bubble. It is characterized by rapid increase in the valuation of real residential property (overheating i.e., housing demand is far high than housing supply) or overshooting of the residential prices. In a usual sense, bubbles characterise the situation of rising housing prices, followed by the falling housing price levels (overcooling). Bubbles arise, when the investors purchase the residential houses at present and speculate selling activity, with an expectation of getting high returns in the future. As a result, the current high demand exceeds the supply of housing due to the inelastic nature of housing supply in the short run. The phenomenon leads to rising housing prices in the urban areas. Ultimately, in the future, there will be huge accumulation of housing stocks available for selling purposes, which outweighs the existing demand that leads to bursts (downside of housing prices) in housing price bubbles. Housing price bubble, on the other hand, shows the upward divergence of actual housing prices from the fundamental equilibrium price. Alternatively, when speculation raises the housing price to an unsustainably level is described as housing price bubble. The housing price comprises both fundamental and speculative prices. Although, the fundamental price is usually unobservable, however, one can still measure long-run fundamental equilibrium price with consideration of shadow price. The evaluation of speculative price on the property market is based on the adaptive expectations, which can be quantified by taking the past information of housing price level (Bianchi and Jehiel 2006). Joshi (2006) has clearly identified asset price bubbles in the Indian housing market, based on the monthly time series data from April 2001 to June 2005 by using VAR model. His findings show that housing price is significantly more sensitive to permanent interest rate shock than to credit growth and income growth and the extent of misalignment of housing price is well equilibrated in Indian housing market. Zbib (2006) looked at the housing price bubble in Sweden with reference to market and non-market fundamentals. The result obtained from his study is that the variation of housing price is not only attributed due to market fundamentals alone but also in a certain degree, supplemented by non-market fundamentals (including speculation and asymmetric information). Similarly, Guntermann et al. (1943) have stated that the demand for owner-occupied single family home is evidently a composite of price, income and price of alternative assets; in which investments in home are determined to some degree by attempts to reap benefits from speculation in a situation where prices are on the increasing mode.

On the other hand, supply of housing was getting curtailed as a result of the operation of the Urban Land Ceiling Act (ULCA 1976) and the various rent control laws, which produces strong impact on housing prices in the urban areas of India (Kumar 1989). DiPasquale and Wheaton (1999) clarifies that housing is a durable good, housing supply is determined not only by the production decision of builders of new units but also by the decisions made by owners of existing housing (and their agents) concerning conversion of the existing stock of housing units into the new housing units, provided both the owners and builders are operating under the joint agreement. Here, there is full risk on the part of the owners of existing housing and no risk for the builders. Because house builders are supplying materials to the owner of house for the construction of buildings without spending any money from their own pocket. So, there is no question of business-risk on the part of housing builders. Again, Poterba (1984) suggests aggregate housing supply depends on its own output price, and the real price of housing structures including construction costs and land prices. Topel and Rosen (1988) argued that rising costs of construction reduces the housing production, and then resulting in shortage of housing supply in the short run.

Apergis and Rzitis (2003) examined the dynamic effect of specific macroeconomic variables such as housing loan rates, inflation, employment, and money supply, on prices of new housings sold in Greece for the period from 1981 to 1990 by using the vector error correction mechanism (VECM) technique. The impulse response results of their study found that housing loan rate is an important variable with the highest explanatory power for the variation of housing prices, followed by inflation, and employment, while money supply does not seem to have substantial impact on housing prices. Another study by Miller and Peng (2004) analysed the dynamic determination of the volatility of single-family home value appreciation in USA, based on large panel data set from 1990 Q₁ to 2002 Q₂, comprising quarterly based price indices for single-family home for 277 metropolitan statistical areas (MSA). They have provided strong evidence on the complicated effect of exogenous change in population growth rate on the volatility of the home value appreciation rate in metropolitan urban areas of USA.

The study by Egret and Mihaljek (2007) analysed the determinants of housing price in eight transition economies of Central and Eastern Europe (CEE) and nineteen OECD countries. Housing price behaviour is explained by conventional market fundamentals: GDP per

capita, real interest rate, housing credit and demographic factors as well as some transition specific factors, in particular institutional development of housing markets, exogenous demand, and housing quality effects (including housing amenities). The result of their study found that the housing price responds positively to income and wealth of the households, exogenous demand and negatively to interest rate on housing loans. They strongly argued that the situation of rising housing price is the result of increasing concentration of economic activities, especially due to the booming service sectors in the urban areas of CEE countries. Another study by Allen, Amano, Byrne and Gregory (2006) provided a detailed relationship between city housing prices and city specific variables across eight metropolitan cities of Canada for the period from 1981 to 2005. The study found that city specific variable: union wage level (cost of labour) tends to be positively related to city existing-housing prices. Another study by Abraham and Hendershott (1994), using U.S. data set, found that local variables such as construction costs, employment growth, and income growth are significant in predicting housing prices across metropolitan housing markets.

The study by Jud and Winkler (2002) examined housing price growth dynamics in a sample of 130 metropolitan areas across the United States during 1984 to 1998. They found that real housing price appreciation is positively influenced by growth of population, income expansion, construction costs, and negatively responded to interest rate on housing loans. The stock market appreciation is also found to impart a strong current and lagged wealth effect on the growth of housing prices. In addition, the housing price appreciation is attributable to location as well. Similarly study by Chen and Patel (1998) examined dynamic causal relationships between house price and its five determinants, including total household income, short-run interest rates, stock price index, construction costs, and housing completion in Taipei new dwelling market. Utilizing Granger causality tests, variance decomposition, impulse response functions based on the vector error-correction model they found that all five determinants Granger cause house prices, but only house prices and stock price index have a bilateral feedback effect. The variance decomposition results suggest that disturbances originating from current house prices inflict greatest variability (66 per cent of variance) to future prices. The remaining 34 per cent of the variance is explained by the five determinants. On the supply side, the construction costs and housing completions together explain about 10 per cent of the house price variance. On the demand side, short-run

interest rates, total household income and stock price index explain about 24 per cent of the variance.

In another study by Paz (2000) obtained the empirical evidence for 71 Spanish province capitals and bigger cities with more than 100,000 inhabitants. Applying a Generalised Least Squares (GLS) procedure based on the panel data sets from 1987 to 1999, he suggests that rising housing price is attributed only due to demand determinants such as wages of labour, migrants, and productive structure. In addition, housing price in the urban areas depends on the market characteristics such as vacancy level, land availability, costs of construction, economic growth, and industry, and service sectors activities located inside urban areas. Muellbauer and Murphy (1997) also stressed that shortage of supply factors, i.e. land on account of expansion of cities, which increases the value of land, tending the high housing prices.

The study by Abelson, Joyeux, Milunovich and Chung (2005), explained changes in real housing prices in Australia from 1970 to 2003. Applying Co-integration Test and Error Correction model to see how housing price changes in the long run as well as in the short run, they found that in the long run housing prices are significantly and positively related to real income and to the rate of inflation as represented by the consumer price index. They are also related significantly and negatively to the unemployment rate, mortgage rates, equity prices, exchange rate (as a proxy for exogenous demand) and the housing stock. Employing short-run asymmetry error correction model, they found that there are significant lags in adjustment to equilibrium.

Eaton and Eckstein (1997) predicted that the biggest cities provide the best environment possible, one that favours learning, work force education, and growth prospectus, which together facilitate the creation of human capital, basically, concentrated in the urban areas. Therefore, higher wages for worker are accounted by the higher levels of human capital that push up the housing prices in the urban cities. Another study by Sinai and Souleles (2003), argued that owner-occupied housing as a hedge against rent risk, which alternatively, increases the housing prices in the Metropolitan Statistical Areas (MSA). They found that at the MSA level, a one standard deviation increase in rent variance increases the house price-to-rent ratio by 2 to 4 percent. This implies housing market rent risk actually increases home

ownership rates and housing prices. Because, the most significant risk in the housing market is that homeowners are exposed to fluctuations in housing values. However, homeownership also provides a hedge against fluctuations in future rent payments. Households with longer expected lengths of stay that live in markets with larger rent variances should have higher probabilities of homeownership, and house prices in those markets should exhibit higher variations relative to variations in rents. It also means more rent risk also leads to greater housing price risk. In this context, Stein (1995) argues that owner-occupied and rental housings are imperfect substitutes. The households those who are staying in rented housing, are worry about the timing of purchase of housing because of adding high transaction costs of frequent moves between owner occupation and rented houses. Another study by Abelson, Joyeux, Milunovich and Chung (2005), explained changes in real housing prices in Australia from 1970 to 2003. Applying Co-integration Test and Error Correction model to see how housing price changes in the long run as well as in the short run, they found that in the long run housing prices are significantly and positively related to real income and to the rate of inflation as represented by the consumer price index. They are also related significantly and negatively to the unemployment rate, mortgage rates, equity prices, exchange rate (as a proxy for exogenous demand) and the housing stock. Employing short-run asymmetry error correction model, they found that there are significant lags in adjustment to equilibrium.

The study by Kapur (2006) established a co-relationship between housing demand and financial liberalization.³ The financial liberalization, which reduces nominal interest rate through the market forces where too much competition and flexible regulation takes place among a large number of financial institutions in the economy. He points out that increased competition among the institutions engaged in providing financial assistance for housing have also eased both the accessibility and affordability factors thereby resulting in a greater demand for housing in the metropolitan areas. Similarly, Glaeser, Gyourko and Saks (2002) suggest that zoning plays a significant role in urban housing market in the United States. The word 'zoning' implies the government's explicit and implicit interventions in the form of stamp duty and delay in project approval on the land controls. So, houses are expensive

³ The financial liberalisation means there are no quantitative restrictions on the movement of financial capital across countries.

because of artificial limits on construction created by regulation of new housing. Thus, zoning is a kind of tax on the housing builders those who want to construct houses in the urban city. According to the classical approach, high cost locations generally have either very attractive local amenities (great weather or good schools and hospitals etc) or strong labour markets. In this place, the cost of housing is much higher than the physical cost of construction.⁴ They also argued that houses are expensive because land is expensive. However, there is a great deal of demand for certain areas, but land, by its very nature is limited in supply. As such the prices of housing are at a higher level. In this context, the neo-classical approach argues that there is plenty of land in high cost areas and in principle, new construction might be able to push the cost of houses down to the level of physical construction costs. Therefore, the barriers to building create a potentially massive wedge between prices and building costs.

Feldstein (2007) in his study found that the combination of lower mortgage rates and widespread refinancing with equity withdrawals led to the rapid rise in housing prices in the US. The process of refinancing against the mortgage was heavily promoted by banks and mortgage brokers in the US.⁵ A massive amount of such refinancing and equity withdrawals could lead to surge in housing prices.

In another study, Cho (2005) found that the soaring housing prices in Korea is due to macro economic factors such as low interest rate, and inflation rate, despite there is presence of micro economic factors like 'chonsei system' (i.e. total rent as a unique system in Korea). His emphasis on theoretical argument that (check it) rent keeps on rising at a more rapid rate, which will lead to rising demand for housing, thereby soaring housing prices in Korea.

The study by Hui and Wong (2007) investigates the impact of supply of subsidized sale flats on housing prices in Hong Kong, and their cause-and-effect relationships. Using quarterly

⁴ The cost of housing means the total occupancy cost including costs of construction, land prices, cost on borrowings, user costs and other costs, where as the physical cost of construction include the land price of the houses, because it is physical in nature.

⁵ The process of refinancing implies someone who obtained a mortgage from banks at 7.7 per cent interest rate in 1997 could refinance it at a 5.8 percent rate in 2003, provided the interest rate prevails at 5.8 per cent in the respective banks and extract substantial cash at the same time.

data for the period 1978-2003, they found that private property prices move independently of the supply of subsidized flat sales and that such supply does not “Granger Cause” private housing prices. Finally, the regression analysis shows that the stock of private domestic accommodation, transaction volume of private residential flats, household income, and unemployment rate are important for property market behaviour. They also pointed out that the availability of public units sold at heavily subsidized prices in the private market as a substitute did not pose a direct and serious menace to the entire private housing sector.

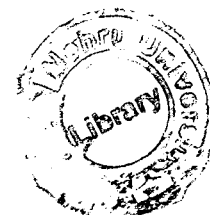
Violand and Simon examined the impact of real estate brokers on the price of residential properties sold in 2005 in twelve French cities (See: www.ssrn.com). The results indicated that brokers increase the prices of properties even though they appear to have heterogeneous properties across cities. The impact of brokers also varies by property size and age of clients. One and two room apartments have higher selling prices when sold through brokers. Buyers in their thirties and forties who seek the assistance of brokers pay more for their homes whereas older sellers obtain higher prices from broker intermediation.⁶

1.5.2 Micro Economic Studies

The traditional micro economic theory points out that individuals are considered to select different types of houses according to their preferences and purchasing power and also the price of alternative assets. Despite, the non-traditional theory shows that the individual’s demand for housing depends on housing characteristics such as house size, floor levels, housing structures and location. Similarly, housing agents are liable to supply housing units subject to costs of production and profit of the business (Lancaster 1966). Factors that affect individual households’ demand for and supply of housing in most Least Developed Countries (LDCs) and developing countries are supposedly different from those of Developed countries.

⁶ The role of broker is just like a screening role between housing buyers and sellers. The housing buyers those who do not have any knowledge about the housing market, they have to take the assistance of brokers as mandatory to give commission to the broker in order to reduce the transaction and searching costs, and time cost also. On the other hand, the older sellers even if they have sufficient knowledge about the housing market situation, will be able to reap more profits through intermediation.

TH-17897



In India, studies examining the influence of market forces on the determinants of demand for and supply of housing appear to be scarce. There have been some few recent attempts studying the house price behaviour at the micro level. Krishna (1982) has observed that 'the extent of builder-developer organization is so limited that housing is usually supplied by the person who demands it. This is done by purchasing materials and hiring professional services. The general level of living in our country is so low and financial means for housing are so poor that most residential house owners can not afford to deal with real estate markets for capital gain as it happens in the developed countries'.

A study by Gopikuttan (1988), empirically examined determinants of demand for housing in the rural areas of Kerala based on cross-sectional data and found that the demand for housing were positively correlated with households' per capita income, asset value, education, and employment and negatively correlated with the family size. Hence, Augusty (1990) suggested that the demand for housing in the urban areas of Kerala, state of India is affected not only due to micro economic fundamentals but also due to the transformation of the traditional housing sector into modern housing sector.⁷

In a recent study, Gopikuttan et al. (2006) has shown that the demand for housing exceeds the supply of housing due to the inelastic nature of housing supply. There is rising demand for housing only because of easy financing sources. Finance for meeting the rising demand for housing comes from a variety of sources: remittances from abroad, which is a part of the savings of non-resident of India, disposal of inherited wealth (including land and jewellery), windfall income from real estate business, surplus income generated in the plantation sector and loans from the Government and co-operative sectors. In addition, the increasing investment on housing is not only backed by the sources of finance but also attributed by demonstration effect as well as fear of inflation.

Hunaiti theoretically analysed that the level of housing demand depends on factors such as population growth and demographic structures (See: www.un.org). The same phenomenon argued by Krishna (1982), and he also hypothesized that the individual demand for housing

⁷ The transformation of traditional housing sector into the modern housing sector implies when the house owner or builders are using the pucca materials such as bricks, Iron rod, Asbestos etc instead of using kutcha materials such as the natural sand, mud and thatch.

in India is determined by demography characteristics such as household age, size, and sex, and economic factors, viz. economic growth, population, and interest rate, and also by the socio-logical factors (households' preference).

In another study, Garza, Dar and Ocerin (2000) employed the principal components technique to establish a link between household income and demand for housing characteristics in Cordoba. The data used were generated through a small sample survey of three real estate agencies of Cordoba on 26 characteristics of 1011 houses located in 31 zones between January and March 1997.⁸ They have decomposed the total housing demand into a set of housing characteristics among different income groups such as high income and low-income groups. There are some housing characteristics that are demanded by all the groups although with varying different degrees of preferences. In their study, it is found that the most striking disparity of demand for housing characteristics obviously lies between the high-income and low-income groups. The most modern and newly built houses with durability and general outlook are, by and large and exclusively demanded by high-income stratum while the low-income are primarily concerned about the age of the house rather than space and general outlook.

On the supply side, study by Augusty (1990) has shown that transformation of housing market in terms of organization, replacement of traditional materials by factory produced materials increases the costs of production, which has constrained the supply of housing units in the urban areas of Kerala. Similarly, Gopikuttan et al. (2006) stated that supply of housing units in Kerala not only depends on construction costs and land price but also on other qualitative factors i.e. favourable government policy related to housing construction.

In another front, the study by Bourne (1981) stressed that rising housing price is the result of location, quality, and preferences of households'. Kundu et al. (1997) found that land price rise was observed in the polycentric Lucknow urban city of India (new peripheral area) compared to the old main city centres where the process of decentralization is taking place and he critically analyzed that the rise in land prices in urban city were only attributed to macro and micro socio-economic factors such as, availability of economic opportunities, the

⁸ The characteristics or nature of houses include housing amenities facilities, outlook, location, space, improvements, comforts, elevation, parking, age and others etc.

level of urban services and state intervention through land acquisition. Such rising land price gets reflected in the rising housing prices in the polycentric city of India.⁹

1.6 Scope of the Present Study

From the preceding comprehensive survey of literature, it could be noted that in-depth analysis, theoretical or empirical, on the economics of housing in India is rare. The possible explanation is that there is lack of relevant secondary information and severe constraints to the collection of data, factors, which prevent the researchers from investigating into the gravity of the real housing problems in India. There hardly exists a comprehensive study, which looks at the housing price bubble and land price changes in the Indian context. As per the few existing studies in India, the housing price bubble is attributed mainly to the speculative market fundamentals (Joshi 2006). The market fundamentals include both demand and supply side forces, which appear in terms of households' disposal income, population growth, interest rates, inflation rate, land price, wage rates and credit availability. The surge in land prices in India across all urban cities is explained to be solely due to market fundamentals that lead to housing price rise (Kundu et al. 1997 and Mitra 1990). However, review of overseas literature shows that housing price rise is not only due to market fundamentals but could also be due to non-market fundamentals (Hu, Su, Jin and Jiang 2006, and Zbib 2006). For instance, the housing price behaviour in a developing country, China shows that the non-market fundamentals like speculation (hoarding) and asymmetric information (moral hazard) were responsible for housing price rise rather than conventional market fundamentals (Hu, Su, Jin and Jiang 2006). However, no serious attempt has been made in India to examine the urban housing price behaviour. Apart that, the causal relationships and detail sources of dynamics between housing price and its determinants have not been captured, particularly in the metropolitan cities of India, a topic that has been extensively covered in other countries (Chen and Patel 1998, Egret and Mihaljek 2007, Jud and Winkler 2002, and Paz 2000).

Against the background, the present study is motivated to gauge the urban housing price behaviour in India due to specific fundamental factors. More precisely, it examines the

⁹ See: Kundu, A. et al. (1997), 'The concept of Polycentric city', which is used in his primary analysis.

determinants of urban housing price changes in India as housing price increase in an urban area could be attributed to various factors. First, the gradual economic reforms provide incentives to domestic residents in the form of legal migration to foreign countries because of availability of various opportunities. The resultant huge inflows of remittances tend to become the savings of such households, which in turn raises the demand for housing and leads to increase in housing prices (Gopikuttan et al. 2006). Second, domestic factors like internal migration of people from rural areas to urban areas across states or within regions of the country in search of job opportunities push up demand for housing in the urban areas. In a country like India, the primary sector gets neglected because of government ineptitude. When the underdeveloped agriculture sector is unable to absorb unskilled surplus labour, they migrate from rural areas to urban areas in the search of work. This flow process leads to rapid increase in the urban population. Increasing urban population and the rising space of urbanization lead to increase in demand for housing. Increasing demand for housing leads to rising housing prices on account of the inelastic nature of housing supply in the short run (Gopikuttan 1988). Third, financial liberalization increases the entry exposures of overseas financial institutions into the domestic economy, which makes an easy process of loans available to the house builders as well as to the end consumers at cheaper rate. As a result, heavy demand for housing activity has emerged in India. Similarly, rising housing prices might decline by excess supply of housing in the long run (Gupta 1985). Fourth, the transition specific factors such as institutional development, better urban governance and locational advantages are the vital factors responsible for the rising demand for housing in the urban areas. Out of these transition specific factors, the locational quality in particular is the most important factor in making the high degree of housing price differences across regions of the urban city. The location quality factors would include better road, transport, educational institutions, hospital, highway and airport etc. Similarly, the land is one of the factors in the process of housing construction. It constitutes the single largest item of expenditure on housing. The quality of land plots in terms of locational advantages makes the variation of its own unit prices, thereby it limits housing supply and makes larger housing price difference across the cities (Gopikuttan 1988). Our additional motivation is to understand the implications of Government policy especially for the urban poor in India.

The varied possible research questions for a comprehensive analysis of housing price boom would include the following: Why housing price is booming in the urban areas of India? What are the determinants of housing price acceleration in the urban areas? Are they solely due to market fundamentals or non-market fundamental too? Is the role of the Government sufficient to control the tendencies of rising housing prices in the urban areas? The present study is an attempt to seek answers to such questions.

1.7 Objectives of the Study

- To examine the housing price behaviour in India in general with a special reference to Bhubaneswar, capital city of Orissa;
- To analyse the determinants of demand for and supply of housing in Bhubaneswar and;
- To assess the role of the Government in delivering housing services for households of the urban poor.

1.8 Hypotheses

The study, therefore, hypothesises that housing price boom in India is influenced by the determinants of demand for housing: such as rise in households' per capita income, population growth, low interest rates, price of alternative assets (equity), taste and preferences, locational fixed quality factor and supply of housing factors: such as availability of credit, costs of construction (including material prices plus labour price) and land prices, stamp duty, transaction cost and Promotional cost (product advisement cost).

The study tests the above hypothesis in the Indian context in general and also pins down the analysis to the Bhubaneswar city.

1.9 Data, Methodology and Chapter Scheme

1.9.1 Data Sources

The present study basically relies on secondary sources of data such as Reserve Bank of India (RBI), National Building Organization (NBO), National Housing Bank (NHB),

Census Report, Government of India, World Bank Report for the general level of analysis at the macro level. The secondary sources of information are supplemented with primary sources by conducting a sample survey in Bhubaneswar, the Capital City of Orissa. The study makes an attempt to examine the determinants of demand for and supply of residential housing at the micro level. On the demand side, we used multi-stage stratified random sampling to select the respondents for the survey. The primary informations were randomly collected from selected sample households' in the urban area of Bhubaneswar. From Bhubaneswar, 150 sample residential households were surveyed from three selected areas; Jaydev Vihar, V.S.S Nagar and Saheed Nagar. Fifty samples were canvassed from each of the three areas. Fifty sample households of the Sahid Nagar were from the Slum areas, regarded as one of its underdeveloped regions. The rest of the samples from Jaydev Vihar and V.S.S Nagar were from developed areas. All these three areas belong to the Bhubaneswar, Municipality Corporation.

On the supply side also, random sampling technique was used for the survey. Residential price data was collected from a total of 18 homeowner-cum-contract construction builders and land prices data were collected from the two land developers in Bhubaneswar. A copy of the questionnaire is given in the Appendix at the end of the dissertation.

1.9.2 Analytical Methodology

Our study uses time series methodology in order to examine housing price behaviour in India in general. Time series techniques like Cointegration Test and Vector Auto Regression (VAR) models are employed in the current study to test the above hypotheses. Similarly, the techniques like Coefficient of Variation, Mean, Skewness and Kurtosis, Quintile Distribution and Multiple Regression Test are employed in the case of determinants of demand for housing at the micro level in order to know the degree of dependency relationship between dependent and independent variables as well as the relative importance of each independent variable on the dependent variable i.e. housing demand. In the study, the households' expenditure on housing is used as a proxy for housing demand in urban areas (Tiwari and Parikh 1997). And the variables such as average households' monthly income levels, plinth area; average households size, average floor level and dummy variables (for the quality locations) are considered as explanatory variables. On the other hand, the

study also uses descriptive statistics such as Compound growth rates technique, frequency table, some percentage, and ratios in the case of determinants of supply of housing at the micro level.

1.9.3 Chapter Scheme

The study has total six chapters. The chapter 1 deals with the conceptual framework and problem identification of the Indian housing market. The chapter 2 analyses the housing scenario and policies in the developing world in general and in India in particular with an emphasis on Orissa. The chapter 3 examines the housing price dynamics in India. The chapter 4 examines the determinants of demand for housing: A micro evidence; and the chapter 5 also examines the determinants of supply of housing at the micro level. Finally, the study gives conclusion and policy implications.

APPENDIX 1.1

Aspects covered in the Survey Questionnaire on Housing Demand Determinants in Bhubaneswar

1. Households Characteristics including caste, religion, family size, occupation levels, age, sex, and education levels in both developed and under developed regions.
2. Households' assets including physical durables and livestock including animals
3. Ownership pattern of houses
4. Types and characteristics of houses including pucca, semi-pucca and kutcha houses, and source of housing amenities like latrine, drinking water, and electricity in both areas.
5. Some motivation factors of households in both regions
6. Total costs of housing construction structures at different stages in urban area.
7. Aspects of Government intervention under different social housing schemes
8. Sources of financing housing in both the regions
- 9a. Own sources of funds for financing housing construction including savings, pension, sale of assets, subsidies and grants and others
- 9b. Borrowed funds of financing building construction from various formal and informal and other sources.

APPENDIX 1.2

Aspects covered in the Survey Questionnaire on Housing Supply Determinants in Bhubaneswar

1. Name of the housing construction agencies in Bhubaneswar
2. Number of houses constructed by these agencies across locations, and cost per house over the period, 1990-1995 to 2005-07.
3. To whom the building agencies sold the houses?
4. Have they built houses for rent or other purposes?
5. What are the pattern for costs of construction and land prices situation in Bhubaneswar?
6. What about the construction process, how and in which way builders are building the pucca houses in Bhubaneswar?
7. What about the housing fashion in terms of changing preferences of the customers towards demand for pucca houses?

Chapter 2

HOUSING SCENARIO AND POLICIES

2.1 Introduction

This chapter presents an account of housing scenario and an overview of the evolution of housing policies in the developing world in general and in India in particular with an emphasis on Orissa. Data for this chapter are collected mainly from reports of international agencies such as World Bank, UNCHS (United Nations Centre for Human Settlements), National Building Organisation (NBO), Central Statistical Organization (CSO) and Census of India, and Five Year Plan documents of the government of India (on housing policy and housing programs).

This chapter comprises three sections. The following section presents an overview of housing scenario in the context of developing countries and with a specific reference to India at the national and state levels, and section 2.3 provides the housing policies in the countries. Section 2.4 concludes.

2.2 Housing Scenario

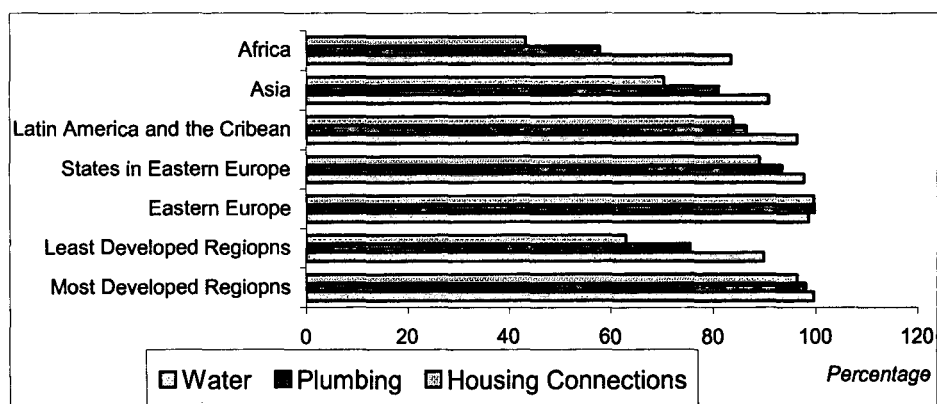
2.2.1 International Housing Scenario

The twentieth century has been called the age of urbanization (UN 2005a). At its commencement, the world had been predominantly rural; only 8 per cent of the population lived in urban settlements. By 1950, the urban population had risen to 29 per cent and by 1990 to 45 per cent. Now it is estimated to be around 50 per cent. In the most developed countries, urban population represented close to 75 per cent of the total population, whereas in less developed countries, the corresponding population is only 42 per cent (*ibid*). According to 2007 estimates, one billion persons in the world are living in slums, and one

hundred million of them are lacking any sort of shelter with basic services.¹⁰ Asia already holds over half the slum inhabitants of the world - 581 million inhabitants; Sub-Saharan Africa holds 199 million, and Latin America 134 million. The annual growth rate of slums in Asia varies across the regions, but it is still around 2 per cent per year; whereas in Sub-Saharan Africa it reaches 4.53 per cent, in Latin America and the Caribbean it is much lower, around 1.3 per cent (UN Habitat 2005).

Global demand for housing is expected to increase at about 2.5 per cent per annum through 2011, generating demand for the construction of approximately 60 million new housing units. China accounted for more than one-fifth of the total housing stock. More than one-half of the world housing stock was spread over Latin America, Eastern Europe, the Africa/Mideast region, and developing countries in Asia other than China.

Figure 2.1: Access to Urban Services by Regions, 2004 (Percentage)



Source: UN, 2005b

It has been estimated that globally one billion persons still lack adequate shelter and basic services. The shelter conditions of the poor are deteriorating: Around 1.3 billion people do not have access to clean water and also live on less than a dollar a day; and 2.6 billion persons do not have access to basic sanitation. According to UN estimate, over 33 per cent of the population in developing countries are houseless and around 100 million people live

¹⁰ A slum area is one in which the dwellings have the following features: located in risk areas, built with perishable products, lacking in space, without access to the supply of drinking water or adequate sanitation, and uncertain conditions regarding tenure

in a state of absolute homelessness, while in excess of one billion persons are forced by circumstances to reside in desperately inadequate housing conditions which threaten their health, security, safety and dignity. It is observed that in the more developed regions of the world the needs for drinking water, plumbing, and housing connections are practically all covered while in the more backward regions, these are not adequately served (Figure 2.1).

2.2.2 India's Housing Situation

The current housing situation in India reflects the key aspects of urbanization and marginalisation. It is important to note that housing needs are largely driven by population size and demographic changes. After independence, India experienced rapid rates of population growth, a process which has somewhat been stabilized in recent decades. The number of households has been growing largely due to an increase in the number of, and nucleation of families accompanied by the important phenomenon of urbanization (Rakeshmohan 1966). The share of urban population in total population has increased from 20 per cent in the 1950s to 27.8 per cent in 2001 (Government of India 2007). The main cause for increasing urban population is massive population flow from rural to urban areas. This process leads to rapid growth of population in the cities.

It is significant that against the annual population growth rate 2 per cent in the country, the number of residential buildings has increased at an annual rate of only 1.5 per cent. One Australia or Nepal, equivalent to a population of 17 million people, is being added to the Indian population annually with the uncontrolled population explosion and the rapid pace of urbanization; the problem of providing shelter to the poor is bound to accentuate in the coming years.

Table 2.1 shows an increase in the share of urban population in India during the twentieth century. Mega cities, i.e., cities with more than ten million population, share almost 40 per cent of the urban population. Another 30 per cent is shared by other class I cities - those with more than one million population.

**Table 2.1:
Trends in the Share of Various Classes of Cities in Urban Population in India**

Category (Population Size)	1971	1981	1991	2001
Class I (> 100 000)	57.2	60.4	65.2	73.7
Class II (50 000- 1000 000)	10.9	11.6	11.0	9.4
Class III (20 000 –50 000)	18.0	14.4	13.2	11.0
Class IV (10000-20000)	10.9	9.5	7.8	4.2
Class V (5000-10000)	4.5	3.6	2.6	1.3
Class VI (< 5000)	0.4	0.5	0.3	0.2

Source: National Building Organization (NBO), 2006.

One of the consequences of growth of the urban population in India is the increasing demand for housing services. Like any other developing country, India too is presently passing through a phase of acute housing shortage. According to the National Building Organisation (NBO 2006) estimates, in 2001, there was a shortage of 24.7 million dwelling units in the country out of which, shortage of 10.6million existed in the urban sector and the remaining 14.1 million units in the rural sector. The picture is abysmally dismal at the lower end of the economic ladder. It means housing shortage is relatively high say 21.78 million and 2.89 million among the social categories like Economically Weaker Section (EWS) and Low Income Group (LIG) than Middle Income Group (MIG) and High Income Group (HIG) (0.04 million) in India (Government of India 2007). According to the Census (2001) estimates, the urban houseless population increased from 1.95 lakh in 1961 to 7.89 lakh in 2001. The houseless populations are those population who do not have own houses and are residing on the road, near to bridges (sometimes under the bridges) and railway stations. The surge of urban houseless population is due to surge in housing prices including rents on rented houses in India. The houseless population is engaged mainly in informal sector occupying of street vendors in urban areas of India.

Despite the housing quantity problem in India, the polarization of growth towards metro cities and mega cities poses a great challenge to the provision of housing in the urban areas,

which are rapidly becoming areas of crowded habitations and lacking in basic amenities. This fact is reflected in the increasing proportion of the slum population, which constitutes 23.1 per cent of the urban population in 2001 (Government of India 2007). According to NBO (2001) estimate, the total slum population was 40,297,341 out of which 21,489,015 males and 18,808,326 females. The National Sample Survey Organization (NSSO 2002) shows that the total urban slum population was 36.79 million in India.¹¹ According to the NSSO report (2002) estimates, about 93 per cent, 69 per cent and 66 per cent of the urban slum households had accessed to housing amenities such as safe drinking water, electricity and toilet facility in India. In fact, the proportions of the slum population in Mumbai, Delhi and Calcutta have been rapidly rising and constituting around 40 per cent; Mumbai alone has reached almost 55 per cent of the total population, according to the latest National and Urban Housing Habitat Policy report (NUHHP 2007). As per the World Bank (2007) report, 'slums are the neglected parts of the cities where housing and living conditions are appallingly lacking'. In other words, it is the product of failed policies, bad governance, corruption, inappropriate regulation, dysfunctional land markets, unresponsive financial systems, and a lack of fundamental political will. It ranges from high density, squalid central city tenements to spontaneous squatter settlements without legal recognition or rights, sprawling at the edge of the cities.

2.2.3 Housing Situation in Orissa

The proportion of urban population to total population in Orissa increased from 11.79 per cent in 1981 to 14.97 per cent in 2001 (Government of India 2000). As a consequence, the demand for housing has increased to an unprecedented level in urban areas of Orissa. The housing situation in Orissa is found to be very grim and alarming. According to 1991 census, the state had all total 5,983,250 households and the total number of residential houses including shop-cum-residence was about 5,300,570. This shows a shortage of 682680 (11.41 per cent) residential houses. Out of these, a shortage of 254386 housing units has arisen in the urban areas of Orissa. In respect of rural areas the shortage was estimated to be 633200 units i.e. 12.25 per cent (Government of Orissa 2002).

¹¹ The World Bank Report (2007) states that the total slum population in India was about 41 million.

Table 2.2 shows the comparative analysis of housing situation in the state of Orissa as against the national average during 1991-2001. It is interesting to note that rural housing shortage is relatively higher than the urban area in Orissa. The similar trend is observed at the national level. So the volume of shortage is comparatively more in at the national level than the state level. This implies both state and central government have not understood the nature of rural housing problem.

Table 2.2:
Comparative Perspective of Housing shortage in Orissa as against National Average
(In Million)

Year	Orissa			India		
	Rural	Urban	Total	Rural	Urban	Total
1991	0.71	0.28	0.99	14.7	8.2	22.9
2001	0.62	0.37	0.86	14.1	10.6	24.7
2007	NA	0.50	NA	NA	24.71	NA

Note: NA shows not available

Source: National Building Organisation, 2006

According to the Census (1991), the proportion of households occupying pucca houses has increased from 33.7 per cent in 1981 to 36.24 per cent in 1991 in rural areas. A similar trend is noticed in the case of semi-pucca houses in the rural areas. The main reason behind the conversion of semi-pucca to pucca houses is protection from natural calamities in rural areas. However, it is found that 37.7 per cent of the households lived in one or two room dwelling units in rural areas. Only 2 per cent of the households possessed five room houses in rural areas. Similarly, 30.6 per cent of the households had two room houses in urban areas. Only 3.6 per cent of the households five room houses in urban areas of Orissa. This shows that more crowded inhabitants and housing shortage in rural areas than in urban areas. This also partly reflects low levels of standard of living of the people in Orissa state.

Table 2.3 shows the percentage distribution of households having access to basic housing amenities like safe drinking water, electricity and toilet facility during 1991-2001 in urban areas of India in general and Orissa in particular. About 73 per cent of the households had access to safe drinking water by 2001 as compared to 63 per cent in 1991 in Orissa. The similar the increasing trend is achieved in the case of amenities such as electricity and toilet.

At the national level, on the other hand, about 90 per cent of the households had access to safe drinking water by 2001 as compared to 81 per cent in 1991. Although more number of households expose to housing amenities in urban areas of India, yet another significant positive achievement is the reduction of gap of accessing housing amenities in Orissa vis-à-vis national situation.

Table 2.3: Distribution of Households Having Access to Basic Amenities During 1991 - 2001 in Urban Areas (In percentage)

State	Safe drinking Water		Electricity		Toilet	
	1991	2001	1991	2001	1991	2001
Orissa	62.83	72.32	62.11	74.08	49.27	59.69
India	81.38	90.01	75.78	87.59	63.90	73.72

Source: National Building Organisation, 2006.

Table 2.4 shows the percentage distribution of households having access to basic amenities like safe drinking water, electricity and toilet facility during 1991-2001 in rural areas of India in general and Orissa in particular. At the national level, about 43 per cent of the people had accessed to electricity connections in 2001 compared to 31 per cent in 1991. At the state level, the improvement of electricity connections to the rural households has not there. Similarly, only 13 percentage of the rural households had toilet facility in their premises in 2001 as compared to 8 per cent in 1991. The similar trend has observed in at the state level. The reason may be the failure of housing schemes implementation, or may be the housing reforms have not broaded its base especially to the rural areas of India, thereby, pasting ugly postures of rural housing situation mainly in the case of housing services such as electricity, toilet and sanitation.

Table 2.4: Distribution of Households Having Access to Basic Amenities during 1991 - 2001 in Rural Areas (In Percentage)

State	Safe drinking Water		Electricity		Toilet	
	1991	2001	1991	2001	1991	2001
Orissa	NA	86.18	23.54	26.9	3.58	7.71
India	55.92	44.9	31.10	43.5	8.52	12.87

Note: NA shows not available

Source: Census, 2001

Despite the housing quantity and quality problems, we now turn into the same aspects of urban slum households at the state level. According to Registrar General of India (2002) estimate, the total urban slum persons was 635,150 out of which 332,534 males and 302,616 females. The National Sample Survey Organization (NSSO 2002) shows that the total urban slum population was 0.07 million in Orissa. According to the NSSO report (2002) estimates, about 100 per cent, and 45 per cent of the urban slum households had accessed to housing amenities such as safe drinking water, and electricity in India

2.2.3.1 A Profile of the State of Orissa

The State of Orissa extends from Latitude 17° 31' to 20° 31' N and Longitude from 81° 31' to 87° 30' E, located on the eastern coast of India. It is surrounded by West Bengal on the North East, Bihar on the North, Andhra Pradesh on the South East, Madhya Pradesh on the West and Bay of Bengal on the East.

With a geographical area of 15, 5707 sq km., Orissa comprises of 4.74 per cent of India's land mass and 36.80 million people (2001 Census), 16.25 per cent more than that of 1991, accounts for 3.58 per cent of the total population of the country. The population is predominantly Hindu (94.67 per cent). In terms of population it holds the same position (eleventh) among the states in India. The rate of growth of population in the state during the decade 1991-2001 was 15.94 per cent as against 21.34 per cent for all-India. This is the third lowest rate of growth of population among the major states of India, with only Kerala (9.42 per cent) and Tamil Nadu (11.19 per cent) having lower rates. The state is one of the thinly populated states of India. The density of population, which was lower than the country's average (324), increased to 236 persons per sq. km in 2001 from 203 in 1991. It has the third lowest population density among the major states of India, ahead of only Rajasthan and Madhya Pradesh. The sex ratio of Orissa's population was 972, though unfavourable, is higher than the country's average, and also the third highest among major Indian states, lower than only Tamil Nadu (986) and Kerala (1058). It is also one of the least urbanized states in India with only 15 per cent of the total population living in urban areas while for the country as a whole the corresponding percentage is 27.8 per cent. The remaining 85 per cent of its population lives in rural areas of the State. Total literacy rate in the state has shown a significant improvement from 49.09 per cent in 1991 to 63.61 per cent in 2001. The

male and female literacy rates, which were 63.09 per cent and 34.68 per cent in 1991, have increased to 75.95 per cent and 50.97 per cent respectively in 2001. It is also considered one of the low literate states, ranking thirteenth among the 16 major states in the country (Government of Orissa 2004).

Orissa had in 2001 a relatively large component of tribal population, comprising 38.6 per cent of its total population - the highest proportion among the major states in India. Scheduled Castes and Scheduled Tribes population (SC and ST) in the State, as per 2001 census, was 60.82 lakh and 81.45 lakh respectively, which was 16.5 per cent and 22.1 per cent of the total population of the State as against 16.2 per cent and 22.2 per cent in the previous census in 1991. The decennial growth rate of SC and ST population during 1991-01 was 18.6 per cent and 15.8 per cent respectively. Similarly, as per 2001 census the sex ratio between SC and ST population was 979 and 1003 respectively as against 936 and 978 at all India level. Total literacy rate among the social groups has shown an impressive improvement from 22.41 per cent in 1981 to 30.19 per cent in 1991 in the case of SC and from 13.96 per cent in 1981 to 18.10 per cent in 1991 in the case of ST (Government of Orissa 2004).

The state is divided into four geographical divisions: the northern Plateau, the Central river basin, the eastern hills and the coastal plains. The coastal plains of the state extend from the Subarnrekha River in the north to Rushikalya in the south and are narrow in their northern parts. The eastern hills cover much of the state's area and are actually fertile and thickly populated. The central river basin is also fertile and the plateau has the peculiarities of peninsular tablelands.

2.2.3.2 A brief Socio-Economic Profile of Orissa Economy

Though Orissa has rich natural resources and abundant human resources, its economy is not well developed. Low per capita income, low capital formation, inadequate exploitation of natural resources and lack of development of socio-economic infrastructure characterize basic features of the economy. The state has remained one of the poorest in the country in terms of social, economic and demographic aspects.

In the early 1960s, Orissa was also one of the economically backward states of India, its per capita income in that year stood at 71 per cent of the all-India average. The median state in that year had a per capita income 34 per cent higher than Orissa's. By 1998-99, the per capita income of Orissa had risen in absolute terms, but had slipped in relative terms to 61 per cent of the all-India average, while the median state had a per capita income of 54 per cent higher than Orissa's. Thus, over this period of four decades, Orissa actually slipped a little further behind the other states, and remained by and large in the 16th position among the states of India. Only during the decade of the 1960's, the over all economic growth rates in the state was higher than that of the country as a whole. In each of the following decades, the record of relative economic growth in the state deteriorated not only in terms of the national average but also in comparison to most of the other states in the country. The 1990s showed considerably the worst performance of the Orissa economy, relative to all-India and the economies of several other states in India.¹²

The Gross State Domestic Product (GSDP) at constant prices (1999-2000) of Orissa had increased from Rs. 42, 909, 62 lakh in 1999-2000 to Rs. 67, 675, 65 lakh in 2006-07. The Net State Domestic Product (NSDP) commonly known as state income increased from Rs. 38, 200, 00 lakh in 1999-2000 to Rs. 59, 240, 87 lakh in 2006-07 at 1999-2000 prices. The per capita income at constant prices (1999-2000) increased from Rs. 10, 567 in 1999-2000 to Rs. 15,096 in 2006-07. It is also clear that increasing gross state domestic product is compounded by the tremendous performances of the three sectors such as agriculture, industry and service sectors.¹³

2.3 Housing Policies

Housing is one of the fundamental demands for living. At the same time it is also characterized as state subject, public good and merit good, and a prominent element of the social security under the welfare mechanism of the state's responsibility. In addition, Access to acceptable housing is one of the elementary human rights as well as one of the keys to peace and happiness. It is believed that housing of the low and middle-income groups is the major real issue in developing countries all over the world. Therefore, it is the responsibility

¹² Orissa Planning and Co-operation Department, Human Development Report 2004, Government of Orissa.

¹³ Central Statistical Organization 2008, Government of India (See: www.mospi.nic.in).

of government to set up various public housing programs and policies to assist low and middle-income groups and to solve their housing related issues. The overall purpose of housing policy is to establish a mechanism through which government can create an enabling environment for the development, delivery and maintenance of the social housing sector at a large scale. The rationale for implementing various programs and policies is to empower the underprivileged sections those who live below the poverty line and also lack basic housing services. To solve housing issues, every country has formulated its own public housing policies. Public housing refers to housing, which is managed and delivered by the government towards impoverished sections of the society.

2.3.1 Housing Policies in Developing Countries

The analysis of policies in developing countries context would help us to compare and understand the relevance of the policies formulated in the Indian context. It would give an international perspective as compared to the existing policies in India. The following section brings out the international policy perspective and subsequent section brings out the policy perspective with reference to India and Orissa.

The aftermath of Second World War raised a huge demand for housing throughout the world. Policies at that time were mainly guided by these demands and by decolonisation. Among the developing countries, the first countries to develop housing programs were the colonies of the European countries, and their initiatives were prompted, guided, and partially funded by their colonial masters. As decolonization proceeded during the 1950s and early 1960s, the responsibility for promoting housing policy passed from colonial governments to the United States and the Soviet Union, themselves imperial powers, and to international agencies, initially the United Nations and later the World Bank. Since 1960s, these agencies have appeared to have a dominant influence on the evolution of housing policy in the developing world (Habitat International 2003). Researchers have identified three phases in the evolution of housing policy since 1945: public housing (1945 to 1960s), sites-and services or aided self-help (1972 to 1980s), and market enabling (1980s–present) (Harris et al., 2003; Giles 2003).

Phase-I (Public Housing, 1945-1960)

Public housing policy was sometimes described as 'Permanent housing for rent' (UK Information Service, 1960 cited in Harris et al. 2003). The Governments' role in the public housing policy for low-income groups was that of a 'Provider' of public housing. Houses were in the form of permanent construction units, often apartments, with the assumptions to ensure affordability and effective housing delivery, eliminating unsanitary conditions, to replace squatter settlement. However, these policies were implemented in the same way as in the industrialized countries without much thought about differing contexts into developing countries (Pugh 1994). High building standards coupled with the use of imported materials made the housing expensive. Also the occupants were forced to adapt to unfamiliar living spaces, which were designed to suit European climates and cultural norms. Eventually, in a number of countries, the occupants of public projects were allowed to adapt and extend their dwellings in ways that made them both more affordable and more suitable (Tipple 2000). Additional problems often included the challenge of managing projects. This 'product' approach, requiring large subsidies per unit, resulted in the formal sector (developers and financial institutions) and could satisfy only a fraction of household demand. Also it failed to generate the market mechanisms necessary to convert homeownership into an economic as well as a social good (Ferguson et al. 2003). Most experts, and all international agencies, soon concluded that public housing could not solve the real housing problem in the developing world, and viewed it as inappropriate and expensive (Harris et al. 2003; Gulati 1985). In order to solve the problem, Turner (1972, 1976) and some of his followers argued that the poor people should be aided rather than hindered in their attempts to solve their own housing problems, through self-help or mutual aid.

Phase-II (Sites-and-services or aided self-help, late 1960-80)

The public housing phase between 1945 and the late 1960s was replaced by an enthusiasm for 'sites and services'. Under this method, the government generally provides land, plans the lay-out of the site and circulation, secures land tenure for the occupants, and installs facilities for water supply and waste disposal or play grounds and other community needs. The building of housing units is left to the residents by whatever means is available to them. Until the early 1960s, aided self-help was consistently endorsed by the leading international

housing agencies including the United States and United Nations. In addition to aided self-help, the UN emphasized enabling strategies. These usually involved support to the building materials industries (Giles 2003). The World Bank's entry into the international housing field in the early 1970s is generally supposed to have opened up a new era and has had a large impact upon the theory and practice of the housing situation in developing countries. The Bank's endorsement of 'sites and services' was consistent with the UN's continuing emphasis on self-help (World Bank 1972). These efforts brought out considerable changes in a comparatively short period of two decades. The state's roles were seen as facilitative and limited, mainly being expressed in providing infrastructure, utility services, and title to land. The intention was to make housing affordable to low-income households without the payment of subsidies, in contrast to the heavily subsidized public housing approach. In the years 1972-1982, the Bank took a project-by-project approach, using its financial power to steer policies towards affordability, cost recovery and replicability. In the 1970s it occupied a central position, thereafter its position changed to being an element in overall policy, which widened to include housing finance, macroeconomics, and whole housing sector development (Pugh 1994).

Phase-III (Whole sector development or market enabling, since 1980)

One of the perceptions that emerged in Vancouver United Nations Centre for Human Settlements (UNCHS) summit in 1976 was to consider human settlements as an integral part of national development. The role of the government as an 'enabler' of public housing was called for. By the mid-1980s the World Bank also adopted a second phase approach (1983 to 1989) centered upon linking housing sector development to national economies. This fundamental shift of the governments from provider to enabler reflects a growing understanding of the importance of housing as an economic good (Zearley 1993). It commenced with the channelling of loan assistance through housing finance systems, using these as conduits for broad allocation to households. One major thrust of these reforms was to mobilize household savings, in particular, and to draw these into the housing capital section of the capital market (Pugh 1991). This approach had important implications in widening the agenda of housing policy reform. Policies and practices have been switching emphasis since the mid 1980s from a focus upon a project-based approach, for example, in sites and services schemes, to whole housing sector development. In a whole housing sector

development perspective, policy makers and professionals have been urged to understand housing as one that connected to development policy, to the macro-economy, to anti-poverty policies, to infrastructure services, to land policies and land management, to capital market and financial systems, and with a focus upon low-income groups in their housing opportunities. The third phase joints together the World Bank, the UNCHS, and the United Nations Development Programme (UNDP) (Pugh 1994). UNCHS serves as a focal point for monitoring progress on implementation of the Habitat Agenda. The available information suggests that follow-up activities on the Habitat Agenda's goal of "adequate shelter for all" have strengthened the focus on the implementation of the Global Strategy, with specific reference to promoting the principles of enablement, partnership and participation, as well as to topics related to the realization of housing rights, improvement of the access of low-income groups to elements of shelter delivery (such as land, finance and building materials) and the diversification of shelter policy to more effectively address the needs of vulnerable groups and people with special needs. Perhaps the single most important development in policy and planning over the last two decades has been the shift to the "enabling approach". The underlying philosophy of the enabling approach seems to be accepted by all, yet concrete implementation remains weak, and many countries lack the detailed time frame, sub-objectives and resources required to turn policies into strategies (UNCHS 1996).

2.3.2 India's Housing Policies

There were no major officially sponsored housing programs in India before independence (1947) other than a few isolated attempts to house their employees by the central and provincial governments. Independent India was facing crucial problems like rehabilitation of refugees, migration of rural population to urban areas, high population growth rate like most of the other newly independent countries. About 7.5 million displaced persons came into India from Pakistan and the problem had been tackled to a great extent by providing planned colonies and townships in various parts of the country. It is in this context that the central government undertook a first large scale-housing programme for persons other than their employees. The immediate responsibility of the government of independent India was the provision of reasonably decent accommodation in the urban

areas within the limited funds. It followed a central planning model of development through the five-year plans, and various social housing schemes for different sections of the society were introduced to solve the real housing problem in India. The followings present the details of the different housing programs introduced by the central government through the five-year plans (See: www.mhupa.gov.in).

In the First Five Year Plan (1951-56), the emphasis was given on institution building and construction of houses for Government employees and the weaker sections of the society. The scope of housing program for the poor was expanded in the Second Plan (1956-61). The general directions for housing programs in the Third Plan (1961-66) were co-ordination of efforts of all agencies and orienting the programs to the needs of the Low Income Groups. Balanced urban growth was accorded high priority in the Fourth Plan (1969-74). Housing and Urban Development Corporation (HUDCO) was established to fund remunerative housing and urban development programs, promising quick turnover. The Fifth Plan (1974-79) reiterated the policies of the preceding plans to promote smaller towns in new urban centres, in order to ease the increasing pressure on urbanisation. The Urban Land Ceiling and Regulation (1976) Act was enacted to prevent concentration of land holding in urban areas and to make available urban land for construction of houses for the middle and low-income groups.

The thrust of the planning in the Sixth Plan (1980-85) was on integrated provision of services along with shelter, particularly for the poor. The Seventh Plan (1985-90) stressed on the need to entrust major responsibility of housing construction on the private sector. A three-fold role was assigned to the public sector, namely, mobilisation of resources for housing, provision for subsidized housing for the poor and acquisition and development of land. The National Housing Bank was set up to expand the base of housing finance. National Building Organization (NBO) was reconstituted and a new organisation called Building Material Technology Promotion Council (BMTPC) was set up for promoting commercial production of innovative building materials. A network of building centres was also set up during this Plan period. The Seventh Plan explicitly recognized the problems of the urban poor and for the first time an Urban Poverty Alleviation Scheme known as Urban Basic Services for the Poor (UBSP) was launched.

As a follow-up of the Global Shelter Strategy (GSS), a National Housing Policy (NHP) was announced in 1988. The long-term goal of the NHP was the eradication of houselessness, improvement of the housing conditions of the inadequately housed and to provide a minimum level of basic services and amenities to all. The role of Government was conceived as a provider for the poorest and vulnerable sections and a facilitator for other income groups and the private sector by removal of constraints and increased supply of land and services.

Against the backdrop, although the Eighth Plan (1992-97) for the first time explicitly recognized the role and importance of the urban sector for the national economy but did not attach any particular emphasis on the housing sector. While the growth rate of employment in the urban areas averaged around 3.8 per cent per annum, it dropped to about 1.6 per cent in rural areas. Therefore, the urban areas had to be enabled to absorb larger increments to the labour force.

Table 2.5 gives a list of all the social housing schemes implemented by the government of India since independence. It is interesting to see the replication of same kind of policy shift in India as noticed in the housing policy put forward by the international agencies. In the same way, during the initial phase (Phase I) from 1945 to 1960, government of India took the role of a provider of public housing. This was followed by sites and service and aided self-help as the second phase from late 1960 to 1980. The third phase (1980 to present) with the facilitator approach along with promoting the sustainable habitat concept through housing programs shows progressive shift for rural housing strategies. There is move from target orientation to a demand driven approach. This is well reflected in the housing programs of the 10th Plan period (2002-07) also. The main reason of shifting of policy paradigm in India is the result of liberalization process. It clearly reflects that the countries like India do not have adequate amount of resources, which did not allow to the state to meet the growing needs of urban poor. As a result, government of India followed the new liberalization mechanism since 1980s onwards and preferred to have a market mechanism for the socio-economic development of the country in 1990. Under this market mechanism, government transformed its role from the state of being provider to the state of being facilitator and realized that to some extent poor people should be adequately motivated to

have a feel of ownership and construct the houses according to their choices with an in built arrangement to invest adequately on good housing.

Until the 1990s, no comprehensive assessment of the housing sector had been made and the policy used to be driven by the government programs and interventions. In 1988, the union government came out with the draft 'National Housing Policy', to provide basic infrastructure facilities like potable water, sanitation and housing to economically weaker sections in the urban areas. In 1991, India adopted a more 'inclusive' view of economic development. In pursuance of this change in view, the National Housing policy, 1988 was superseded by National Housing policy in 1994. The revised policy aims to increase supply of land serviced by basic minimum services with a view to promoting a healthy environment. Further, this document was revised later in 1998, and brought out as the 'National Habitat and Human Settlements Policy'. It laid greater emphasis on the aspect of 'Habitat' as a supplementary focus to housing. The word 'Habitat' is a broad concept, which refers to an ecological area where the community lives. But the housing is one of the components of Habitat. The emphasis on 'providing' housing continued in this policy with emphasis on both quality and cost-effectiveness especially to vulnerable sections of the society. The New Urban Housing and Habitat policy seeks to enhance the spotlight on 'habitat' with depending upon the role of Government as a 'facilitator' and 'regulator'. Moreover, the new policy lays emphasis on earmarking of land for the economically weaker sections and low-income (EWS/LIG) groups in new housing projects. In the new urban housing and habitat policy, the government retains its role in social housing so that affordable housing is made available to EWS and LIGs of the population who lack affordability and are hopelessly out-priced in urban land/housing markets. Besides that policies and schemes, other programs implemented by the government at the national level are Valmiki Ambekar Awas Yojana (VAMBAY 2001), and Integrated Housing and Slum Development Programme (IHSDP 2005) to target the low and middle-income groups in the society.

Table 2.5: Different Housing Scheme of the Government of India

No:	Housing Scheme	Year of Launch	Target Groups	Policy Shift
1	Integrated subsidized housing scheme	1952	Industrial workers and other economically sections	Phase I Public Housing (1945-60)
2	Low income group (LIG) housing	1954	Low income group household with regular income	
3	Subsidized housing for plantation worker	1956	Plantation workers	
4	Slum clearance / improvement scheme	1956	Rehabilitation of slum dwellers	
5	The Village housing projects scheme	1957	Villagers and landless agricultural workers	
6	Middle Income group (MIG) housing	1959	Loan scheme for middle income groups	
7	Rental housing scheme for state government employees	1959	State government employees	
8	Subsidized Rental housing scheme for E.W.S	1964-65	Economically weaker sections	Phase II Site and Services And Aided Self-help (1960-80)
9	Provision of house sites to land less agricultural labourers	1964	Landless workers in rural areas	
10	Land acquisition and development scheme	1967	Slum dwellers, industrial workers, LIG and MIG households	
11	Environment improvement of urban slums	1972	Slum dwellers	
12	Minimum Needs Programme	1974	Rural landless labourers	
13	Rural house site cum house construction scheme	1980	Landless rural poor	
14	Rehabilitation Housing Scheme	1984-85	Households who lost their houses calamities and belonging to EWS	
15	Indira Awas Yojana	1985	Economically weaker sections	Phase III Market Enabling (Facilitator or Whole Sector Development) 1980s onwards
16	Rajiv One million Housing Scheme	1987	Economically weaker sections	
17	Night shelter scheme for pavement dwellers	1990	Pavement dwellers	
18	National slum development programme	1996	Slum dwellers	
19	Two million housing programme	1998	Economically weaker sections	
20	Samagra Awas Yojana (SAY)	1999	Economically weaker sections in rural area	
21	Credit cum subsidy scheme for housing	1999	Rural households with repayment capacity	
22	Innovative Stream For Rural Housing & Habitat Development	1999	Economically weaker sections in rural	
23	Vaalmiki Ambedkar Awas Yojana	2001	(VAMBAY)	

Source: Nair (2006)

2.3.3 Orissa's Housing Policies

State intervention in the housing sector in Orissa was initiated in 1968. Before 1968, it had been limited to implementing the schemes of the central government, and the progress was unimpressive mainly because of low priority to housing sector and lack of mechanisms to implement housing schemes. The Orissa State Housing Board (OSHB) was constituted in the year 1968 with a view to formulate and implement various housing construction schemes, as well as housing loan schemes for catering the housing needs of public belonging to various income groups in the state. In addition, the prime objective of the board is to provide affordable accommodation both in rural and urban areas and to alleviate an acute shortage of housing units in the state. The Orissa State Housing Board implements various housing schemes, and its main source of finance for the projects are institutional loans from Housing and Urban Development Corporation (HUDCO), and grants from the state. The board has sanctioned a loan amount of Rs. 12 crore for the housing projects in the state from the HUDCO during 1996-2002. The achievements of the board during the past two and half decades have kept pace with its growth. The board during the 1968-69 to 2001-02 completed construction of 28793 residential housing units against the total project cost Rs. 227.35 crore under various housing schemes, encompassing 18 districts of Orissa. Out of these total, the board has constructed a total of 3985 for Economically Weaker Section (EWS), 14072 for Low Income Group (LIG), 5733 for Middle-Income Group (MIG), 2286 for High Income Group (HIG), and 2717 housing units for others under various social housing schemes during the same period. However, the major plan schemes implemented by the housing board are Valmiki, EWS and LIG in order to meet the growing needs of the urban poor in Orissa. Besides these, the Gram Vikas Housing Program was implemented by the state also (See: www.oshb.org).¹⁴

Valmiki Ambekar Awas Yojana (VAMBAY)

A centrally sponsored scheme launched in the state from 15th August 2001. This scheme seeks to provide shelter or upgrade the existing shelter of urban slum dwellers as well as weaker sections of the population living below poverty line, with a view to achieving the goal

¹⁴ Department of Housing and Urban Development, Government of Orissa

of 'Shelter for all' as outlined in the National Housing and Habitat Policy. The financial limit for construction of VAMBAY units is a maximum of Rs. 40,000 including the provision of sanitary latrine for an area of not less than 15 Sq. metres in normal areas. For difficult (hilly or non-plain) areas, the maximum limit is Rs. 45,000. According to the funding pattern, the Government of India releases subsidy to HUDCO, which matches the subsidy on a 1:1 basis with a loan. However, the state government has the option to mobilize its matching position of 50 per cent from other sources, such as own budget provision, resources of local bodies, loans from other agencies, or contribution from beneficiaries or Non-Government Organisation (NGOs). State Urban Development Agency and District Urban Development Agency identify beneficiaries in consultation with Municipal Bodies by following the reservation percentage of not less than 50 per cent for SC/ST, 30 per cent for backward classes, 15 per cent for other weaker sections and 5 per cent for physically handicapped persons. By the end of 2003-04, 789 dwelling units were taken up. Out of them, 55 units were completed and 30 units were nearing the completion stage (Government of Orissa 2003-04).

EWS and LIG Housing Schemes

Housing schemes for Economically Weaker Section (EWS) and Low Income Group (LIG) under 20-point programs, are being implemented by different housing authorities under the housing and urban development authorities. The physical achievement in terms of number of houses has been constructed under EWS and LIG housing schemes in the state from 2000-01 to 2003-04 is indicated in Table 2.6. It shows although the achievement percentage was quite impressive during the years 2001-02 and 2002-03 but it was very poor in 2000-01 and 2003-04. The major reason for the low achievement of the EWS and LIG schemes is may be due to the problem of effective implementation of housing schemes at the grass roots levels. The inefficiency of administrative governance and lack of setting up time-bound programs together lead to the problem of scheme implementation in the regions of Orissa (Government of Orissa 2003-04).

**Table 2.6: Achievement under EWS and LIG Housing Schemes in Orissa.
(Number of Houses)**

Year	Economically Weaker Section (EWS)			Low Income Group (LIG)		
	Target	Achievement	Per cent of achievement	Target	Achievement	Per cent of achievement
2000-01	144721	122300	84.50	949	56	5.90
2001-02	144721	7251	5.01	949	937	98.73
2002-03	3200	4500	140.62	400	409	102.25
2003-04	1620	58	3.58	450	238	52.88

Source: Economic Survey 2003-04, Government of Orissa.

Gram Vikas Housing Programme

The program integrates water and sanitation with housing for the rural poor in the state of Orissa in India. Its most significant feature is the 'all-or-none' approach, which provides housing for every single family through participatory processes of community mobilisation, empowerment strategies for women and micro-credit. It is an integrated effort to help poor tribal villagers of Orissa realise their dream of a safe and disaster-proof house and enhance their self-confidence. Gram Vikas directly reaches out to 20,000 households in 500 villages in fifteen districts of rural Orissa. The focus is on adivasis, and small and marginal farmers. 80 percent of these communities are adivasis, Gram Vikas has so far supported the construction of 3,479 houses across 169 villages/ habitations. Over 11,000 families in 143 villages have also been mobilized and supported for protected piped water supply and sanitation systems (Jayapadma 2005).

2.3 Conclusion

It is found that increasing size of urban population increases the demand for housing and leads to 10.6 million housing shortage and 7.89 lakh population houseless in 2001 (National Building Organisation 2006). This picture is abysmally dismal at the lower end of the economic ladder. It is clear that housing needs are driven by changes in the composition of financial status of population in an economy. Before independence, the nature and magnitude of housing problems was not that severe. The problems have been duly realized

and recognized since independence. In this situation, housing was recognized as state subject, the role of government was important as a provider of housing to the urban poor up to the 1980s. The paradigm policy shift from provider to facilitator approach became a reality after the 1980s onwards due to resource crunch. It is observed that the countries like India do not have an independent housing policy for the low and middle-income groups. Indian housing policy is almost similar and matched with the policies of international agencies like World Bank and United Nations Centre for Human Settlement. Therefore, this change in policy paradigm in India forced the government to curtail the expenditure on welfare activities. This is clearly evident from the various plan documents where the magnitude of financial allocations out of total urban investments towards housing sector has been declining from 3.4 per cent to 2.4 per cent during 1st plan to 10th plan in India. It implies less importance is being given to urban housing sector where the problem is actually much worse. Besides that quantity problem, quality of housing condition in terms of infrastructure and other facilities/amenities is poor in nature. According to the National Building Organisation (2006) estimates, the number of households per dwelling unit in urban area is 1.07 in 2001, which shows crowded living condition of the urban households. In other words, housing shortage forced the urban poor households to reside in desperately inadequate housing conditions, which threat their life, safety and dignity. Despite the improvement of housing infrastructure at the national level, it is seen that about 18 per cent of the urban households did not have access to housing amenities like safe drinking water, 13 per cent to electricity and 36.42 per cent to toilet facilities as per 2001 Census.

At the Orissa state level, it is observed that increasing home ownership, compounded by the holding of durable assets, relative rise in income levels as compared to previous decades and population growth has led to increasing demand for housing, thereby resulting in a total housing shortage of 0.50 million (Government of India 2007). However, It is still found that less proportion of households converted kutchha house to semi-pucca and pucca houses. The reason may be that their increased income is not sufficient for building houses and they do not have proper exposure to the financial institutions, moreover, there is an absence of Government's assistances for housing investments. Hence these households are susceptible to natural calamities and earthquake etc. This problem will accumulate and accentuate further the problem of housing shortage in the urban areas. It is found that 33.6 per cent of

the households in urban areas are having one room per dwelling unit, which shows housing shortages and huge density per house. Furthermore it is observed that about 25 per cent of the households did not have access to proper housing amenities like electricity connections, 40 per cent to toilet facility and 38 per cent to safe drinking water facilities in the urban areas. This implies urban households are living in dilapidated houses combining with lack of necessary housing infrastructure and presence of huge density per house. Moreover, about 8 per cent of the urban households live in dilapidated houses in Orissa and 46.3 per cent and 45.9 per cent of urban households also live in good and liveable houses respectively. Hence, the study suggests for a re-examination of the policies at the state level in order to improve the living conditions of the people.

Chapter 3

HOUSING PRICE DYNAMICS IN INDIA

3.1 Introduction

Traditional models of housing market are based on the assumption that housing markets clear instantaneously. In these models, prices adjust almost immediately, so that the demand for housing equals the existing stock at any point in time. However, recent theoretical or empirical works have established that the market for owner-occupied housing is often inefficient and adjusts slowly to changes in market conditions (Case and Schiller 1989). In this context, DiPasquale and Wheaton (1994, 1995) find strong evidence that it takes several years for market changes to be fully incorporated into housing prices. Mankiw and Weil (1989) find that market prices respond slowly to changing demographics forces.

The present study attempts to explain the housing price behaviour in India in a partial macroeconomic framework. For this purpose, the partial adjustment housing-market model proposed by DiPasquale and Wheaton has been considered (1994). The partial macroeconomic framework is useful when an analysis could capture a few direct and indirect determinants of housing prices, as it is difficult to get information on all the variables influencing housing prices. Against this backdrop, the objective of this part of the study is

- To examine the dynamic casual relationships between housing prices and its determinants, such as income, stock prices, credit, real interest rate, and real effective exchange rate.

3.2 Analytical Framework

Housing markets, like other durable goods markets, can be viewed to have a flow dimension and a stock dimension. Net investment, the flow dimension, is the sum of construction of new residential units and depreciation of existing units. The long run supply, or stock of housing is the accumulation of the net investment. DiPasquale and Wheaton

(1994) and Riddle (2000, 2004) define the long run equilibrium stock, S_t , to be a function of price, P_t , and a vector of cost shifting variables such as construction costs including material costs and labour cost, land cost and credit availability, $X_{s,t}$, so that, in functional form it could be written as:

$$S_t = S(P_t, X_{s,t}) \quad (3.1)$$

The model can be specified in a linear form as:

$$S_t = \alpha_0 + \alpha_1 P_t + \alpha_2 X_{s,t} + v_t \quad (3.2)$$

Similarly, housing demand theory defines the equilibrium demand, D_t , for the current stock of housing as a function of price, and a set of demand variables such as income, mortgage interest rate, population growth, wealth, and overseas demand, $X_{d,t}$, so that the long run demand for housing in functional form may be written as:

$$D_t = D(P_t, X_{d,t}) \quad (3.3)$$

This can be specified in a linear equation form as:

$$D_t = \beta_0 + \beta_1 P_t + \beta_2 X_{d,t} + \varepsilon_t \quad (3.4)$$

Accordingly, in the economic literature (See Hendry 1984; Meen 1990; Muellbauer and Murphy 1997) the housing price model is most often an inverted demand equation of the following general kind:

$$P_t = f(X_{d,t}, X_{s,t}, Z_t) \quad (3.5)$$

Where Z_t refers to other qualitative variables influencing the housing price. However, economic theory does not provide a finite list of variables. It may be useful to make some observations about the main possible determinants of housing prices in Indian dwelling market.

Given the above framework, the final estimable housing price equation could be specified as follows:

$$P_t = \theta_0 + \theta_1 DY_t + \theta_2 BSEI_t + \theta_3 NFC_t + \theta_4 REER_t + \theta_5 RIR_t \quad (3.6)$$

Income is generally an important determinant explaining the behaviour of housing prices. The preferred form of income variable is disposable income (*DY*) per household. The households with high disposable income have the high probability of demand for housing services (Abelson, Joyeux, Milunovich and Chung 2005, and Joshi 2006.). When there is low real mortgage interest rate (*RIR*), that can lead to rise in housing prices.¹⁵ The easy availability of credit for housing sector (non food credit) at cheaper rates could increase the housing prices (Himmelberg, Christopher, and Sinai 2005, Joshi 2006). Because this would enable the buyers to get loan from the financial and non-financial institutions against the asset backed securities (ABS). When borrowing cost prevails at low rates, it will help the property holders to raise more finance from the banks against their assets, leading to increase in housing prices.

Indeed, in an open economy like India, the trade based weighted real effective exchange rate (*REER*) could influence housing prices (a low exchange rate for foreigners increases the attractiveness of housing assets) (Abelson, Joyeux, Milunovich and Chung 2005). Wealth (value of asset) may also influence housing demand. However, a proper estimate of wealth is not available in the Indian context. Equity is an important component of wealth (Bombay Stock Exchange 30 share index-*BSE*) and may positively be related to housing prices because of its wealth effect (Chen and Patel 1998, Egert and Mihaljek 2007). Also, when supply of equities is high, the returns on those assets plunge and investors substitute housing for their investment purposes. In other words, investors apparently enter into housing market following the crash in the stock market. For instance, this has also been observed in

¹⁵ See the Abelson, Joyeux, Milunovich, and Chung (2005), 'House prices in Australia: 1970 to 2003'. Economic theory suggests that real rates are more important because the nominal component of interest costs should be offset by nominal increase in housing price. The nominal interest rates can create a repayment problem in the early years for some borrowers and restrict their borrowing. An unregulated interest rate may reflect real borrowing costs better.

21st Jan 2008 where Indian stock market witnessed historically a 4th biggest crash, called tsunami in the Indian stock market (*The Economic Times Daily* 23rd Jan 2008).

3.3 Theoretical Casual Relationships

In the preceding section we specified a housing price equation where different factors exert influences on housing prices. However, the relationship between housing price and its determinants are ambiguous depending upon the country situation and has remained a debatable issue. Theoretically, the determinants of housing price are to be exogenous variables and therefore are expected to cause housing price changes. However, in most cases, there could exist two-way relationship, meaning that housing prices may also affect those determinants. There could be a simultaneity relationship.

An increase in disposable income makes household more affluent. This raises the demand for housing and consequently prices. On the other hand, there could also be a feedback effect from housing prices to income. This is due to the fact that a house represents an accumulation of wealth of household that rises with the appreciation of housing prices. It also gives rise to income in the form of rent. Conversely, falling housing prices depress homeowner's wealth and in turn can lead to reduction in consumption spending over and above that associated with current income. As a result, even a small percentage decline in the value of housing assets will generate wealth losses that are large in relation to the national income.

Prices of financial assets, namely stock prices, may also have a two-way causality with housing prices given that households' portfolios comprise of both financial and real physical assets. This bilateral causality relationship suggests that stocks and housing act as alternative investments. Housing in an economy requires a large initial money capital compared to buying or investing on stocks/shares. It is also true that owner-occupiers cannot afford to buy and sell houses just following a small change in prices caused by economic circumstances because of relatively high cost associated with acquisition of housing and the investment on it, is also long term in nature. It can therefore be, argued that the stock market and the housing market are two independent markets with no short-term causality in either direction.

Housing prices could have one-way causality with monetary factors. Low interest rate (cost of borrowing) may lead to surge in housing prices when it is complemented with abundant availability of credit in the economy. There does not exist feed back relationships between them.

Housing prices could have two-way causality with trade variable. The trade-based low effective exchange rate could increase the overseas demand for housing prices. On the other hand, low housing price can lead to high exchange rate in the economy. Apart from these, the policies related to the external sector also could influence the housing prices in the domestic market. The factors already considered in the above can capture the aspects of financial liberalization. However, some of the external policies are of recent origin.¹⁶ Allowing the foreigners to invest on housing in the domestic market or issuing housing equity to the foreigners are of recent origin in the Indian scenario which is likely to affect the housing prices in the recent and future periods. Since it is a very recent phenomenon, therefore, capturing the effect of this policy would be difficult in time series models.

3.4 Data Sources and Description

In order to understand the housing price behaviour in India, the study uses the annual data and quarterly data with a separate analysis for each. All the data have been collected from Reserve Bank of India Monthly Bulletin, Handbook of Statistics on Indian Economy, and Central Statistical Organisation. The choice of the data period for the empirical analysis is purely based on the availability of respective data series. The annual data will establish the relation over a long period while the quarterly data with a higher frequency will establish the relation in a more liberalized regime where lots of changes have taken place in the domestic financial environment and changes in the external environment. So, the data set used for quarterly span from 1996:1 to 2007:1 and annual series from 1979 to 2006. The quarterly data on variables include housing price index, real income (real gross GDP), real interest rate

¹⁶ The Government of India (2005) took the bold steps to liberalize the external economy, where housing sector in particular. The Government has decided to allow FDI upto 100 per cent under the automatic route in townships, housing, built-up infrastructure and construction development projects which would include commercial premises, hotels, hospital, recreational facilities and regional level infrastructure etc.

on mortgage, real non-food bank credit availability, real effective exchange rate, and real stock prices (Bombay stock exchange index). The housing price index is based on monthly Consumer Price Index for the industrial workers estimated by the Reserve Bank of India. It is a general measure of housing price in India. Considering empirical estimation using quarterly data, since data on determinants of housing prices including housing prices are available on monthly basis, therefore, sum of monthly data for four consecutive periods in the series are averaged to produce quarterly observations. The same does not apply for GDP series as it is already reported on quarterly basis. The short-term 91 days Treasury bill rate is taken as a proxy for the real mortgage rate.¹⁷ The real non-food bank credit, real effective exchange rate and Bombay Stock Exchange (BSE) have been considered as to represent credit availability for housing and other durables, overseas demand and stock prices respectively. The quarterly data on GDP series is considered with a new base year 1999-2000=100. Since the data with the new base period is not available prior to 1999-2000, the GDP data with base 1993-94 =100 has been spliced forward into the new base year. Further, BSE Index has been collected with base 1978-79 = 100. The 36-currency bilateral trade based weights real effective exchange rate has been collected with 1993-94 =100 base year. The variables, measured in nominal terms such as interest rate, stock price index, and non-food bank credit are deflated by the Whole Sale Price Index (WPI) in order to consider their real values. All the variables are converted into natural logarithms, with the exception of real effective exchange rate, and real interest rate.

Since all the annual data are not available for the period 1960, the data has been collected for the period from 1979 to 2006. The definitions for variables followed for quarterly data is same as for the annual data. The housing price index has been taken for the base year 1982 = 100. Since the data for this base year is not available prior to 1989-1990 and ex post to 2004-2005, the pre base year 1960 = 100 and the post base year have been spliced to the reference base year 1982 = 100. The real GDP at factor cost has been collected at its new base year, 1999-2000 = 100 values. The real GDP is divided by the total population in order

¹⁷ The study also considers 364-day treasury bill rate in place of 91-day treasury bill rate for verification of results. However, it is subsequently seen that results remain unchanged.

to arrive at the real per capita GDP.¹⁸ In addition, State Bank of India (SBI) lending rate is taken as a proxy for the short-run interest rate on borrowings. Further, BSE Index has been collected with base 1978 = 100 values. The 36–currency bilateral trade based weights real effective exchange rate has been collected with the base year 1993-94=100 values. The variables, measured in nominal terms such as interest rate, stock price index, and non-food credit are deflated with annual Whole Sale Price Index (WPI). Similarly, all the variables are converted into natural logarithms, with the exception of real effective exchange rate, and real interest rate.

3.5 Methodology

Time series procedures are employed to understand the housing price behaviour in the Indian context. The study assumes that in the long run, housing prices adapt to economic fundamentals. However, in the short run, the housing price may deviate from its long run equilibrium; but they continually readjust to the deviations through an error correction process. Therefore, the study uses Johansen cointegration-vector error correction model (VECM) (1988, 1991) as a suitable strategy to examine the co-movement between housing price and economic fundamentals and their dynamic relationship both in the long and short run.¹⁹ This would enable us to know the housing market disequilibrium in the short run in India. Besides, as a check for robustness of the cointegration results, the study utilises impulse response and variance decomposition procedures of Vector Auto regression (VAR) method as suggested by Sims (1980).

3.5.1 Time Series Properties of the Variables

Before we test for cointegration in housing price equation, first, we need to ensure that the variables are integrated of the same order say 1 i.e. I (1). Therefore, we conduct unit root test for each variable. Although Augmented Dickey Fuller (hereafter, ADF 1979) test is the most

¹⁸ The study has taken real gross GDP as a proxy for real income in the case of quarterly data and has also considered real per capita income, dividing the total real gross GDP by the total population in the case of annual data.

¹⁹ Engel Granger test suffers from low power and the usual problem of simultaneity biasedness is associated with a single equation approach. Consequently, the study chooses to test for cointegration using the Johansen method.

popular tests for stationarity, however, this suffers from some weakness. It does not correct for heteroscedasticity. Therefore, a non-parametric test as proposed by Phillips-Perron (hereafter, PP1988) is performed for verification of ADF results.

In order to identify degrees of integration of the above-mentioned series, the study performs both ADF (1979) and PP (1988) tests. Both procedures test the null hypotheses of a unit root in the autoregressive representation of the series. The ADF test constructs a parametric correction for higher order serial correlation by assuming that the series follows an AR (p) process. In order to do so, it adds lagged difference terms of the dependent variable to the right hand side of the test regression. It can be represented as:

$$\Delta P_t = \Psi_0 + \Psi_1 P_{t-1} + \Psi_2 t + \sum_{i=1}^p \eta_i \Delta P_{t-i} + \mu_t \quad (3.7)$$

The unit root test is carried out by testing the null $\Psi_1 = 0$ using Mackinnon (1991) critical values. The PP differs from the ADF tests in that it accounts for serial correlation non-parametrically. The procedure of PP test is an estimate for the unit root in the non-augmented DF specification:

$$\Delta P_t = \lambda_0 + \lambda_1 P_{t-1} + \lambda_2 t + \Omega_t \quad (3.8)$$

Secondly, the result of the Multiple Cointegration Test can be quite sensitive to the lag length. Therefore, it is important to check optimal lag length by different procedures.²⁰ The study usually selects an appropriate lag according to Akaike Information Criterion (AIC) and Schwarz Information Criterion (SIC) criterion as the latter selects longer lags. The basic logic of preferring a longer lag is that it is likely to show the effects of housing price determinants, in the current period, over a longer time. In the sense, there may persist lagged effects of determinants of housing price than their immediate impact.

3.5.2 Co-integration and Vector Error Correction Model

The aim of this study is to analyse housing price dynamics. Therefore, as a check for robustness, it applies Vector Auto Regression (VAR) model. However, one area of controversy for estimating in VAR models is whether the variables included in the model

²⁰ Even though we are working with no stationary variables, we can perform lag length test using the likelihood test statistic recommended by Sims (1980): $(T-c)(\text{Log} |\Sigma_1| - |\Sigma_4|)$, see the Ender's et al. (2004).

should be stationary or not. Some argue that if the time series is non-stationary, regression of one time series variable on one or more time variables can often give rise to spurious results due to the effect of a common trend. Sims (1980) and others, though, recommend against differencing even if the variables have a unit root. The main argument against differencing is that “it throws away” information concerning the co-movement in the data, which in general, lead to poor forecasting. However, econometricians use stationary variables for stability and robustness of results in VAR. Therefore, wherever endogenous variables are found to be non-stationary, the study considers differencing the series for its stationary values. The VAR model can be represented as follows:

$$\Delta Y_t = \gamma_y \mu_{t-1} + \sum_{i=1}^n \alpha_i \Delta Y_{t-i} + \sum_{j=1}^n \beta_j \Delta X_{t-j} + \varepsilon_{1t} \quad (3.9)$$

$$\Delta X_t = \gamma_x \mu_{t-1} + \sum_{i=1}^n \delta_i \Delta Y_{t-i} + \sum_{j=1}^n \phi_j \Delta X_{t-j} + \varepsilon_{2t} \quad (3.10)$$

The above two equations constitute a vector auto regression model (VAR) in first differences. In equation (3.9) and (3.10), if γ_x and γ_y equal to zero, it is a traditional VAR in first difference. If γ_y differs from zero, ΔY_t responds to the previous period's deviation from long-run equilibrium. Hence, estimating Y_t as a VAR in first differences is inappropriate if Y_t has an error correction representation. Therefore, if the variables are non-stationary and are cointegrated in the same order, the correct method is to estimate the Vector Error Correction Model (VECM), which is a VAR in first-differences with the addition of a vector of cointegrating residuals. Thus, this VAR system with this procedure does not lose long run information. Therefore, the study does not estimate VAR model in differences. However, in order to check the dynamic relationship among the variables in the model, it uses only impulse response and variance decomposition analysis of the VAR model in differences of variables.

There are two approaches, impulse response function and variance (forecast error) decomposition, for characterising the dynamic behaviour of the VAR model. Equations (3.9) and (3.10) are rather difficult to describe in terms of α_i and ϕ_j coefficients; the impulse response functions and variance decomposition techniques suggested by Sims (1980) are useful devices in the VAR framework for testing the sources of variability. The impulse

response function traces the response of the endogenous variables to a shock in another variable in the system. The variance decomposition method splits the variance of the forecast error for each variable into components shocks that can be attributed to each of the endogenous variables.

Following Sims' (1980) seminal paper, dynamic analysis of VAR model is routinely carried out using the “orthogonalized” impulse responses, where the underlying shocks to the VAR model are orthogonalized using the Cholesky decomposition method. This method assumes the system is recursive in a sense that all the determinants are influencing the housing prices simultaneously and the estimations of impulse response function and variance decomposition are orthogonalized so that the covariance matrix of the resulting innovations is a lower triangular matrix.

3.6 Empirical Results and Discussion Using Quarterly Data

The empirical analysis reported here is based on a two-stage estimation. In the first stage, cointegration analysis is used to identify cointegrating relationship among the variables. This is important because if two non-stationary variables are cointegrated, a VAR model in the first difference is misspecified. If cointegration relationship is identified, the model should include residuals from the vectors (lagged one period) in the dynamic Vector Error Correction Model (VECM) system.

As discussed in previous section, it is necessary to check the order of integration of the level variables before using any time series procedure. Therefore, unit root tests of each variable at their levels as well as first difference of non-stationary level variables were conducted. The result from Table 3.1 shows that all the variables are non-stationary at their levels except RT91 (short-term 91-day Treasury bill rate) and REER. However, all the non-stationary variables are found to be stationary at their first differences, and therefore, are integrated of order one.

Table 3.1: Result of ADF and PP Tests for Unit Root.

Variables	Levels		1st Difference		Inference on Integration
	ADF	PP	ADF	PP	
LHPI	- 1.716 ^C (4)	-0.40 ^T (4)	-5.36 ^T (1)	-4.06 ^N (1)	1
LGDP	4.95 ^C (3)	-6.50 ^T (1)	- 15.98 ^C (1)	-7.22 ^C (1)	1
LBSE	-1.53 ^T (1)	-1.40 ^T (1)	-4.42 ^N (1)	-4.99 ^N (3)	1
LNFC	3.03 ^C (1)	3.88 ^C (1)	-6.48 ^T (1)	-6.24 ^T (1)	1
RT91	-3.78 ^T (1)	-13.32 ^T (1)			0
REER	-2.64 ^C (1)	-3.02 ^C (1)			0

Note: L stands for Logarithm of the respective variables, and the optimal lag length for the ADF and PP tests is based on the AIC and SBC Criteria. The McKinnon critical values for ADF and PP tests at 1%, 5% and 10% are -3.59, -2.93 and -2.60 respectively for without trend but intercept (denoted by superscript C) and -4.18, -3.51 and -3.18 respectively for with trend and intercept (denoted by superscript T) and -2.61, -1.94 and -1.61 respectively for no trend and intercept (denoted by N). For PP tests at 1%, 5% and 10% are -3.69, -2.97 and -2.62 respectively for without trend but intercept (denoted by superscript C) and -4.33, -3.58 and -3.22 respectively for with trend and intercept (denoted by superscript T) and -2.65, -1.95 and -1.62 respectively for no trend and intercept (denoted by N).

3.6.1 The Cointegration -Vector Error Correction Model

The cointegration model has total six variables; 4 non-stationary variables viz LHPI, DLGDP, DLBSE, DLNFC and two stationary variables viz REER, and RT91. Two stationary variables have been assumed to be exogenous in the cointegration framework as they are likely to exert their influence on house price in the long run rather than getting influenced by other variables. Studies also show that their behaviour is quite independent of movement of other monetary, fiscal and real influences (Nachane, Karnik and Hatekar 1997; Mallick and Agarwal 2007). Since they are found to be stationary, the study assumes them to be exogenous in the cointegration. However, in the error correction equation, they are treated as endogenous, the constant, and an error correction term being exogenous variables.

The VECM involves selection of appropriate lag length. An inappropriate lag selection may give rise to problems of overparametrization or underparameterization. The objective of estimation is to ensure that there is no serial correlation in the residuals. Likelihood Ratio (LR), Final Prediction Error (FPE), Akaike information criterion (AIC), Schwarz information criterion (SIC), and Hannan-Quinn criterion (HQ) are used to select optimal lag lengths. Up to three lags are tested in the present study. The resulting lag structures are reported in Table 3.2. All the criteria such as LR, FPE, AIC, SC, and HQ select for second lag. Hence, the second period is considered to be optimal lag here.

Table 3.2: Selection of Lag Length

Lags	Log L	LR	FPE	AIC	SC	HQ
0	18.57	NA	5.87	-0.69	-0.52	-0.63
1	220.80	356.30	8.30	-9.56	-8.73	-9.25
2	266.54	71.87*	2.06*	-10.97*	-9.48*	-10.43*
3	278.21	16.11	2.68	-10.77	-8.62	-9.98

Note: * Indicates lag order selected by the criterion, NA shows not available.

3.6.2 Results from Cointegration Tests

Cointegrating relationship is tested with equation (3.6). The relationship is estimated by the Johansen (1988) multivariate cointegration test.²¹ Table 3.3 presents the trace and maximum eigenvalue statistics for the sample period: 1996:1 to 2007:1. The test statistics and asymptotic critical values at 1% and 5% are also shown in the Table 3.3. Both the tests reject the hypothesis of no cointegration ($\delta = 0$) at the 1% and 5% level, where as they do not reject the hypothesis that $\delta \leq 1$. This suggests that there exists one cointegrating vector in the model. Therefore, the conclusion is that $\delta = 1$, that is, there is one stationary relationship among the variables.

²¹ In Johansen Test, we can calculate the trace statistic, i.e., $\lambda_i(0) = -T [\ln(1-\lambda_1) + \ln(1-\lambda_2) + \ln(1-\lambda_3)]$. Where T is the total number of observation less the lags and λ_i are the characteristics roots of Coefficient matrix of independent variables. Similarly, the same formula can be used in the calculation of maximum Eigen value statistic. See the Ender's et al. (2004) for more clarification.

Table 3.3: Johansen Co-integration Rank Test

Null Hypothesis	Alternative Hypothesis	Trace Statistic	5% Critical Value	1% Critical Value
$\delta = 0$	$\delta \geq 1$	56.10 ^(**)	47.21	54.46
$\delta \leq 1$	$\delta \geq 2$	13.01	29.68	35.65
$\delta \leq 2$	$\delta \geq 3$	3.65	15.41	20.04
Null Hypothesis	Alternative Hypothesis	Maximum Eigen Statistic	5% Critical Value	1% Critical Value
$\delta = 0$	$\delta = 1$	43.08 ^(**)	27.07	32.24
$\delta \leq 1$	$\delta = 2$	9.35	20.97	25.52
$\delta \leq 2$	$\delta = 3$	3.65	14.07	18.63

Note: * and ** shows significant at 5 % and 1 % level.

3.6.3 Long Run Estimates of Housing Price Equation

The long run coefficients obtained from cointegrating equation shows that the real *GDP* has a significant and positive influence on the housing price while the real *BSE* index does not have any influence on housing price in the long run. In addition, the real non-food credit has a significant and surprisingly negative influence on housing price. The housing price responding negatively to the bank credit availability in the long run may arise for the reason that when more credit is available from the banks, construction of number of houses rapidly increases and thereby it suppresses the price of housing. In this case the supply force dominates over the demand forces. The credit has more of supply force than its demand force. It gives rise to increased supply of houses as credit gets utilized in the construction process than just utilizing the bank credit in buying number of new houses. There might also be houses constructed but there may not be economic demand because of affordability problem on the part of individuals. Once an income factor comes in it gives rise to economic demand and thereby leading to rise in prices. Otherwise, new arrival of houses arising from credit availability could have downward pressure on house prices or keeps the housing markets dampen.

$$HPI_t = 14.86 RGDP_t - 0.21 RBSE_t - 7.54 RNFC_t \quad (3.11)$$

$$(-7.29)^* \quad (0.85) \quad (7.46)^*$$

3.6.4 Short Run Estimates of Housing Price from VECM Model

The coefficients of error correction term in the VECM shows that it is significant and possesses correct sign (negative sign) implying that there is partial adjustment of housing prices in the short run to its deviations from its long run equilibrium path. The adjustment is around 10 per cent per quarter. Looking at the short-run parameters, it suggests that surprisingly both real GDP and real interest rate have significant and negative influence on housing prices. Other variables do not play significant role in the short run. Some literature argues that housing investment is a long term in nature. It needs increasing permanent income for the housing investment. Even if there is a change in transitory income in the short run, the housing investment will not be stimulated unless there is an increase in the permanent income. This is the reason why a short run rise in income does not encourage to construct/invest on housing, thereby putting downward pressure on the housing prices. It is also found that about 52 per cent ($R^2 = 0.52$) of housing price variations is explained by its controlled determinants. The remaining (48 per cent) of housing price variations is explained by the other qualitative factors, which is implicitly incorporated in the residual of the system equation.

$$DHPI_t = 0.14 + 0.62 DHPI_{t-1} - 0.35 DHPI_{t-2} - 1.04 DRGDP_{t-1}$$

$$(0.150) \quad (3.744)^* \quad (-2.268)^* \quad (-1.963)^*$$

$$- 1.09 DRGDP_{t-2} - 0.02 DRBSE_{t-1} - 0.13 DRBSE_{t-2} + 0.43 DRNFC_{t-1}$$

$$(-2.100)^* \quad (-0.027) \quad (-0.573) \quad (0.388)$$

$$- 1.02 DRNFC_{t-2} - 0.01 RT91_t + 0.01 REER_t - 0.10 ECM_{t-1} \quad (3.12)$$

$$(-0.719) \quad (-1.305)^* \quad (0.014) \quad (-1.386)^*$$

$$R^2 = 0.52, \quad \bar{R}^2 = 0.35$$

3.6.5 Granger Causality Test

As a prelude to estimating variance decomposition and impulse response analyses in a multivariate set up, the study conducts Granger causality test between housing prices and its determinants. This would enable us that if there exists some causality relationship among

the variables in the bi-variate model, then only it makes meaningful to test their relationship in a multivariate framework of VAR. The estimated F -statistics of the causality test are reported in Table 3.4. The results of F -statistic suggest that all determinants including national income, Bombay stock exchange, and non-food bank credit granger cause housing prices, except real interest rate (RT91) and REER. Although no causality is observed from real interest rate and the trade based real effective exchange rate to house price, but the reverse causality exists.

Table 3.4: Bivariate Granger Causality Test

Null Hypothesis	Lags	Obs	F-Statistic	Probability
DRGDP does not Granger Cause DHPI	4	40	2.09	0.10
DHPI does not Granger Cause DRGDP			0.14	0.96
DRBSE does not Granger Cause DHPI	1	43	3.18	0.08
DHPI does not Granger Cause DRBSE			0.17	0.68
DRNFC does not Granger Cause DHPI	5	39	3.58	0.01
DHPI does not Granger Cause DRNFC			0.42	0.83
RT91 does not Granger Cause DHPI	1	43	0.13	0.71
DHPI does not Granger Cause RT91			3.06	0.08
REER does not Granger Cause DHPI	1	43	1.95	0.17
DHPI does not Granger Cause REER			2.98	0.09

A number of points also emerge from causality test results. Saravanan, Ramamoorthy, and Nagarajan (2007) have indicated that there is some evidence of inertia with short-term interest rate, implying a decrease in short-term interest rate causes rising housing prices in Indian economy and vice versa. Because the buyers enjoy short-term floating interest rate rather than the long-term interest rate. The main effect of interest rate on housing prices is likely to come through its effect on builders funding cost and buyers borrowing cost. The feedback effect, however, is not observed in our result. The results indicate that real effective exchange rate Granger causes housing prices as expected, but the causality effect is not

observed. Although, the theory suggests that decrease in exchange rate could push up housing prices, this may not be the case in the short run.²² However, given these results, it makes a sense to include all of these variables in a VAR framework to understand the true dynamic relationship among the variables.²³

In order to provide further insight on the relationship of housing prices and its determinants, the variance decomposition and impulse response function are calculated. These two approaches give an indication of the dynamic properties of the system and allow us to gauge the relative importance of the variables beyond the sample period. Before estimating Variance Decomposition and Impulse Response functions, one needs to ensure the model adequacy by using the required diagnostic checking procedures.

The results reported in Table 3.5 points out that VAR estimated with lag two satisfies the stability test, normality test as well as no serial correlations among the residuals in the VAR model. Therefore, it leads us to take the position that our model fulfills the model adequacy tests for the analysis.

Table 3.5: Diagnostic Checking Criteria

Adequacy Test for VAR model	Critical Values	Lags
Stability (modulus values of roots of characteristic polynomials)	0.93, 0.93, 0.85, 0.73, 0.61, 0.19	2*
Normality Chi-Square values	0.50, 0.41	2*
Serial Correlation LM-stat	68.35, 43.06	2*

Note: * Indicates lag length.

²² Abelson, Joyeux, Milunovich and Chung (2005), 'In an open economy, the exchange rate could influence house prices i.e., a low exchange rate increases the attractiveness of housing assets to foreigners. As a result, the increasing housing investment on housing will lead to rising housing prices in an economy'.

²³ The causality test results may show that there may be a bi-directional causality relationship among two variables, but that could be due to a third common factor with which two variables are related without having true causality relations among the tested variables. Similarly, test result may show that there does not exist any causality relationship, but there could be causality between two variables once the intermediate link between the two is established through other variables in a multivariate framework. Therefore, it necessitates a multivariate modelling in order to discover the true direct and indirect relationship among the variables.

3.6.6 Variance Decomposition Results

The variance decomposition measures the percentage of variation in housing prices induced by shocks emanating from its relevant determinants. The estimates of variance decomposition are shown in Table 3.6 for a period of 20-quarter time horizon. The results indicate that disturbance originating from housing price itself inflicted the greatest variability to future prices. It contributes 89 per cent variability one quarter ahead, approximately 54 per cent fifth quarters ahead. The proportion of variance remains high (56 per cent) even till (20th quarter). This result indicates that current change in housing prices heavily influences people's expectation of future price changes. Despite an average of 56 per cent variability contributed by current price changes, there remains 44 per cent of variability, which is being explained by other five factors. Total real non-food credit availability prevails over all other four housing price determinants in influencing house prices. This accounts for approximately 30 per cent of the total variance contributed by five determinants (i.e. 13 per cent of the total variance) as shown in the table. This variable captures the amount of credits to households for house purchase or for taking rented house as well as funds available to the builders for house construction. A relatively high proportion of housing price variance induced by credit availability confirms its importance in the dynamic behaviour of house prices.

The third largest source of housing price variance appears to be from real BSE index, which accounts for approximately 21 per cent of the total variance contributed by five determinants (that is 9 per cent of the total house price variance). Our results indicate a very significant relationship between the two markets. Clearly, during the past ten years of rapid economic growth and financial reforms in India the values of both real assets and financial assets have appreciated enormously. Thus, this implies that stock market and housing markets are perfectly integrated. Stock market, which is highly liquid with relatively low transactions costs, is characterized by high degree of speculative activity. It is possible that the stock market may have some influence on speculative house building and investment but this is likely to be a temporary in nature.

Table 3.6: Variance Decomposition of Housing Prices

Quarter	REER	RT91	DRNFC	DRBSE	DRGDP	DHPI
1	0.73	2.68	3.01	1.49	2.09	89.97
	(-0.24)	(-0.46)	(-0.57)	(-0.35)	(-0.45)	(-10.52)
4	7.17	9.92	12.42	9.54	4.86	56.07
	(-0.84)	(-1.24)	(-1.51)	(-1.29)	(-1.40)	(-5.10)
5	7.72	9.56	14.64	9.67	4.64	53.74
	(-0.82)	(-1.25)	(-1.68)	(-1.36)	(-1.38)	(-4.92)
6	7.93	9.50	14.72	9.65	4.62	53.55
	(-0.83)	(-1.28)	(-1.70)	(-1.35)	(-1.37)	(-4.87)
7	8.22	9.40	14.56	9.79	4.88	53.12
	(-0.84)	(-1.26)	(-1.68)	(-1.38)	(-1.41)	(-4.82)
10	8.67	9.35	14.68	9.94	4.95	52.38
	(-0.84)	(-1.25)	(-1.72)	(-1.43)	(-1.37)	(-4.72)
11	8.76	9.33	14.63	9.93	5.13	52.19
	(-0.83)	(-1.23)	(-1.71)	(-1.44)	(-1.38)	(-4.67)
14	8.81	9.40	14.62	9.94	5.22	51.98
	(-0.79)	(-1.18)	(-1.68)	(-1.48)	(-1.31)	(-4.57)
15	8.85	9.39	14.59	9.94	5.31	51.89
	(-0.77)	(-1.17)	(-1.65)	(-1.48)	(-1.30)	(-4.52)
18	8.86	9.43	14.58	9.94	5.37	51.79
	(-0.73)	(-1.10)	(-1.59)	(-1.50)	(-1.24)	(-4.38)
20	8.87	9.44	14.57	9.95	5.41	51.73
	(-0.71)	(-1.07)	(-1.57)	(-1.52)	(-1.22)	(-4.29)
Average1	7.58%	9.27%	13.12%	9.50%	4.71%	55.79%
Average 2	17.15%	20.98%	29.68%	21.49%	10.67%	
Note: Average 1 shows the average of total housing price variation and Average 2 shows the housing price variance from its individual determinant. The parentheses shows t statistic in the table.						

The fourth largest source of housing price variance appears to be from real short-term interest rate, which accounts for approximately 21 per cent of the total variance contributed by five determinants (that is 9 per cent of the total house price variance). This variable

captures the cost of borrowing to household for house purchase as well as builder's development funding cost. A relatively high proportion of housing price variance induced by interest rate confirms its importance in the dynamic behaviour of house prices. It is, therefore, not surprising that it contributes a significant proportion of house price volatility.

Apart from these three determinants, two remaining variables account for less than 8 percent of total housing price variance. Real Effective Exchange Rate accounts for approximately 7 per cent (that is, only 17 per cent of the total variance from five determinants). However, the result indicates it is not significant.

The final variable in the model, real GDP, contributes very little to housing price variance (5 per cent of total housing price variance). The result suggests that the demand factor for housing market have more long-term impact rather than a short-run impact, which is being modelled in the above VECM.

3.6.7 Results from Impulse Response Function

Although the variance decomposition estimates the proportion of housing price variance accounted by its determinants, it can not indicate whether the impact is positive or negative, or whether it is a temporary jump or long-run persistence. Thus, impulse response analyses are carried out to indicate system's dynamic behaviour. Also, the impulse response functions are used to predict the responses of housing price to various shocks in its determinants. An impulse response function shows how a variable in the VAR system responds to one standard deviation shock in another variable of interest.

Figure 3.1 (a) to (f) illustrate the estimated impulse response functions for twenty-quarter time horizons. Real effective exchange rate is expected to have a negative influence on housing prices. In Figure 3.1(a), however, we find surprisingly that real effective exchange rate results in 0.01 per cent increase in housing prices during the first two quarters and there is a negative response only after third quarters. The results suggest that the rise in exchange rate discourages the foreign investors not to take any investment project in the economy where the exchange rate is overvalued against their currency, which subsequently leads to reduction of housing prices in an economy.

A one standard deviation disturbance originating from real interest rate (Figure 3.1b) results in an approximately -0.02 per cent decline in housing prices in first quarter; the price adjustment, however, undergoes a reversal (-0.01 to 0.01 per cent) between second to fourth quarter. Given that interest rate is often used by the Indian government to dampen housing price inflation, higher interest cost could do both, raise housing prices and also reduce demand and, consequently, causes decline in the price. As seen in the Figure, interest rate has a negative relationship mostly in first year, implying that the chief determinant of housing prices is from the demand side in the short-run. But the positive sign after fourth quarter suggests that the rise in interest rate increases builders' cost of capital, which is subsequently reflected in higher house prices in the long run.

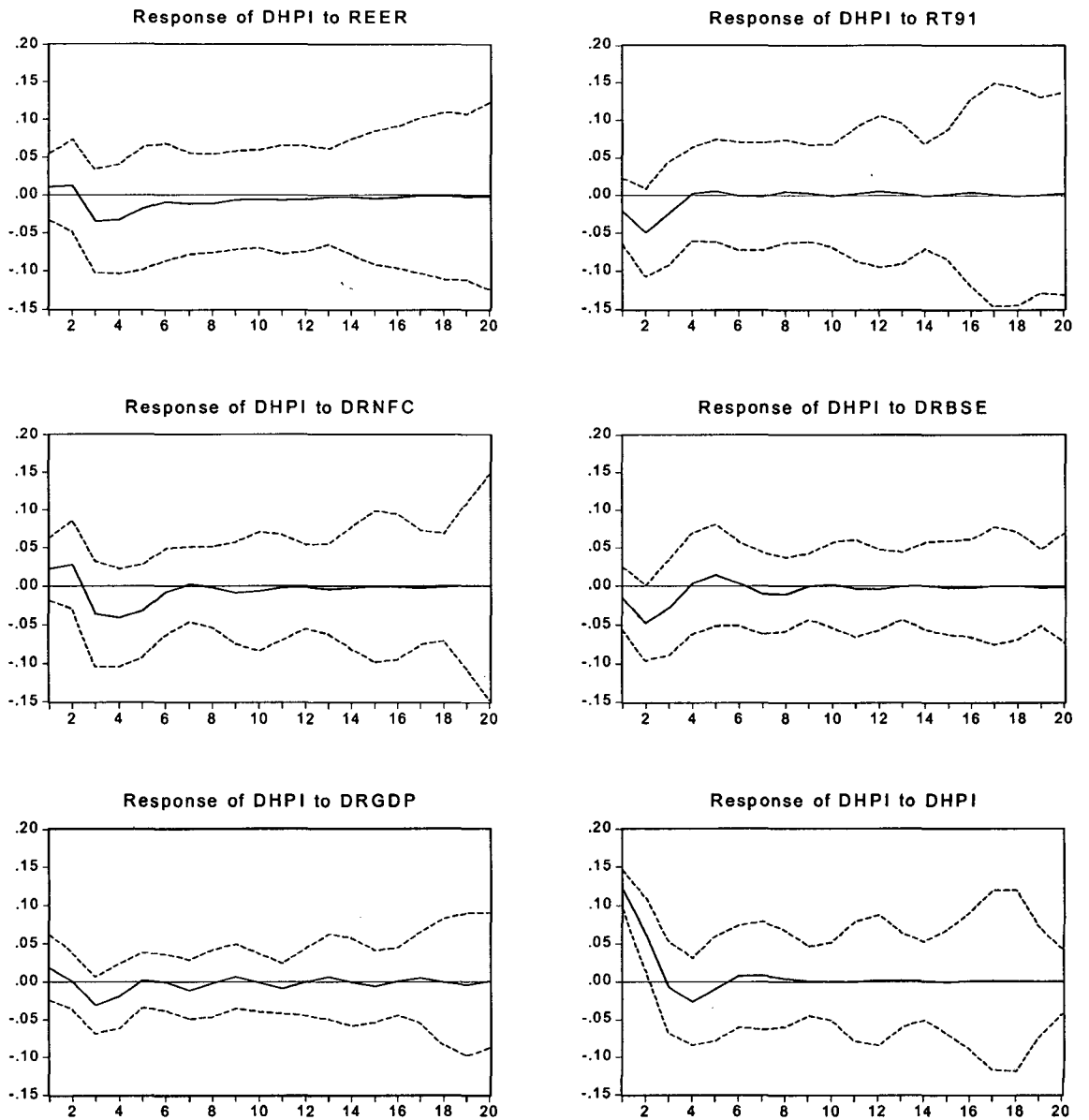
Real non-food bank credit (Figure 3.1c) has positive effect on housing prices as expected. It has a greater positive effect (0.03 per cent) in the first quarter, implying that buyers demand for housing increase rapidly due to easy availability of credit from public and private financial institutions in India. However, in the second quarter there is negative response in house price to one standard deviation shock in non food credit. This is almost similar to the previous results obtained from VECM.

A one standard deviation disturbance originating from real stock price index (Figure 3.1d) results in an approximately -0.01 per cent change in housing prices. It initially produces a negative impact on housing prices in first two quarter and has a large positive impact in third quarter. The possible explanation for the positive and negative impacts could be the influence of speculative activity in the stock market spilling over to invest in housing market. It is also feasible that wealth created in the stock market has a positive effect on the housing market in the long run.

A one standard deviation disturbance originating from real GDP (Figure 3.1e) produces 0.02 per cent of increasing housing prices in the first quarter; the speed of adjustment is fairly rapid and it declines after the second quarter. In response to a one standard deviation disturbance in its own house price (Figure 3.1f), house price increase by 0.12 per cent in the first quarter. This appears to die out very quickly, implying that the current price change has a greater influence on people's expectation of next quarter's price rather than over longer-term horizon.

Figure 3.1(a) to (f): (Top to Bottom Row-Wise): Impulse Response Functions

Response to Cholesky One S.D. Innovations ± 2 S.E.



3.7 Empirical Results Using Annual Data

The empirical analysis reported here is based on a two-stage estimation similar to the preceding estimation with quarterly data. In the first stage, cointegration analysis is used to identify cointegrating relationship among the variables. This would give us impact of determinant variables of housing price on housing price in the long run and the corresponding ECM equation would give us the short run estimates. In the second stage, VAR estimation has been carried out in order to understand the dynamic relationship among the variables entered into the model.

The use of cointegration technique is important because if two non-stationary variables are cointegrated, a VAR model in the first difference would be misspecified. If cointegration relationship is identified, the model should include residuals from the vectors (lagged one period) in the dynamic VECM system.

Table 3.7: Results of Unit Root Tests

Variables	Level		1st Differences		Inference
	ADF	PP	ADF	PP	
LHPI	-1.66 ^C (1)	-1.63 ^C (1)	-1.02 ^T (1)	-1.28 ^T (1)	1
LPRGD	-1.97 ^T (1)	-2.55 ^T (1)	-5.09 ^C (1)	-6.57 ^C (1)	1
P					
LRBSE	-2.11 ^T (1)	2.05 ^N (1)	-3.34 ^C (1)	-4.52 ^C (1)	1
LRNFC	3.05 ^N (1)	3.08 ^C (1)	-1.33 ^T (1)	3.64 ^T (1)	1
RSBIR	-5.08 ^C (1)	-3.84 ^C (1)			0
REER	-3.04 ^C (4)	-2.08 ^N (3)			0

Note: L stands for Natural Logarithm of the respective variables. The optimal lag length for the ADF and PP tests is based on the AIC and SIC criteria. The Mackinnon critical values for ADF and PP tests at 1%, 5% and 10% are -3.59, -2.93 and -2.60 respectively for without trend but intercept (denoted by superscript C) and -4.18, -3.51 and -3.18 respectively for with trend and intercept (denoted by superscript T) and -2.61, -1.94 and -1.61 respectively for no trend and intercept (denoted by N). For PP tests at 1%, 5% and 10% are -3.69, -2.97 and -2.62 respectively for without trend but intercept (denoted by superscript C) and -4.33, -3.58 and -3.22 respectively for with trend and intercept (denoted by superscript T) and -2.65, -1.95 and -1.62 respectively for no trend and intercept (denoted by N).

As discussed in preceding section, it is necessary to check the order of integration of the level variables before using any time series procedure. Therefore, unit root tests of each variable at their levels as well as first difference of non-stationary level variables were conducted. The result from Table 3.7 shows that all the variables are non-stationary at their levels except RSBIR (State Bank of India Real lending Rate) and REER (Real Effective Exchange Rate). However, all the non-stationary variables are found to be stationary at their first differences, and therefore, are integrated of first order.

3.7.1 Cointegration -Vector Error Correction Model

Similar to the previous analysis, cointegration model used here has total six variables; four non-stationary variables viz DLHPI, DLPRGDP, DLRBSE, DLRNFC and two stationary variables viz REER, and RSBIR. Two stationary variables are treated to be exogenous in the cointegration relation as they are likely to exert their influence on housing price in the long run rather than getting influenced by other variables. Since they are found to be stationary, the study assumes them to be exogenous in the cointegration relation. However, in the error correction equation, they are assumed to be endogenous, the constant, and an error correction term being exogenous to the model.

Table 3.8: The VAR Selection of Lag Length

Lags	Log L	LR	FPE	AIC	SC	HQ
0	71.08	NA	1.73	-4.22	-3.64	-4.04
1	158.86*	131.67*	1.07*	-9.34*	-8.01*	-8.94*
2	167.05	9.94	2.14	-8.78	-6.69	-8.14
3	185.24	16.88	2.52	-8.94	-6.09	-8.07

Note: * Indicates lag order selected by the criterion

The VECM involves selection of appropriate lag length. An inappropriate lag selection may give rise to either problem of overparametrization or underparameterization. The objective of estimation is to ensure that there is no serial correlation in the residuals. Likelihood Ratio (LR), Final Prediction Error (FPE), Akaike information criterion (AIC), Schwarz information criterion (SIC), and Hannan-Quinn criterion (HQ) are used to select optimal lag

lengths. A maximum of four lags was tested in the present study. The resulting lag structure is reported in Table 3.8. All the criteria such as LR, FPE, AIC, SC, and HQ select for first lag. Hence, the first period lag is considered to be appropriate for analysis.

3.7.2 Cointegration Relationship

Cointegrating relationship is tested with equation (3.6). The relationship is estimated by the Johansen (1988) multivariate cointegration test. Table 3.9 in the following presents the trace and maximum eigenvalue statistics for the sample period, 1979 to 2006. The test statistics and asymptotic critical values at 1% and 5% are also shown in Table 3.9. Both the tests reject the hypothesis of no cointegration ($\delta = 0$) at the 1% and 5% level, where as they do not reject the hypothesis that $\delta \leq 1$. This suggests that there exists one cointegrating vector in the model. Therefore, the conclusion is that $\delta = 1$, implying that there is one stationary relationship among the variables.

Table 3.9: Johansen Cointegration Rank Test

Null Hypothesis	Alternative Hypothesis	Trace Statistic	5% Critical Value	1% Critical Value
$\delta = 0$	$\delta \geq 1$	58.52 ^{***}	47.21	54.46
$\delta \leq 1$	$\delta \geq 2$	25.42	29.68	35.65
$\delta \leq 2$	$\delta \geq 3$	5.48	15.41	20.04
$\delta \leq 3$	$\delta \geq 4$	0.59	3.76	6.65
Null Hypothesis	Alternative Hypothesis	Maximum Eigen Value	5% Critical Value	1% Critical Value
$\delta = 0$	$\delta = 1$	33.10 ^{***}	27.07	32.24
$\delta \leq 1$	$\delta = 2$	19.94	20.97	25.52
$\delta \leq 2$	$\delta = 3$	4.88	14.07	18.63
$\delta \leq 3$	$\delta = 4$	0.59	3.76	6.65

Note: * And **shows Significant at 5% and 1% Level

3.7.3 Long Run Estimates of Housing Price from VECM Model

The long run coefficients obtained from cointegrating equation shows that the real per capita GDP has a significant and positive influence on housing prices while the real BSE index and real non-food bank credit have a significant and surprisingly negative influence on

housing prices. The same reasoning reported in the case of quarterly data for negative influence of the credit availability on housing prices can be applicable here. Furthermore, the negative coefficient of BSE index also satisfies our hypothesis.

$$LHPI_t = 27.57 LPRGDP_t - 0.21 LBSE_t - 7.54 LNFC_t, \quad (3.13)$$

$$(-3.09)^* \quad (2.88)^* \quad (3.08)^*$$

3.7.4 Short Run Estimates of Housing Price from VECM Model

The coefficients of error correction term in the VECM shows that it is significant and negative implying that there is partial adjustment of housing prices in the short run to its deviations from its long run equilibrium path. The adjustment is around 9 per cent per year. Looking at the short-run parameters from the ECM equation, it suggests that surprisingly both real per capita GDP and real effective rate have significant and negative influence on housing prices like quarterly estimates. Other variables do not play significant role in the short run. May be that a short run rise in income does not encourage to construct/invest on housing, thereby putting downward pressure on the housing prices. It is the only increase in permanent income in the long run which leads the individuals to demand for housing.

$$DLHPI_t = 1.33 + 0.17 DLHPI_{t-1} - 3.01 DLRGDP_{t-1} - 0.56 DLBSE_{t-1}$$

$$(2.056)^* \quad (0.339)^* \quad (-1.534)^* \quad (-0.925)^*$$

$$- 0.82 DLNFC_{t-1} + 0.004 RSBIR_t - 0.009 REER_t - 0.09 ECM_{t-1} \quad (3.14)$$

$$(-1.08)^* \quad (0.327)^* \quad (-1.742)^* \quad (-2.050)^*$$

$$R^2 = 0.39 \quad Adjusted \bar{R}^2 = 0.18$$

3.7.5 VAR Analysis

As a prelude to estimating variance decomposition and impulse response analyses in VAR, the study conducts Granger causality tests between housing prices and its determinants. This enables us that if there exists some causal relationship among the variables in the bi-variate model, then only it makes sense to test their relationship in a multivariate framework of VAR. The estimated F -statistics of the causality test are reported in Table 3.10. The results of F -statistic unlike quarterly estimates suggest that all

determinants including national income, stock price, real interest rate, and real effective exchange rate do not granger cause housing price, except real non food credit. Although no causality is observed from real interest rate and the trade based effective exchange rate to house prices, but the reverse causality exists.

Table 3.10: Granger Causality Test

Null Hypothesis:	Lags	Obs	F-Statistic	Probability
DRPGDP does not Granger Cause DHPI	1	26	0.01	0.90
DHPI does not Granger Cause DRPGDP			0.29	0.58
DRBSE does not Granger Cause DHPI	1	26	0.63	0.43
DHPI does not Granger Cause DRBSE			1.08	0.30
DRNFC does not Granger Cause DHPI	2	25	4.50	0.02
DHPI does not Granger Cause DRNFC			5.82	0.01
RSBIR does not Granger Cause DHPI	3	24	1.61	0.22
DHPI does not Granger Cause RSBIR			2.65	0.08
REER does not Granger Cause DHPI	2	25	0.53	0.59
DHPI does not Granger Cause REER			3.20	0.06

3.7.6 Estimated Results in VAR

In order to provide further insight into the relationship of housing prices and its determinants, the variance decomposition and impulse response function are calculated in a multivariate set up. These two approaches give an indication of the dynamic relationship among the variables in the model and allow us to gauge the relative importance of the variables beyond the sample period. Before estimating Variance Decomposition and Impulse Response functions, diagnostic checking procedures have been followed.

The results reported in Table 3.11 points out that VAR estimated with lag one satisfies the stability test, normality test as well as no serial correlations among the residuals in the VAR model. Therefore, we conclude that our model fulfills the model adequacy test for the analysis.

Table 3.11: Diagnostic Checking Criteria

Adequacy Test for VAR model	Critical values	Lags
Stability (modulus values of roots of characteristic polynomials)	0.69, 0.68, 0.52	1*
Normality Chi-Square values	0.58, 0.40	1*
Serial Correlation LM-stat	50.01, 40.97	1*

Note: * Indicates the lag length.

3.7.7 Results from Variance Decomposition

The estimates of variance decomposition are produced in Table 3.12 for a 20 year time horizon. The results similar to the previous estimates indicate that disturbance originating from housing price itself inflicted greatest variability to prices. It contributes 91 per cent variability one period ahead, approximately 62 per cent fifth year ahead. The proportion of variance remains high (60 per cent) even till 20th period. This result indicates that current change in housing prices heavily influence people's expectation of future prices changes. The remaining 40 per cent of the variability is being explained by other factors. Total real non-food credit prevails over all other four housing price determinants in influencing house prices. It accounts for approximately 69 per cent of the total variance contributed by the five determinants (that is 27 per cent of the total housing price variance). This variable captures the amount of bank-lendings to households for house purchase as well as builder's development funding financing. A relatively high proportion of the housing price variance induced by credit availability confirms its importance to dynamic behaviour of housing prices.

Table 3.12: Variance Decomposition of Housing Prices

Period	REER	RSBIR	DLRNFC	DLRBSE	DLPRGDP	DLHPI
1	0.03	0.11	0.20	6.93	1.23	91.51
	(-4.4)	(-0.02)	(-0.03)	(-0.81)	(-0.21)	(-7.15)
2	1.28	0.31	17.28	8.05	1.45	71.6
	(-0.21)	(-0.05)	(-1.57)	(-0.89)	(-0.23)	(-5.32)
4	1.90	0.92	25.01	6.83	1.7	63.61
	(-0.25)	(-0.14)	(-1.83)	(-0.78)	(-0.23)	(-4.41)
5	1.81	0.96	26.57	6.65	1.69	62.28
	(-0.23)	(-0.15)	(-1.85)	(-0.74)	(-0.23)	(-4.15)
6	1.78	0.95	27.8	6.52	1.7	61.21
	(-0.22)	(-0.15)	(-1.86)	(-0.71)	(-0.22)	(-4.06)
8	2.03	0.91	29.28	6.33	1.73	59.7
	(-0.24)	(-0.14)	(-1.89)	(-0.72)	(-0.22)	(-3.81)
9	2.29	0.90	29.75	6.25	1.74	59.05
	(-0.27)	(-0.14)	(-1.91)	(-0.70)	(-0.22)	(-3.75)
11	2.98	0.91	30.41	6.09	1.76	57.81
	(-0.34)	(-0.14)	(-1.91)	(-0.70)	(-0.23)	(-3.63)
13	3.79	0.95	30.87	5.94	1.78	56.63
	(-0.40)	(-0.14)	(-1.89)	(-0.69)	(-0.23)	(-3.51)
14	4.21	0.98	31.06	5.87	1.79	56.05
	(-0.43)	(-0.14)	(-1.89)	(-0.66)	(-0.24)	(-3.43)
18	5.89	1.11	31.68	5.6	1.81	53.87
	(-0.58)	(-0.16)	(-1.97)	(-0.65)	(-0.23)	(-3.23)
19	6.3	1.14	31.81	5.54	1.82	53.36
	(-0.62)	(-0.16)	(-1.97)	(-0.65)	(-0.23)	(-3.19)
20	6.7	1.18	31.94	5.47	1.83	52.85
	(-0.66)	(-0.16)	(-1.98)	(-0.63)	(-0.24)	(-3.23)
Average1	3.29 %	0.9 %	27.48 %	6.26 %	1.73 %	60.32 %
Average 2	8.31 %	2.27 %	69.26 %	15.77 %	4.36 %	

Note: Average 1 shows the average of total housing price variation and Average 2 shows the housing price variance from its individual determinant. The Parentheses shows the t statistic in the table.

The third largest source of housing price variance appears to be from real BSE index, which accounts for approximately 16 per cent of the total variance contributed by the five determinants (that is 6 per cent of the total house price variance). This indicates a very significant relationship between the two markets implying both the markets are perfectly integrated. Stock market, which is highly liquid with relatively low transactions costs, is characterized by high degree of speculative activity. It is possible that the stock market may have some influence on the speculative house building and investment in the long run but this is likely to be a temporary phenomenon.

The fourth largest source of housing price variance appears to be from real short-term interest rate, which accounts for approximately 8 per cent of the total variance contributed by the five determinants (that is 3 per cent of the total house price variance). This variable captures the cost of borrowings to households for house purchases as well as builder's development funding cost. A relatively high proportion of the housing price variance induced by interest rate shocks confirms its importance in the dynamic behaviour of housing prices. It is, therefore, not surprising that it contributes a significant proportion of house price variability.

Apart from these three determinants, the two remaining variables account for less than 4 per cent of housing price variance. Real effective exchange rate accounts for approximately 3 per cent to the housing price variance (that is, only 8 per cent of the total variance from the five determinants). But, our result indicates that it is significant only in the first quarter or for a shorter period.

The final variable in the model, real per capita GDP, contributes very little to housing price variation (4 per cent of the total variance). The result suggests that the demand factor of the housing market have more long-term impact rather than a short-run impact as this is taken in differences of variables and the result is similar to the results in VECM equation.

3.7.8 Results from Impulse Response Analysis

Figure 3.2 (a) to (f) illustrate the estimated impulse response functions for twenty years. Real effective exchange rate is expected to have a negative effect on housing prices. However, in Figure 3.2(a), it is found that shocks in real effective exchange rate give rise to

0.03 per cent decline in housing prices during first two years and there is a positive response after fifth year. The results suggest that the rise in exchange rate discourages especially to the foreign investors not to take any investment project in the economy where the exchange rate is overvalued against their currency, which subsequently leads to the reduction of housing prices in an economy.

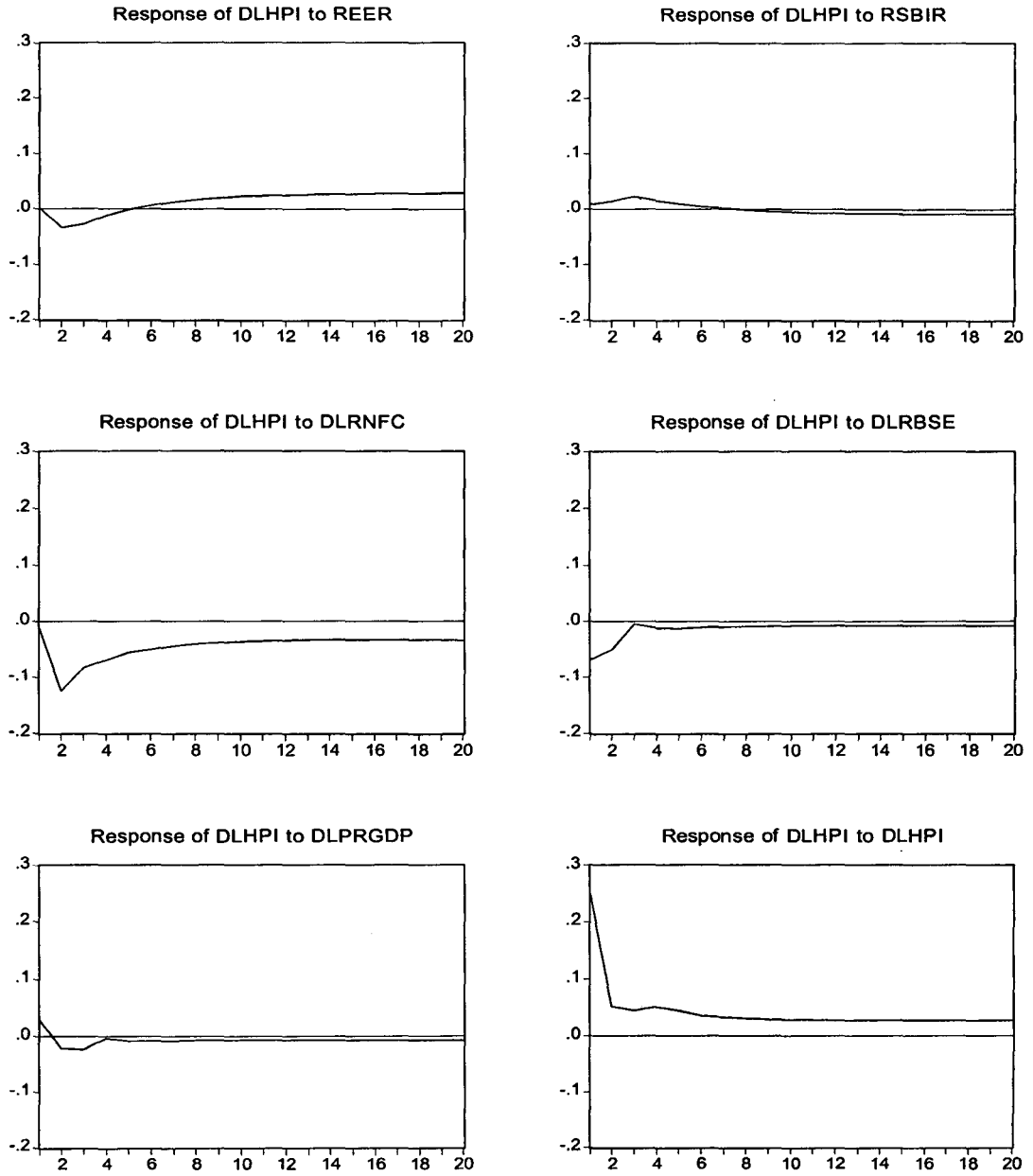
Figure 3.2(b) shows that a one standard deviation disturbance originating from real interest rate results in an approximately 0.01 per cent increase in housing prices in first quarter; the price adjustment, however, does undergo a reversal (0.01 to -0.01 per cent) between second to fourth year. It suddenly dies out after sixth year. As can be seen in the Figure 3.2(b), interest rate has a positive relationship mostly in first year, implying that chief determinant of housing price change is attributed to supply side in the short-run. It might be due to rising funding cost for the builders, thereby, the builders increase the housing prices in the long run in line with the rising interest rate. This positive impact of interest rate on housing prices has also been supported by Chen and Patel (1998).

Real non-food bank credit in Figure 3.2(c) has negative effect on housing prices in contrast to an expected positive sign. Its greatest negative effect (-0.01 per cent) occurs in the first period and improves later, implying that there could be a decline in demand for housing from the buyers' side due to high cost of credit from the public and private financial institutions in India or as explained earlier credit availability might have translated into more construction activities. When the effect of credit availability strengthens the supply side more relative to the demand side, it could result in decline in housing prices unless the demand side finds support from rise in permanent income.

It could also be seen that a one standard deviation disturbance originating from stock price index in Figure 3.2(d) results in an approximately -0.08 per cent change in housing prices. It initially produces a negative impact on housing prices in the first two quarters and then the negative impact has been reduced in the third quarter. The possible explanation for the negative impact could be due to influence of speculative activity in the stock market spilling over to invest in the housing market. However, it is also feasible that wealth created in the stock market has a positive effect on housing market in the long run.

Figure 3.2 (a to f): (Top to Bottom Row-Wise): Impulse Response Functions

Response to Cholesky One S.D. Innovations



A one standard deviation disturbance originating from real per capita GDP in Figure 3.2(e) produces 0.02 per cent increase in housing prices. The speed of adjustment is fairly rapid and although it declines in the second period but further leads to a rise in 3rd year. In response to a one standard deviation shock in its own house price as shown in Figure 3.2(f), future house price increases by 0.25 per cent in the first year. This appears to die out very quickly, implying that the current price change has a greater influence on people's expectation and this lasts for a temporary period.

3.8 Conclusion

The overall objective of this chapter is to investigate the long and short run determinants of housing prices and examine the sources and the extent of housing price variability due to relevant determinants within the context of a partial macroeconomic framework. The techniques employed for analysis include Johansen's cointegration test and variance decomposition and impulse response techniques in VAR.

The findings using quarterly data for the period from 1996:1 to 2007:1 indicate that there is a long-run equilibrium relationship between housing price and its determinants including real GDP, and non-food credit. The long run coefficients obtained from cointegrating equation shows that the real GDP has a significant and positive influence on the housing price while the real stock price index (BSE) does not have any influence on housing price in the long run. In addition, the real non-food bank credit has a significant and surprisingly negative influence on housing price. In order to test the sources of variability and identify the responses of housing prices to its determinants, the study decomposed the housing price variance. The results indicate that a disturbance originating from its own housing price induces greatest variability in house prices: it accounts for 89 per cent of the variability one period ahead, approximately 54 per cent four quarters ahead and 55 per cent six years ahead. The remaining variance is accounted for by the five determinants. The supply side factor (credit availability alone) accounts for 13 per cent of the housing price variance and demand side factors (real GDP, real interest rate, real stock prices, and real effective exchange rate) account another 32 per cent.

The findings using annual data for the period from 1979 to 2006 indicate that there is a long-run equilibrium relationship between housing price and its determinants including real per capita GDP, real stock prices and real non-food bank credit. The long run coefficient obtained from cointegrating equation shows that the real per capita GDP has a significant and positive influence on housing prices while the real stock price index (BSE) and real non-food bank credit have a significant and surprisingly negative influence on housing prices. In order to test the sources of variability and identify the responses of housing prices to its determinants, the also decomposed the housing price variance. This result is almost similar using quarterly data. It indicates that a disturbance originating from its own housing prices induces greatest variability in housing prices. It accounts for 91 per cent of the variability one period ahead, approximately 63 per cent four years ahead and 61 per cent six years ahead. The remaining variance is accounted for by the five determinants. The supply side factor (credit availability) accounts for 27 per cent and demand side factors (real per capita GDP, real interest rate, real stock prices, and real effective exchange rate) account another 12 per cent.

These results have significant policy implications. Therefore, the findings in this study suggest that the determinants of housing prices, supply side factors credit availability in particular should not be underestimated in the new dwellings market of Indian economy, which plays an important role for the dynamic behaviour of housing prices.

Chapter 4

DETERMINANTS OF DEMAND FOR HOUSING: MICRO EVIDENCE

4.1 Introduction

Housing is a highly durable good, which provides flow of consumption services to the occupants and represents a capital asset to the owners. In a discussion of determinants of its production, it is imperative to look into the structure and composition of factors influencing its demand and supply. It is to be noted that since housing is a basic necessity for human existence and, human beings are situated in various types of political and socio-economic situations, there exists various types of demand for housing. Downs (1974) observes that “There are three elements of demand to be considered: the political demand, the demographic demand, and the ‘effective’ market demand”. He used the term ‘political’ to mean the state or body of citizens, the government and its policy, especially in secular affairs. The three elements of demand for housing vary widely among themselves.

Housing the poor is now more a political issue than an economic issue. Market forces would not allocate the given amount of resources efficiently for satisfying the housing needs of all the households in an economy, particularly in which distributions of income and wealth are unequal and supply constraints are formidable. Such a situation is regarded as market failure, which justifies government’s intervention to provide housing services for all. Unlike the social provision of health and education services, it is essential to provide shelter for the urban and rural poor and the other relatively deprived sections of the society. In order to meet their wants, public may raise demand for effective state intervention through the political process. The political demand for housing mainly depends upon the quantity and the quality of existing housing stocks as well as the quality of the ruling government in place.

In a market-determined allocation system, only persons with adequate purchasing power to acquire goods and services would become the effective consumers of goods and services. This is the case with housing too. The market forces would not translate all the needs

generated by political or demographic demands into effective demand; it would respond only to the effective demand. In a broad sense, the effective demand for housing comes from four major sources: (i) persons who demand for housing services (for rented houses); (ii) landlords (who demand houses by way of an income-earning assets); (iii) builders (whose demand arises from the objective of selling buildings and earning profits) and (iv) owner-occupiers (whose demand for housing is for own use).

Persons who demand housing services (hiring of houses on rent) look for occupying house and not for ownership of house buildings. This category of demand depends on a number of exogenous variables. According to Stafford (1978), the demand for housing services is a function of the price of alternative accommodation, the prices of other goods, income levels and neighborhood characteristics such as proximity to road, school and other educational institutions, communication, and hospital etc.

Landlords demand additional houses with a view to renting them out and earning a regular flow of income. They consider house is an alternative form of profitable investment. Landlords do not bother about the utility aspect of the houses at their disposal.

Builders' demand for housing is of an entirely different kind. Their interest is merely to sell out housing units in the housing market with a motive to make profits from the selling units transaction. For the builder, a house is only a commodity, a saleable good. If he expects high profit in the future, he demands more housing units now. In a competitive market economy, house builders make projections of important factors determining housing demand such as number of household formations, increase in income level, and decline in interest rate.

In contrast, the owner-occupier demands houses exclusively for own use. The owner himself is both an asset holder and a deriver of consumer services. He derives consumption benefits, both as necessary and as luxury, in the space and quality of the housing commodity. Therefore, he may attach more importance to the utility aspect and the characteristics that the housing unit provides than the landlord and the builder from the capital invested in the form of housing services.

In our analysis of the determinants of demand for housing, the study confines the analysis to the last category i.e., the effective demand for owner-occupied housing. The effective demand comprises the actual housing investment either to buy/construct new housing units or to make additions, alterations and improvements on the existing inventories.

4.2 A Profile of the Study Area

The study area 'Bhubaneswar' is situated in the Khordha district of Orissa State. Bhubaneswar, the capital of Orissa and the "Temple Town of India", is an important metropolis of eastern India. The city is well connected with the rest of the country and has the potential to emerge as an important growth centre. Being the seat of administration in the state, Bhubaneswar has attracted a huge worker population, mostly from the neighbouring locations, and has been experiencing surge in its population growth by 57 per cent over the decade. The prime economic drivers of the city have been trade and tourism. The Orissa Government has accorded 'Priority Sector' status to the Information Technology (IT) sector to attract investment into the region. IT major players like Infosys and Satyam who set up their development centres in Bhubaneswar in 1997 are contemplating expansion plans. In addition, some of the major developments by the State Government through Industrial Development Corporation of Orissa (IDCO) are the Tower 2000 in Mancheswar Industrial Estate, IDCO Towers in Janpath and Fortune Towers in Chandrasekharpur which houses prominent companies like Tata Consultant Services (TCS), Reliance Infocom, Tata Teleservices, Pohang Steel Company Limited (POSCO) and Essar Steel. With the growth of Information Technology (IT) and IT Enabled Services (IT/ITES) prospects in the city and the resurgence of the mining industry, Bhubaneswar is expected to evolve as a significant urban centre of the country in the forthcoming years.

Though the infrastructure development in the city has been rather slow, there has been steady development in the real estate sector of the city. The Bhubaneswar real estate market is government regulated with almost 70 per cent to 75 per cent of the landholding vested with the state owned Orissa State Housing Board. A number of national level developers have expressed interest to set up their projects in the city. With Janpath, the central business district (CBD) of the city, facing paucity of land, new commercial developments in the city

are coming up in the north and southwest locations of the city. Residential property in the city mostly comprises independent units in prime locations of Ashok Nagar, Forest Park, Saheed Nagar, V.S.S Nagar, Jaidev Vihar and Bapuji Nagar with a few multi-storied apartments in Rasulgarh. Demand for apartments and flats are expected to pick up with increasing preference shown by the HIG (High Income Group) and Middle Income Group (MIG) population of the city. Besides, Bhubaneswar scores rank 6th on the real estate front owing to its relative weightage of given five parameters (such as real estate, people, physical infrastructure, social infrastructure and business environment) among all other three-tier cities in India in 2007, where as the capital city share the top rank on the people parameter and also score 4th rank across all the rest parameters (See: www.knightfrank.com).²⁴

Khordha District extends from Latitude 19°40' to 20°25' N and from 84°40' to 86°5' E, Longitude which constitutes the coastal region of Orissa. It is surrounded by the districts such as Nayagarh in the North, Cuttack in the East, Jagatsinghpur on the South East, Puri on the South and Ganjam in the West.

With a geographical area of 2813 sq km., Khordha is the largest District of Orissa, which had a total population of 18.74 lakh in 2001 against 15.02 lakh in 1991, which accounted for 4.74 per cent in 1991 and 5.11 per cent of the total population of the state in 2001 census. The decadal rates of growth of the population were 32.63 per cent during 1981-91 and 24.79 per cent during 1991-2001. Urban population reached to 34.37 per cent in 1991 and 42.93 per cent in 2001. The density of population (persons per square km) increased from 534 in 1991 to 666 in 2001. SC and ST population in 2001 constituted 13.62 per cent and 5.14 per cent respectively of the total population in Khordha district in 2001.

Khordha came into existence as a district separated from Puri district in 1992. This district is divided into 2 sub-divisions and 7 tahsils. There are 1567 villages that are grouped into 168 panchayat blocks, 5 urban bodies and 10 community development blocks.

²⁴ The three tier cities of India are Chandigarh, Ludhiana, Lucknow, Guwahati, Jaipuar, Ahmedabad, Suarat, Nagpur, Indore, Goa, Visakapatnam, Mysor, Coimbatore, Kochi, Vijayawada, Mangalore, Trivandrum and Boroda. People parameter include purchasing power plus literacy rate, Real Estate parameter include real estate cost, availability and outlook, Physical infrastructure include road, telecom, power supply and air connectivity, Social infrastructure parameter includes quality educational institutes and finally, Business environment parameter constitutes progressive govt. policies and positive state of economy.

The literacy rate of Khordha district increased from 67.72 per cent in 1991 to 80.19 per cent in 2001. Khordha district holds the first rank of the human development index in 2001 among the districts of Orissa (Human Development Report 2004).

4.3 Hypotheses

The study hypothesizes that in Orissa, it is the levels of household income in the past and the present that have influenced the demand for housing consumption. Empirical studies on the determinants of consumer demand for housing give predominant importance to household's per capita income (Gopikuttan 1988).

Another important factor that is expected to exert influence on housing demand is the size of the household. The bigger the household size, the higher is likely to be the need for housing. The study by Philippe (1980), indicates that there exists an inverse relationship between household size and standard of living (including consumer demand for housing). The reason offered for the observed inverse relationship is the following: with a view to ensuring better future for their children, better-educated and better-employed parents enjoying high standard of living prefer to have fewer children. In the context of Orissa economy, the study hypothesizes, on the other hand, a positive relationship, namely that the size of the household has strong positive influence on the effective demand for housing. Although Orissa economy is underdeveloped in nature, standard of living of the household has increased especially in urban areas. This means increased household size will generate high demand for housing.

Education level of a person should be expected to influence his/her demand for housing. Better education fetches better quality jobs. A better-employed person would have better control over his/her income and its flow over time. He/She is likely to have wider choice of the level and the standard of his/her housing and higher ability to earn the required income. We therefore assume that levels of education would have positive influence on a person's demand for housing.

The number of rooms should be expected to have positive influence on the demand for housing. It is in a sense, increase in number of rooms leads to increase in expenditure on

housing. The study therefore hypothesize that number of rooms has positive influence on household's demand for housing.

The floor level of the houses that determines the size of a house, should be expected to have positive influence on the demand for housing. It means that larger is the size of building floor construction, the higher is the household's expenditure on housing.

Lastly, we assume that location is the most important factor of soaring housing demand in the urban city. The locational quality depends on the physical form of infrastructure development in the city. It means developed regions having standard infrastructure is expected to have a rising demand for housing than the underdeveloped region in Bhubaneswar or any city for that matter.

From the preceding discussion, one can develop the hypothesis that individual household's demand for housing (D_h) is functionally related to average monthly households income level (Y_m), number of rooms (N), and, floor level (FL), and economic development of a region (R).

$$D_h = f (Y_m, N, FL, R) \quad (4.1)$$

The study assumes that the relationship between the dependent and the independent variables is linear.

4.4 Survey Areas

The three sample areas such as Jaydev Vihar, V.S.S. Nagar and Saheed Nagar are located on the northwestern, northeastern and northern outskirts of the Bhubaneswar city. A major portion of the city has been witnessing substantial development in housing and infrastructure during the past eight years. These three areas of Bhubaneswar city remain close to major towns of Cuttack and Puri. Jaydev Vihar lies close to the national highway, Kalinga hospital, BDA colony and the Mayfair hotel. In this area it is found that it is mostly the high-income group (HIG) and middle-income group (MIG) reside. This area is regarded as the VIP area of Bhubaneswar.

V.S.S. Nagar lies close to the East Coast Central railway station as well as to the Mancheswar Industrial Estate; where MIG and low-income group (LIG) form the majority. The place is close to the Utkal University at Vanibihar. Saheed Nagar is also regarded as a VIP area, lying close to the national highway and the Central Bhubaneswar railway station. It is observed that there has been a significant development in infrastructure and it forms the main city hub of Bhubaneswar, where there is a large concentration of retail markets.

The selection of the sample areas was made keeping in mind the objectives of the present study, which required to be carried out in an area mainly characterized by the existence of owner-occupied residential houses as well as newly emerging buildings showing the mixed features of an urban fringe and infrastructure developments. Given these features of the locations, it is expected to bring the analysis of urban housing price behaviour into sharp focus. These three areas reasonably meet the requirements of the objectives of the present study.

4.5 Result Discussion

4.5.1 Characteristics of the Sample Households

Table 4.1 shows that in the three urban areas of Bhubaneswar, the Capital City of Orissa, namely Jaydev Vihar, Saheed Nagar, and V.S.S Nagar, the present study has been carried out considering 50 households each from the three urban areas which means a total of 150 sample households is studied.

Table 4.1: Sample Areas of the Study

Urban Areas	Ward No	Number of Respondents
Jaydev Vihar	15	50 (33.3)
V.S.S.Nagar	4	50 (33.3)
Saheed Nagar	20	50 (33.3)
Total		150 (100.0)

Note: Figures in Parenthesis are percentages.

Source: Primary Survey

Table 4.2 shows household characteristics of three sample urban areas. The total population in the sample households came to a total of 635, 328 males and 307 females.

Table 4.2: Sex-wise Distribution of the population of the sample households

Sex	Number of the households	Percent
Male	366	57.6
Female	269	42.4
Total	635	100.0

Source: Primary Survey

The survey also finds that only less than 12 per cent of the households have dairy animals; nearly 89 per cent of the households did not have any livestock at all. Households' assets are considered the traditional source of wealth, which could influence their expenditure on housing (Table 4.3).²⁵

Table 4.3: Household Assets

Name of Livestock	Number of the Livestock	Number of the Respondents
-0	-0	133 (88.7)
Cow	1	2 (1.7)
Goat	2	14 (9.3)
Others	3	1 (.7)
Total	6	150 (100.0)

Note: Figures in parenthesis are percentages.

Source: Primary Survey

Table 4.4 shows the distribution of sample households according to ownership of consumer durables such as television, radio, computer and ceiling fan. It is clear that in the urban areas, more than three-fourth of the households possess television sets and 20 respondents have three mobile phones each, and 11 respondents have four fans.

²⁵ Households' asset mean animals like cow, goat and others, and also refer to consumer durable goods such as mobile phone, telephone, television, radio, fan and others.

Table 4.4: Distribution of Households by Consumer Durables

Name of Consumer Durables	Number of Durables	Number of Respondents
Mobile Phone	3	20 (13.3)
Television	1	114 (76.0)
Radio	2	4 (2.7)
Computer	3	1 (0.7)
Fan	4	11 (7.3)
Total	13	150 (100.0)

Note: Figures in parenthesis are percentages

Source: Primary Survey

Table 4.5 shows the percentages of sample households having different types of walls for their houses. It is found that about 21 per cent had mud walls and 80 per cent, brick walls. Mud walls were found in kutchra houses and brick walls reveal that houses were good.

Table 4.5: Distribution of Households by Type of Materials for Wall

Types of wall	Number of Respondents
Mud	31 (20.7)
Bricks	119 (79.3)
Total	150 (100.0)

Note: Figures in parenthesis are percentages.

Source: Primary Survey

Table 4.6 shows that households used different types of materials for construction of roofs. About 20 per cent had houses with thatched roof. Tiles or asbestos were used by 12.7 per cent households. It was noted that about two-third of the households had concrete-made roof.

Table 4.6: Distribution of Households having type of roof

Types of roof	Number of Respondents
Thatched	30 (20.0)
Tile	1 (0.7)
Asbestos	18 (12.0)
Concrete	99 (66.0)
Others	2 (1.3)
Total	150 (100.0)

Note: Figures in parenthesis are percentages.

Source: Primary Survey

Table 4.7 shows the distribution of households according to the lighting facility in use. It is seen that about 87 percentage of the sample households had electricity connections. Hardly 13 per cent depended on kerosene lamps for lighting purposes.

Table 4.7: Distribution of Households according to lighting facility

Sources of lighting facility	Number of Respondents
Kerosene	20 (13.3)
Electricity	130 (86.7)
Total	150 (100.0)

Note: Figures in parenthesis are percentages.

Source: Primary Survey

Table 4.8: Distribution of Households having cooking facility

Sources of cooking	Number of Respondents
Firewood	38 (25.3)
Kerosene Stove	8 (5.3)
Bio-gas	103 (68.7)
Electric Heater	1 (0.7)
Total	150 (100.0)

Note: Figures in parenthesis are percentages.

Source: Primary Survey

Table 4.8 shows the distribution of households that they had cooking facility. It is seen that about 26 per cent used firewood as the traditional cooking fuels and about 6 per cent kerosene stoves or electric heaters for the purpose. The proportion of households, which used biogas for the purpose, came to as many as around 69 per cent.

Table 4.9 shows about 36 per cent of the sample households were found to be lacking in toilet facilities. The Remaining 64 per cent of the respondents had toilet facility in their premises.

Table 4.9: Distribution of Households having Toilet facility

Sources of toilet	Number of Respondents
Having	96 (64.0)
Not having	54 (36.0)
Total	150 (100.0)

Note: Figures in parenthesis are percentages.

Source: Primary Survey

The proportion of households, which accessed drinking water from wells, amounted to 30.7 per cent. Most of the rest (68.7 per cent) draw their drinking water from tube wells (Table 4.10).

Table 4.10: Distribution of Households having Water Provision Facility

Sources of drinking water	Number of Respondents
Well	46 (30.7)
Tube well	103 (68.7)
Govt. Supplied Water	1 (0.7)
Total	150 (100.0)

Note: Figures in parenthesis are percentages.

Source: Primary Survey

While considering multiple dimensional features of houses of households, it gives a different perspective about housing in the Bhubaneswar city. Table 4.11 shows the percentage distribution of type of roof houses having different types of wall. It is found that 77.41 percentage of the households had thatched roof with mud type of wall houses. Similarly, 83.19 percentage of the households were having concrete roof with bricks type of wall houses in the urban area.

Table 4.11: Distribution of Households by type of roof versus type of wall of houses

Type of roof	Type of Wall		Total
	Mud	Bricks	
Thatched	24 (77.41)	6 (5.04)	30
Tile	0	1 (0.84)	1
Asbestos	5 (16.12)	13 (10.92)	18
Concrete	0	99 (83.19)	99
Others	2 (6.45)	0	2
Total	31 (100.0)	119 (100.0)	150

Note: Figures in parenthesis are percentages.

Source: Primary Survey

Further, it is found that about 65 per cent of the households had thatched type of roof houses with use of kerosene for lighting purpose. Note that 76.15 percentages of the households had concrete type of roof houses using electricity for lighting (Table 4.12).

Table 4.12: Distribution of Households by type of roof versus type of lighting

Type of roof	Lighting		Total
	Kerosene	Electricity	
Thatched	13 (65.0)	17 (13.07)	30
Tile	0	1 (0.76)	1
Asbestos	6 (30.0)	12 (9.23)	18
Concrete	0	99 (76.15)	99
Others	1 (5.0)	1 (0.76)	2
Total	20 (100.0)	130 (100.0)	150

Note: Figures in parenthesis are percentages.

Source: Primary Survey

Table 4.13 shows about 99 per cent of the households had concrete type of roof houses using tube well for drinking purpose. It is also found that nearly 57 per cent of the households were having thatched-made roof houses using the supply water, provided by the government for drinking purpose in Bhubaneswar.

Table 4.13: Distribution of Households type of roof versus type of drinking water

Type of roof	Drinking Water		Total
	Tube Well	Supply Water	
Thatched	0	30 (56.50)	30
Tile	1 (1.03)	0	1
Asbestos	0	18 (33.96)	18
Concrete	96 (98.96)	3 (5.66)	99
Others	0	2 (3.77)	2
Total	97 (100.0)	53 (100.0)	150

Note: Figures in parenthesis are percentages.

Source: Primary Survey

It is found that about 61 per cent of the households having thatched-made roof houses did not possess toilet facility in their premises. About 98 percentage of the urban households with concrete type of roof houses had toilet facility in their premises in Bhubaneswar (Table 4.14).

Table 4.14: Distribution of Households type of roof houses versus type of toilet

Type of roof	Toilet Facility		Total
	No	Yes	
Thatched	28 (60.86)	2 (1.92)	30
Tile	0	1 (0.96)	1
Asbestos	16 (34.78)	3 (2.88)	19
Concrete	0	98 (94.23)	99
Others	2 (4.34)	0	2
Total	46 (100.0)	104 (100.0)	150

Note: Figures in parenthesis are percentages.

Source: Primary Survey

Table 4.15 shows that about 58 per cent and 87.5 per cent of the sample households with thatched-made roof houses had firewood and kerosene stove facility for cooking. On the other hand, 96.11 per cent of the sample urban households had biogas cooking facility with concrete type of roof houses. Note that about 100 per cent of the households had possessed

electric-heater for cooking purpose also having asbestos type of roof houses in Bhubaneswar.

Table 4.15: Distribution of Households type of roof houses versus Cooking

Type of roof	Cooking Facility				Total
	Firewood	Kerosene Stove	Bio-gas	Electric Heater	
Thatched	22 (57.89)	7 (87.5)	1 (0.97)	0	30
Tile	0	0	1 (0.97)	0	1
Asbestos	14 (36.84)	1 (12.5)	2 (1.94)	1 (100.0)	18
Concrete	0	0	99 (96.11)	0	99
Others	2 (5.26)	0	0	0	2
Total	38 (100.0)	8 (100.0)	103 (100.0)	1 (100.0)	150

Note: Figures in parenthesis are percentages.

Source: Primary Survey

It is found that 80 per cent of households lived in own houses. No response was received from the rest. Table 4.16 shows that only 17 households had leased out house buildings on monthly rent in the range of Rs. 1000 to Rs. 8000.

Table 4.16. Distribution of Households by Status of Renting out Houses.

Monthly Rent (Rs.)	Number of Respondents	Percent
No rent	133	88.7
1000 - 2000	5	3.4
2000 - 3000	3	2.0
3000 - 4000	2	1.3
4000 - 5000	4	2.7
5000 - 6000	2	1.3
6000 - 8000	1	0.6
Total	150	100.0

Source: Primary Survey

It is interesting to note that only about 5 per cent of the sample respondents originally belong to the city. The remaining 85 per cent are households that migrated from different regions of Orissa like Cuttack, Puri, Phulbani, Nayagarh, Kendrapada, Bhanjanagar, Bhadrak

and Balesore and different states of India to Bhubaneswar such as State like Andrapradesh and regions. Out of the total migrated sample households, say, 85 (100.0) per cent, about 34 per cent of households had migrated to underdeveloped slum area of Saheed Nagar. It is found that these immigrant households are mostly living in the underdeveloped notified slum area of Saheed Nagar. The next highest is around 51 per cent households who had migrated from different regions of Orissa such as Kendrapada, Bhanjanagar, Bhadrak, Puri and Balesore and are living in developed areas such as Jaydev Vihar and V.S.S Nagar in Bhubaneswar. And about 15 per cent of the sample households studied did not furnish the information on the places where from they have migrated.

However, the study finds that 99.3 per cent of the households were satisfied with the location of their houses because of their proximity to work place, close to the airport and hospital and near to city centre. Only one per cent household complained about the non-availability of pure water facility as well as the inadequacy of housing accommodation. Most of the households from the slum area in Saheed Nagar reported that they are comfortable in their dwelling places because they got daily work in the urban centre, even though they lacked proper housing amenities.

Table 4.17: Motivation factor of households

Reasons for building house	Number of Respondents	Percent
No reason mentioned	38	25.4
Sense of Social security	5	3.4
Nearness to Roads and market	65	43.2
Nearness to Work place	42	28.0
Total	150	100.0

Source: Primary Survey

Table 4.17 shows the factors that motivated the sample households to build houses in the urban area of Bhubaneswar. Nearness to roads and market places were the major attraction for 43.3 per cent of the households. Nearness to work place was the main inducement for 28.7 per cent of the households. For about 3.3 per cent, a sense of security was the major factor. However, 25.3 per cent of households did not mention about any motivating factors.

They might be indifferent about the factors affecting their choice of residing in the place. Their stay and residence may be a natural outcome rather than by their choice to stay.

However, when factors adversely affecting their stay or interest were enquired, only a small fraction of the households (about less than 3 per cent) reported that they faced negative externalities due to social tension, firewood problem and several similar difficulties. But a vast majority of them did not raise any complaint. This may be due to the fact that they are accommodative to the circumstances.

It could be seen that the government intervention for the provision of housing to the Economically Weaker Section (EWS) and Middle Income Group households (MIG) in the urban areas has been very insignificant. About one-sixth of the households had approached the Housing Board for accommodation. Nearly one-fifth of the households residing in the slum area of Saheed Nagar reported that they had not received any housing loan from the Orissa State Housing Board (OSHB) for the improvement of housing except the super cyclone assistance. They had received Rs. 1000 each for the damages caused due to super cyclone in 1999. The main reason for their not getting housing assistance is that they lack knowledge how to apply and obtain the loan from the Housing Board. Further, their bargaining power of getting a housing loan hinges upon the collective decision of Basti. Only 14.7 per cent of households got loans from the Orissa State Housing Board.

Table 4.18 shows the percentage distribution of sample households according to the amount of loans received under different schemes in Bhubaneswar. About one-third of the households got housing loans in the range of Rs. 1000 under the government's EWS scheme. Around 3 per cent of households received loans under Low Income Group (LIG) housing scheme. Similarly, around 11 per cent of households were able to get loans in the range of Rs. 8,000 to Rs. 30,000 under the MIG scheme for the improvement of their houses. The remaining 2.8 per cent households belonging to high-income levels received higher amount of loans for their house construction under High-Income Group (HIG).

Table 4.18: Distribution of Households under different schemes

Name of the schemes	Amount of loan (Rs.)	Number of Respondents
No Scheme	0	76 (50.06)
Economically Weaker Section	1000	50 (33.3)
Low Income Group	2,000 - 3,000	4 (2.6)
Middle Income Group	8,000 - 30,000	16 (10.6)
High Income Group	30,000 - 1,00,000	4 (2.8)
Total		150 (100.0)

Note: Figures in parenthesis are percentages.

Source: Primary Survey

Table 4.19 shows the response of the sample households regarding repayment of housing loans. It is seen that about 33 per cent of the households reported that they cleared the entire principal amount of their loans. The remaining 68 per cent of the households mentioned loan defaults due to their inadequate financial capacity to repay.

Table 4.19: Distribution of Households according to loan default

Loan Default	Number of Respondents	Percent
No Default	24	32.42
Default	50	67.56
Total	74	100.0

Source: Primary Survey

However, it was found that more than one-third of the households stated about their repayment of housing loan through their daily earnings from the work (employed as daily labour). More than one-third of the sample households had mentioned regarding the loan clearance with the help of their job (employed in government or private organized sector). No information was found from the 8.10 per cent households about the debt clearance. The remaining 1.35 per cent of the households did not say anything about clearing of their housing debt. This may be related with their social status and prestige.

4.6 Sources of Housing Finance in Bhubaneswar

4.6.1 Developed Areas

We now turn into an analysis of the structure of housing finance in the developed areas such as Jaydev Vihar and V.S.S Nagar in Bhubaneswar. These areas seem to be developed in terms of standard physical form of infrastructures like road, transport and communication and social and human capital developments like health facilities and quality educational institutions. It has been observed that residential households in the developed areas in Bhubaneswar have made their housing construction through borrowings from different channels like formal and informal sources as well as from own sources like savings, pension, and sale of durable assets. The formal sources include both financial and non-financial institutions. The financial institutions include co-operative housing finance agencies, commercial banks, co-operative banks, general provident fund, and life insurance companies. Similarly, non-financial institutions include State Housing Board, local bodies, public sector undertakings, and private sector institutions. On the other hand, the informal sources include friends, relatives, employer, moneylender and others.

A. Housing Finance from Own Sources

Table 4.20 shows that 85 per cent of the households had relied upon own sources including saving and sale of assets (land and gold), and also pension amount. The remaining 15 per cent of households did not have any own sources for financing their housing expenses. Therefore, they rely on other sources. There is a fairly significant housing finance variation among the households in Bhubaneswar. Thus, more than 20 per cent of the households financed houses from own source in the range of Rs. 1,00,000 to Rs. 2,00,000, and about 4 per cent of the households financed from own source in the range of Rs. 6,00,000 to 7,00,000. This implies majority households might be depending on other sources for housing finance. It is also found that housing finance distribution is positively skewed where the difference between median and mean is very high.

Table 4.20: Distribution of Households by Own Source of Financing Houses

Amount (Rs.)	Number of Respondents	Percent
0	15	15.0
50,000 - 1,00,000	19	19.0
1,00,000 - 2,00,000	21	21.0
2,00,000 - 3,00,000	11	11.0
3,00,000 - 4,00,000	9	9.0
4,00,000 - 5,00,000	8	8.0
5,00,000 - 6,00,000	7	7.0
6,00,000 - 7,00,000	4	4.0
7,00,000 - 33,00,000	6	6.0
Total	100	100.0
Mean = Rs. 348400	Coefficient of Variation (%) = 12.84	
Skewness = 3.63	Kurtosis = 19.39	

Source: Primary Survey

Table 4.21 reveals that 85 sample households in the developed areas in Bhubaneswar relied exclusively upon own source of bank saving for the construction of houses. It is seen that highest 30.4 per cent of the households spent amounts on house improvement via bank savings in the range of Rs. 50,000 to Rs. 2,00,000, followed by the 20.0 per cent of the households in the range of Rs. 20,000 to Rs. 50,000. Therefore, there is also a great deal of significant housing finance variation among the households. About 31 per cent of the urban households had financed their housing from bank savings in the range of Rs. 50,000 to Rs. 1,00,000, and 4.4 per cent of the households did financing housing construction in the range of Rs. 9,00,000 to Rs. 15,00,000. It is clear that majority of the households had spent less amounts from bank savings for house construction. The reason may be they are depending on other sources of borrowing. On the other hand, less number of households raised significant amounts of money from their saving accounts depending upon their education and income status in the society. However, the housing finance distribution is also positively skewed.

Table 4.21: Percentage Distribution of Households Which Spent from Bank Savings (deposits) on Houses

Amount (Rs.)	Number of Respondents	Percent
10,000	2	2.3
10,000 - 20,000	5	5.8
20,000 - 50,000	17	20.0
50,000 - 2,00,000	26	30.4
2,00,000 - 3,00,000	6	7.0
3,00,000 - 4,00,000	8	9.4
4,00,000 - 5,00,000	1	1.1
5,00,000 - 6,00,000	1	1.1
6,00,000 - 9,00,000	2	2.2
9,00,000 - 15,00,000	4	4.4
Total	85	100.0
Mean = Rs. 165220	Coefficient of Variation (%) = 149.06	
Skewness = 2.77	Kurtosis = 10.19	

Source: Primary Survey

It is found that only 8 per cent of the households in the developed areas in Bhubaneswar depended upon pension amounts for investment in housing. The remaining 92 per cent of households in these areas did not rely upon this source. It is clear that the households, which made use of pension amounts for housing purposes, were retired government officials. Moreover, it was found that only eight percent of the households had sold their assets for the housing investment in Bhubaneswar.

B. Loan from Financial Institution

The study found the presence of middle-income and high-income group of households in these two urban centers, namely Jaydev Vihar and V.S.S Nagar.

B.1 Loan from cooperative banks by the households

Only 8 per cent of residential households in the sample of these two areas are seen to have raised loan funds from co-operative banks. The amounts of loan raised were in the range of Rs. 50,000 to Rs. 10,00,000. It is interesting to note that the variation of housing finance by the urban households from the co-operative banks remains constant. However, the financing distribution is positively significant which implies that the mean is higher than the median and mode of the distribution. In addition, although less number of the households borrowed high amounts from the banks, but it shows that banks are ready to lend more money to the owner households against the collateral, say land, house and job (Table 4.22).

Table 4.22: Distribution of Households borrowed money from co-operative banks

Amount (Rs.)	Number of Respondents	Percent
0	92	92.0
50,000	1	1.0
50,000 - 60,000	1	1.0
60,000 - 1,00,000	1	1.0
1,00,000 - 15,00,000	1	1.0
15,00,000 - 2,00,000	1	1.0
2,00,000 - 4,00,000	1	1.0
4,00,000 - 5,00,000	1	1.0
5,00,000 - 10,00,000	1	1.0
Total	100	100.0
Mean = Rs. 24600	Coefficient of Variation (%) = 488.22	
Skewness = 6.51	Kurtosis = 47.31	

Source: Primary Survey

It is found that the cost of borrowing from co-operative banks varied from 7.50 per cent to 11.75 per cent per annum. It is also observed that the resident households borrowed money from the co-operative banks at different stages in the house construction process. Therefore,

the duration of loans varied from five years to ten years. The amounts of repayments of loans per month by the sample households varied from Rs. 1000 to Rs. 10,000.

Moreover, it is found that all the households, which raised loans from co-operative banks, were able to raise loans on the basis of collateral of their jobs, in the sense that a person with a good job had more probability of getting a loan from the banks. The borrowing households have made regular repayments of loans on monthly installments and there were no difficulties among them. However, on the whole (at the aggregate) as seen earlier there were some loan defaults. This may be seen only in the less developed region where it constitutes more than one-third of the total sample households in Bhubaneswar.

B.2 Loan from the General Provident Fund

Table 4.23: Loan from the General Provident Fund (GPF)

Amount (Rs.)	Number of Respondent	Percent
0	63	63.0
50,000 - 1,00,000	20	20.0
1,00,000 - 2, 00,000	7	7.0
2, 00,000 - 3, 00,000	3	3.0
3, 00,000 - 4, 00,000	2	2.0
4, 00,000 - 5, 00,000	3	3.0
5, 00,000 - 7,00,000	1	1.0
7,00,000 - 10,00,000	1	1.0
Total	100	100.0
Mean = Rs. 80500	Coefficient of Variation (%) = 201.87	
Skewness = 3.14	Kurtosis = 12.09	

Source: Primary Survey

Only 37 per cent of residential households are seen to have borrowed from their general provident fund (GPF) accounts. The amounts of borrowing were in the range of Rs. 50,000 to Rs. 10,00,000. It is found that housing finance from the general provident funds varies substantially among the urban households, whereas the distribution is positively skewed in the case of housing finance (Table 4.23).

Moreover, it is observed that most of the households started borrowing at the very beginning of the process of house construction. The collateral offered for obtaining the loans from the general provident fund was the jobs of the borrowers, as was the case in the borrowings from the co-operative banks.

B.3 Financing Housing Construction from Other Sources

Table 4.24: Loan from the Other Sources

Amount (Rs.)	Number of Respondent	Percent
0	68	68.0
1,00,000 - 2,00,000	10	10.0
2,00,000 - 3,00,000	6	6.0
3,00,000 - 5,00,000	7	7.0
5,00,000 - 7,00,000	3	3.0
7,00,000 - 9,00,000	1	1.0
9,00,000 - 10, 00,000	3	3.0
10, 00,000 - 20,00,000	2	2.0
Total	100	100.0
Mean = Rs. 164700	C.V. (%) = 205.50	
Skewness = 2.95	Kurtosis = 10.52	

Source: Primary Survey

Only 32 per cent of sample households in these two urban centers had borrowed from sources other than co-operative banks and the general provident fund (Table 4.24). Interest rates on borrowings from other sources ranged from 6.48 per cent to 12.00 per cent per annum. It is found that housing finance distribution is positively skewed and pattern of housing finance among the urban households varies to a large extent.

With respect to borrowings, households had shown their jobs as the primary collateral. Only one household was seen to have offered other assets as collateral. The households, which

raised such funds, had made regular repayments and no defaulters were found among them. Therefore, the maximum period for complete repayment of a loan is reportedly ten years from the date of borrowing.

C. Informal Sources

C.1 Household housing finance from Relatives

Table 4.25: Amount of Borrowings from the Relatives

Amount (Rs.)	Number of Respondents	Percent
0	75	75.0
10,000 - 50,000	7	7.0
50,000 - 1,00,000	10	10.0
1,00,000 - 2,00,000	3	3.0
2,00,000 - 3,00,000	4	4.0
3,00,000 - 5,00,000	1	1.0
Total	100	100.0
Mean = Rs. 35200		C.V. (%) = 240.94
Skewness = 3.16		Kurtosis = 11.18

Source: Primary Survey

About 25 per cent of residential households have borrowed amounts from their relatives. The amounts borrowed ranged from Rs.10, 000 to Rs. 5,00,000 (Table 4.25). This implies there is also variation where about 10 per cent of the sample households in developed areas borrowed money in the range of Rs. 50,000 to Rs. 1,00,000 from the relatives against their well-to-do relation for the building construction purpose. On the other hand, only 4 per cent of the households got relatively higher amounts from the relatives for the same purpose in the range of Rs. 2,00,000 to Rs. 3,00,000.

It is observed that the interest rates on such borrowings varied from 5 per cent to 10 per cent per annum. 25 per cent of the households reported that the duration of their borrowings from relatives varied from five to ten years in Bhubaneswar. Out of that total 25 percent, about 7 per cent of the borrowers are still in debt. It is to be noted that same 7 per

cent borrowed households have reported that a maximum period of more than one year would be needed to clear the debt towards their relatives.

On the comparison front, the degree of variation of housing financing by the urban households from the cooperative banks is found to be high (C.V. (%) = 488.22) compared to the other sources of financing in developed areas. In general, it is to be noted that the peaked ness of the housing finance distribution revealed a type of leptokurtic distribution in the entire distribution. While the shape of the financing distribution also revealed right tails positively skewed distribution in the entire distribution.

4.6.2 Housing Finance in Underdeveloped Area

A. Housing Finance from Informal Sources

The Saheed Nagar slum area is an under-developed area in which most of the households who had migrated from different parts of Orissa as well as from different states of the country live in the squatter settlements. Besides, these residential households do not have their own land. They are living in squatter settlements, which lack basic housing amenities such as electricity, drinking water and toilet facility. Residential households in the Saheed Nagar slum area of Bhubaneswar have made their housing construction through borrowings from different informal sources. The informal sources include friends, relatives, employer and moneylender. They are deprived of the privilege of the borrowings from financial and non-bank financial institutions because they did not have any acceptable collateral (capital base) to offer to formal financial institutions.

Table 4.26 shows the amounts borrowed by the residential households for house construction in the slum area in Bhubaneswar. Only 84 per cent of the households had borrowed from their relatives. The rates of interest charged by these informal sources were relatively low, varying from 3 per cent to 10 per cent. Most of the households started borrowing from the relatives in 2000 for financing their housing construction. The year 2000 is the post-super cyclone year, which forced them to borrow from relatives for the housing purpose. The period for which loans were granted although ranged between two to twenty five years; but in the case of majority, the period was five years or less. In addition, even if

the housing financing distribution from the relatives is positively skewed, but the variation of financing among the urban poor households remains constant.

Table 4.26: Borrowing from the Relatives

Amount (Rs.)	Number of Respondents	Percent
0	8	16.0
1,500 - 3,000	8	8.0
3,000 - 6,000	4	4.0
6,000 - 8,000	4	4.0
8,000 - 10,000	4	4.0
10,000 - 12,000	2	2.0
12,000 - 15,000	7	7.0
15,000 - 20,000	6	6.0
20,000 - 25,000	2	2.0
25,000 - 30,000	4	4.0
30,000 - 80,000	1	1.0
Total	50	100.0
Mean = Rs. 13630		C.V. (%) = 134.80
Skewness = 3.14		Kurtosis = 12.16

Source: Primary Survey

About the details of monthly repayment on housing loans, information was furnished only by 84 per cent households (out of the total 50 samples households). Out of those 84 per cent, only 42 per cent households had made complete repayment. The monthly amounts of repayment varied from Rs. 100 to Rs. 4000. Henceforth, they had been able to obtain loans from neighborhood households where good relations with neighbours serve as collateral. The neighbours those who offer loans, they offer it out of their daily/monthly savings. Once their savings get accumulated out of such lending, they utilize the principal and proceed in their house construction and other important purposes such as marriages and education etc. It is found that relatives' loans were being repaid regularly to some extent and remaining 42 per cent of the households reported cases of default. Therefore, these defaulters households

reported that they require up to seven years or more for complete repayment of their debt obligations raised for financing house construction expenses.

B. Financing Housing Construction through Own Sources

It is found that the borrower households had managed to raise funds from their own resource like own saving (saving out of their daily work) for housing purpose. The amounts they were able to raise range from Rs. 300 to Rs. 30,000 (Table 4.27). It is found that the variation of housing finance of the poor households from own source remains more or less moderate. It implies own source is the main catalyst for each and every poor household in urban areas. Because, they did not have adequate collateral assets against which they could be exposed to the financial institutions for the purpose.

Table 4.27: Money from own sources spent for housing construction

Amount (Rs.)	Number of Respondents	Percent
0	8	16.0
3,00 – 5,00	2	2.0
5,00 – 1,000	2	2.0
1,000 – 2,000	4	4.0
2,000 – 3,000	2	2.0
3000 – 4,000	3	3.0
4000 – 5000	10	10.0
5000 – 10,000	6	6.0
10,000 – 15,000	6	6.0
15,000 – 18,000	2	2.0
18,000 – 30,000	5	5.0
Total	50	100.0
Mean = Rs. 7550		C.V. (%) = 101.66
Skewness = 1.23		Kurtosis = 1.15

Source: Primary Survey

Importantly, about 18 households reported they were able to mobilize funds from own resources, exceeding the amount Rs. 10,000 each.

Further, it is found that there is relatively high variability of households' housing finance from their relatives' sources (C.V. = 134.80) than financing from their own source (C.V. = 101.66). In other words, there is a peak of the households finance frequency distribution (leptokurtic) in the entire distribution

4.7 Quintile Distribution of Housing Demand in Both Developed and Under-Developed Areas In Bhubaneswar

The study used 'quintile' distribution in order to understand the relationship between row and column variables in a cross-tabulated bi-variate framework. The quintile distribution refers to the value of the variables, which divides the whole series into five equal parts i.e., Q_1, \dots, Q_5 . Q_1 represents the first lower quintile occupying the bottom 20 per cent of the whole distribution, which is lower than above 80 per cent items of the distributions. Similarly, Q_5 represents the fifth quintile occupying the top 20 per cent of the whole distributions. The logic behind using cross-tabulation is to see how many each possible combinations of variables' values occur for both the variables under consideration. Broadly it underlines the theoretical dependency relationship between row and column variables. The row and column variables denote dependent (including households' expenditure on housing) and independent variables (all explanatory variables) respectively in the analysis. In the cross-tabulation, the percentages have been used only to enhance the strength of the analysis. In this case, Chi-Square test can not be applied in order to test the degree of dependency relationship between both dependent (row variable) and independent variables (column variable) only because cell frequencies are found to be less than five or equal to zero. It means it goes against the 'rule of thumb' saying that cell frequency in a cross tabulation should be equal or more than five or not equal to zero.

Table 4.28 shows the two-way relationship between households' expenditure on housing (row) and households' monthly average income (column). It is found that 23.5 per cent of the households under bottom 20 per cent of monthly average income constitutes bottom 20

per cent of household expenditure on housing.²⁶ About 40 per cent of the households under top 20 per cent of monthly average income also constitute top 20 per cent of housing expenditure. It clearly indicates that relatively the absolute magnitude of housing expenditure is high in the case of households who had top 20 per cent of their monthly average income.

Table 4.28:
Distribution of Household Expenditure versus Income in Developed Areas

Housing Expenditure Quintiles	Households Income Quintiles					Total
	1	2	3	4	5	
1	4 (23.5)	5 (21.7)	7 (33.3)	9 (47.3)	2 (10.0)	27
2	4 (23.5)	5 (21.7)	2 (9.5)	0	0	11
3	5 (29.4)	7 (30.4)	2 (9.5)	3 (15.7)	4 (20.0)	21
4	2 (11.7)	3 (13.0)	6 (28.5)	4 (21.0)	6 (30.0)	21
5	2 (11.7)	3 (13.0)	4 (19.0)	3 (15.7)	8 (40.0)	20
Total	17 (100.0)	23 (100.0)	21 (100.0)	19 (100.0)	20 (100.0)	100

Note: Figures in brackets are column percentages to total cell frequency.

Source: Primary Survey

It means that there is positive correlation between households' expenditure on housing and income levels. This indicates that higher is the income level, the higher is the household's expenditure on housing in the developed area.

Table 4.29 shows the two-way dependency relationship between household's expenditure and their monthly average income in the underdeveloped areas of Bhubaneswar. It is found that 18.2 per cent of the households under bottom 20 per cent of monthly average income constitute bottom 20 per cent of household expenditure on housing. About 36.3 per cent of the households under top 20 per cent of monthly average income also constitute top 20 per cent of household's expenditure on housing. On the comparison front, the percentage of

²⁶ It is to be noted that both households' expenditure and income levels are measured in the absolute figures. In the sense, households are incurring aggregate expenditure on housing that they stand at the top.

urban households belonging to the top income group in developed areas is spending more on housing than the households in underdeveloped areas in Bhubaneswar.

Table 4.29:
Distribution of Household Expenditure versus Income in under developed Area.

Housing Expenditure Quintiles	Households Income Quintiles					Total
	1	2	3	4	5	
1	2 (18.2)	1 (12.5)	4 (28.5)	1 (16.6)	1 (9.0)	9
2	4 (36.3)	2 (25.0)	0	1 (16.6)	2 (18.2)	9
3	3 (27.2)	2 (25.0)	5 (35.7)	1 (16.6)	3 (27.2)	14
4	2 (18.2)	1 (12.5)	2 (14.2)	1 (16.6)	1 (9.0)	7
5	0	2 (25.0)	3 (21.4)	2 (33.3)	4 (36.3)	11
Total	11 (100.0)	8 (100.0)	14 (100.0)	6 (100.0)	11 (100.0)	50

Note: Figures in brackets are column percentages to total cell frequency.

Source: Primary Survey

Table 4.30:
Distribution of Household Expenditure versus House Size in Developed Areas

Housing Expenditure Quintiles	House size Quintiles					Total
	1	2	3	4	5	
1	16 (84.2)	9 (41.0)	0	1 (4.7)	1 (5.5)	27
2	0	3 (13.6)	2 (10.0)	3 (14.2)	3 (16.6)	11
3	1 (5.2)	4 (18.1)	9 (45.0)	4 (19.0)	3 (16.6)	21
4	1 (5.2)	3 (13.6)	4 (20.0)	7 (33.3)	6 (33.3)	21
5	1 (5.2)	3 (13.6)	5 (25.0)	6 (28.5)	5 (27.7)	20
Total	19 (100.0)	22 (100.0)	20 (100.0)	21 (100.0)	18 (100.0)	100

Note: Figures in brackets are column percentages to total cell frequency.

Source: Primary Survey

Table 4.30 shows dependency relationship between households expenditure and plinth area of the houses (Sq. feet) in the developed areas. It is found that 84.2 per cent of the households under bottom 20 per cent of house plinth area constitute bottom 20 per cent of household expenditure on housing. About 27.7 per cent of the households under top 20 per cent of house plinth area also constitute top 20 per cent of housing expenditure. It implies that the relative magnitude of households expenditure on housing under top 20 per cent of households having large size area is higher than the bottom 20 per cent of households having large size area in the developed areas.

Table 4.31: Distribution of Household Expenditure versus House Size in Underdeveloped Area.

Housing Expenditure Quintiles	House size Quintiles					Total
	1	2	3	4	5	
1	0	5 (45.4)	1 (16.6)	3 (25.0)	0	9
2	3 (27.2)	1 (9.0)	1 (16.6)	2 (16.6)	2 (20.0)	9
3	6 (54.5)	4 (36.3)	2 (33.3)	2 (16.6)	0	14
4	1 (9.0)	1 (9.0)	0	2 (16.6)	3 (30.0)	7
5	1 (9.0)	0	2 (33.3)	3 (25.0)	5 (50.0)	11
Total	11 (100.0)	11 (100.0)	6 (100.0)	12 (100.0)	10 (100.0)	50

Note: Figures in brackets are column percentages to total cell frequency. —

Source: Primary Survey

Table 4.31 shows dependency relationship between households expenditure and plinth area of the houses (Sq. feet) in the underdeveloped area. It is found that 27.2 per cent of the households under bottom 20 per cent of house plinth area constitute bottom 40 per cent of the households expenditure on housing. About 50 per cent of the households under the top 20 per cent of their house plinth area also constitute top 20 per cent of housing expenditure. Similarly, it is seen that 9 numbers of households under bottom 20 per cent of their housing consumption expenditure constitute bottom 20 per cent of their house plinth area.

Table 4.32 shows relationship between households' expenditure on housing and households average family size in the developed areas in Bhubaneswar. It is found that 35.5 per cent of the households having average family size say (1-3) constitute bottom 20 per cent of their expenditure on housing. About 25 per cent of the households having average family size more than seven also constitute top 20 per cent in housing expenditure. This implies higher the households' size, the higher is the expenditure on housing in the developed areas.

Table 4.32:

Distribution of Household Expenditure versus Household's Size in Developed Areas

Housing Expenditure Quintiles	Household Size (in number of individuals)			
	1-3	4-6	≥ 7	Total
1	15 (35.5)	12 (17.6)	0	27
2	1 (3.5)	10 (14.7)	0	11
3	5 (18.0)	14 (20.5)	2 (50.0)	21
4	1 (3.5)	19 (28.0)	1 (25.0)	21
5	6 (12.4)	13 (19.1)	1 (25.0)	20
Total	28 (100.0)	68 (100.0)	4 (100.0)	100

Note: 1) Figures in brackets are column percentages to total cell frequency.

2) Households family size has coded into three categories i.e., 1.0 (1-3), 2.0 (4-6), 3.0 (≥ 7)

Source: Primary Survey

Table 4.33 shows relationship between households' expenditure and households average family size in the under-developed areas. It is found that 30.7 per cent of the households having average family size say (1-3) constitute bottom 20 per cent in expenditure on housing. About 20 per cent of the households having average family size say (≥ 7) also constitute top 20 per cent in amounts of housing expenditure. Similarly, it is seen that 9 numbers of households under bottom 20 per cent in housing consumption expenditure constitute the average family size of (1-3). About 11 numbers of households under the top 20 per cent in housing expenditure also constitute average family size of greater than or equal to seven.

Table 4.33: Distribution of Household Expenditure versus Household Size in Underdeveloped Areas.

Housing Expenditure Quintiles	Household Size			Total
	(1-3)	(4-6)	(≥ 7)	
1	4 (30.7)	5 (15.6)	0	9
2	2 (15.3)	7 (21.9)	0	9
3	5 (38.4)	8 (25.0)	1 (20.0)	14
4	1 (7.6)	5 (15.6)	1 (20.0)	7
5	1 (7.6)	7 (21.9)	3 (60.0)	11
Total	13 (100.0)	32 (100.0)	5 (100.0)	50

Note: 1) Figures in brackets are column percentages to total marginal cell frequency.

2) Households family size has coded into three categories i.e., 1.0 (1-3), 2.0 (4-6), 3.0 (>7).

Source: Primary Survey

Table 4.34 shows dependency relationship between households' expenditure on housing and education levels of the households in the developed areas. It is found that 33.3 per cent of the households having high-school education constitute bottom 20 per cent in expenditure on housing. About 22.3 per cent of the households having university education level also constitute top 20 per cent in housing expenditure. Similarly, it is seen that 27 numbers of households under bottom 20 per cent in housing consumption expenditure constitute the primary education level. About 20 numbers of households under the top 20 per cent in housing expenditure also constitute university level education. It is clear that the higher the level of education, the higher is the households' expenditure on housing in the developed areas. Because highly educated households were able to earn more income while engaged in higher paying occupations.

Table 4.34: Distribution of Household Expenditure versus Education levels in Developed Areas.

Housing Expenditure Quintiles	Education Levels of the Respondents			
	High School	College	University	Total
1	1 (33.3)	5 (16.6)	21 (31.3)	27
2	0	6 (20.0)	5 (7.4)	11
3	1 (33.3)	8 (26.6)	12 (18.0)	21
4	0	7 (23.3)	14 (21.0)	21
5	1 (33.3)	4 (13.3)	15 (22.3)	20
Total	3 (100.0)	30 (100.0)	67 (100.0)	100

Note: Figures in brackets are column percentages to total cell frequency.

Source: Primary Survey

Table 4.35: Distribution of Household Expenditure versus Education levels Underdeveloped Areas.

Housing Expenditure Quintiles	Education Levels of the Respondent						Total
	Illiterate	UP School	ME School	High School	College	University	
1	2 (40.0)	1 (12.5)	0	3 (15.0)	3 (37.5)	0	9
2	1 (20.0)	0	0	4 (20.0)	3 (37.5)	1 (13.3)	9
3	2 (40.0)	3 (37.5)	1 (16.7)	7 (35.0)	0	1 (13.3)	14
4	0	1 (12.5)	2 (33.3)	3 (15.0)	1 (12.5)	0	7
5	0	3 (37.5)	3 (50.0)	3 (15.0)	1 (12.5)	1 (13.3)	11
Total	5 (100.0)	8 (100.0)	6 (100.0)	20 (100.0)	8 (100.0)	3 (100.0)	50

Note: Figures in brackets are column percentages to total cell frequency.

Source: Primary Survey

Table 4.35 shows relationship between households' expenditure on housing and education levels of the households in the under-developed areas. It is found that 40 per cent of the households having high-school education constitute bottom 20 per cent in expenditure on housing. About 13.3 per cent of the households having university education level also constitute the top 20 per cent in housing expenditure. Similarly, it is seen that 9 numbers of households under bottom 20 per cent in housing consumption expenditure constitute the

primary education level. About 7 numbers of households under the top 20 per cent in housing expenditure also constitute university level of education.

Table 4.36 shows the relationship of households' expenditure with respect to the religion of the households in the developed areas of Bhubaneswar. It is seen that 27.2 per cent of the households under Hindu religion constitute bottom 20 per cent in expenditure on housing. About 19.1 per cent of the households under Hindu religion also constitute the top 20 per cent in housing expenditure. Similarly, it is found that only one household under top 20 per cent of households in incurring expenditure on housing belong to Muslim religion in the developed areas.

Table 4.36:
Distribution of Household Expenditure versus Religion in Developed Areas

Housing Expenditure Quintiles	Religion of the Households		
	Hindu	Muslim	Total
1	27 (27.2)	0	27
2	11 (11.1)	0	11
3	21 (21.1)	0	21
4	21 (21.1)	0	21
5	19 (19.1)	1 (100.0)	20
Total	99 (100.0)	1 (100.0)	100

Note: Figures in brackets are column percentages to total cell frequency.

Source: Primary Survey

Table 4.37 shows the relationship of households' expenditure with respect to religion of the households in the under-developed areas of Bhubaneswar. It is seen that 18 per cent of the households under Hindu religion constitute bottom 20 per cent households in incurring expenditure on housing. About 22 per cent of the households under Hindu religion also constitute the top 20 per cent of households in incurring expenditure on housing. No any other religions were found from this slum area. Given a mixed kind of result pattern at the upper, bottom and middle ends of the household distribution in incurring expenditure on housing, it implies that relatively more proportion of households in the underdeveloped/slum areas they tend to spend more on housing as their housing needs are rising.

Table 4.37:
Distribution of Household Expenditure versus Religion in Underdeveloped Area

Housing Expenditure Quintiles	Religion of the Households	
	Hindu	Total
1	9 (18.0)	9
2	9 (18.0)	9
3	14 (28.0)	14
4	7 (14.0)	7
5	11 (22.0)	11
Total	50 (100.0)	50

Note: Figures in brackets are column percentages to total cell frequency.
Source: Primary Survey

Table 4.38:
Distribution of Household Expenditure versus Caste in Developed Areas.

Housing Expenditure Quintiles	Caste of the Households				
	General	OBC	SC	ST	Total
1	24 (13.5)	0	2 (22.2)	1 (11.1)	27
2	4 (5.2)	5 (83.3)	0	2 (22.2)	11
3	14 (18.4)	0	4 (44.5)	3 (33.3)	21
4	16 (21.0)	0	3 (33.3)	2 (22.2)	21
5	18 (23.6)	1 (16.7)	0	1 (11.1)	20
Total	76 (100.0)	6 (100.0)	9 (100.0)	9 (100.0)	100

Note: Figures in brackets are column percentages to total cell frequency.
Source: Primary Survey

Table 4.38 shows relationship of households' expenditure with respect to caste of the households in the developed areas of Bhubaneswar. It is seen that 13.5 per cent of the households under General category constitute the bottom 20 per cent of households in expenditure on housing. About 23.6 per cent of the households under General category also constitute top 20 per cent of households in housing expenditure. Similarly, it is found that 16.7 per cent and 11.1 per cent of the households under OBC and ST categories include the top 20 per cent of households in housing expenditure in the developed areas. The relative

magnitude of households in incurring housing expenditure, in the top 20 percent category, is found to be high from General Caste than the OBC and ST in developed areas in Bhubaneswar.

Table 4.39 shows relationship of households' expenditure on housing with respect to caste of the households in the under-developed areas of Bhubaneswar. It is seen that 11.1 per cent of the households under General category constitute bottom 20 per cent in incurring expenditure on housing. About 22.2 per cent of the households under General category also constitute top 20 per cent of their housing expenditure. Similarly, it is found that 30 per cent and 16.7 per cent of the households under SC and ST categories include top 20 per cent of their housing expenditure in the under-developed areas. This presents mixed results as it is difficult to say whether bottom or middle or top category of households spend more on housing on the basis of their caste. With little conviction, it could be said that at the lower end (within second quartile constituting bottom 40 percentage of households), a more percentage of households spend less on housing in the underdeveloped areas of BBSR. It is due to their socio-economic backwardness in the underdeveloped regions. A very few percentage of households spend more on housing in the region due to their poor financial conditions. Especially, a higher proportion of households among STs, spend less on housing.

Table 4.39:
Distribution of Household Expenditure versus Caste in Underdeveloped Area

Housing Expenditure Quintiles	Caste of the Households				
	General	OBC	SC	ST	Total
1	2 (11.1)	0	4 (20.0)	3 (50.0)	9
2	5 (27.7)	1 (16.7)	2 (10.0)	1 (16.7)	9
3	4 (22.2)	3 (50.0)	7 (35.0)	0	14
4	3 (16.6)	2 (33.3)	1 (5.0)	1 (16.7)	7
5	4 (22.2)	0	6 (30.0)	1 (16.7)	11
Total	18 (100.0)	6 (100.0)	20 (100.0)	6 (100.0)	50

Note: Figures in brackets are column percentages to total cell frequency.

Source: Primary Survey

4.8 Multiple Regression Analysis

We now turn to the results from the multiple regression in order to understand the relationship between households' housing expenditure in both the areas, developed and underdeveloped regions (150 sample households) and a set of relevant explanatory variables such as households' monthly average income levels, average floor level, number of rooms, and dummy variables viz. 1 and 0 for the developed and underdeveloped areas respectively (in order to make a quality distinction). The study has tested the correlations among the selected explanatory variables before using them in multiple regressions. All explanatory variables are correlated at 1% and 2% significance levels.

Table 4.40(a) shows the multiple regression results on the households' expenditure on housing given the explanatory variables in the system. It is found that household's income and floor levels are significant, but other relevant variables like number of rooms and dummy variables are not significant. Note that the variables floor level and number of rooms are collinear to each other in the system, thereby the relative importance of first one outweighs the relative importance of second one on the housing demand. The system is also unable to capture the impact of locational quality on housing demand in Bhubaneswar. In this case it is better to have another parsimonious regression deleting the number of rooms from the model, as both number of rooms and floor level are collinear to each other.

Table 4.40(b) presents the results from the multiple regression analysis on the households' expenditure on housing and the set of independent variables. The study considers the same independent variables here as in the case of first regression with deleting the number of room variable in the system. It is seen that once the number of rooms variable were dropped from the model, dummy variable (as a proxy for the location) became highly significant indicating it has positive influence on households' expenditure on housing. Besides, income level is highly significant and positively influencing housing demand. It means one unit increase in income levels leads to 0.91 unit increase in households' expenditure on housing i.e., one rupee increase in income leads to 91 paise increase in expenditure on housing. Similarly, there is also a positive relationship between households' expenditure on housing and the average house floor level. This implies that an increase in the number of floor levels leads to an increase in housing expenditure in the urban areas. It is found that an

expenditure of Rs. 267599.04 is required in order to build one floor of a pucca house in the urban areas of Bhubaneswar. Further, the dummy variable representing economic status of the regions in terms of the quality of location is found to be highly significant at the chosen levels of significance. This implies dummy variable largely influences the demand for housing in Bhubaneswar. However, the study found that R^2 square is 0.32, which is very low, indicating that only 32 per cent of the households' expenditure on housing is explained by a set of these controlled explanatory variables.

Table 4.40(a): Demand for Housing: Model 1

Independent Variables	β Coefficients	Std. Error	t - Value	P - Value
Constant	-252231.88	83270.0	-2.978	0.003
Average Households Monthly Income	0.88	0.18	4.69	0.000
Average Floor Level	231212.0	69505.95	3.32	0.001
Number of Rooms	27923.53	20949.01	1.33	0.185
Dummy (for Regions)	175920.2	76449.72	2.30	0.023
$R^2 = 0.33$		Adjusted $\bar{R}^2 = 0.31$		

Note:: 1. Dependent variable include households' expenditure on housing
 2. Dummy Variables viz., 1 for the developed areas and 0 for the under developed area
 3. The Regions capture the locational quality in terms of infrastructure development in city

Table 4.40(b): Demand for Housing: Model 2

Independent Variables	β Coefficients	Std. Error	t - Value	P - Value
Constant	-248460.32	83443.006	-2.97	0.003
Average Households Monthly Income	0.91	0.18	.33	0.000
Average Floor Level	267599.04	64090.58	4.17	0.000
Dummy (for Regions)	218284.79	69714.49	3.13	0.002
$R^2 = 0.32$		Adjusted $\bar{R}^2 = 0.30$		

Note: 1. Dependent variable include households' expenditure on housing
 2. Dummy Variables viz., 1 for the developed areas and 0 for the under developed area
 3. The Regions capture the locational quality in terms of infrastructure development in city.

4.9 Conclusion

The overall conclusion emerging from the above empirical analysis on the determinants of demand for housing at micro level may be summarized as follows. In general it is empirically found that with the presence of number of rooms as an independent variable in the regression model 1, the variables viz., household income levels and average floor level of houses are highly significant and positively impact on demand for housing in Bhubaneswar, where as the dummy independent variable (proxy for quality distinction for both the regions) does not play a significant role. Once the number of rooms dropped from the regression model 2, the dummy along the income and floor became significant determinants of housing demand in Bhubaneswar. However, the study found from the second regression model that R^2 square is 0.32, which is very low, indicating that only 32 per cent of the households' expenditure on housing is explained by a set of these controlled explanatory variables. The remaining (68 per cent) may be explained by the other factors, which is only incorporated in the residuals of the regression equation.

However as the households move up along the social and economic ladder in the developed areas in Bhubaneswar, their housing expenditure increases. In these areas, households assign more importance to the consideration of status and prestige and sense of security and hence to the luxury aspects of housing. In addition, middle class and high-income groups are more exposure to the formal financial markets such as banking and general provident fund. As a result, their demand for housing increases. It is interesting to be noted that there is high degree and direction of housing finance variation among the households in the developed areas. In these areas households assign more importance to the considerations of status and prestige and a sense of social security and hence to the luxury aspects of housing. On the other hand, it is also found that almost 33.3 per cent of households migrated from different parts of Orissa to Bhubaneswar and settled in the slum Basti in Saheed Nagar. They lament out that they are migrating from their native place to urban area only because of job opportunities available in the city. Even though, they lack adequate housing and basic housing amenities such as drinking water, sanitation and toilet facility, they still like to settle themselves down in the city as squatter settlements only due to availability of daily employment. These slum households look foremost to getting the minimum essential

standards of dwelling through daily labour in the city. In addition, the squatters are deprived of the formal housing market and access to financial institutions because of lack of their purchasing power and collaterals at their disposal. Such situation forced them to through the informal sources of financing like borrowing from the relatives. Moreover, it is found that the degree of housing finance variation among the households is very less in the underdeveloped areas compared to developed areas. Large differences, therefore, persist in the nature and extent of demand for housing among households belonging to the different income and educational groups in Bhubaneswar, Capital City of Orissa. Moreover, they have recognized housing as a “new gold” as everybody aspires to have a bit of gold at their disposal irrespective of their income levels.

Chapter 5

DETERMINANTS OF SUPPLY OF HOUSING: MICRO EVIDENCE

5.1 Introduction

Housing is an investment good as investors and building suppliers invest on it for their profit motive. It is also a final consumer durable good when it is used for the end use. For instance, it can be used for domestic use or for business/commercial purposes or office use (both public and private). It is to be emphasized that the determinants of investment in housing by the investors are different from those demand for housing (expenditure on housing) for its final use or consumption purpose.

The housing sector is considered as one of the instrumental investment options in the present market conditions. Housing supply is a significant component of the urban housing market. In a fundamental sense, supply of a commodity refers to its availability at the existing prices in the market. Housing supply, on the other hand, defines a stock of net housing units at a given point of time t , given by today's new construction units minus the number of housing units demolished or lost of depreciation from the previously existing housing stocks with a lag period $t-1$ (DePasquale and Wheaton 1999). Economic theory postulates a positive relationship between the supply of any commodity and its prevailing price level and a negative relationship to the costs of its production. This implies that higher the price level, higher is the supply of commodities in the market and opposite relationship holds true when considering the costs of production with number of housing units. Unlike other durable commodities, supply of housing unit is sensitive to its own price levels as well as to the costs of construction (including materials cost and labour wages) and land prices. It is, however, true that high costs of construction and high land prices reduce the availability of housing stocks in the market. Housing is also considered a unique and heterogeneous physical durable commodity, different from other goods, as its quality is made of different

attributes such as materials used for its construction, electricity, safe drinking water, number of rooms, latrine facilities and environmental characteristics.

5.2 Transformations in the Urban Housing Supply Market

Housing has widely been regarded as a customized product and a criterion for fashion too. The term 'customized' product implies the quality of housing, whether constructed by private housing builders or not, a decision dependent on the choice as well as preferences of the customers in an urban housing market. Where builders employ trained architects and professional service personnel, the quality of houses goes up in terms of building structures including roof and wall and design of the houses in terms of amenities such as electricity, drinking water and toilet; and such houses characterize housing fashion. If it is customized product and fashionable too, the question then arises as to who constitute suppliers and buyers in the urban housing market. On the supply side, there exist four categories of housing supply agencies: private builders, owner builders, and homeowner-cum-contract builders, government agencies and others. The nature and determinants of housing production vary widely among these four categories.

Private Builders

The first type of private builders is visible in only developed countries where housing is considered a durable, saleable comfort commodity and a mortgage-hedging asset against inflation. Such builders are engaged in the construction of both residential and non-residential buildings with own finance and operate in the urban housing market. They are profit-oriented rather than utility-oriented in respect of the type of houses they construct. The builders endeavour to improve the quality of houses in terms of size and amenities, and employ trained professional personnel and deliver better site and services for their final customers. They sell their finished housing product to the end customers/buyers who are ready to pay relatively high prices. It is seen that builders bear all the risks of the production process and that no risk handed over to buyers of those types of houses. The determinants of production are both economic and social. Economic factors comprise the total costs of production of housing including financial costs of construction, land costs and interest on

borrowed funds. Social factors, on the other hand, include builders' speculation about future prices, general economic conditions, quality locations as well as administrative regulations involved in the housing transaction process and quality of neighbors/locality.

Homeowner Builders and Contract Builders

The homeowner builders, one of the housing supply agencies, which utilize own finances for house construction and utilize the houses for own occupation. They attach more value to the utility and to socio-cultural aspects of houses. They seek to satisfy physical needs (shelter), psychological needs (a sense of privacy and identity), social needs (a place of gathering) and economic needs (a central place carrying transaction from their housing units) (Nair 2006). They do not bother about the market sentiments (profit) of house building transactions. Housing production determinants depend upon owner-builders' own decision, their preference over locations, costs of construction and land prices. In the past, owner builders were visible in both developed and underdeveloped countries. They were the main organizers as well as the supervisors over their work. They used traditional, non-produced building materials, available free of cost. At present, the role of owner builders has ceased because of the complexity of the organization, the increasing difficulty of getting independent workers, the lengthening of the period of completion of building construction. Delays in the completion of building work increase total construction costs in two ways: through cost escalation due to rise in the prices of factory-produced building materials and increase in wage rates; and through increase in cost of borrowed funds. The third type of builders has emerged in the form of contractors in the modern era. Traditional artisans and owner-builders have lost their way in the modern building scenario. The modern building process calls for the services of technically trained architects, engineers, supervisors and contractors, in place of traditional types of artisans and consumer builders. Hence, the divisions of labour and specialisation have entered into the building sector in a big way (Gopikuttan 1988). Owners utilize the services of contractors for house construction/improvement/renovation scene. Homeowners are virtually house buyers and builders constitute house suppliers. House construction in this type depends upon the joint decision of both-homeowners and builders. Homeowners have ownership rights over the land used for house construction. The contractor would be requested to construct the

houses within the financial budgets of the house owners. This method has come to be considered the quickest way to finish the housing construction (Pavananthi, Suresh and Sathyamala 2008). In this case, owners employ building contractors for the supply of construction materials at all stages in the construction process. At the commencement of construction, builders spend one-fourth of the housing costs for construction and depend upon the customers' funds for the completion of the rest of the construction work. It is clear that the house constructed, does not constitute saleable commodity. Building contractors in such cases are therefore free from all production related risks and the entire risks being born by the homeowners. Besides, the production process itself depends upon the financial availability of the homeowners, and upon the costs of production involved during the process of production and joint decisions the homeowners and house builders.

Government Builders

Fourth, government itself is one of the house building supplier agencies in both urban and rural housing markets. Housing has widely been recognized as a human right and a state subject, rather than as a basic need (United Nations Centre for Human Settlements 2000). Recognizing its significance, the state plays an important role in providing housing services particularly to deprived sections of the society in the urban areas. It is commonly known that the housing needs of the urban people can be satisfied on the basis of their financial strength in the urban housing market. The urban housing market understands only the language, of 'effective demand.' In addition, poor people have needs, but are unable to afford urban housing due to lack of their purchasing power. It means that the urban housing market does not care for the needs of the poor, the weak and the needy. These needs have therefore to be satisfied by government intervention through formulation and implementation of various social policies and programs; and the market goods have to be converted into social goods especially for the weaker sections of the society. As a result, the poor would also get benefit, from the government provision of housing services, in urban areas. The determinants of government housing supply depend upon its financial viability and effort.

The supply of housing units increases with increase in investment in housing. Investment on housing may be for residential or commercial purposes. The difference lies between the two

with consideration of utility aspect attached to the first one and its annual steady flow return varies from 4 per cent to 6 per cent, and profits attached to the second one and its annual return varies from 8 per cent to 11 per cent (See: www.mumbaipropertyexchange.com). Investment in housing done by clients could be broken into several segments: individual housing developers who buy residences to rent them out; builders who buy residences to sell them out for commercial purposes such as hotels, restaurants, shopping malls, multiplexes and theatres and builders who build houses with investment of own resources for purpose of profit (*The Frontline* 28th March, 2008). The builders who supply housing units to the end consumers in the housing market, do not bother about the utility aspect of these houses, but are interested only in profits from the transactions (Gopikuttan 1988). In addition, this type of builders often consider building as a part of some market activity and attach greater importance to it as the utilization of certain factors of production (Stone et al. 1966). According to the builders' point of view, housing investment is long-term investment and it is highly illiquid in nature. Moreover, it is a portfolio diversified asset rather than a traditional form of wealth and regarded as a hedging asset against inflation. In this sense, investors divert assets from the equity market (stocks) into the real estate (housing) market, where there is less volatility than in the first one. In other words, investment on housing as a subset of real estate activities has turned out to be a more convincing investment than other investment vehicles such as those in capital and debt markets and the bullion market. The main attraction of investing in housing is that it offers a possibility of steady income yields, tax structuring benefits, moderate capital appreciation and higher security than investments in other instruments (*The Frontline* 28th March, 2008).

Price Volatility

Housing markets often exhibit a high degree of volatility in prices and quantities, with significant economic consequences for both homeowners and building construction agents. As an asset, housing constitutes two-thirds of the average households' portfolio, meaning that the typical owner household faces a large uninsurable risks from price volatility, with correspondingly large welfare effects; and on the supply side, construction volatility has substantial direct impacts on employment levels and the demand for raw materials in the intermediate construction industry. Cyclical patterns are a consistent feature

of the housing markets, with alternating periods of price increases and downturns often being evident. The dynamics of housing prices naturally arises through the interaction of demand and supply forces. It is in this sense that the timing of housing supply responses to demand shock is limited, in the short run. The responsiveness (elasticity) of housing supply to a demand shock is governed by two cost parameters that capture the impact of the stock of existing housing units and the flow of new construction on demand shock. The two cost parameters in the urban housing market are soaring wage rates and land prices. For instance, the demand shock could be in the form of an increase in the demand for labour as an input by the final construction-units-producing industry. This shock may translate into increase in wage rates, ultimately pushing up the housing prices. Because supply then gets slowed to respond to the spiraling demand for housing which arises due to high costs of construction mainly driven by increasing costs of labour and rising land prices. As a consequence, the unit prices continue to rise and overshoot in the short run; when supply eventually responds fully in the long run, mean prices revert (Murphy 2007).

According to the classical theory, the dynamics of the housing market arises under the conditions of full employment. For instance, when all the factors are already utilized efficiently in the housing market and that the full potential housing supply has been realized; under that circumstances if demand for housing increases from the potential buyers at this full employment point, prices tend to increase. This is because the builders have to hire more labour and material inputs by paying rising prices in order to meet the unmet rising demand for housing. However, the housing output cannot not rise at the full employment situation, because of diminishing marginal returns to inputs, thereby compromising the builders' profits. This situation would force builders to increase housing commodity prices in order to reduce costs and increase their profit margins. According to Keynesian theory, on the other hand, the dynamics of the housing market arises only because of price dynamics in which it responds to all the flow variables; that is, household income, households formation, credit availability and interest rates .The reasons for the inelasticity of supply in the short run are either:

- (i) the capacity of the housing industry has not been expanded owing to the non-substitutability of certain factors or due to the imperfect competition;

- (ii) the excess capacity of the housing industry has not expanded due to the inadequacy of required capital resources;
- (iii) some factors have not been efficiently utilized in the process of production under the assumption of an under-employment situation;
- (iv) the constancy of technological progress would lead to increasing unit costs of production under the condition of soaring demand for the product.

Therefore, the inadequacy of supply in a condition of spiral demand, raises the housing prices in the urban housing market. This type of house price inflation has been considered as the 'bottleneck inflation' in an economy.

5.3 Studies on Housing Supply Determinants

While it remains true that the majority of the housing literature is concerned with demand side issues, increasing attention is now being diverted towards understanding of housing supply determinants. Pollock (1973) pointed out that the availability of mortgage financing and efficiency of the housing market are the major determinants of supply of housing. The study by Windapo and Iyagba (2007) argues that housing construction costs in Nigeria are responsive to changes in labour costs. They find that housing construction costs in Nigeria increases with increases in labour costs. It may be inferred from the analysis that housing construction costs in Nigeria are not responsive to changes in the prices of building materials, interest rates, property prices (land), foreign exchange rates, national disposable income or money supply. In another study, Kahn (2007) suggests that housing supply regulation raises the costs of building construction, if the type of regulation is social in nature. Communities also enact housing supply regulations to preserve and enhance local quality of life. Environmentalist communities are especially likely to pursue such goals. Environmentalists may seek to block local growth to preserve local public goods such as open space, Bike Park and clean air and to preserve the character and culture of their communities. Such regulation would hamper housing supply. In the sense that the communities would not permit builders to construct houses in locations near to their residences.

The study by Xing, Hartzell, and Godschalk (2006), analyzes the impacts of land use regulation on housing builders. Land use controls are explicitly and implicitly applied in the urban housing market of developing countries. Explicit tools are specific regulatory devices that are used to manage the supply and development of land. Implicit constraints result from the administrative practices within jurisdictions. Explicit controls include registration fees, development permit caps and urban growth boundaries. In each case, the restriction is imposed on housing developers to define what can be done. Other restrictive activities on the part of local jurisdictions are more implicit, and result from administrative responses to development requests. For example, developers in every jurisdiction must seek approval for their projects. The process typically involves applying for entitlements to build the project that is desired. In many jurisdictions, the time taken from application to approval is quite short. In other cases, the period from application to approval of entitlements is quite long, in effect raising the costs and the time taken for the development through, delays in review and approval processes. While there is no explicit restriction, in practice delays lengthen the development period and increase the cost to the housing developers (Luger and Temkin 2000). It has been argued that trends in general economic activities are the outcome of business cycles. It means, in a sense that the booming economic activities push up the demand for the housing sector, thereby producing a mismatch between demand for and the supply of housing in the urban housing market. The mismatch usually leads to the skyrocketing of housing prices in urban areas. In this regard, Augusty (1990) pointed out that the impact of rising housing price levels falls mostly on the economically weaker sections of the society. This phenomenon has underlined the importance of governments' direct and indirect intervention through policy responses for augmenting housing supply to the marginalized sections of the urban housing market.

The study by Gopikuttan (1988) states that location is one of the social factors, which plays an important role in bringing about differences in housing prices across urban cities. The quality of location refers to ecological conditions and different types of physical amenities, such as better roads, transport and communication facilities, educational institutions, medical care facilities and good climate conditions. Homebuyers who want to buy and build houses prefer locations, which offer all these facilities. Therefore, the demand for such locations would rise and lead to rising house prices. In this dynamic process, the determinants of the

timing of supply response are not yet well understood in developing countries like India, even though the timing of supply responses is central to the length and severity of housing price dynamics (Murphy 2007). It is this crisis situation in the literature that provides the rationale for the present study.

Growth of Prices of Construction Materials

Before going into the micro level results, let us have a look into the growth rates of prices of construction materials at the national level. Table 5.1 shows trend of wholesale price index and compound annual growth rates of building materials prices in India during 1995-96 to 2006-07 with 1993-94 as base year. It is seen that the wholesale compound growth rates of prices of all individual commodities were showing an upward trend over the period. The main reason for the relentless rising of building materials' prices such as price of cement and rods, bricks, asbestos, and tubes at the national level is the heavy rising demand by housing builders. Another reason may be speculation and hoarding in anticipation of high returns in the future, thereby creating artificial shortage in the input markets, thus leading to further price rise.

Table 5.1: Wholesale Price Index and Growth Rates of Building Materials Prices

Financial Year	Cement	Asbestos & Cement	Burnt Bricks	Iron and Steel	Bar & Rods	Pipes & Tubes
1995-1996	129.9	103.6	94.2	116.6	112.4	111.1
1995-1997	133.5	104.7	106.1	124.1	115.2	114.5
1997-1998	128.9	116.3	110.5	129.8	122.6	120
1998-1999	130.9	113.5	118.7	132.8	131.3	121.4
1999-2000	128.4	107	118.7	134.5	130.2	122.3
2000-2001	136.6	106.2	125.9	136.8	130.6	132.2
2001-2002	148.7	110.2	136.8	136.6	132.8	130.7
2002-2003	145.3	108.8	136.8	143.5	138.8	131.5
2003-2004	147.1	106.6	136.8	181.1	177	161.5
2004-2005	152.8	107.1	150.8	232.9	236.5	188.9
2005-2006	166.7	104	175.1	250.1	258.7	195.2
2006-2007	197.2	108.2	183.9	254.4	250.5	203.3
Compound Growth Rates	3.87 %	0.39 %	6.27 %	7.35 %	7.56 %	5.65 %

Note: Own estimation of growth rates

Source: Economic Advisor of Ministry of Commerce & Industry

Table 5.2 shows the average prices of basic building materials in selected metro cities of India in 2000. It is observed that the cost of brick per one thousand was Rs. 3000 in Calcutta, followed by Rs. 2625 in Pune and Rs. 2300 in Bangalore. The cost of timber per metric ton was Rs. 75055, Rs. 68750, and Rs. 62000 in Delhi, Nagapur and Bangalore respectively. Similarly, the cost of cement per metric ton was Rs. 3375, Rs. 3340, and Rs. 3339 in Bangalore, Chennai and Calcutta respectively. The cost of steel was found to be the highest in Mumbai, followed by Pune and Bangalore. The major reason for rising building material prices in the metro cities of India has been the existence of cartel-like fashion of steel and cement manufacturing industries whereby they form their monopoly, and succeed to raise prices of building materials used by housing builders (*The Hindu Business Line* 17th April, 2008). Besides, new townships and housing projects have come up in the metro cities, a development which has enhanced the real estate sector into the growth trajectory, leading to soaring demand for building materials in the manufacturing industry of India, particularly in metropolitan cities.

Table 5.2:
Average Price of Basic Building Materials in Selected Cities During 2000 (Rs.)

Center	Fire Bricks Ist Class per thousand	Timber per cu.mt	Cement per m.tn	Steel per m.tn
Ahmedabad	1284	28925	2845	14425
Bangalore	2300	62000	3375	16275
Mumbai	1400	38037	2777	17308
Calcutta	3000	58068	3339	14917
Delhi	1550	75055	2795	14913
Hyderabad	1275	34140	2638	14932
Jaipur	1263	32441	2575	15725
Kanpur	1425	35486	2560	14298
Lucknow	1475	N.A.	2760	15250
Chennai	1850	21008	3040	15725
Nagpur	1450	68750	2850	15500
Pune	2625	40000	2825	16609

Source: National Building Organization, 2006

Table 5.3 shows the average wage rates of building workers in selected metro cities of India in 2000. It is observed that the costs of masons first class labour were Rs. 193, Rs. 190 and Rs. 170 in Nagapur, Bangalore and Mumbai respectively. The wages of carpenters were Rs. 190, Rs. 175, and Rs. 170 in Bangalore, Pune and Mumbai respectively. Similarly wages of unskilled male laborers were Rs. 115, Rs. 100, and Rs. 93 in Mumbai, Bangalore and Delhi respectively. The wages of unskilled female laborers were found to be the highest in Mumbai, followed by Delhi and Chennai. The high wage rates of both skilled and unskilled laborers are due to the fact that construction industries in metro cities are labour-intensive and that labour productivity is high. These construction builder-employers are keen to maximize between returns and costs of production (Stone et al. 1966).

Table 5.3:
Average Wage rates of building workers in selected cities during 2000 (Rs. Per Day)

Center	Mason Ist class	Carpenter Ist class	Male labour	Female labour
Ahmedabad	84	84	74	74
Bangalore	190	190	100	80
Mumbai	170	170	115	110
Calcutta	128	138	80	80
Delhi	155	155	93	93
Hyderabad	128	124	100	85
Jaipur	150	150	90	70
Kanpur	116	110	57	57
Lucknow	110	110	57	57
Chennai	193	165	115	90
Nagpur	160	175	80	70
Pune	146	165	88	57

Source: National Building Organization, 2006

The present study looks into the possible fundamental determinants of housing supply through a primary survey of both housing builders and land developers in Bhubaneswar. The

study considers three builders from bottom levels of the categorizations including, Orissa State Housing Builders (OSHB) and homeowners-cum-building contractors. The survey was conducted in 2007, September and found data deficiency on social housing schemes especially with regard to housing-finance agencies. To some extent, data on the social housing schemes has been collected from government agencies.

5.4 Survey Areas

The present survey selected Bhubaneswar, as an appropriate location for an investigation of the determinants of housing supply. The justification of taking Bhubaneswar as a case study is mainly that, the city has now been widely acknowledged as an information and technology and industrial hub, where both service and industry sectors have been growing very fast for the past six years. It is due to the fact that the liberalization process made the easy entry of foreign private investors into the domestic economy and created business platform for the service and the industry sectors. The service sectors like Information Technology (IT) and Real Estate Companies and industry sectors like Pohang Steel Company (POSCO) and National Aluminum Company (NALCO) limited are concentrating their profitable business investments in the city. Because they find there is a dramatic change in life style of the people and increasing per capita income level of the middle-income groups and they extract the resources for the final production at cheap costs. In particular, the business investment climate is very conducive in terms of better urban governance, exposures to financial institutions, consumer base in terms of purchasing power and educational institutions, and the developed infrastructure facilities in terms of road, transport and communication., It is well known that residential housing price has been skyrocketing across all the metro-cities of India, but the gravity of real housing price behaviour could be better understood by conducting a primary survey. The primary survey results presented here examines the behaviour of housing prices in Bhubaneswar by looking into the housing transactions, made by construction contract- builders at the micro level.

5.5 Results of the Survey

5.5.1 Private Builders

House building contractors/land developers operate in different areas in Bhubaneswar (Table 5.4). It is found that 30 per cent of the housing private builders/land developers operate in the VIP area of Bhubaneswar named Saheed Nagar. Their main motive is to acquire land and construct houses and sell it out to the end customers at high profits. Their building constructions are positioned in places where there are locational advantages in terms of better infrastructure facilities and better urban governance.

Table 5.4: Name of the Builders/Land Developers in Bhubaneswar

Name of the Builders	Areas
Atrik construction (P) LTD.	Laxmi Sagar
B.Engineers and Builders (P) LTD.	Mancheswar
Balaji Builders	Satya Sagar
Barunei Builders and Developers (P) LTD.	Jaidev Vihar
Bhagabat Construction (P) LTD.	V.S.S. Nagar
Binayak Construction (P) LTD.	V.S.S. Nagar
C.S.Builders and Promoters (P) LTD.	Bermunda
Cosmo Infrastructure (P) LTD.	Nayapalli
Kalinga Builders (P) LTD.	Saheed Nagar
Laxmi Builders and Developers (P) LTD.	Saheed Nagar
Maa Tarini Est Con (P) LTD.	Saheed Nagar
Monorama Properties (P) LTD.	Rasulgarh
Realty Promoters & Builders (P) LTD.	Satya Nagar
Royal Estate Developers and Builders (P) LTD.	Saheed Nagar
Sekhar Builders & Promoters (P) LTD.	Jaydev Vihar
SJ & Housing Developers	Beramunda
Sri Jagannatha Cons (P) LTD.	Saheed Nagar
Sudarshan Estcon (P) LTD.	Nayapalli
Trishna Builders and Construction (P) LTD.	Nayapalli
Utkal Builders	Saheed Nagar

Source: Primary Survey

Table 5.5 shows the total number of houses constructed by total eighteen homeowner-cum-contractor builders in Bhubaneswar during 1990-1995 to 2005-07. These building contractors have built a total of 1484 housing units for the use of homeowners with owner financing. Out of these total housing units, a total of 490 (33.01 per cent) and 235 (15.83 per cent) housing units have been constructed by the Kalinga and the Utkal Builders during the period. On the other hand, the rest sixteen builders have built a total of 769 (around 51 per cent) housing units in Bhubaneswar. It shows that both Kalinga Builder and Utkal builders are the major players of high number of housing transactions among all the builders in the different areas of Bhubaneswar. This implies these builders have strong political power and social capital, which helped them to operate efficiently in the housing market. It is in this sense that they have produced housing units at the lowest cost and expanded the production capacity and also reaped more profit margins relatively to other existing builders in Bhubaneswar.

Table 5.5: Number of House Constructed in Bhubaneswar over the Period

Name of the Builders	Number of Houses Constructed in Bhubaneswar over the period			
	1990-1995	1996-2000	2001-2005	2005-2007
Atrik construction (P) LTD.	-	60	-	40
B.Engineers and Builders (P) LTD.	-	-	32	-
Balaji Builders	75	-	-	28
Barunei Builders and Developers (P) LTD.	-	15	-	-
Bhagabat Construction (P) LTD.	-	15	-	51
Binayak Construction (P) LTD.	-	20	-	28
C.S.Builders and Promoters (P) LTD.	-	-	-	17
Cosmo Infrastructure (P) LTD.	-	-	-	20
Kalinga Builders (P) LTD.	250	40	88	120
Laxmi Builders and Developers (P) LTD.	-	-	-	9
Monorama Properties (P) LTD.	-	-	35	30
Realty Promoters & Builders (P) LTD.	-	-	-	48
Sekhar Builders & Promoters (P) LTD.	-	-	-	35
SJ & Housing Developers	-	-	-	66
Sri Jagannatha Cons (P) LTD.	-	-	-	46
Sudarshan Estcon (P) LTD.	-	-	-	10
Trishna Builders and Construction (P) LTD.	-	25	-	16
Utkal Builders	125	-	-	110
Total	450	155	155	674

Note: The symbol (-) shows unavailability of information

Source: Primary Survey

Table 5.6 shows the types of housing units built by these private contract-builders across different regions in Bhubaneswar during 1990-1995. It is seen that the total cost per house varies depending on locations. It is observed that the total cost is found to be high Rs. 25 lakh per flat with 2000 Sq. feet of built-in area in C.S.Pur. The specific factor for the high price per flat in C.S. Pur is the official settlement of POSCO Company. Similarly it is found that cost varies from Rs. 30 lakh to Rs. 32 lakh for the same type of flat with different built-in areas, in the areas like CTC Road and Nayapalli. But the cost of a duplex structure is found to be Rs. 30 lakh with built-in area of 2500 Sq. feet in Patia. The main reason for the observed variations in price of the same type of flats with different built-in areas is the quality of the locations in terms of proximity to the city, availability of health facilities, roads and transport facilities and nearness to airports and hotels.

Table 5.6: Locations and Built-in Areas in Bhubaneswar (1990-1995)

Types of Housing Units	Locations	Built-in Areas (Sq. feet)	Cost Per house (Rs. in Lakh)
100 flats	C.S.Pur	2000	25
40 Duplex	Patia	2500	30
60 flats	CTC Road	3200	32
250 flats	Nayapalli	1025	30

Source: Primary Survey

Table 5.7 shows the types of housing units built by private builders across different regions in Bhubaneswar city. It is seen that the total cost per house varies across locations. It is found that 20 flats were built by housing builders in Khandagiri, 75 flats in Rasulgarh, 25 duplexes in Lewis Road respectively during 1996-2000. The total cost is Rs. 14 lakh per flat with 2000 Sq. feet of built-in area in Khandagiri. The cost varied from Rs. 10 lakh to Rs. 25 lakh for the same type of flat/duplexes with different built-in areas in Rasulgarh. But the cost of a duplex unit is found to be as high as Rs. 25 lakh with built-in area of 1500 Sq. feet in Lewis Road. The main reason for such significant variation of price of the same type of flats with different built-in areas is the quality of the locations in terms of nearness to the city centre, availability of health facilities, roads, transport facilities, closeness to airport and hotels, better urban governance and availability of financial and educational institutions.

Table 5.7: Locations and Built-in Areas in Bhubaneswar (1996-2000)

Type of House/units	Locations	Built-in Areas (Sq. feet)	Cost Per house (Rs. in Lakh)
20 flats	Khandagiri	2000	14
75 flats	Rasulgarh	2000	10
25 Duplex	Rasulgarh	1000	25
35 Duplex	Lewis Road	1500	25

Source: Primary Survey

The types of housing units built by private builders across different regions in Bhubaneswar are shown in Table 5.8. It is seen that the total cost per house varied across locations. It is found that 88 flats were built by C.S Pur, 12 flats in CTC Road, 20 duplexes in Bomikhal, and 35 duplexes in Mancheswar respectively during 2001-2005. The total cost is Rs. 23 lakh per flat with 1800 Sq. feet of built-in area in C.S Pur. The cost comes down to Rs. 20 lakh for the same type of flat with higher built-in areas in CTC road. But the cost per duplex unit is found to be as high as Rs. 25 lakh with a built-in area of 2400 Sq. feet in Bomikhal.

Table 5.8 Locations and Built-in Areas in Bhubaneswar (2001-2005)

Type of House/units	Locations	Built-in Area (Sq. feet)	Cost Per house (Rs. In Lakh)
88 flats	C.S Pur	1800	23.4
12 flats	CTC Road	2400	20
20 Duplexes	Bomikhal	2400	25
35 Duplexes	Mancheswar	2500	18.75

Source: Primary Survey

Table 5.9 shows the types of housing units built by private builders across different regions in Bhubaneswar during 2005-07. It is seen that the total cost per house varies across different locations. In all, 120 flats, 60 duplexes, 30 flats, 40 flats, 48 flats, 51 duplexes, 110 flats, 28 duplexes, 17 flats, and 28 duplexes have been built by housing builders in C.S Pur, Patia, Palasuni, Gajapati Nagar, Ganga Nagar, Jaydev Vihar, Bomikhal, Saheed Nagar, Khandagiri, and V.S.S Nagar during the period respectively. The total cost is Rs. 25 lakh per

flat with 2000 Sq. feet of built-in area in C.S Pur. The cost varies for the same type of flat with different built-in areas across different locations. However, the cost per duplex is found to be as high as Rs. 60 lakh with built-in area of 2400 Sq. feet in Saheed Nagar.

Table 5.9: Locations and Built-in Area in Bhubaneswar (2005-07)

Type of House/units	Locations	Built-in Area (Sq. feet)	Cost Per house (Rs. in Lakh)
120 flats	C.S.Pur	2000	25
60 Duplexes	Patia	2000	35
35 flats	Palasuni	2000	15
55 flats	Gajapati Nagar	1200	8
48 flats	Ganga Nagar	1500	15
91 Duplexes	Jaydev Vihar	1500	35
110 flats	Bomikhal	1500	25
64 Duplexes	Saheed Nagar	2400	60
47 flats	Khandagiri	2200	32
43 Duplexes	V.S.S Nagar	1800	25

Source: Primary Survey

The percentage distribution of contract-builders who sold houses to different income categories of buyers during 1990-1995 to 2005-07 is shown in Table 5.10. The homebuyers obtained houses from private housing building contractors/developers by employing them in their own house construction process. It is to be observed that the highest 61.1 per cent of the house builders reported that houses were constructed and sold to high-income groups (HIG) compared to low-income groups in Bhubaneswar during 2005-07. This implies increasing demand for housing has come from high-income groups. This implies the increasing consumer base in terms of high purchasing power has attracted most of the house contract-builders in Bhubaneswar. In addition, it is also found that higher number of housing was constructed in Bhubaneswar during the same period.

Table 5.10: Distribution of Builders and Buyers during 1990-1995 to 2005-07

Type of buyers on basis of income	Number of Construction Builders			
	1990-1995	1996-2000	2001-2005	2005-2007
Not Available	11 (61.1)	12 (66.6)	15 (83.3)	1 (5.5)
High Income Group	3 (16.6)	6 (33.3)	2 (11.0)	11 (61.1)
Middle Income Group	4 (22.2)	-	1 (5.5)	6 (33.3)
Total	18 (100.0)	18 (100.0)	18 (100.0)	18 (100.0)

Source: Primary Survey

5.5.2 Public Sector Builders

Table 5.11: Housing Schemes Implemented by Orissa State Housing Board (Till 2000-2001)

Bhubaneswar	Number of Houses Constructed	Total Project Cost (Rs. In Lakh)	Cost Per House (Rs. In lakh)
Economically Weaker Section	1866	15542.47	8.32
Lower Income Group	9517	„	1.63
Middle Income Group	2803	„	5.54
High Income Group	1647	„	9.43
Others	1804	„	8.61
Total	17646	„	0.88

Note: The symbol (,,) shows the total cost is same for all the income groups.

Source: Primary Survey

Table 5.11 shows about 17646 housing units have been constructed by the Orissa State Housing Board (OSHB) under social housing schemes, for catering to the housing needs of the vulnerable sections of the society in Bhubaneswar till 2000-2001. The total project cost incurred by the State Board on housing construction under social housing schemes was Rs. 15542.47 lakh. Out of the total housing units, a total of 1866, 9517, 2803, 1647, and 1804 housing units have been constructed by the board under the Economically Weaker Section (EWS), low-income group (LIG) housing scheme, Middle-Income group

(MIG), High-Income Group (HIG) and Others respectively. It is observed that less housing units have been constructed for EWS where cost per house is found to be as high as Rs. 8.32 lakh similar to HIG scheme. This shows cost per house is increasing in Bhubaneswar. It may be due to the constancy of technology, which limits the scale of production, or it is not enough if the government targets the urban poor who live in below the poverty line. In other words, this implies government's inefficiency in the urban housing market. Therefore, it is a matter of serious concern for the government in the state for improving the welfare of the people in terms of provision of good standard of houses.

5.5.3 Land Prices in Bhubaneswar

Table 5.12: Trend in the Prices of Land across Different Locations during 1990-2007 in Bhubaneswar.

[Land Prices (Rs.) Per Sq. feet]				
Locations/Years	1990-1996	1996-2000	2001-2005	2005-2007
BBSR Unit-4	-	-	-	350-500
Beramunda	-	-	-	300-400
C.S. Pur	-	120 - 225	225-300	300-350
Palasuni	-	-	-	200-250
CTC Road	-	-	-	700-900
Ganga Nagar	-	-	200-300	500-700
Jaydev Vihar	-	-	-	1000-2000
Khandagiri	200-250	250-280	-	400-450
Patia	400-450	450-490	-	600-800
Nayapalli	300-400	400-480	-	480-575
Bornikhal	650-700	700-780	-	780-1000
I.R.C Village	125-200	-	-	450-850
Pandra	60-80	-	-	200-250
Rasulgarh	400-450	450-500	-	500-600
Patrapada	-	-	-	240-250
Pokhariput	-	-	-	200-250
Saheed Nagar	-	-	-	1000-1600
Sundarpada	-	50-55	-	100-200
Jainla	-	-	-	20-25
Raghunathapur	-	40-50	-	100-150
Tomando	-	-	-	100-150
Nakhara	-	45-50	-	100-300
Balikuda	-	-	-	100-120
Lakmi Sagar	450-650	-	-	-
Balikuda	-	60-70	-	-
Mancheswar	-	-	350-450	-

Source: Primary Survey, the dash symbol (-) shows unavailability of information

Table 5.12 shows the trend in land prices across different locations in Bhubaneswar city. It is found that land prices vary across both developed and underdeveloped areas. Land prices are high in developed regions than in underdeveloped regions. In developed regions such as Jaydev Vihar, Saheed Nagar, Bomikhal and CTC Road, land prices ranged from Rs. 700 to Rs. 2000 per Sq. feet during 2005-2007. An increasing trend of land prices is also observed in the developed regions during the period. Similarly, land prices are also found to be rising in the other semi-developed regions in the City. The main reason for the soaring land prices is the derived demand of households, backed by increasing households' per capita incomes accruing from remittances. Besides, house builders are also speculating on the prices of land, by creating artificial shortages of land parcels in various localities. Shortages arise due to increasing demand for land. In addition, in recent years, several multinational companies also have been concentrating their business near the city centre because of several advantages such as good governance, institutional development and locational factors in terms of better roads, and transport and hospital facilities.

5.5.4 Construction Costs in Bhubaneswar

Table 5.13 shows the costs of construction of housing at two time points: at present and five years ago in Bhubaneswar. The costs of construction include the prices of factory-produced building - materials such as cement, burnt bricks, iron rods, and asbestos and also labour costs of both skilled and unskilled workers. At present, price of cement per packet is in the range of Rs. 225 to Rs. 300 against the prices of Rs. 120 - Rs. 150, five years ago. This price rise has been almost two times. The price of burnt bricks per one trip is in the range of Rs. 3000 to Rs. 6000 at present as against the prices of Rs. 1500 - Rs. 3000, five years ago, about two times higher than the previous five years price. Iron rod per quintal is Rs. 3000 to Rs. 3500 now as against Rs. 1500 - Rs. 2000, five years ago, which is about two times higher than the previous five years price. Asbestos piece, which also shows a comparable trend. Thus, in overall, there is a two times price rise in the raw materials used in the construction of houses.

Apart from the price trends of building materials, one needs to examine the price of labour also, which forms an important input in the house construction process. Both skilled and unskilled labourers are required in the construction process. At present, the wage rates per day of skilled labour have increased enormously as compared to rates five years ago. Wage rates of unskilled labour have also increased substantially during the period. Most of the own house builders employ labourers in partnership with the contractors. It is a kind of cartel system. The disturbance of this system in terms of breaking the partnership may lead to further increases in labour costs in building construction. Private house contract-builders in Bhubaneswar point out that they incur more costs in the construction process in their search for other building contractors.

Table 5.13: Cost of Materials/Laborers in House Construction

Materials/Laborers Unit		Average Price (Rs.)	
		At Present	Five Years Ago
Cement per Packet		225-300	120-150
Burnt Bricks Per One Trip (“3000 number)		3000-6000	1500-2500
Iron Rods Per Quintal		3000-3500	1500-2000
Asbestos Per Piece		50-70	30-50
Wage per Day	Skilled Labour	200-250	125-175
	Unskilled Labour	125-150	75-125

Source: Primary Survey

The main reason for increasing material costs in Bhubaneswar is the use of modern technology, which has replaced the use of traditional materials as well as increased transport costs in the process of production. Modern technology implies the use of professional service contractors in the designing of buildings, according to preferences of building homeowners and high use of capital-intensive methods replacing labour-intensive methods in the course of the construction mechanization process (Stone et al. 1966). The question that arises is on the rationale for the use of modern capital-intensive technology. The only reason for replacement of inputs is the adoption of modern housing design. It is the type of

building that decides the type of materials required and the factor-intensity of construction. It is in this sense that builders pay more prices for intermediate raw materials and also to trained professionals and skilled workmen. Even if building developers employ both skilled and unskilled laborers in the construction process, they have to abide by technical compulsions. Strong labour unions lead to rising wage rates of skilled and unskilled laborers. Finally, rising wage rates leads to overall increase of costs of production of private builders. Private builders are not able to increase the size of their firms due to this cost constraint, and thereby increasing the construction costs without enhancing labour productivity in the production process. This process may force builders to limit their output production in urban areas and that results in rising house prices on account of the mismatch between housing demand and supply forces.

5.5.5 Housing Finance By the Builders/Land Developers in Bhubaneswar

The present study enquired into the ways in which house builders/land developers finance house construction and land development projects in Bhubaneswar. It is found that builders finance building construction through different feasible sources like using own sources, customer collections and borrowed funds. Own sources include corporate savings, sale proceeds of assets and imputed value of builders' participation in the construction process. Similarly, customer collections refer to financial installments released to the builders by homeowners, at every stage of house construction. Borrowed funds, comprise loans both financial and non-financial institutions including banks and moneylenders.

It is found that 95 per cent of the private builders/land developers reported utilizing their own sources of finance for house construction. Out of them, the highest 25 per cent of the builders/developers also depended upon own sources. They spent as much as 30 per cent of the total expenditure from this source. Similarly, the lowest 5 per cent of the house builders spent as much as 80 per cent of the total expenses from this source.

It is also found that 95 per cent of the builders/developers financed their construction /land development expenditure from customer collections. Out of them, the highest 25 per cent of the builders/developers relied upon customer collections to the extent of 70 per cent of the expenditure on house construction. Similarly, it is found that 5 per cent of the builders

depended upon customer collections to the tune of 80 per cent of house construction /renovation expenditure. Overall, most of the builders/developers rely on the customer collections for financing houses. It is observed that the house builders/land developers choose to build houses and sell land to owner households, finance their investment projects from funds collected from owner households, instead of spending from their own pockets in order to avoid risks in their on going business processes.

Further, it is found that only 40 per cent of the builders/developers rely upon borrowed funds for their building construction and land development projects. About 5 per cent of them borrowed 100 per cent of the required amounts from financial institutions. It was also seen that 40 per cent of the builders/developers borrowed from financial institutions at different interest rates ranging from 9 per cent to 12 per cent per annum against secured collateral. According to the builders'/land developers' point of view, they were able to borrow from banks against asset termed as non-firm land, lands released to them by homeowners at the very beginning of the construction process. The remaining 60 per cent of the house builders did not depend upon borrowed funds for construction purposes. They might have relied on other sources such as own sources and customer collections. There may be two reasons for them for not borrowing from banking institutions: (i) they did not have collateral security to offer to the financial institutions or the financial institutions were not willing to grant them loans for fear of default, (ii) Builders/developers were not ready to take loans because of high interest rates charged by the lending institutions.

Furthermore, it is observed that as housing is purely a durable asset and monetary phenomenon, both financial and non-financial institutions are ready to lend loans to the building contractors for their profit purposes. The main implication of construction financing from different sources is to accelerate the housing sector boom and thereby enabling builders to supply more housing units in order to meet unmet rising demand for housing. Therefore, building contractors were able to reap more profit margins from booming urban housing sector during the transaction period.

The present study made further enquiries into the details of the house construction process. Nearly 85 per cent of the builders (out of 18 builders) reported that they did not have own construction workers. Only about 5 per cent of the builders had own workforces. About 85

per cent of the house builders who build houses and sell them to the end consumers, said that they maintain links with contractors within and outside the state, who employ both skilled and unskilled labourers, procured from within the state or from outside. Out of such contractors, about 50 per cent were found to be facing serious production risk. The possible reasons reported by them are: (i) they employ migrant labourers supplied by well-known contractors, who charge high wage rates for both skilled and unskilled labourers because of the high bargaining power they command. If the builders do not agree to pay the stipulated high wage rates, the labour-supplying contractors withdraw their labourers and redirect them to other builders who agree to offer higher wage rates, (ii) builders also search for other contractors not only to reduce the costs of construction but also to conduct and complete the process of production according to the time schedules agreed between them and the homeowners, (iii) builders also incur huge transaction costs as well as searching costs which also go into the production costs. Most of them report that they complete all construction works within the stipulated time. On the other hand, 5 per cent of the house builders who had own construction workers, were unable to complete all works in time because of delays in joint operations (in the cartel system) in the process of production

It should be noted that, no house builders were found to have taken up construction of social housing schemes. All building contractors pointed out that they produced houses for commercial purpose as well as for residential purposes, involving high demand for housing. They reported that the high demand for housing in Bhubaneswar basically came from the high-income and the middle-income groups. According to house builders'/land developers', the demand for land/pucca houses had been steadily increasing since the 1990s. The real estate sector, particularly the residential segment has shown phenomenal growth with the back up of the Information Technology/Information Technology Enabled Services (IT/ITES) sectors, the Tourism sector and the Educational sector. Out of the 18 house builders interviewed, three (16 per cent) reported having constructed houses to let them out on rent. They have rented the pucca houses they had built on monthly rents of Rs. 2500. It is clear that certain groups of homebuyers did not have high financial ability and they were unable to afford to enter the urban housing market. Since they were marginalized from the urban housing market, they therefore forced to live in rented houses. It is quite likely that they had been excluded from the urban housing market due to the fact that they were

engaged in low earning occupations, which did not give them leeway to save any amount after meeting their consumption requirements.

However, both the house contract-builders and land developers have pointed out that Bhubaneswar has emerged as one of the metro/twin cities (joining with Cuttack and Puri districts), experiencing high rates of growth of population, increasing household formation, rising levels of household per capita income accruing from remittances, change in tastes and preferences of the households, and growing in-migration. These factors had led to radical changes in housing fashions and requirements from semi-pucca houses to pucca houses and the pattern of demand for housing. According to builders' agencies, there has been a rising need for housing in slum areas. Slum-dwellers possess non-economic demand for housing given their increasing housing needs. But the income of slum-dwellers is insufficient to produce adequate effective demand in the housing market. This situation forced them to live as squatters on government lands without possessing any legal title on such lands, which did not have basic facilities such as drinking water, sanitation and latrine. The increasing trend of houseless population has primarily been due to rising waves of in-migrants from different regions into the city in search of job opportunities and access to basic amenities. This phenomenon is typical instance of market failure; only government intervention in the urban housing market with adequate programs for housing subsidy to the needy poor has the power to rectify the defects in the urban housing sector.

5.6 Conclusion

Although the supply of housing units in Bhubaneswar has increased through the efforts of private contract house builders, and the Orissa State Housing Board (OSHB), the increase is seen to have been inadequate to meet the increasing and enormous demand for housing in the city. The inadequacy in housing supply has been on account of increasing production costs due to rise in material costs, labour costs and land prices, which have forced construction agencies to limit their production operations in the city. The housing production costs appear to have increased by four-times since the 1990s, on account of the soaring construction costs, labour costs and land prices. It is clear that even though prices of materials such as steel, burnt bricks, stone and cement have increased twice on an average,

wage rates of both skilled and unskilled labourers, and land prices have registered much higher increases. Similarly, location quality factors have made huge differences in the costs of production. Moreover, house builders incur high costs in the process when they employ quality materials and professional service personnel. The main motive behind employing quality construction inputs is to increase house quality, which would enable them to reap high profits. It is found that costs of construction remain uniform across the city; but land prices per Sq. feet vary substantially across regions in Bhubaneswar. Land price per Sq. feet was in the range of Rs. 1000 - Rs. 2000 in areas like Jaydev Vihar and Saheed Nagar. These constitute the highest rates in the city. The value per transaction in the housing market is seen to be the highest in Saheed Nagar, which was of the order of Rs. 60 lakh per duplex unit. It is found that the majority of the middle income and high-income groups are the buyers of the urban housing market because of high purchasing power at their disposal.

The house construction agencies have also responded to social factors such as labour unions and bureaucratic regulations, which often restricted their freedom to operate in the housing sector. The majority of house builders/land developers rely upon the customer collections method in the financing house construction/land development projects, with a view to reducing risks involved in the business. A few house builders and land developers raise finance from financial institutions by offering their real estate homeowner assets as collateral.

Besides, it is observed that there has been a rising need for housing in slum areas. Slum-dwellers possess non-economic demand for housing given their housing needs. But the income of slum-dwellers is insufficient to produce adequate effective demand in the housing market. This situation forced them to live as squatters on government lands without possessing any legal title on such lands, which did not have basic facilities such as drinking water, sanitation and latrine. The increasing trend of houseless population has been due primarily to rising waves of in-migrants from different regions into the city in search of job opportunities and access to basic amenities. This phenomenon is a typical instance of market failure; only government intervention in the urban housing market with adequate programs for housing subsidy to the needy poor or marginalized sections has the power to rectify the defects in the urban housing sector.

It is also observed that the role of government intervention has been extremely insignificant in the provision of housing services, especially to the economically weaker sections of urban poor households, in Bhubaneswar. The Orissa State Housing Board (OSHB) has constructed a total of 17646 housing units under the social housing schemes till 2000-2001. Out of these, only 1866 (10.57 per cent) housing units have been constructed for the Economically Weaker Section respectively under the social housing schemes.

Chapter 6

CONCLUSION AND POLICY IMPLICATIONS

6.1 Summary

6.1.1 Introduction

The causal relationships and detail sources of dynamics between housing price and its determinants have not been captured, particularly in the urban areas of India, a topic that has been extensively covered in other countries' context (Chen and Patel 1998, Egret and Mihaljek 2007, Jud and Winkler 2002). Given the setting, the present study makes an attempt to examine the housing price behaviour in India in general and in Bhubaneswar in particular. However, the study employs some time series techniques such as: cointegration, vector auto regression (VAR), multiple regression and some descriptive statistics such as mean, coefficient of variation and skewness in analysis.

6.2.2 Housing Scenario and Policies

In analyzing the housing scenario and policies in chapter 2, the findings show that the increasing urbanization at the global level leads to increasing demand for housing. Global demand for housing is expected to increase at about 2.5 per cent per annum through 2011, generating demand for the construction of approximately 60 million new housing units. China accounted for more than one-fifth of the total housing stock. More than one-half of the world housing stock was spread over Latin America, Eastern Europe, the Africa/Mideast region, and developing countries in Asia other than China. It has been estimated that globally one billion persons still lack adequate shelter and basic services. The shelter conditions of the poor are deteriorating: Around 1.3 billion people do not have access to clean water and also live on less than a dollar a day; and 2.6 billion persons do not have access to basic sanitation. According to UN estimate, over 33 per cent of the population in developing countries are houseless and around 100 million people live in a state of absolute homelessness, while in excess of one billion persons are forced by circumstances to reside in desperately inadequate housing conditions which threaten their

health, security, safety and dignity. It is observed that in the more developed regions of the world the needs for drinking water, plumbing, and housing connections are practically all covered while in the more backward regions, these are not adequately served

At the national level, increasing urban population increases the demand for housing and leads to 10.4 million housing shortage and 7.89 lakh population houseless in 2001 in India (National Building Organization 2006). This picture is abysmally dismal at the lower end of the economic ladder. It means housing shortage is relatively high about 21.78 million among the social categories like Economically Weaker Section (EWS) and 2.89 million among Lower Income Group (LIG) compared to Middle Income Group (MIG) and High Income Group (HIG) (0.04 million) in India (Government of India 2007). Before independence, the nature and magnitude of housing problems was not that severe. The problems have been duly realized and recognized since independence. In this situation, housing was recognized as a state subject, the role of government was important as a provider of housing to the urban poor up to the 1980s. The paradigm policy shift from provider to facilitator approach became a reality after the 1980s onwards due to resource crunch. It is observed that the countries like India do not have an independent housing policy for the low and middle-income groups. Indian housing policy is almost similar and matched with the policies of international agencies like World Bank and United Nations Centre for Human Settlement (UNCHS). Therefore, this change in policy paradigm in India has forced the government to curtail the expenditure on welfare activities. This is clearly evident from the various plan documents where the magnitude of financial allocations out of total urban investments towards housing sector has been declining from 3.4 per cent to 2.4 per cent during 1st plan to 10th plan in India. It implies less importance is given to urban housing sector where the problem is actually much worse. Besides the quantity problem, quality of housing condition in terms of infrastructure is poor in nature. According to the NBO (2006) estimates, the number of households per dwelling unit in urban area is 1.07 in 2001, which shows crowded living condition of the urban households. In other words, housing shortage has forced the urban poor households to reside in desperately inadequate housing conditions, which threat their life, safety and dignity. Despite the improvement of housing infrastructure at the national level, it is seen that about 18 per cent of the urban households did not have access

to housing amenities like safe drinking water, 13 per cent to electricity and 36.42 per cent to toilet facilities as per 2001 Census.

At the Orissa state level, it is observed that increasing home ownership, compounded by the relative rise in income levels and population growth as compared to previous decades has led to increasing demand for housing, thereby resulting in a total housing shortage of 0.50 million (Government of India 2007). However, it is still found that less proportion of households converted kutcha house to semi-pucca and pucca houses. The reason may be that they do not have sufficient income sources for building houses and they do not have proper access to the financial institutions for financing towards their housing; moreover, there is an absence of Government's assistance for housing investments. Hence these households are more exposed to natural calamities and earthquake etc. This problem will accumulate and accentuate further the problem of housing shortage in the urban areas. It is found that 33.6 per cent of the households in urban areas are having one room per dwelling unit, which shows housing shortages and huge density per house. Furthermore, It is observed that about 25 per cent of the households did not have access to proper housing amenities like electricity connections, 40 per cent to toilet, 38 per cent to safe drinking water facilities respectively in the urban areas. This implies urban households are living in dilapidated houses combined with lack of necessary housing infrastructure and presence of huge density per house. Moreover, about 8 per cent of the urban households live in dilapidated houses and 46.3 per cent and 45.9 per cent of urban households also live in good and livable houses respectively in the state. Hence, the study suggests for a re-examination of the policies at the state level in order to improve the living conditions of the people.

6.3.3 Housing Price Dynamics in India

The overall objective of chapter 3 is to investigate the long and short run determinants of housing prices and examine the sources and the extent of housing price variability due to relevant determinants within the context of a partial macroeconomic framework. The techniques employed for analysis include Johansen's cointegration test and vector auto regressions (VAR) model.

Our findings using quarterly data for the period from 1996 Q₁ to 2007 Q₁ indicate that there is a long-run equilibrium relationship between housing price and its determinants including real GDP, and real non-food bank credit. The long run coefficients obtained from cointegrating equations show that the real GDP has a significant and positive influence on the housing price while the real BSE index does not have any influence on housing price in the long run. In addition, the real non-food credit has a significant and surprisingly negative influence on housing price. In order to test the sources of variability and identify the responses of housing prices to its determinants, we decomposed the housing price variance. The results indicate that a disturbance originating from its own housing prices itself induces greatest variability in house prices: it accounts for 89 per cent of the variability in one period ahead, approximately 54 per cent in four quarters ahead and 56 per cent in six quarters ahead. The remaining variance is accounted for by the five determinants. The supply side factor (credit availability) accounts for 13 per cent of the variance and demand side factors (real GDP, real interest rate, real stock prices, and real effective exchange rate) account another 31 per cent.

The findings using annual data for the period from 1979 to 2006 indicate similar results as is the case using quarterly data. It shows that there is a long-run equilibrium relationship between housing price and its determinants including real per capita GDP, real stock prices and real non-food bank credit. The long run coefficients obtained from cointegration equation shows that the real per capita GDP has a significant and positive influence on the housing price while the real BSE index and real non-food bank credit have a significant and surprisingly negative influence on housing price. While examining the sources of variability from the use of variance decomposition results in VAR, the results indicate that a disturbance originating from its own housing prices induces greatest variability in housing prices. It accounts for 91 per cent of the variability in one period ahead, approximately 63 per cent four years ahead and 61 per cent six years ahead. The remaining variance is accounted for by the five determinants. The supply side factor (represented by credit availability only) accounts for 27 per cent and demand side factors (real per capita GDP, interest rate, stock prices, and exchange rate) account another 12 per cent.

These results have some important policy implications. Given the results, the study suggests that the supply side factors, credit availability in particular should not be underestimated in the new dwellings market, which plays a vital role in the dynamics of housing prices in the developing countries like India. It puts downward pressure on the house prices. As more housing credit is available from banks, it may lead to increase in the new construction activities and therefore more supply of houses to the market. So it has a stronger impact in the supply side than its role in the demand side. However, rising income can have strong impact on the demand side as a result increasing the house prices in the city.

6.4.4 Determinants of Demand for Housing: Micro Evidence

The overall conclusion of chapter 4 emerging from our empirical analysis of the determinants of demand for housing at micro level may be summarized as follows. In general it is empirically found from the model 1 that the variable, viz., besides number of room variable, average household income levels and average floor level of houses are highly significant and positively impact on demand for housing in Bhubaneswar, where as the dummy independent variable (proxy for quality distinction) does not play any significant role. The reason may be due to the collinearity between two independent variables such as number of rooms and floor level, thereby neutralizing the effect of dummy on housing demand. Once the number of room variable is dropped from the regression model 2, the dummy variable has emerged as a potential determinant of demand for housing in Bhubaneswar.

In particular as the households move along the social and economic ladders in the developed areas in Bhubaneswar, their housing expenditure increases. In these areas, households assign more importance to the considerations of status and prestige and sense of security and hence to the luxury aspects of housing. On the other hand, it is also found that almost 33.3 per cent of households migrated from different parts of Orissa to Bhubaneswar and settled in the slum Basti in Saheed Nagar. They have lamented out that they are migrating from their native place to urban area only because of job opportunities available in the city. Even though, they lack adequate housing and basic housing amenities such as drinking water, sanitation and toilet facility, they still like to settle themselves down in the city as squatter settlements only due to availability of daily employment. These slum households look

foremost to getting the minimum essential standards of dwelling through daily labour in the city. In addition, the squatters are deprived of the formal housing market and financial institutions because of lack of their purchasing power and also not having collateral at their disposal. Large differences therefore persist in the nature and extent of demand for housing among households belonging to different income and educational groups in Bhubaneswar. Moreover, they have recognized housing as a “new gold” as everybody aspires to have a bit of gold at their disposal irrespective of their income levels.

6.5.5 Determinants of Supply of Housing: Micro Evidence

The findings from chapter 5 show that although the supply of housing units in Bhubaneswar has increased through the efforts of private contract house builders, and the Orissa State Housing Board (OSHB), the increase is seen to have been inadequate to meet the enormous demand for housing in the city. The inadequacy in housing supply has been on account of increasing production costs due to rise in material costs, labour costs and land prices, which have forced construction agencies to limit their production operations in the city. The housing production costs appear to have increased by four-times since the 1990s, on account of the soaring construction costs, labour costs and land prices. It is clear that even though prices of materials such as steel, burnt bricks, stone and cement have increased twice on an average, wage rates of both skilled and unskilled labourers, and land prices have registered much higher increases. Similarly, location quality factors have made huge differences in the costs of production. Moreover, house builders incur high costs in the process when they employ quality materials and professional service personnel. The main motive behind employing quality construction inputs is to improve the house quality, which enables them to reap high profits. It is found that costs of construction remain uniform across the city; but land prices per sq. feet vary substantially across regions in Bhubaneswar. Land price per sq. feet was in the range of Rs. 1000 to Rs. 2000 in areas like Jaydev Vihar and Saheed Nagar. These constitute the highest rates in the city. The value per transaction in the housing market was seen to be the highest in Saheed Nagar, which was of the order of Rs. 60 lakh per duplex unit. It is found that the majority of the middle income and high-income groups are the buyers in the urban housing market because of high purchasing power at their disposal.

The house construction agencies have also responded to social factors such as labour unions and bureaucratic regulations, which often restricted their freedom to operate in the housing sector. The majority of house builders/land developers rely upon the customer collections method in the financing house construction/land development projects, with a view to reducing risks involved in the business. A few house builders and land developers raise finance from financial institutions by offering their real estate homeowner assets as collateral.

Besides, it is observed that there has been a rising need for housing in the slum areas. Slum-dwellers possess non-economic demand for housing given their housing needs. But the income of slum-dwellers is insufficient to produce adequate effective demand in the housing market. This situation forced them to live as squatters on government lands without possessing any legal title on such lands, which did not have basic facilities such as drinking water, sanitation and latrine. The increasing trend of houseless population has primarily been due to rising wages of in-migrants from different regions into the city in search of job opportunities and access to basic amenities. This phenomenon is a typical instance of market failure; only government intervention in the urban housing market with adequate programs for housing subsidy to the needy poor or marginalized sections has the power to rectify the defects in the urban housing sector.

It is also observed that the role of government intervention has been extremely insignificant in the provision of housing services, especially to the economically weaker sections of urban poor households, in Bhubaneswar. The Orissa State Housing Board has constructed a total of 17646 housing units under the social housing schemes till 2000-2001. Out of these, only 1866 (10.57 per cent) housing units have been constructed for the Economically Weaker Section respectively under the social housing schemes.

6.2 Policy Implications

In general, the study finds that the developing countries like India do not have an own- constructive social housing policy for the impoverished sections of society at the macro and micro levels. The study suggests that both central and state governments in India

should re-innovate a new social housing scheme towards underprivileged sections of the society in particular and also make it more adaptable to all kinds of socio-cultural and economic conditions. However, the empirical evidence at the macro level shows that the supply side factors such as credit availability relatively plays a pivotal role compared with other factors in the sources and dynamics of housing prices in India. In this context, the study points out that the researchers or policy makers while engaged in examining the housing price dynamics in the developing countries in particular should not underestimate the supply side factors.

Given the observations at the macro level that bank credit availability to housing sector enhances the supply of housing, had there been increase in supply of credit in the Bhubaneswar city at the micro level, it would have definite impact on the supply side. However, on the demand side, income has to improve for creation of economic demand in the housing market in the capital city of Orissa.

On the demand for housing front, the micro evidence shows that there is an increasing housing effective demand for housing compounded by rising households' income, floor level and quality of locations. There is also growing housing needs from the slum-dwellers in Bhubaneswar. On the supply of housing front, the government has not adequately supplied housing related infrastructure services to the needy people in urban areas in Bhubaneswar. It is seen that the living conditions of the slum-dwellers have not improved too. The study suggests that the government's effective intervention is essential at the grass-root levels while implementing and formulating the policies and programs in targeting urban poor and also should re-look in the same way to the living conditions of the urban poor.

6.3 Limitations of the Study

It should be admitted that the present study has not captured all the relevant determinants of housing prices for the better understanding of the intricacies of housing market at the macro level in India. A possible explanation is that there is lack of relevant secondary information on the determinants of housing prices, such as costs of construction and land prices over a period of time and severe constraints to the collection of data, which prevent the researchers from investigating into the gravity of the real housing problem in

India (Joshi 2006). Besides, the study could not also collect the required information such as details of households assets, income level, exact expenditure on housing and sources of financing on the demand side and the exact price with built area on the supply side for the purpose during the primary survey due to the non-response of the residential households and private contract house builders in Bhubaneswar.

The present study, however, provides a scope for further research, to examine the housing price behaviour in the metropolitan cities in India in particular and to assess the role of the government in the provision of government in the provision of housing sites and services to the urban poor slum dwellers.

References

- Abelson, P., Joyeux, R., Milunovich, G., and D. Chung. 2005. 'House Prices in Australia: 1970 to 2003: Facts and Explanations', (See: <http://www.econ.mq.edu.au/research/2005/HousePrices.pdf>)
- Abraham, J. M. and P. H. Hendershott. 1994. 'Bubbles in Metropolitan Housing Markets', National Bureau of Economic Research, Working Paper No.4774, (June, 1994), Cambridge M.A.02138.
- Allen, J., Amano, R., Byrne, D. P. and A. W. Gregory. 2006. 'Canadian City housing Prices and Urban Market Segmentation', Applied Economic Letters, 10(3), Pp: 799-804.
- Apergis, N. and A. Rezitis. 2003. 'Housing Price and Macro Economic Factors in Greece: Prospects within the EMU, Applied Economic Letters, 10(12), Pp: 561-565.
- Alonso, W. 1964. 'Location and Land Use: Toward a General Theory of Land Rent', Harvard university Press: Cambridge MA.
- Augusty, K. T. 1990. 'Housing in Kerala: A Study of Some Aspects of Finance and the Choice of Technology in Construction', M.Phil Dissertation Submitted to JNU, CDS, Trivandrum (Unpublished).
- Basant, K. K. 2006. 'Financial Liberalization and Short-Run Housing Price Dynamics', National University of Singapore.
- Berg, L., and T. Berger. 2005. 'The Q theory and the Swedish Housing Market- An Empirical Test', European Network for Housing Research, International Conference Paper, Reykjavik, Iceland, (June 29th-july 2nd, 2005).
- Bianchi, M., and P. Jehiel. 2006. 'Speculative Bubbles Without Stupid Investors', Job Market paper, (December, 2006), (<http://www.hhs.se/NR/rdonlyres/B68BDB80-A894-4FD2-8644-8231A62F5D6B/0/milobianchibubbles.pdf>).
- Bourne, S. L. 1981. 'The Geography of Housing', V.H. Winston & Sons, Edward Arnold (Publishers Ltd.), Pp: 254.
- Buckley, R. M. et al. 1996. 'Housing Finance in Developing Countries', World Bank, Washington, D.C.
- Cameron, G., Muellbauer, and J. Murphy. 2006. 'Was there A British House Price Bubble?' (See: www.odpm.gov.uk).

- Case, K. E. and R. J. Shiller. 2003. 'Is there a Bubble in the Housing Market?' *Brooking Papers on Economic Activity*, 2, Pp: 299-342.
- Case, K. E. and R. J. Shiller. 1989. 'The efficiency of the market for single-family homes', *American Economic Review*, 79, Pp: 125-137.
- Census India. 1991. 'Housing and Amenities: A Brief Analysis of the Housing Tables of 1991 Census', New Delhi: Demography Division Office of the Registrar General and Census Commissioner.
- Chandrasekhar, C. P. 2007. 'A Housing Price Boom Gone Away', *India's National Magazine Weekly Front Line*, 24(8), (April 21-May 04, 2007), Pp: 1-5.
- Chen, M. C. and K. Patel. 1998. 'House Price Dynamics and Granger Causality: An analysis of Taipei New Dwelling Market', *Journal of the Asian Real Estate Society*, 1(1) Pp: 101-126.
- Cho, Y. J., and D. Khatkhate. 1989. 'Financial Liberalisation: Issues and Evidence', *Economically Politically Weekly*, (May 20, 1989), Pp: 1105-1114.
- Cooper, J. M. and Guntermann, K. L. et al., 1974. 'Real Estate and Urban Land Economics', Lexington Books Toronto London.
- Cho, D. 2005. 'Interest rate, Inflation, and Housing Price: With an emphasis on Chonsei Price in Korea', *NBER Working Paper No.11054*.
- Cho, M. 1996. 'Housing Price Dynamics: A Survey of the Theoretical and Empirical Issues', *Journal of Housing Research*, 7(2).
- Dam, F., Visser, P. and P. Hooimeijer. 2005. 'The influence of neighborhood Characteristics on geographical differences in house prices in the Netherlands', *European Network for Housing Research, International Conference Paper*.
- Depasquale, D. and Wheaton, W. 1994. 'Housing Market Dynamics and the Future of Housing Prices', *Journal of Urban Economics*, 35, Pp: 1-27.
- Depasquale, D. and Wheaton, W. 1995. 'Urban Economics and Real Estate Markets', Prentice Hall, Englewood Cliffs, NJ.
- Dipasquale, D. 1999. 'Why Do not we know More About housing Supply?', *Journal of Real Estate Finance and Economics*, 18(1), Pp: 9-23.

- Dickey, D. A. and W. A. Fuller. 1979. 'Distribution of the Estimators for autoregressive time series with a unit root', *Journal of the American Association*, 74, Pp: 427-31.
- Downs, J. C. 1974. 'Demand and Market for Housing: The balance of the decade in Sternlieb, George (ed.) *Housing 1971-72: An AMS Anthology*, AMS Press Inc New York, Pp: 281.
- Downs, A. et al., 1976. 'Urban Problems and Prospects', Pp: 77-86.
- Eaton, J., and Z. Eckstein. 1997. 'Cities and Growth: Theory and Evidence from France and Japan', *Regional Science and Urban Economics*, 27, Pp: 443-447.
- Egert, B. and D. Mihaljek. 2007. 'Determinants of House Prices in Central and Eastern Europe', *BIS Working Paper No.236*, (Sept. 2007).
- Enders, W. et al., 2004. 'Estimation of Cointegration and Vector Auto Regression Techniques', *Applied Econometric Time Series*, Second Edition, WILEY.
- Engle, W. and C. W. J. Granger. 1987. 'Cointegration and Error Correction: representation, estimation and testing', *Econometrica*, 55, Pp: 251-76.
- Feildstein, M. S. 2007. 'Housing Credit Markets and the Business Cycles', *NBER Working Paper No.13471*.
- Ferguson, B. and J. Navarrete. 2003. 'New approaches to progressive housing in Latin America: A key to habitat programs and policy', *Habitat International*, 27, Pp: 309-323.
- Friedman, M. 1957. 'A Theory of the Consumption Function', *Princeton University Press, Princeton*, Pp: 20-38.
- Garza, Branas, P., Dar, A. H., Ocerin, Y., and J. M. Caridad. 2000. 'Effect of income levels on demand for housing characteristics: evidence based on principal components analyses, Department of economics, university of Cordoba, Spain.
- Glaeser, E. L., Gyourko, J., and Saks. 2002. 'The Impact of Zoning on Housing Affordability', *NBER Working Paper No.8835*, (March, 2002), (See: www.nber.org).
- Glaeser, E. L., Gyourko, J., and Saks. 2005. 'Why have Housing Prices Gone up?' *HIER*, (February, 2005), (See: www.post.economics.edu/heir).
- Glaeser, E. L., Gyourko, J., and Saks. 2005. 'Urban Growth and Housing Supply', *Taubman Centre Research Working Paper 05-06*.

- GoI. 2002. 'Housing Condition and Stocks in India', New Delhi: NSSO 58th Round, (July-December, 2002), Report No. 488, Government of India.
- GoI. 2004. 'Economic Survey 2003-04 on Social Housing schemes', Government of Orissa, Chapter 8, Pp: 8-15, (See: <http://orissagov.nic.in/p&c/eco2004/ecocont.htm>).
- GoI. 2005. 'FDIs in the Real Estate Sector in India', New Delhi: Ministry of Housing and Urban Poverty Alleviation, Government of India.
- GoI. 2005. 'Report on Trend and Progress of Housing in India', New Delhi: National Housing Bank, Government of India (See: www.nhb.org.in).
- GoI. 2006. 'Housing Statistics: An Overview', New Delhi: National Building Organization 2006, Government of India.
- GoI. 2007. 'Report on the Technical Group [11th Five Year Plan: 2007-12] on Estimation of Urban Housing Shortage', New Delhi: NBO (See: www.nhupa.gov.in).
- GoI. 2007-08. 'Orissa State Gross Domestic Product 2006-07', New Delhi: Ministry of Statistics and Programme Implementation, CSO 2007-08, Government of India (See: www.mospi.nic.in).
- GoI. 2007. 'National Urban Housing and Habitat Policy 2007', New Delhi: Ministry of Housing and Urban Poverty Alleviation (See: www.mhupa.gov.in).
- GoO. 2004. Orissa Human Development Report, Bhubaneswar: Planning and Coordination Department, Government of Orissa.
- Gopikuttan, G. 1988. 'Housing boom in Kerala: Causes and Consequences', Ph.D Dissertation Submitted to Kerala University, Trivnadrum (Unpublished).
- Govt. warns of stern steps to break Cement Steel Cartels. 2008. The Hindu Business Line Daily News Paper, (April 17th, 2008), (See: www.thehindubusinessline.com).
- Gujarati, D. N. et al., 2003. 'Estimation of Augmented Dicky Fuller and Phillips Perron Tests', New Delhi: Basic Econometrics, Fourth Edition, A Division of the McGraw-Hill Companies.
- Giles, C. 2003. 'The autonomy of Thai housing policy: 1945–1996', Habitat International 27, Pp. 227–244.
- Gulati, P. 1985. 'The Provision of Housing: Self help Arrangements in Less-Industrialized Countries in Housing, Needs and Policy Approaches: Trends in

Thirteen Countries', Edited by Willem van Vliet, Elizabeth Huttman and Sylvia Fava, Duke University Press. Durham.

- Gupta, D. 1985. 'Urban housing in India', World Bank Staff Working Papers, No. 730.
- HABITAT. 2006. 'The State of the World's Cities', Report 2006/7. Nairobi. Pp. 76.
- Hendry, D. F. 1984. 'Econometric Modeling of House Prices in the United Kingdom', The Econometrics and Quantitative Economics, (eds D.F. Hendry and K. F. Wallis).
- Hickman, P., Robinson, D., Casey, R., Green, S., and R. Powell. 2007. 'Understanding Housing Demand Learning from rising Markets in Yorkshire and Humber', Chartered Institute of Housing.
- Himmelberg, C., Christopher, M., and T. Sinai. 2005. 'Assessing High House Prices: Bubbles, Fundamentals, and Misperceptions', Federal Reserve Bank of New York Staff Reports No. 218, (Sept, 2008), New York.
- Hu, J., Su, L., Jin, S., and W. Jiang. 2006. 'The Rise in House Prices in China: Bubbles or Fundamentals', Economics Bulletin, 3(7), Pp: 443-447, (See: www.economicsbulletin.com).
- Hui, E. C., and J. T. Wong. 2007. 'The Impact of Supply of Subsidized Sale Flats on Private Housing Prices in Hong Kong', Journal of Real Estate Literature, 15(2), Pp: 255-280.
- Hunaiti. 'Housing Demand, Population growth and Demographic factors'. (See: www.un.org).
- India's Real Estate Plus Magazine, (August, 2007), 3 (12).
- Jayapadma, R. V. 2005. 'Gram Vikas Housing Programme – Orissa', (1), Published Documents, (January, 2005), (See: www.gramvikas.org).
- Johansen, S. J., 1988. 'Statistical Analysis of Cointegration Vectors', Journal of Economic Dynamics and Control, 12, Pp: 231-54.
- Johansen, S. J., 1991. 'Estimation and Hypothesis Testing of Cointegration Vectors in Gaussian Vectors Auto regression Models', Econometrica, 59, Pp: 1551-80.
- Joshi, H. 2006. 'Identifying Asset Price Bubbles in the Housing Market in India: Preliminary Evidence', RBI Occasional Paper, 27(1), Pp: 73-88.

- Jud, D., and D. T. Winkler. 2002. 'The Dynamics of Metropolitan Housing Prices', *JRER*, 23(2).
- Kannan, K. P., and R. J. S. Spence. 1975. 'A Social Cost Approach to Choice at Technology in Building Construction', (September, 1975), CDS Working Paper No.30, Trivandrum.
- Kapur, B. K. 2006. 'Financial Liberalisation and Short-Run Housing Price Dynamics', *Economic Theory*, 29(3), Pp: 649-675.
- Kahn, M. E. 2007. 'Environmentalism as a Determinant of Housing Supply Regulation', (November 9th, 2007), UCLA and National Bureau of Economic Research, (See: <http://www.econ.ucsd.edu/seminars/0708seminars/11-26-07%20Environmentalism%20as%20a%20Determinant%20of%20Housing%20Supply%20Regulation.pdf>).
- Krishna, K. T. 1982. 'The Role of Economic Analysis in Public Policy on Housing', *Nagarlok*, 14(2), Pp: 12.
- Kumar, A. 1989. 'National Housing Policy: The Implications', *Economic and Political weekly*, (June 10th, 1989), Pp: 1285-1294.
- Kundu, A. et al., 1977. 'Urban Land Markets and Land price Changes: A study in the Third World Context'.
- Lancaster, K. J. 1966. 'A New Approach to Consumer theory', *Journal of Political Economy*, 74, Pp: 541-558.
- Leamer, E. E. 2007. 'Housing is the Business Cycles', NBER Working Paper No.13428, (See: www.nber.org).
- Leung, C. 2004. 'Macroeconomics and Housing: A Review of the Literature', Chinese University of Hong Kong, (See: <http://www.econ.cuhk.edu.hk/~discusspaper/00004.pdf>).
- Luger, M. and K. Temkin. 2000. 'Red Tape and Housing Costs: How Regulation Affects New Housing Development', New Brunswick, NJ: Centre for Urban Policy Research.
- Mackinnon, J. 1991. 'Critical Values for Cointegration Tests', in R.F. Engle and C.W.J. Granger (eds) *Long-run Economic Relationships*, Oxford University Press, Oxford, Pp: 267-76.
- Mallick, H. and S. Agarwal. 2007. 'Impact of Real Interest rates on Real output Growth in India: A Long Run Analysis in a Liberalized Regime', *Singapore Economic Review*, 52(2), Pp: 215-231.

- Mahadeva, M. 2006. 'Reforms in Housing Sector in India: impact on housing development and housing amenities', *Habitat International*, 30, Pp: 412-433.
- Malpezzi, S., and Mayo, S.K 1987. 'The Demand for Housing in Developing Countries: Empirical Estimates from Household Data', *Economic Development and Cultural Change*, 35(4), (July 1987), Pp.687-721, Published by the University of Chicago.
- Mankiw, N. G., and D. N. Weil. 1989. 'The Baby Boom, the Baby Bust and the Housing Market,' *Regional Science and Urban Economics*, 19.
- Marisol, E., and A. Amaia. 2008. 'A model of the Spanish Housing Market', *Journal of Post Keynesian Economics*, 30(3), Pp: 353-372.
- Meen, G. 1990. 'The Removal of Mortgage Constraints and the Implications for econometrics modeling of UK house Prices', *Oxford Bulletin of Economics and Statistics*, 32(1), Pp: 1-23.
- Mehta, M., and D. Mehta. 1987. 'Metropolitan Housing Markets: A Case Study of Ahmedabad', *Economically Politically Weekly*, (October 3rd, 1988), Pp: 1701-1709.
- Mehta, M., and D. Mehta. 1988. 'National Housing Bank: Financing Housing or Shelter', *EPW*, (February 13th, 1988), Pp: 300-02.
- Miller, N., and L. Peng. 2004. 'Exploring Metropolitan Housing Price Volatility', (March 26th, 2004), University of Cincinnati.
- Mitra, A. 1990. 'Land Price in Indian Cities: Dimensions and Determinants of Change', *EPW* (December 15th, 1990), Pp: 2723-2729.
- Muellbauer, J., and A. Murphy. 1997. 'Booms and busts in the UK housing markets', *Economic Journal*, 107, 445, Pp: 1701-27.
- Murphy, A. 2007. 'A Dynamic Model of Housing Supply', *Job Market Paper*.
- Muth, R.F. et al., 1975. 'Urban Economics Problems', Harper and Row Publishers.
- Muth, R. F., and S. Czamanski. 1970. 'Cities and Housing', *The Journal of the American Statistical Association*, 65 (331), (Sept., 1970), Pp: 1408-1411.
- Nachane, D. M., Karnik, A. V., and N. R. Hatekar. 1997. 'The Interest rate Introglolio and Fiscal Dimension', *EPW*, 32(20-21), (May 17 -24, 1997), Pp: 1167-1174.
- Nair, K. N., and G. Gopikuttan et al., 2006. 'Housing in Kerala, impact of investment, technology and institutions'.

- Nair, D. G. 2006. 'Sustainable Affordable Housing for the Poor in Kerala', Ph.D Dissertation Submitted to Delft University of Technology.
- Naylor, T. H. 1967. 'The Impact of Fiscal and Monetary Policy on the Housing Market', *Law and Contemporary Problems*, 32(2), the Federal Role, (Summer, 1967), Pp: 384-396, (See: www.jstor.org/stable/1191077).
- Pavananthi, R. V., Suresh, R. J. K., and C. Sathyamala. 2008. 'Post-Tsunami Housing in Tamil Nadu', *Economy Politically Weekly*, (April 19th, 2008), Pp: 39-51.
- Paz, P. T. D. L. 2000. 'Determinants of Housing Prices in Spanish Urban Areas', *European Regional Science Association*, (August 30th – 2nd Sept, 2000), International Economic Institute, UO Alicante.
- Philippe, A. 1980. 'Two Successive Motivations for Declining Birth Rate in the West', *Population and Development Review*, 6(4), Pp: 645-50.
- Phillips, P. C. B., and P. Perron. 1988. 'Testing for a unit root in time series regression', *Biometrika*, 75, Pp: 335-46.
- Pollock, R. 1973. 'Supply of Residential Construction: A Cross-Sectional Examination of Recent Housing Market Behaviour', *Land Economics*, 49(1), (February, 1973), Pp: 57-66.
- Poterba, J. M. 1984. 'Tax Subsidies to Owner-Occupied Housing: An Asset-Market Approach', *The Quarterly Journal of Economics*, (November, 1984), Pp: 729-752.
- Pugh, C. 1991. 'Housing Policies and the Role of the World Bank', *Habitat International*, 15, Pp: 275–298.
- Pugh, C. 1994. 'Housing Policy Development in Developing Countries', *Cities*, 11 (3), Pp: 159-180.
- Pugh, C. 1997. 'The Changing Roles of Self-help in Housing and Urban Policies 1950–1996: Experience in developing countries', *Third World Planning Review*, 19, Pp: 91–109.
- Rakeshmohan, P. 1996. 'Urbanisation in India: Patterns and Emerging Policy Issues', Joseph Gugler (ed). *The Urban Transformation of Developing World*, Pp: 93-132 Oxford: Oxford University Press.
- Rakeshmoahn. 2007. 'Development of Financial Markets in India', *Reserve Bank of India Monthly Bulletin*, (June, 2007), Pp: 961-990.
- Real Estate Plus on the aspect of housing, (See: <http://www.realtyplusmag.com/>).
- Real Estate Market in India, (See: www.bseindia.com and www.valuenotes.com).

- Riddell, M. 2000. 'Housing Markets dynamics Under Stochastic Growth: An Application to the Housing Market in Boulder, Colorado', *Journal of Regional Science*, 40(4), Pp: 771-788.
- Riddell, M. 2004. 'Housing Market Dis-equilibrium: An Examination of Housing Market Price and Stock Dynamics 1967-1988', *Journal of Housing Economics*, 13, Pp: 120-135.
- Saravanam, Palanisami, Nagarajan, and Ramamoorthy. 2007. 'Housing Finance System in India and China- An Exploratory Investigation', MPRA WP No.26, (December, 2007), (See: www.mpra.ub.uni-muenchen-de).
- Saraogi, R. 2007. 'Demystifying Subprime Crisis', Munich Personal RePEc Archive (MPRA) Working Paper No. 7571, (See: www.ub.uni-muenchen.de).
- Segal, D. et al., 1977. 'Urban Economics', Pp: 117-140.
- Siedenburg, F. 2007. 'Global Imbalances and the Housing market: An SVAR approach for the case of the US', (June 26th, 2007), Workshop 2007 on account dynamics, Christian – Albrechts-University of Kiel.
- Sims, C. 1980. 'Macroeconomic and Reality', *Econometrica*, 48, Pp: 1-48.
- Sinai, T., and N. S. Souleles. 2003. 'Owner-Occupied Housing as a hedge against Rent Risk', National Bureau of Economic Research, Working Paper No.9462, (January, 2003), Cambridge, M.A. 02138.
- Stafford, D. C. 1978. 'The Economics of Housing Policy', Croom Helm Ltd., London, Pp: 25.
- Stein, J. 1995. 'Prices and Trading Volume in the Housing Market: A Model with Downpayment Constraints', *Quarterly Journal of Economics*, 110(2), (May, 1995), Pp: 379-406.
- Stone, P. A. et al., 1966. 'Building Economy, Design, Production and Organisation: A Synoptic View'.
- The Real Estate Sector in India. 2008. *The Weekly Front Line*, (March 28th, 2008), Pp: 120-124.
- The Stock Market Crash in India. 2008. *The Economic Times Daily News Paper*, (Jan 23rd, 2008).
- Tipple, G. 2000. 'Extending themselves: User-initiated Transformations of Government Built Housing in Developing Countries', Liverpool: Liverpool University Press cited in Harris, R and Giles, C, 2003.

- Tiwari, P., and J. Parikh. 1997. 'Demand for Housing in the Bombay Metropolitan Region', *Journal of Policy Modelling*, 19(3), Pp: 329-321.
- Topel, R., and S. Rosen. 1988. 'Housing Investments in the United States', *Journal of Political Economy*, 96, Pp: 718-740.
- Turner, J. F. C., and R. Fitchereds. 1972. 'Freedom to Build', Collier Machmillion, New York.
- Turner, J. F. C. 1976. 'Housing by People towards autonomy in building environment', Marion Boyars, London.
- United Kingdom, UK Information Service. 1960. 'Housing and Town and Country Planning in the United Kingdom Dependencies. London: UKIS cited in Harris, R and Giles, C. 2003. A mixed message: the agents and forms of international housing policy, 1945–1973, *Habitat International*, 27, Pp: 167–191.
- UNCHS. 1996. 'The future of human settlements: good policy can make a difference. Executive summary preparatory committee for the United Nations conference on human settlements Third session New York.
- United Nations Human Settlement Programme. 2003. 'The Challenge of Slums', *Global Report on Human Settlement*.
- United Nations Human Settlements Programme (HABITAT). 2005. 'Global Report on Human Settlements 2005: Financing Urban Shelter', ISBN: 18440-72118.
- United Nations Human Settlements Programme (HABITAT). 2005. 'Responding to the challenges of an urbanizing world', *Annual Report 2005*.
- United Nations Human Settlements Programme (HABITAT). 2005. 'The State of the World Cities', 2004/2005: Globalization and Urban Culture. ISBN 1-84407-160-X.
- Violand and Simon. 'The Impact of Real Estate Broker on House Prices', (See: www.ssrn.com)
- Wadhwa, K. 1996. 'Urban Land Market Failure and Government Intervention', Sing K. and Steinberg et al. 1996. 'Urban India in crisis', New Delhi Publishers, Pp: 353-358.
- Wadhwa, K. 1988. 'Housing Programme for Urban Poor: Shifting Priorities', *EPW*, (August 20th, 1988), Pp: 1762-1767.

- Wagner, M. W. 1984. 'Market Prices and Assessed Values in the Urban Land Market in Bogotá, Colombia: The role of quantity Premiums and Discounts', World Bank Staff Working Papers No.651, Washington, DC, World Bank.
- Windapo, A. O., and R. O. Alyagba. 2007. 'Modeling the Determinants of Housing Construction Costs in Nigeria', University of Lagos, Akoka, Nigeria, (See: www.rics.org).
- World Bank. 1972. 'Urbanization', World Bank, Washington. DC.
- World Bank. 1975. 'Housing: Sector Policy Paper', Washington DC, World Bank.
- World Bank. 1992. 'Housing: Enabling Markets to Work', Washington.
- World Population Prospect. 2005. United Nations: Department of Economic and Social Affairs, Population Division, (February 24, 2005).
- Xing, X., HartZell, D. J., and D. R. Godschalk. 2006. 'Land Use Regulations and Housing Markets in Larger Metropolitan Areas', *Journal of Housing Research*, 15(1), Pp: 55-80.
- Zbib, Z. 2006. 'A House Price Bubble in Sweden', Bachelor Thesis Submitted to J.University, (August, 2006).
- Zearley, T, L. 1993. 'Creating an enabling environment for housing: Recent reforms in Mexico', *Housing Policy Debate*, 4 (2), Pp: 239-49.

APPENDIX.A

Survey Questionnaire

Interview Schedule

Determinants of Demand for Housing At the Micro Level: A Study in the Bhubaneswar City of the Orissa State

Name of the Investigator: Mantu Kumar Mahalik	Date _____
---	------------

IDENTIFICATION

IDENTIFICATION	
District:	_____
City:	_____
Panchayat:	_____
Ward:	_____
Village:	_____
Household Number:	_____
Name of the Household Head:	_____
Name of the respondent:	_____

Use code	Write the name	Use code
Religion	Caste:	Category
Code: Hindu-1, Muslim-2, Christian-3, Other		BPL/APL
		Category code: General-1, OBC-2, SC-3, ST-4

B. HOUSEHOLD DETAILS

	01	02	03	04	05	06	07	08
	Members of the household	Relationship to head of the Household	Sex	Marital Status	Age	Education	Monthly income	Place of work
Sl. No	Please give me the names of the persons who usually live in your household starting with the head of the household?	What is the relationship of (Name) to the head of the household?	Is (Name) male or female?	What is the current marital Status of (Name)?	What is the age of (Name)?	What is the level of education (Name) has received?	What is the total income of the individual ?	Where does the person work?
01								
02								
03								
04								
05								
06								
07								
08								
09								
10								

Codes for Q. 02

- 01=Head
- 02=Wife or Husband
- 03=Son or daughter
- 04=Son-in-law or daughter in law
- 05= Grandchild
- 06=Parent
- 07=Parent-in-law
- 08=Brother or sister
- 09=Brother-in-law or sister-in-law
- 10=Neice or Nephew

Codes for Q. 03

- Male = 1
- Female = 2

Codes for Q. 04

- 01=Currently married
- 02=Never married
- 03=Divorced
- 04=Widowed

Codes for Q. 06

- 01=Illiterate
- 02= UP School or less
- 03= ME School
- 04= High school
- 05= College
- 06= University

Codes for Q.08:

- 1= Near to residence
- 2=Near to city center
- 3=Within the district
- 4=Outside the district
- 5=Outside the state
- 6=Outside India

1) Household's Assets and Livestock

Land Size		Livestock		Vehicles		Consumer Durables	
01		02		03		04	
Farm land	Non-farm land	Name	Nos.	Name	Nos.	Name	Nos.

Codes for 02

Codes for 03

Codes for 04

1=Cow
2=Goat
3=Pig
4=Others (specify)

1=Bicycles
2=Two Wheelers
3=Four Wheelers
4=Tractor
5=Others

1=Television
2=Radio
3=Computer
4=Fan
5=Refrigerators
6=Mobile Phone

2) Ownership of House

01		02		03	04		05
Do you own this house		Do you let a part of the house on rent		What was the mode of acquisition of House	Is this your place of origin?		Do you have any other buildings/ house?
Yes	If No	If yes, Rent per month	No		Yes	If no, Native Place	If Yes, Is it on rent, specify rent amount per month
Codes for 01				Codes for 03			
1=Rent 2=Living with relatives				1=Built on own/borrowed capital 2=Purchased with own money 3=Purchased with capital borrowed			

3) Details of Housing Characteristics

Type of House	Floor Level (Height)	Size of the house (square foot)	No. of rooms other than kitchen	Lighting Facility	Cooking Facility	Drinking Water	Toilet Facility
Floor				Use Code	Use Code	Use Code	Use Code
Wall							
Roof							

Floor 1=Mud 2=Cement 3=Tiles 4=Mosaic 5=Others	Wall 1=Mud 2=Stone 3= Bricks 5=Others	Codes for Lighting 01= Kerosene 02=Electricity 03=Other Codes for Cooking 01=Firewood 02=Kerosene stove 03=Bio-gas 04=Electric Heater 05= Solar Chula	Codes for Drinking water 01= Well 02=Tube well 03=Supply water 04= Other
Roof 1=Thatched 2=Tile 3=Asbestos 4=Concrete 5=others			Codes for Toilet 01=No 02=Yes

01		02	03		04
If occupying own house, are you satisfied with the location?		What prompted you to buy/ construct this house? (Housing amenities)	Has the old/ new houses affected your livelihood negatively?		Sources of Funds for House Construction/ Apartment Purchase
Yes	No		No	If Yes give reasons	Own Sources
If No, specify reasons					Borrowed Funds

Codes for 02

1=Location	8=lose to Highway
2=Neighborhood characteristics	9=A status symbol
3=Proximity to place of work	10=Social security
4=Near to city center	11=A profitable investment
5=Close to Railway station	12=Roads and market
6=lose to Airport	13=place of worship
7=close to Hospital	

Codes for 03

1=Social tension
2=firewood problem
3=other reasons

01	02	03		04		05	
If you yourself have constructed the house	If purchased,	If you are living in rented/relative's house, are you looking for buying a house?		Have you tried before to get house from Government Housing Board?		Have you got any housing loan from housing board for building/improvement of houses?	
Year of construction	Year of purchase		If yes, when do you plan to make the purchase?			If Yes	If No, Specify the Reasons
Price of land?	Specify the Agency		How much are you willing to pay for the house purchase		If Yes then how many times	Name of the Schemes	
Cost of construction Labor + Capital	Cost paid at the time of purchase		Where would you like to Purchase the house?			Year	
Other costs (specify)		Reason, specify				Amount	
Total							

1=Private Agency
2= Government Agency

1.1: Sources of Own Funds for Housing Construction/Purchase

Own Sources	Amount (Rs.)	Name of Schemes	Any default in repayment?		Are you confident about repaying the remaining?		How will you clear the debt?	Have you any outstanding debt other than the above?
			1. Yes	2. No	Yes	No		If yes, give details
Savings								
Pensions			If yes, why?		If No, why?			Amount of indebt
Sale of Assets								Agency
Subsidies and Grants								How do you plan to clear the debt?
Gifts								
Others								

11.2: Sources of Borrowed Funds for Housing Construction/Purchase

Channel	Amount (Rs.)	Rate of interest	Year of borrowing	Year of closure	Repayment amount Rs.(per month)	Extra-cost of raising the loans	Collateral Yes/ No	Amt. repaid so far	Time required to clear full debt (months)
1	2	3	4	5	6	7	8	9	10
Co-operative housing finance agencies									
Commercial banks									
Co-operative banks									
Provident Fund									
LIC									
Others									
State housing Board									
Local Bodies									
Public Sector Under takings									
Private Sector									
Others									
Friends									
Relatives									
Employer									
Money Lender									
Others									

APPENDIX. B

Survey Questionnaire

Determinants of Supply of Housing: A Micro Evidence

I. Identification

1	Country Name	INDIA		
2	State's Name	ORISSA		
3	District	KHORDHA		
4	City	BHUBANESWAR		
6	Ward No.			
7	House No.			
8	Name of the Respondent:			
9	Gender of the Respondent	Male	Female	

II. Type of Construction agency

Name	The Year of Building agency established
State Government	
Private Construction agency	
Individual	
Commercial Builder	
NGO	
Co-operative Society	
Owner Builder	
Others (specify)	

A. How many houses have your agency constructed?

Period of construction	No. of houses Constructed	Location	Cost Per Houses constructed (Rs.)		
			Pucca	Semi-Pucca	Kutchha
1990-1995					
1996-2000					
2001-2005					
2006-07					

B. What according to your agency is the trend in prices of housing units? (Material Costs plus Land Price)

Year	Cost of Construction and Land (Rs)				
	Location	Land Price per sq.foot	Types of materials used	At Present	5/10 years back
1990-1995			Cement		
1996-2000			Bricks		
2001-2005			Iron Rods		
2006-07			Asbestos		
			Mosaic Tiles		
			Wage Rates		

C. Details about the Construction Process

Do you have any construction workers?		
Yes	No	
If No, do you have any any contract with some construction workers agencies?		
Yes	No	
If No, how do you manage?		
Do you face any labour problems during construction?	Yes	No
If Yes, give Reasons.		
Have you completed all works all time?		

D. 1: Particulars of the Houses Sold

Period of Purchase	Type of Buyer	No. of houses sold	Average Price per (Rs.)		
			Pucca	Semi-Pucca	Kutcha
1990-95					
1996-2000					
2001-2005					
2006-07					

D.2:

01	02	03	04	05	06
Do you construct houses under any housing schemes?	What are the general types of persons who demand houses from your agencies?	Has the demand for housing has increased during the past 15 years	Does your agencies construct houses to lend on rent?	What are the types of houses constructed for renting?	What are the average rents charged per month?
Yes No		Yes No	If yes, since which year?		
If Yes, the Schemes		If it has, what is the type of houses demanded most?			
Code for 01: 1=IAY 2=VAMBO 3=Others	Code for 02: 1=WS 2=LIG 3=MIG 4=HIG	Code for 03: 1=Pucca House 2=Semi-Pucca House 3=Kutcha House		Code for 05: 1=Pucca House 2=Semi-Pucca House 3=Kutcha House	

E. Sources of Funds for House/Apartment Construction/Land Development

- | | |
|-------------------------|-----------|
| 1. Own Sources | Rs.----- |
| 2. Borrowed Funds | Rs.----- |
| 3. Customer Collections | Rs.----- |
| Total | Rs. ----- |

E.1: Sources of Borrowed Funds for Housing Construction/Purchase.

Channel	Amount (Rs.)	Rate of interest	Year of borrowing	Year of closure	Repayment amount Rs.(per month)	Extra-cost of raising the loans	Collateral Yes/No	Amt. repaid so far	Time required to clear full debt (months)
1	2	3	4	5	6	7	8	9	10
Co-operative housing finance agencies									
Commercial banks									
Co-operative banks									
Provident Fund									
LIC									
Others									
State housing Board									
Local Bodies									
Public Sector Under takings									
Private Sector									
Others									
Friends									
Relatives									
Employer									
Money Lender									
Others									

F. Housing Scenario in Bhubaneswar

What reasons do you ascribe for the observed variation in bhubaneswar, for housing?	Does according to your agency; there exists a rising demand for housing in slum areas		Does your agencies feel that the size of the houseless population in the city has been growing?		Has housing fashions undergone change during the past 15 years?	
1. Growth of population	Yes	No	Yes	No	Yes	No
2. Growth of urbanization	If yes, give reasons.		If yes, give reasons		If yes, give details of the changes in each category of housing. 1. Pucca 2. Semi-Pucca 3. Kutcha	
3. Increasing average per capita income						
4. Inward migration						
5. Others						

