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# THE HOUSING CHALLENGE IN EMERGING ASIA

## *Options and Solutions*

*Naoyuki Yoshino and Matthias Helble, Editors*

ASIAN DEVELOPMENT BANK INSTITUTE

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# Foreword

Asia has achieved impressive economic growth over the past 3 decades, lifting hundreds of millions out of poverty. Yet, despite this strong economic growth, housing conditions in many parts of Asia remain inadequate.

Asia has been a latecomer to urbanization. Whereas 30 years ago, less than a third of Asia lived in urban areas, nearly 50% of the region's people do so today. All other regions, except Africa, have urbanization rates well above 70%. This trend of urbanization is predicted to continue for the foreseeable future. The United Nations expects that urbanization in Asia will reach 64% by 2050.

Asia today has more than 2 billion urban dwellers, surpassing all other regions in the world. The number of urban residents in Asia is expected to reach 3.3 billion by 2050. Growing urban populations means that urban centers need to provide housing for a large number of new residents every near. The Asian Development Bank Institute (ADBI) estimates that at the current urbanization rate, 127,000 people are added to urban centers every day in Asia.

There is a pressing need to provide adequate and affordable housing throughout Asia. While economic success combined with continued urbanization and a growing middle class have strongly increased the demand for housing in Asia, the supply of housing has not kept pace. As a consequence, land prices have increased rapidly as well as the price of construction materials and services. Furthermore, acquiring housing also requires having access to housing finance. In many Asian countries, low- and middle-income households typically lack access to formal finance mechanisms. Consequently, access to housing has remained elusive for a large share of the population in Asia. For low-income groups, this has translated into an expansion of urban slums, instead of an improvement in living conditions.

The effects of inadequate housing conditions are multiple. There is strong empirical evidence in the scientific literature of a close correlation between poor health and inadequate housing. Access to water and sanitary facilities appears equally crucial for better health. Furthermore, the literature suggests that poor housing is associated with lower educational achievements. Finally, having access to housing can also play an important role in the welfare system of a country.

The challenge of providing affordable and adequate housing is not new to Asia. Over the past 4 decades, governments throughout the region have experimented with a wide range of policy interventions. Assisted by strong economic growth, several countries were able to improve the living conditions of millions of their citizens. By implementing programs of slum upgrading, Asia has seen its urban population living in inadequate slum housing decrease as a percentage of the urban population over the last 2 decades. However, due to strong population growth, the absolute number of people living in slums in Asia has increased. Improving access to affordable and adequate housing thus remains an important task for most governments in Asia.

This book aims to contribute new knowledge to solving the housing challenge. It studies the experiences of several advanced countries that have earlier confronted the challenge of housing an increasing urban population. The lessons learned from these countries can provide invaluable guidance to policy makers today. Every country and context is different, but certain principles apply universally. These include (i) removing supply-side constraints to encourage housing markets, (ii) giving more people access to housing finance while at the same time avoiding overborrowing or crowding out the private sector, and (iii) continuously improving housing quality while ensuring affordability.

This book is the outcome of research conducted by ADBI in Tokyo, in collaboration with leading housing policy experts in Asia and beyond. It was edited by Naoyuki Yoshino, dean of ADBI, and Matthias Helble, research economist at ADBI. It is the first knowledge product by ADBI on the topic of housing policies. I am convinced that this book will help policy makers in the region make better and more informed decisions on housing policies and thus help to improve the well-being of people around the region.

**Takehiko Nakao**
President, Asian Development Bank

# Abbreviations

| | | |
|---|---|---|
| ARRA | – | American Recovery and Reinvestment Act |
| BPL | – | below the poverty line |
| CPF | – | Central Provident Fund |
| CPI | – | consumer price index |
| CRH | – | Cheap Rental Housing |
| DTI | – | debt-to-income |
| ECH | – | Economic and Comfortable Housing |
| EWS | – | economically weaker section |
| FILP | – | Fiscal Investment and Loan Program |
| FY | – | fiscal year |
| GDP | – | gross domestic product |
| GFI | – | government financial institution |
| GHLC | – | Government Housing Loan Corporation |
| HAMP | – | Home Affordable Modification Program |
| HATA | – | Housing Assistance Tax Act |
| HDB | – | Housing & Development Board |
| HDFC | – | Housing Development Finance Corporation |
| HHF | – | Hardest-Hit-Fund (program) |
| HIG | – | high-income group |
| HOS | – | Home Ownership Scheme |
| HPF | – | Housing Provident Fund |
| HPI | – | house price index |
| HUDCO | – | Housing and Urban Development Corporation |
| JHC | – | Japan Housing Corporation |
| JHF | – | Japan Housing Finance Agency |
| JNNURM | – | Jawaharlal Nehru National Urban Renewal Mission |
| $km^2$ | – | square kilometers |
| LBS | – | Lease Buyback Scheme |
| LGU | – | local government unit |
| LIG | – | lower-income group |
| LTV | – | loan-to-value |
| $m^2$ | – | square meters |
| MBS | – | mortgage-backed securities |
| MDO | – | mortgage debt outstanding |
| MHA | – | Making Home Affordable (program) |
| MHUPA | – | Ministry of Housing and Urban Poverty Alleviation |

| | | |
|---|---|---|
| MID | – | mortgage interest deduction |
| MIG | – | middle-income group |
| MOLIT | – | Ministry of Land, Infrastructure, Transport and Tourism |
| MPCE | – | monthly per capita expenditure |
| MRD | – | monthly rental with deposit |
| NHB | – | National Housing Bank |
| OECD | – | Organisation for Economic Co-operation and Development |
| PAP | – | People's Action Party |
| PIR | – | price–income ratio |
| PLS | – | private label securities |
| PRC | – | People's Republic of China |
| PRH | – | public rental housing |
| RAY | – | Rajiv Awas Yojana |
| SHI | – | Second Home Initiative |
| SOE | – | state-owned enterprise |
| SPR | – | Singapore permanent resident |
| TMHD | – | Two-Million Housing Drive |
| TPS | – | Tenants Purchase Scheme |
| UDC | – | Urban Development Corporation |
| UK | – | United Kingdom |
| ULB | – | urban local body |
| UR | – | Urban Renaissance Agency |
| US | – | United States |

# Introduction

*Naoyuki Yoshino and Matthias Helble*

A Japanese saying explains that every human being needs three basic items: clothing (衣, *i*), food (食, *shoku*), and shelter (住, *ju*). Rapid economic growth combined with trade opening has facilitated access to the first two commodities for most people in emerging Asia. The current gross domestic product (GDP) per capita in Asia is about four times higher than it was in 1990. However, out of the three fundamental needs, access to adequate housing remains elusive for many residents of Asia. The objective of this book is to study the housing challenge of Asia and develop new ideas to solve it.

The strong economic growth in Asia over the past 3 decades stems from various sources. Several Asian economies improved their macroeconomic policies, successfully implemented export-oriented development strategies, and quickly integrated into international markets. Since the 2000s, Asian economies have been successful in joining regional and global production networks and in building up Asia as a global manufacturing hub. Economic growth was also stimulated by urbanization. At the beginning of the 1990s, only about a third of Asians lived in urban areas. This number has now increased to about half. The mechanism behind this strong increase is rather simple. Demand for cheap labor in urban areas outstripped the supply and triggered a massive movement of labor from rural areas to urban centers. As productivity in the manufacturing and services sectors in urban centers was usually higher than in agriculture, Asia's urbanization fueled the region's economic growth. In addition, the development of industrial clusters in cities proved to be economically very efficient, especially in industries where transportation costs, outsourcing, and spillover effects play an important role. At the same time, urbanization has been self-reinforcing. Wages in urban areas were typically higher compared with rural areas, as were the standards of living.

Asia's fast urbanization, however, has not been without problems. Urban areas typically suffer from environmental degradation, high levels

of pollution, and traffic congestion. Access to adequate and affordable housing has become one of the most immediate challenges for urban dwellers. Rapid urbanization has often resulted in a high demand for housing while supply has been lagging. Furthermore, land in urban centers is typically limited, which favors a fast increase in property prices. Another aggravating factor has been that part of the urbanization is unplanned, resulting in the emergence of slums with deleterious living conditions.

Being able to offer access to affordable and adequate housing will become a cornerstone for equitable and sustainable growth in the region. The effects of ill housing are well documented and range from poor health and lower educational achievements to adverse social spillovers.

The following is the approach of this book: We first develop a theoretical framework that conceptualizes the main characteristics of the housing market. The model allows analyzing and simulating different policy interventions by governments. It serves therefore as a useful reference point. In the second part of the book, we study the housing policies of nine, mostly advanced, countries. The idea is for readers to learn from the experiences of developed countries in their attempt to design and implement housing policies. The lessons learned in advanced countries can thus provide useful insights and guidance for emerging economies in the region.

The nine economies were chosen based on three main criteria. First, we were interested in economies with a long and well-documented history of housing policies. Second, the housing policies of the economies included in this book have been analyzed in international scientific literature, which allows us to build our conclusion on solid empirical evidence. Finally, we wanted to cover some of the most advanced economies in the region—Japan, the Republic of Korea, and Singapore—as well as the two largest countries—India and the People's Republic of China (PRC). It is without doubt that other countries in Asia also fulfill the first two criteria. However, this book does not aim to be exhaustive. The main objective is to provide a sound understanding of the mechanisms of various housing policies, both from a theoretical and practical viewpoint.

The best housing policies cannot work if they are not designed in a holistic way. Housing policies interact and rely on a wide array of other public policy interventions. For example, every household needs to have access to the water and sanitation system as well as electricity. The new dwellings need to be connected to the road network and, if possible, to the public transportation network. Furthermore, new neighborhoods should provide access to fundamental needs such as health care and education. Access to employment opportunities is another important consideration

for policy makers. At the same time, housing policies can also contribute to achieving objectives in other policy areas. For example, promoting the construction of energy-efficient houses can help reduce electricity consumption and greenhouse gas emissions. Housing policies can thus become a vector to achieve environmental objectives. Another example is a housing policy that requires that all dwellings fulfill certain safety and quality standards. This promotes health and prevents substandard housing. Finally, one of the most crucial determinants of successful housing policies is the legal framework. For example, uncertain land titles might inhibit potential homeowners from building houses. Again, this book does not aim to exhaustively cover all the linkages. We focus on housing policies per se. However, our country studies clearly illustrate that the nexus with other policy areas is important to consider when designing and implementing housing policies.

## Chapter Overview

The book starts with a chapter by Naoyuki Yoshino, Matthias Helble, and Toshiaki Aizawa. The main objective of the chapter is to give an overview of the most commonly used housing policies and to illustrate their economic impact. To facilitate the analysis, the authors first introduce a simple two-period housing demand model for owner-occupied houses and rental houses. They then add a standard stock-flow housing supply model. Using this modeling framework, the authors explain the qualitative effects of various housing policies on supply and demand. Chapter 2, by the same authors as Chapter 1, provides a quantitative estimation of the impact of various housing policies with the two-period demand model introduced in Chapter 1. The chapter assesses the effectiveness of different housing policies holding costs constant. The numerical simulations suggest that, in terms of cost-effectiveness, the reduction of the mortgage interest rate is the most preferable of demand-side policies for owner-occupied housing and that a cash subsidy is preferred to rental assistance for tenants.

Part II contains a chapter by Masahiro Kobayashi on housing policies in Japan. After World War II, Japan faced an acute shortage of housing, which the government tackled by implementing a range of policies to boost the supply of housing. Paired with strong economic growth, the restoration of the housing stock progressed rapidly and allowed many Japanese to become homeowners. However, in the late 1980s, property prices surged, resulting in a property bubble that burst in the early 1990s. The burst of the bubble negatively impacted the real

economy and created a persistent loss of confidence among Japanese people. Today, the enhancement of the quality of houses is an important part of the housing policy in Japan, but, at the same time, the government attempts to balance new construction and the activation of the existing housing stock.

The chapter by Kyung-Hwan Kim and Miseon Park documents and evaluates the housing policy of the Republic of Korea over the past several decades. They describe how the housing policy constantly evolved addressing new challenges, such as housing shortages, housing quality issues, and housing welfare for the underserved. The authors find that thanks to sustained and massive provision of new housing since the 1980s, the absolute shortage problem was resolved and overall housing conditions improved substantially in a relatively short period of time. However, the chapter highlights that there remains an important task of enhancing the housing welfare of low-income households and the underprivileged. A salient feature of the housing policies in the Republic of Korea has been to engage the private sector within a framework featuring extensive government intervention. The government has played a key role in establishing public sector institutions and the legal framework, providing developable land, and allocating housing units to intended target groups. According to the authors, the country's housing policy currently faces a new challenge arising from ongoing demographic and socioeconomic changes.

The chapter by Sock-Yong Phang and Matthias Helble studies the housing policies in Singapore. One of the most distinguished features of the housing system of Singapore is the fact that three-quarters of its housing stock have been built by the Housing & Development Board (HDB) and homeownership has been financed through Central Provident Fund (CPF) savings. As a result, the homeownership rate in Singapore is around 90%, which is one of the highest among market economies. The chapter describes how at different stages of its economic development, the Government of Singapore was faced with a different set of housing problems. An integrated land–housing supply and financing framework was established in the 1960s to solve a severe housing shortage. By the 1990s, the challenge was that of renewing aging estates, and creating a market for HDB transactions. Housing subsidies in the form of housing grants were also introduced. Recent challenges include curbing speculative and investment demand, increase in income inequalities, as well as an aging population. These have brought about carefully crafted macroprudential policies targeted housing grants, and schemes to help elderly households monetize their housing equity. The chapter also analyzes key pillars of housing policy, with respect to land acquisition, the HDB–CPF system, the role of markets, housing market

interventions, the Ethnic Integration Scheme, and the Lease Buyback Scheme, and concludes with lessons learned for other countries.

The chapter by Christian Hilber and Oliver Schöni provides an analysis of the housing market and current housing policies in three developed countries in Europe and North America— Switzerland, the United Kingdom (UK), and the United States (US). The authors focus on these three countries mainly due to the marked differences in their institutional settings. The UK is characterized by fiscal centralization and an extraordinarily rigid planning system. The authors show that this rigid setting makes housing supply extremely unresponsive to changes in house prices, resulting in a severe housing affordability crisis and housing shortage, particularly for the young. The key UK housing policy, called Help-to-Buy, which focuses on stimulating housing demand, fails to address the affordability crisis, because increasing demand only pushes up house prices further without expanding housing supply. Switzerland is marked by fiscal decentralization and a rather lax zoning system, which both encourage residential development. However, sprawl and rent hikes have become major challenges for the countries to try to tackle, but with rather mixed success so far. The US finally is characterized by fiscal federalism and an enormous variation in the tightness of land-use restrictiveness across metro areas. The key policy concern across the country is homeownership attainment and the key policy to tackle this issue is the mortgage interest deduction (MID). The chapter's authors analyze how this policy backfired in prosperous and tightly land-use-regulated metro areas because it pushed up house prices. The MID only increased homeownership attainment of higher-income households in metro areas with lax land use regulation. The net effect of the policy on homeownership attainment across the country was essentially zero. The authors conclude that the assessment of housing policies crucially depends on the fiscal and regulatory environment in local housing markets. Policies that stimulate housing demand such as the MID or Help-to-Buy are doomed to fail in markets with tight regulation or otherwise tight supply.

In Part III, Piyush Tiwari and Jyoti Rao cover the case of India, which has a long history of establishing housing policies, programs, and institutions. However, without allocating adequate resources, their impact in ameliorating the shortage has been marginal. In 2011, the housing shortage was estimated at 51 million. The chapter argues that to address housing shortage in India, there is desperate need to assemble the foundation for the housing system by (i) including housing as a constitutional right; (ii) resolving issues of unclear land titles and ensuing claims; (iii) building adequate financial resources for affordable housing programs; (iv) building responsive instruments to facilitate

affordability of housing by all income segments; and (v) overcoming market segmentation, which is currently catering to housing needs of creditworthy clients and overlooking the growing demand from middle- and lower-income segments. The authors conclude that India has an extensive architecture of agencies, policies, and market frameworks for housing that the country needs to leverage by equipping them with adequate resources so they can deliver housing for all.

The chapter by Jing Li studies the housing markets and housing policies in the PRC and Hong Kong, China. Both markets face housing affordability problems due to limited land supply, for which the solutions vary considerably. The author describes how Hong Kong, China adopted a Railway and Property Development Model, which involved close collaboration between the government and property developers in compacted urban areas, while leaving most greenbelts and surrounding islands underdeveloped. In contrast, the PRC pledged to maintain a minimum level of basic farmland, while the targets are often compromised due to local governments' fiscal constraints and growth concerns. Against this background, the chapter further unravels how economic and institutional differences influence housing market development, and how housing policies under different institutions and systems work. The targets and outcomes of housing policies in both markets are in line with their social welfare systems: While Hong Kong, China favors the elderly and the poor, the PRC focuses on the young and the rich. The instruments used are also different: Hong Kong, China assists public housing tenants to become private homeowners by granting a housing subsidy. In the PRC, the Housing Provident Fund provides a mortgage interest rate reduction, which turned out to be an effective measure to access owner-occupied housing.

## Housing Policy Matrix

The book provides a compendium of housing policies. Table I.1 gives an overview of all the housing policies studied by demand-side and supply-side policies, as well as policies aimed at homeownership (second column) and those that deal with rental housing solutions (third column). For homeownership policies, we first list those that try to promote homeownership (marked with a positive sign), such as mortgage interest rate deduction from income tax. We then present those that are designed to lower the demand for housing, such as a property tax on housing purchases. As for the policy of upgrading quality standards, it could either promote homeownership by offering higher

standards or deter it due to higher costs. For the rental housing market, we list all those policies that aim at making renting more affordable. For example, governments might decide to offer a rental subsidy to tenants. For the supply side, the book covers the six policies aimed at the owner-occupied housing market as well as the rental housing market.

Tables I.2 and I.3 provide a matrix of the main policies used in the economies covered by the book. The matrix lists in each column a specific type of housing policy. The first row describes whether the policy is a supply-side or a demand-side policy. The following rows present the main merits and demerits of each policy. Finally, the tables enumerate the economies in which the policy was applied and which are covered in our book. For example, in the Republic of Korea, low-income groups were eligible to receive housing vouchers to lower their costs of paying rent. Housing vouchers are not without demerits as they might be used for other purposes than rent and may weigh heavily on public budgets. Tables I.2 and I.3 provide a condensed overview of most of the instruments used in the cases presented in this book.

**Table I.1: Overview of Demand- and Supply-Side Housing Policies**

| | Owner-Occupied Housing Market | Rental Housing Market |
|---|---|---|
| **Demand Side** | + Cash benefits for housing<br>+ Housing subsidy<br>+ Mortgage interest rate reduction<br>+ Mortgage interest deduction from income tax<br>± Upgrading quality standards<br>- Property tax on housing purchases<br>- Loan-to-value (LTV) and debt-to-income (DTI) ratio regulations<br>- Restriction of new purchases | + Fixed amount cash subsidy<br>+ Rental subsidy<br>+ Rent certificate<br>+ Housing vouchers<br>+ Rent control |
| **Supply Side** | + Public housing<br>+ Subsidy to suppliers<br>• Upgrading quality standards | + Public housing<br>+ Subsidy to suppliers<br>+ Slum upgrading |

Source: Authors.

## Table I.2: Housing Policies to Promote Homeownership

| Policy | Cash Benefits for Housing/Housing Subsidy | Mortgage Interest Rate Reduction | Mortgage Interest Deduction from Income Tax | Upgrading Quality Standards | Construction of Housing or Provision of Land |
|---|---|---|---|---|---|
| **Demand/ Supply** | **Demand** | | | **Demand/Supply** | **Supply** |
| **Merits** | • Lowers housing costs for households<br>• Simple to implement and to understand for households | • Lowers financial cost to purchase housing<br>• Enhances competition | • Lowers housing financing costs | • Enhances living standards and durability<br>• Contributes to environmental policies | • Accelerates the construction of houses<br>• Ensures quality of houses |
| **Demerits** | • Cash benefits used for other purposes<br>• Eligibility criteria<br>• Fiscal burden | • Crowds out private banks and investors<br>• Increases household debt<br>• Fiscal burden | • Less effective for low-income groups<br>• Increases household debt<br>• Fiscal burden | • Implementation costs for household and government<br>• Makes housing less affordable for low-income groups | • Overstretched supply capacity<br>• Lack of diversity<br>• Fiscal burden |
| **Country examples** | • Rep. of Korea<br>• Singapore | • Japan<br>• Rep. of Korea | • United States<br>• Japan | • Japan<br>• Rep. of Korea | • Japan<br>• Rep. of Korea<br>• Singapore |

Source: Authors.

## Table I.3: Housing Policies to Assist Low-Income Renters

| Policy | Rent Certificate | Housing Voucher | Rent Control | Public Housing | Subsidy to Suppliers |
|---|---|---|---|---|---|
| **Demand/ Supply** | **Demand** | | **Demand/Supply** | **Supply** | |
| **Merits** | • Increases housing consumption<br>• Incentivizes maintenance (owner) | • Gives households more choices<br>• Incentivizes maintenance (owner) | • Mitigates the burden of rent hikes | • Addresses housing shortage<br>• Guarantees minimum standard | • Accelerates the construction of houses<br>• Addresses housing shortage |
| **Demerits** | • No incentive to find inexpensive housing<br>• Fiscal burden | • Subsidy might be used for other purposes<br>• Fiscal burden | • Excess demand<br>• Low incentive for new construction<br>• Inefficient allocation | • Limits household choice<br>• Crowds out private suppliers<br>• Eligibility<br>• Fiscal burden | • Overinvestment<br>• Fiscal burden |
| **Country examples** | • United States | • Rep. of Korea<br>• United States | • Switzerland<br>• United States | • Japan<br>• United Kingdom | • India |

Source: Authors.

## Conclusion

As Table I.2 and I.3 show, housing policies can take very different forms. In addition, the implementation of housing policies might differ substantially from one country to another. Even though the same instrument is applied in two countries, policy formulation might be different. And obviously the country context is always different. Despite these differences between countries, we have been able to detect some common challenges across all countries.

The first common problem that most countries face is a lack of detailed data on the housing market. It is a well-known fact that the housing market has the particularity that every housing unit (be it a house or an apartment) has its unique characteristics (age, floor space, etc.) and thus a different price in terms of buying or renting. Another aggravating factor is that the turnover of housing units on the housing market is low compared with the total stock of houses. In general, it is therefore challenging to know the existence of a housing bubble and the exact magnitude. Another difficult issue is to estimate the supply and demand elasticities. To make sure that government interventions in the housing market have the intended effect, detailed data on prices and other economic variables are needed. In the past, governments, both in developed and developing countries, often introduced housing policies without knowing the precise impact. The risk of failure is then obviously high and, as this book shows, many housing policies have failed because of poor understanding of the housing market.

The second challenge for governments is to decide on the role of the market in improving access to affordable and adequate housing. In studying and comparing the history of housing policies in various countries, a certain pattern emerges. In the earlier stage of economic development, the government tended to opt for nonmarket solutions. For example, the governments of Japan and the Republic of Korea intervened heavily on the supply side of the housing market to boost the construction of new housing units during times of high economic growth. As economies matured, housing policies that rely more on the market were preferred. For example, Singapore gradually liberalized its housing market as the economy was advancing. It is often a difficult choice for policy makers to decide on the right level of market and nonmarket interventions for housing policies.

Another common issue that governments face is the choice between demand- and supply-side policies. Comparing the economies presented in this book, we noticed that in the 1950s to the 1970s, supply-side policies were more common. For example, several fast-growing countries, such as Japan, supplied residential land and public rental

housing on a large scale. Starting in the 1990s, many countries switched to demand-side policies. The supply side was left to the private sector. This policy change was only successful when the supply side was flexible enough to accommodate the increasing demand. In other cases, such as in the UK, the higher demand led to higher housing prices, lowering the affordability of housing.

As for housing finance, governments might consider introducing tools that mitigate the risk of mortgage defaults due to interest rate volatility. Households often sign mortgages with flexible interest rates that are linked to benchmark interest rates, such as the London Interbank Offered Rate (LIBOR). In case of a sudden spike in interest rates, households may be faced with substantially higher payment requests to service their debt. The subprime mortgage crisis in the United States in 2007/08 demonstrated that these sudden swings can have disastrous consequences for households that have a low income or that have lost revenue due to unemployment. Many households might be forced to sell their houses, triggering a sharp decline in housing prices and a rapid increase in household debt. Governments can design interventions that aim at lowering interest rates or guaranteeing a low level even in case of interest rate spikes. However, governments should be careful when designing these tools as they should not distort private sector market activities or provide wrong incentives to households. In the best case, housing finance tools by the government improve the predictability and affordability of housing finance (smoothening out interest rate hikes) and thus prevent the collapse of the housing market while at the same time avoid overborrowing of households.

The economies presented in our book have very different institutional settings. However, one recurring theme in all economies (except for Singapore and Hong Kong, China) was the challenging relationship between central and local governments. Housing policies can be designed at both the central and the local level. However, the implementation often hinges on the capacity of local authorities. In the cases of India and the PRC, this central–local relationship seems to be particularly critical to advance housing policies. In both countries, local authorities often lack the capacity to implement housing policies decided at the central level. Another possibility is that certain housing policies are against the interest of local authorities. For example, local authorities might have an incentive to boost the local housing market to maintain economic growth, without considering systemic risks to the housing market locally and nationally. To effectively implement housing policies, the central–local government relationship needs to be brought into the equation.

Many housing policies presented in this book started with the intention to improve the housing conditions of the poorest segments of

society. These housing policies typically attempt to increase the financial means for low-income groups. This can happen either with the help of direct cash transfers or other types of indirect subsidies, such as mortgage guarantees. However, reaching the poor has not always been successful. The example of mortgage interest reductions in the US shows that even though the policy was aimed at low-income groups, eventually it was the high-income earners who benefited. The reasons were multiple, but one was that low-income groups typically did not file for a deduction in their taxable income. Another example is rent controls. Aimed at limiting rent increases, rent controls often reduce the supply of rental housing as housing becomes a less attractive investment. As a consequence, the rental market becomes tighter and landowners give preference to tenants with high incomes. As these examples illustrate, good intentions of a policy are not enough to achieve concrete changes on the ground.

Becoming a homeowner is an important goal in life in many societies across the world. Governments have therefore developed various policies to facilitate this step. Homeownership rates are high in several Asian countries such as Singapore and Japan. Promoting homeownership can have several advantages, such as incentivizing the accumulation of a physical asset. At the same time, the pursuit of homeownership carries serious risks, such as overborrowing by households or lower labor mobility. Governments should balance the pros and cons of homeownership before deciding to favor homeownership over renting.

In quickly growing economies, one of the main concerns of housing policies is affordability and adequacy. In Hong Kong, China, for example, the government has made large strides to ensure that low-income groups are able to live in housing units that fulfill minimum standards and are affordable. As economies mature, we observe that the housing policies start to include elements, aiming at improving the quality of living. For example, in the 2000s, both Japan and the Republic of Korea introduced housing policies that target quality standards. These policies can be motivated by policies other than improved housing. Countries might pursue a certain environmental objective, such as a lowering of greenhouse gas emissions. Rewarding quality improvements of new and existing housing units can therefore result in a win–win scenario.

Another recurrent topic across countries was the maintenance of the housing stock. Government policies are often aimed at the construction of new housing units, without due consideration of the need to maintain the existing housing stock. As a consequence, dilapidation progresses faster with severe consequences for housing conditions and negative externalities for the neighborhood, such as higher crime rates. Refurbishing existing housing units can be as important as constructing new ones.

The lessons highlighted are a result of a careful comparison of housing policies across economies. This book does not claim to deliver a silver bullet for all housing problems. However, we hope that the analysis offered by all contributors enlightens the interested readers, gives new insights and information, and helps policy makers and policy implementers to better assess, design, and implement housing policies. It is now time for rapid growth in Asia to make access to adequate housing a reality.

# PART I
# A Theoretical Introduction into Housing Policies

CHAPTER 1

# A Simple Model of Housing Policies

*Naoyuki Yoshino, Matthias Helble, and Toshiaki Aizawa*

## 1.1 Introduction

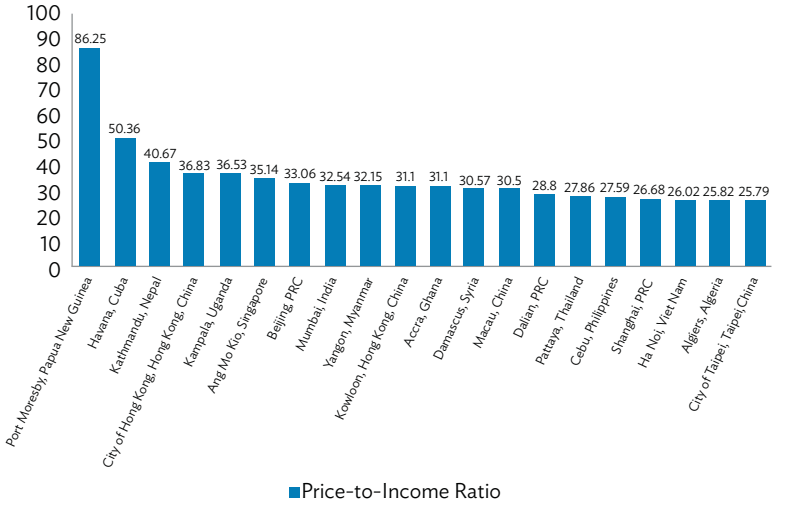
Access to affordable and adequate housing has become a key concern for many low- and middle-income households around the world. Rapid urbanization combined with population growth has led to a surge in housing prices in many urban areas, especially in developing countries. As a consequence, housing has become less affordable for many middle- and low-income households. A recent survey showed that the problem of affordability is particularly severe in Asia and the Pacific. Among the top 20 cities in the world ranked according to the price-to-income ratio, 16 are located in Asia and the Pacific (Figure 1.1).

If prices in the housing market are getting beyond the reach of many dwellers, it can have several severe consequences. First, households are forced to live in dwellings that are too small or in bad condition. Second, households are forced to allocate a large share of their income for housing, neglecting other needs or taking substantial financial risks. Third, some low-income households are unable to pay for regular housing and end up in illegal dwellings or slums, which often lack basic services such as fresh water or sanitation.

To avoid these negative consequences, policy makers are attempting to intervene in the housing market using different policies. The outcome of these housing policies is not always well understood, even though the problem of providing enough affordable and adequate housing for the population is not new.[1] The first public housing project started in 1890 in

[1] Public housing was already known in the Roman Empire.

**Figure 1.1: Price-to-Income Ratio in 20 Most Expensive Cities in the World**




PRC = People's Republic of China.

Source: Numbeo Property Prices Index 2015.

the Old Nichol in London, a notorious slum at that time. Throughout the 20th century, governments around the world intervened in the housing markets and attempted to provide adequate housing for their citizens. Government interventions were particularly bold after natural disasters or wars, when large parts of the population were lacking shelter. Governments then often massively built public houses for low-income groups.

Today, the main challenge in housing policies in Asia stems from rapid urbanization. According to the United Nations (2014), in Asia only 48% of the population is currently living in urban areas, which is substantially lower than in all other regions of the world (North America 82%, Latin America and the Caribbean 80%, as well as Europe 73%), except for Africa (40%). Given the relatively low share of urbanized people in Asia, the United Nations expects that in Asia urbanization will rapidly increase and have reached 64% (3.313 billion) by 2050. UN–HABITAT (2011) estimates that this growth means that in Asia every

day urban areas will need to accommodate 120,000 new residents, which equals a daily demand of around 20,000 housing units. It is a well-known fact from urban economics, that the supply of housing is very inelastic (see for example, Ozanne and Struyk 1978). As a rule of thumb, urban economists assume that new construction in a given year is only 2% to 3% of the total housing stock (O'Sullivan 1996). Given the strong increase in demand for housing and the small elasticity of supply, it is no surprise that the affordability of housing has become a central concern in many economies in Asia and the Pacific. Many governments throughout the region have started to intervene in the housing market, but in most places access to affordable and adequate housing remains elusive.

The objective of this chapter is to develop a simple theoretical framework that allows us to better understand and assess various housing policies. The proposed model allows for the illustration of supply- as well as demand-side policies. Moreover, it covers both the case of homeownership and that of renters. Our main intention is to provide a simple tool for policy makers to enable them to better understand the implications of various policies and compare them. It is meant to serve as a tool kit to better manage housing markets and facilitate progress toward increasing affordable housing in Asia and the Pacific.

## 1.2 Related Literature

The purpose of this chapter is to study the qualitative and quantitative effects of housing policies. A large number of textbooks in urban economics have already illustrated the qualitative effects of housing policies (e.g., Brueckner 2011; O'Sullivan 1996; Harvey 2000; McDonald 1997). Typically, the authors use simple pedagogical diagrams to analyze different housing policies. However, the diagrams used for illustration are rarely based on derivation from utility maximization. Instead, the authors draw on the large body of economic literature on the topic of demand for housing.

In this literature, the demand for housing is typically derived from the households' utility maximization. As Megbolugbe et al. (1991) pointed out, housing as a commodity can be distinguished by some principal features such as its durability, its heterogeneity, and its spatial immobility. Particularly, the durability of housing makes it different from other consumption goods. Given these features, numerous attempts and modifications have been made to better describe housing demand. According to Rothenberg et al. (1991), housing demand analysis can be

categorized into the following four types: (1) demand for housing services or housing units, (2) demand for housing attributes such as the distance to the central business district and amenities in the neighborhood, (3) tenure choice, and (4) spatial allocation of households. Each of these categories requires very different modeling and estimation strategies (Zabel 2004).

Research on housing services or units studies the demand for housing, assuming housing units to be homogenous (e.g., Gahvari 1986; Malpezzi et al. 1985; Kau and Keenan 1980). Research on the demand for housing attributes often develops a single period model and adopts a hedonic approach for estimation (e.g., Rosen 1974; Bajic 1984; Cheshire and Sheppard 1984). One of the disadvantages of the single period model lies in the difficulties of incorporating the durable aspect of housing. In contrast, research on the tenure choice tends to treat housing consumption as a discrete choice (rent/own) in multiperiod models, but the discreteness makes it difficult to analyze a policy effect quantitatively. For example, a recent study by Attanasio et al. (2012) studied the tenure choice and the change in the homeownership rate by modeling the demand for housing over the life cycle, treating housing consumption in a discontinuous fashion. Research on spatial allocation studies the choice as to where people dwell and discusses segregation of residence (e.g., McFadden 1978; Rapaport 1997; McDonald 1997).

The research objective of this paper falls into the first category, as it considers housing demand as a continuous quantity. However, in contrast to most papers in this category, we developed a two-period model that focuses on the finance of housing. Our paper mainly draws from two earlier contributions to the literature on housing demand: First, we suggest a utility function similar to Zabel (2004). Zabel (2004) developed a single-period model, assuming that individual utility depends on housing and non-housing composite consumption and individual demographic characteristics. The model gives a very simple and intuitive presentation of housing demand, but it is only a one-period model and is unable, therefore, to illustrate important cases, such as the effect of mortgage on the household's budget constraint.

Second, we model housing finance similar to Gahvari (1986). Gahvari (1986) adopted a multiperiod model and implicitly incorporated housing finance in the budget constraint. Optimal housing consumption in each period is derived in a way that an individual agent maximizes his/her utility in each period. The model developed by Gahvari (1986) is based on the idea of the consumer choice model and elegantly proposes a substitution relationship between housing and all-encompassing consumption goods. However, the model ignores the aspect of durability of housing. In the model, the individual agent is allowed to choose the

optimal housing consumption level in each period without being affected by the choice made in the previous period. In our model, we explicitly incorporate the aspect of durability following earlier contributions to the literature, for example by Fallis (1983).[2]

In summary, this chapter adopts the modeling framework proposed by Zabel (2004) and extends it to a two-period decision-making model incorporating housing finance aspects similar to Gahvari (1986). The continuity of the housing units and the durability of housing are explicitly assumed in our model for owner-occupied housing. We add to the existing literature by introducing a new theoretical model that is able to accommodate most of the commonly used housing policies.

## 1.3 Overview of Housing Policies

Various types of housing policies have been implemented throughout the world since World War II. In this paper, we suggest categorizing all policies into four dimensions (see Table 1): demand- and supply-side policies as well as policies to promote homeownership and policies to support renters.

**Table 1: Overview of Housing Policies along Four Dimensions**

| | Owner-Occupied Housing Market | Rental Housing Market |
|---|---|---|
| **Demand Side** | • Cash benefits for housing<br>• Housing subsidies<br>• Mortgage interest rate reduction<br>• Mortgage interest deduction from income tax<br>• Upgrading quality standards<br>• Property tax on housing purchases<br>• Loan-to-value (LTV) and debt-to-income (DTI) ratio regulations<br>• Restriction of new purchases | • Fixed amount cash subsidies<br>• Rental subsidies<br>• Rent certificates<br>• Housing vouchers<br>• Slum prevention<br>• Rent controls |
| **Supply Side** | • Public housing<br>• Subsidies to suppliers<br>• Upgrading quality standards | • Public housing<br>• Subsidy to suppliers<br>• Slum upgrading |

Source: Authors.

[2] Fallis (1983) introduced a dynamic model for the demand for general durable goods. In the same paper, the author presented a static single period model to explain housing demand and tenure choice.

Demand-side policies encompass all those policies directly targeted at demand. The only exception is the policy of upgrading quality standards. This policy directly affects the demand- and supply-side. On the demand-side, we have first listed those policies that increase demand for housing and then those that are implemented to curb demand. (The order of the policies in Table 1 is made according to the order of their introduction later in the chapter.)

Supply-side policies were implemented by many governments after World War II. The destruction caused by the war and the rapid growth in population made it necessary to quickly address the shortage of housing. In other emerging countries, rapid economic growth also caused shortages in housing and triggered supply-side interventions by the government. When the economy is in a more mature state, demand-side policies typically become the preferred policy instrument.

A good example of this shift from supply- to demand-side policies is the Republic of Korea. The Republic of Korea first adopted a supply-side policy called Two Million New Housing Construction Project to deal with a severe housing shortage in 1989. After overcoming the housing shortage and price hikes, housing policy in the Republic of Korea shifted toward demand-side approaches, such as an interest rate deregulation, the introduction of a reverse mortgage loan, and a cash subsidy. Singapore provides another example of this shift. Under Prime Minister Lee Kuan Yew (1959–1990), most housing policies were supply-side-oriented with an objective to increase homeownership rates. In the 1990s, the government shifted to demand-side subsidies, which were considered more cost-effective than supply-side subsidies. However, supply-side policies are still playing vital roles in many economies in Asia and the Pacific. For example, in India, supply-side policies are considered to be as important as demand-side policies for providing affordable housing.

## 1.4 A Theoretical Framework of Housing Policies

We use the consumer choice model based on standard tools of microeconomics. We assume there are only two types of goods: housing (H) and other consumption goods (C). The household allocates its budget to the two goods. Our two-period housing demand model for owner-occupied housing allows us to analyze the interplay between housing demand and supply. These two demand models (homeowners and renters) are used to analyze the effects of major housing policies. An advantage of setting up a theoretical model is that it enables us to evaluate the policy effects graphically as well as numerically.

As for the supply of housing, we employ the idea of the stock and flow model (Brueckner 2011; Pirounakis 2013; DiPasquale and Wheaton 1996). The stock is independent of the price, but the flow is dependent on it. The stock is inelastic to the price and the stock level changes gradually via the flow market. As the stock and flow model is not derived from the profit maximization of a representative producer, we focus only on the qualitative effect in analyzing supply-side policies.

## 1.4.1 Demand for Housing

### 1.4.1.1 Two-Period Owner-Occupied House Demand Model

We assume a representative household that lives only for two periods and seeks to maximize its utility:

$$u(C_1, H_1) + \beta u(C_2, H_2), \quad \beta \in (0,1) \tag{1}$$

where

$$u(C_t, H_t) = \frac{C_t^{1-\theta}}{1-\theta} + b\frac{H_t^{1-\omega}}{1-\omega}, \ \theta \neq 1, \omega \neq 1 \tag{2}$$

$$u(C_t, H_t) = ln(C_t) + b\ ln(H_t), \quad \theta = \omega = 1 \tag{3}$$

$$H_2 = (1-\delta)H_1 \tag{4}$$

$C_t$ and $H_t$ represent the quantity of consumption goods consumed and housing units owned by the household in period $t$. Every housing unit is assumed to be homogenous and of the same quality. Differences, for example in location, tranquility, and range of amenities in neighborhoods, are not considered in the model. In other words, we treat all units equally and differences in characteristics are assumed not to affect demand. Houses as durable goods affect utility in both periods, but they are subject to depreciation due to wear and tear. The dilapidation is assumed to be at the rate of $\delta$. $b$ and shows the weight for housing in the utility function and $\beta$ is the discount factor for future utility.

We assume that the household buys a new house with the aid of a loan, $L$, in period 1 and pays off the loan and its interest in period 2. The interest rate of the loan is $r$. $Y_1$ and $Y_2$ represent the household's income in each period. $G_1$ and $G_2$ stand for the cash subsidies from the government in period 1 and 2. $t_h$ and $t_y$ stand for the property tax

rate and income tax rate, respectively. The budget constraint of the households can thus be written as:

$$C_1 + (1 + t_h)P_h H_1 = \left(1 - t_y\right)Y_1 + L + G_1 \tag{5}$$

$$C_2 + (1 + r)L = \left(1 - t_y\right)Y_2 + G_2 \tag{6}$$

$$Y_2 = (1 + g)Y_1 \tag{7}$$

where $P_h$ is the price of a housing unit and the price of consumption goods is set to unity as numeraire. *g* denotes the economic growth rate, which is assumed to be determined exogenously in the model. From (5) to (7) we obtain the following inter-temporal budget constraint:

$$C_1 + \frac{C_2}{1+r} + (1 + t_h)P_h H_1 = \left(1 - t_y\right)Y_1 + \frac{(1-t_y)(1+g)Y_1}{1+r} + G_1 + \tag{8}$$

When we assume $\theta = \omega = 1$, the optimal $H_1^*, H_2^*, C_1^*, C_2^*$ are the bundles that maximize

$$ln(C_1) + b\ ln(H_1) + \beta\{ln(C_2) + b\ ln((1 - \delta)H_1)\} \tag{9}$$

subject to the inter-temporal budget constraint.

The optimal levels of consumption and housing units are expressed as functions of income and the housing price (the derivations can be found in the Appendix):

$$H_1^* = \frac{b}{(1+t_h)(1+b)P_h}\left\{\left(1 - t_y\right)Y_1 + \frac{(1-t_y)(1+g)}{1+r}Y_1 + G_1 + \frac{G_2}{1+r}\right\} \tag{10}$$

$$H_2^* = (1 - \delta)H_1^* \tag{11}$$

$$C_1^* = \frac{1}{(1+\beta)(1+b)}\left\{\left(1 - t_y\right)Y_1 + \frac{(1-t_y)(1+g)}{1+r}Y_1 + G_1 + \frac{G_2}{1+r}\right\} \tag{12}$$

$$C_2^* = \frac{\beta(1+r)}{(1+\beta)(1+b)}\left\{\left(1 - t_y\right)Y_1 + \frac{(1-t_y)(1+g)}{1+r}Y_1 + G_1 + \frac{G_2}{1+r}\right\} \tag{13}$$

The optimal level of housing loan, $L^*$, and debt-to-income (DTI) ratio and loan-to-value (LTV) ratio can be expressed as follows:

$$L^* = C_1^* + (1 + t_h)P_h H_1^* - (1 - t_y)Y_1 - G_1 \tag{14}$$

$$DTI = \frac{L^*}{Y_1} \tag{15}$$

$$LTV = \frac{L^*}{P_h H_1^*} \tag{16}$$

#### 1.4.1.2 Two-Period Rental Housing Demand Model

Similar to the owner-occupied house model, we assume that a representative household that lives only for two periods seeks to maximize the following utility function:

$$u(C_1, R_1) + \beta u(C_2, R_2), \quad \beta \in (0,1) \tag{17}$$

where

$$u(C_t, R_t) = \frac{C_t^{1-\theta}}{1-\theta} + b\frac{R_t^{1-\omega}}{1-\omega}, \ \theta \neq 1, \omega \neq 1 \tag{18}$$

$$u(C_t, R_t) = ln(C_t) + b\ ln(R_t), \quad \theta = \omega = 1 \tag{19}$$

$C_t$ represents the quantity of consumption products consumed and $R_t$ denotes the housing units rented by the household in period *t*.

The household can choose the quantity of housing units in each period. It can substitute its consumption inter-temporally through savings, for which the interest rate is *r* is offered:

$$C_1 + P_r R_1 + S = (1 - t_y)Y_1 + G_1 \tag{20}$$

$$C_2 + P_r R_2 = (1 - t_y)Y_2 + (1 + r)S + G_2 \tag{21}$$

$$Y_2 = (1 + g)Y_1 \tag{22}$$

where $P_r, t_y$, and *g* denote the price for rented house per unit, the income tax rate, and the exogenous economic growth rate. $G_t$ is a subsidy from the government in period *t*.

From (20) to (22), the inter-temporal budget constraint for rental houses takes the form:

$$C_1 + \frac{C_2}{1+r} + P_r R_1 + \frac{P_r R_2}{1+r} = \left(1 - t_y\right)Y_1 + \frac{(1-t_y)(1+g)Y_1}{1+r} + G_1 + \frac{G_2}{1+r} \quad (23)$$

The optimal level of rental housing units and the consumption goods, $R_1^*, R_2^*, C_1^*, C_1^*$, can be obtained by maximizing the whole life utility subject to the inter-temporal budget constraint.

When we assume that $\theta = \omega = 1$, the optimal levels of rental housing units and consumption goods become:

$$R_1^* = \frac{b}{(1+\beta)(b+1)P_r}\left\{\left(1 - t_y\right)Y_1 + \frac{(1-t_y)(1+g)}{1+r}Y_1 + G_1 + \frac{G_2}{1+r}\right\} \quad (24)$$

$$R_2^* = \frac{b\beta(1+r)}{(1+\beta)(b+1)P_r}\left\{\left(1 - t_y\right)Y_1 + \frac{(1-t_y)(1+g)}{1+r}Y_1 + G_1 + \frac{G_2}{1+r}\right\} \quad (25)$$

$$C_1^* = \frac{1}{(1+\beta)(b+1)}\left\{\left(1 - t_y\right)Y_1 + \frac{(1-t_y)(1+g)}{1+r}Y_1 + G_1 + \frac{G_2}{1+r}\right\} \quad (26)$$

$$C_2^* = \frac{\beta(1+r)}{(1+\beta)(b+1)}\left\{\left(1 - t_y\right)Y_1 + \frac{(1-t_y)(1+g)}{1+r}Y_1 + G_1 + \frac{G_2}{1+r}\right\} \quad (27)$$

## 1.4.2 Supply of Housing

### 1.4.2.1 A Stock-Flow Housing Supply Model

Following Pirounakis (2013) and DiPasquale and Wheaton (1996), we assume that the supply of housing can be decomposed into a stock side and a flow side—the housing stock from the previous period and the new constructions. In the stock-flow model, the current period stock level, $H_t$, is the last period's housing stock, $H_{t\text{-}1}$, plus the current period's new construction, $\Delta H_t$, minus the last period's stock, which needs to be demolished, $\delta H_{t\text{-}1}$. We assume that the new constructions depend on the current price for housing and that it is also affected by exogenous conditions, such as policy changes, $v_t$ .

$$H_t^s = H_{t\text{-}1}^s + \Delta H_t^s \text{-} \delta H_{t\text{-}1}^s \quad (28)$$

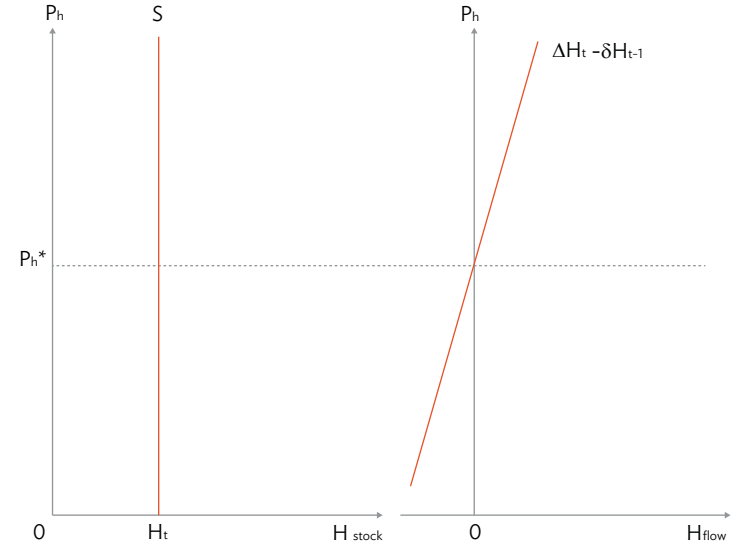
$$\Delta H_t^s = aP_{h\,t} + b + v_t \ , \ a > 0 \quad (29)$$

From equation (28) and (29), it is apparent that

$$H_t^S = aP_{h\,t} + (1-\delta)H_{t\text{-}1}^S + b + v_t \tag{30}$$

Figure 1.2 shows the stock and flow market of housing. The existing stock of housing is illustrated in the left panel and the right panel shows whether and how much the housing stock changes given a certain price. In every period, new housing units are constructed, but at the same time decrepit houses are demolished. As long as construction exceeds demolitions, the stock increases over time. If the opposite is true, the stock decreases.

**Figure 1.2: Stock-Flow Supply Model**




Source: Authors.

The stock-flow model tells us that, in the short run, the housing price adjusts quickly to equalize demand to the existing units. As well as the price, the housing stock is adjusted to help the price level go back to the original equilibrium level. However, the adjustment of the housing stock occurs only slowly over time and often with substantive

lags. When the stock does not change, $H_t^S = H_{t\text{-}1}^S$, the stock is said to be in a steady state. Under the steady state equilibrium price, $P_h^*$, new construction and demolition offset each other, $\Delta H_t^S = \delta H_{t\text{-}1}^S$. If for some reason the price is higher than the steady state equilibrium price, then the new constructions outnumber the units depreciated and the stock grows gradually. If the price is below $P_h^*$, then the flow of housing units becomes negative and the housing stock decreases continuously. The supply of housing in the steady state can be derived simply by substituting $H_t^{S*} = H_{t\text{-}1}^{S*}$ into equation (30).

$$H_t^{S*} = aP_h^* + (1-\delta)H_t^{S*} + b + v_t \tag{31}$$

Solving for $H_t^*$, we obtain the steady state of housing supply.

$$H_t^{S*} = \frac{aP_h^* + b + v_t}{\delta} \tag{32}$$

where $P_h^*$ is a steady state equilibrium price.

#### 1.4.2.2 Equilibrium

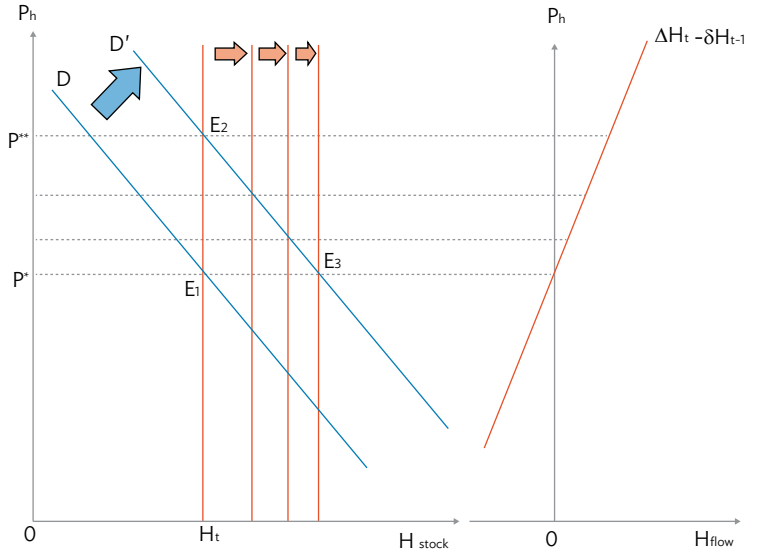
The equilibrium price is determined at the point where demand intersects with the housing stock.

Ignoring large exogenous shocks (such as natural disasters), the supply of housing can be assumed to be fixed in the short run for any price level, which translates into a vertical short-run supply curve, inelastic to price changes. On the other hand, in the intermediate run and long run, the supply responds to a price change via changes in the flow. The higher the price becomes, the more units are constructed and the stock of housing increases.

Suppose the demand for housing goes up because of an increase in the population, the increase shifts the demand curve upward and pushes up the price in the short run to $P_h^{**}$ (Figure 1.3). Then the higher price encourages new construction and therefore the supply also gradually goes up because newly constructed housing outnumbers abandoned housing. The short-run equilibrium price $P_h^{**}$ and the newly constructed units become smaller and smaller in every period. The shift continues until the short-run equilibrium price reaches the original steady state

equilibrium level, $P_h^*$. We need to stress that under normal circumstances the supply of housing adjusts only gradually, as the building of new houses (or the destruction of old ones) cannot be done immediately. However, exogenous shocks—such as wars, natural disasters, or large policy interventions—might directly and suddenly affect the supply.

**Figure 1.3: The Effect of Demand Shift on Supply**




Source: Authors.

## 1.5 Applications to Housing Policies

This section analyzes the qualitative effect of each policy in Table 1.1. We pay attention first to the owner-occupied house market and then move to policies for the rental house market. We make use of indifference curves and a budget constraint curve for the analysis. The representative household chooses the point that gives the highest utility of all the feasible points. An indifference curve is a contour line realizing the same

utility, so any point on the same indifference curve gives the same level of utility. Indifference curves located in the northwest give higher levels of utility, but the household can only choose the point in the feasible area, which is the southwest area divided by the budget constraint line.

### 1.5.1 Owner-Occupied Housing Market

We are going to provide the effect of the following demand-side policies:

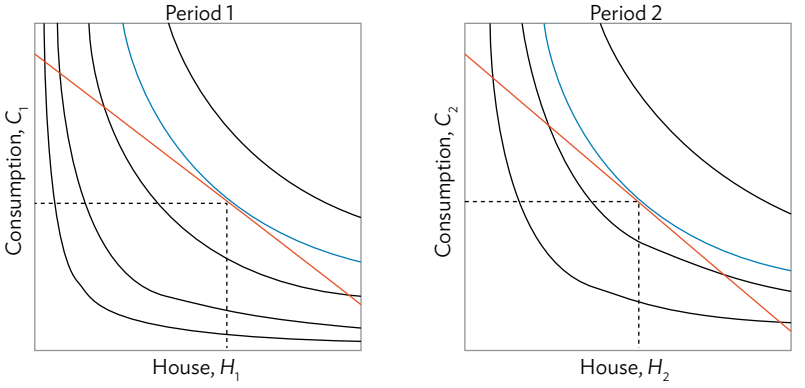
(i) Cash Benefits for Housing,
(ii) Housing Subsidies,
(iii) Mortgage Interest Rate Reduction,
(iv) Mortgage Interest Deduction from Income Tax,
(v) Technology Improvement,
(vi) Property Tax on the Purchase of Housing,
(vii) Loan-to-Value (LTV) Ratio Regulation,
(viii) Debt-to-Income (DTI) Ratio Regulation, and
(ix) Restrictions of New Purchases.

Figure 1.4 shows the optimal level of consumption goods and housing units before implementing any policy. The optimal levels are determined at the tangency point between the budget constraint line and the indifference curve. Since the representative household rationally substitutes its consumption inter-temporally and decides its optimal expenditure on consumption goods and housing intra-temporally with perfect foresight in each period, the household allocates its budget such that its allocation will maximize its utility.

In the two-period model, the housing consumption level in period 2 is automatically determined based on the level of the housing consumption chosen in period 1. In this sense, the household cannot choose in period 2 how many units of housing it consumes. However, the optimal housing units in each period are simultaneously determined by the households with perfect information and foresight, which allows us to draw the budget constraint line in the second-period diagram, because the choice in period 2 is not independent of the choice in period 1.

Most of the housing policies affect the budget constraint line of the household and therefore change the demand for consumption goods and housing units. Each policy affects a value of exogenous variables such as the interest rate, the subsidy, and the tax rate. The budget constraints in

**Figure 1.4: The Optimal Bundle in Period 1 and Period 2**




Source: Authors.

period 1 and period 2 are:

$$C_1 = \frac{1}{1+\beta}(1+t_h)P_hH_1 + \frac{1}{1+\beta}\left\{\left(1-t_y\right)Y_1 + \frac{(1-t_y)(1+g)Y_1}{1+r} + G_1 + \frac{G_2}{1+r}\right\} \quad (33)$$

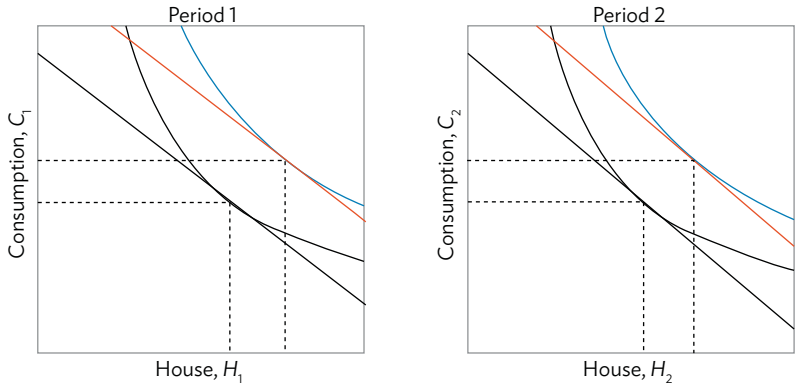
$$C_2 = \frac{\beta}{(1+\beta)(1-\delta)}(1+t_h)(1+r)P_hH_2 + \frac{\beta}{1+\beta}\left\{\left(1-t_y\right)(1+r)Y_1 + \left(1-t_y\right)(1+g)Y_1 + (1+r)G_1 + G_2\right\} \quad (34)$$

### 1.5.1.1 Cash Benefits for Housing

We now assume that the government gives a grant to those who do not yet own a house, but wish to buy one. In some countries, these are either low-income households or young households. The housing grant can take the form of a cash benefit and can either be used to purchase housing or for any other purpose. The different effects of cash benefits versus in-kind benefits, such as a housing grant, were briefly explained by Brueckner (2011).

A subsidy in the form of a cash benefit shifts up the budget constraint, both in period 1 and period 2 (Figure 1.5). As a result, both the optimal consumption level and the housing consumption level become higher, leading to higher utility levels in both periods.

**Figure 1.5: Housing Subsidy as Cash Benefit**



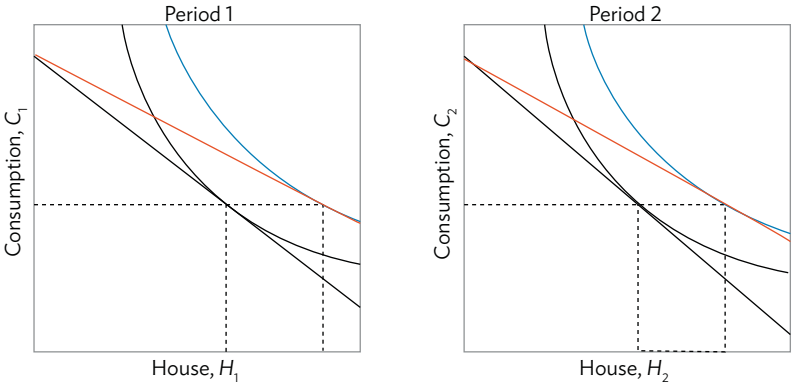

Source: Authors.

### 1.5.1.2 Housing Subsidy

We would now like to introduce another type of subsidy. Suppose the amount of the subsidy depends on the price of housing the household is going to buy. Housing financial aid, which is sometimes called housing subsidy, is an example of this type of subsidy. The more expensive the house the household will buy, the larger the amount of subsidy that will be paid. Because of the subsidy, housing is now cheaper to purchase for the household. The perceived cheaper cost for housing means that the budget constraint line rotates outward (Figure 1.6). The distance between the original budget constraint line and the new budget constraint line is subsidized by the government. Now housing becomes cheaper and thus the households will increase their quantity consumed and obtain higher utility. The relative price change, however, does not affect the consumption of other goods in this model, because of our parameter setting. There are two effects at work: the decrease in the housing price compels the households to consume less in terms of consumption goods, because consumption goods became relatively more expensive (substitution effect). At the same time, the cheaper cost for housing makes the households better off and increases their consumption of other goods (income effect). In our model, the substitution effect and the income effect exactly offset each other when we assume $\theta = \omega = 1$. As a result, the households purchase the same level of consumption goods before and after the introduction of the subsidy.

It is known that housing subsidy is generally less efficient than cash benefits, even when the amount of both subsidies is equal. This is because the subsidy in the form of cash benefits, which is equivalent to a lump-sum cash transfer, gives the household more options than the housing subsidy. This welfare difference is not due to our parameter settings, but due to the distortion of the price system caused by the housing subsidy. As standard neoclassical microeconomics argues, the intervention in the competitive price system causes a deadweight loss. In this case, the deadweight loss shows up as a welfare loss of the household, that is to say, lower utility. On the contrary, as a lump-sum subsidy, such as cash benefits, does not intervene in the price system, and an efficient allocation can be achieved.

**Figure 1.6: Housing Subsidy Proportional to Housing Price**




Source: Authors.

Housing subsidy policies have been adopted in many countries. India, for example, started to provide subsidies extensively to make housing more affordable in the 1950s and 1960s. Initially, it had worked well, as long as affordability had been a key issue. However, it turned out to be very costly and the rate of new construction lagged behind the increased demand. In Singapore, housing grants were introduced as part of housing policies under Prime Minister Goh (1990–2004). Capitalization of housing subsidies facilitated households' movement

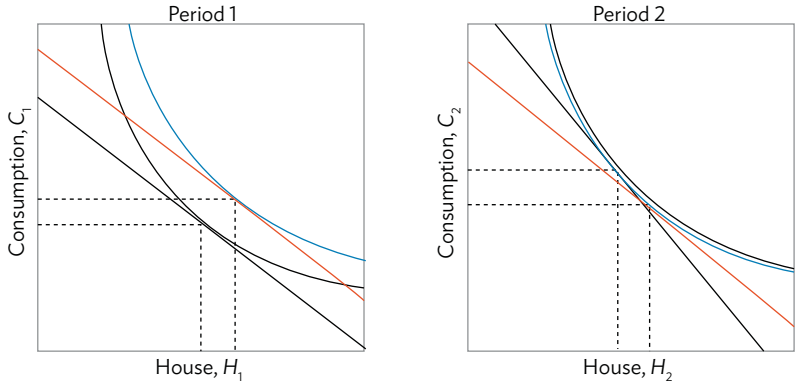
up the housing "ladder," but housing policies under Prime Minister Goh accentuated the house price bubble that preceded the Asian financial crisis.

#### 1.5.1.3 Mortgage Interest Rate Reduction

The economic implications of a reduction in the mortgage interest rate are slightly more complicated to analyze, compared with the previous policies. A reduction in the mortgage interest rate is achieved by introducing a subsidy to cover the difference between market interest rates for mortgages and the targeted level of mortgage interest rates. The lower interest rate shifts up the first period budget constraint in a parallel fashion, which pushes up consumption of both goods and housing units (Figure 1.7). In the second period, the budget constraint line pivots around the original optimal point in counterclockwise direction. Although consumption of housing units in the second period becomes higher than the units that could be consumed but for the policy, the optimal consumption level in period 2 becomes lower than the level before the reduction in the mortgage interest rate.

A long-term, low interest rate finance policy was introduced in Japan in the 1950s to promote the construction of housing. A publicly sponsored agency, the Government Housing Loan Corporation, offered favorable interest rates to potential homeowners. This policy enhanced

**Figure 1.7: Mortgage Interest Rate Reduction**




Source: Authors.

competition with private banks and helped to successfully eliminate the shortage of housing stocks in the postwar era and thus raised the living standards of many Japanese people. The Government of the United Kingdom started in 2013 to provide mortgage guarantees, which is another way of lowering mortgage interest rates. The program increased demand for housing, however, as the supply did not react accordingly and the prices of new houses boomed as a consequence, lowering housing affordability.

Instead of an intervention by the government in the market for housing finance, another option is to increase competition in the housing finance market with the objective of lowering financing costs for households. For example, the Republic of Korea started in 1999 to liberalize the housing finance market, which helped to increase access to housing finance and eventually raise the homeownership rate.

#### 1.5.1.4 Mortgage Interest Deduction from Income Tax

Mortgage interest deduction allows households to deduct the interest payments on mortgages from their taxable income. Our model can be extended to incorporate the mortgage interest deduction program as follows:

The household's disposable income without the mortgage interest deduction system is:

$$\text{(Income) - (Tax)} = Y_2\text{-}Y_2 t_y\text{= (1-}t_y\text{)}\ Y_2 \tag{35}$$

Once the program is introduced, the interest payment $rL$ can be deducted from the household's income, and its disposable income then becomes:

$$\text{(Income) - (Tax)} = Y_2\text{- (}Y_2\text{- rL) }\mathrm{t_y}\text{= (1-}\mathrm{t_y}\text{) }\mathrm{Y_2}\text{+r}\mathrm{t_y}\mathrm{L} \tag{36}$$

The new inter-temporal budget constraint is:

$$C_1 + \frac{C_2}{1+r\text{-}rt_y} + (1+t_h)P_h H_1 = \left(1-t_y\right)Y_1 + \frac{(1-t_y)(1+g)Y_1}{1+r\text{-}rt_y} + G_1 + \frac{G_2}{1+r\text{-}rt_y} \tag{37}$$

The representative household again chooses its optimal consumption level and optimal numbers of housing units subject to the inter-temporal budget constraint. The optimal levels of housing units and consumption goods then become:

$$H_1^* = \frac{b}{(1+t_h)(1+b)P_h}\left\{\left(1-t_y\right)Y_1 + \frac{(1-t_y)(1+g)}{1+r\text{-}rt_y}Y_1 + G_1 + \frac{G_2}{1+r\text{-}rt_y}\right\} \tag{38}$$

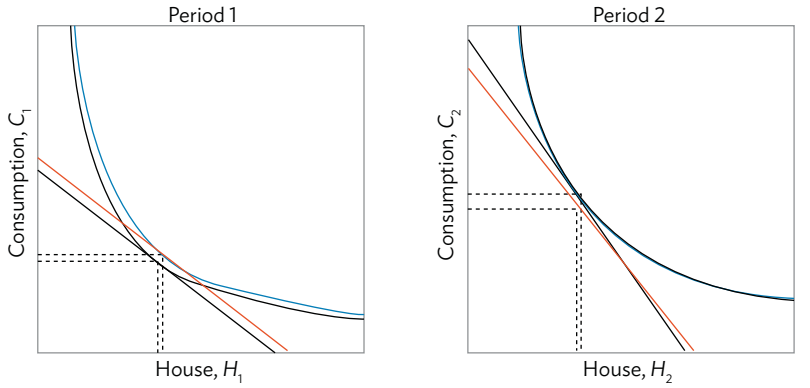
$$H_2^* = (1-\delta)H_1^* = \frac{(1-\delta)b}{(1+t_h)(1+b)P_h}\left\{(1-t_y)Y_1 + \frac{(1-t_y)(1+g)}{1+r\text{-}rt_y}Y_1 + G_1 + \frac{G_2}{1+r\text{-}rt_y}\right\} \quad (39)$$

$$C_1^* = \frac{1}{(1+\beta)(1+b)}\left\{(1-t_y)Y_1 + \frac{(1-t_y)(1+g)}{1+r\text{-}rt_y}Y_1 + G_1 + \frac{G_2}{1+r\text{-}rt_y}\right\} \quad (40)$$

$$C_2^* = \frac{\beta(1+r\text{-}rt_y)}{(1+\beta)(1+b)}\left\{(1-t_y)Y_1 + \frac{(1-t_y)(1+g)}{1+r\text{-}rt_y}Y_1 + G_1 + \frac{G_2}{1+r\text{-}rt_y}\right\} \quad (41)$$

The mortgage interest deduction from income tax shifts up the budget constraint in period 1 and the household increases both its consumption of goods and of housing units, resulting in a higher level of utility (Figure 1.8). However, in the second period, its optimal consumption level decreases, and its utility also becomes lower compared with its utility before the introduction of the policy. The overall qualitative effect of mortgage interest deduction is the same as that of mortgage interest rate reduction.

**Figure 1.8: Mortgage Interest Rate Deduction from Income Tax**




Source: Authors.

The United States provides the most prominent example of mortgage interest deduction. In the United States, a mortgage interest deduction (MID) program was started in 1986 to facilitate access to homeownership, especially for low- and middle- income households.

The MID allows homeowners to deduct interest payment on mortgage balances up to $1.1 million and home equity loans up to $100,000. Ironically, however, the benefits of MID went disproportionately to higher-income taxpayers (Tax Payers for Common Sense 2013). Hilber and Turner (2014) found that MID has worked less well for low- and middle-income households than for high-income households, as most of the latter would own a house with or without MID. The homeownership rate did not increase as a result of MID and, overall, the policy has turned out to be ineffective and expensive to maintain for the government.

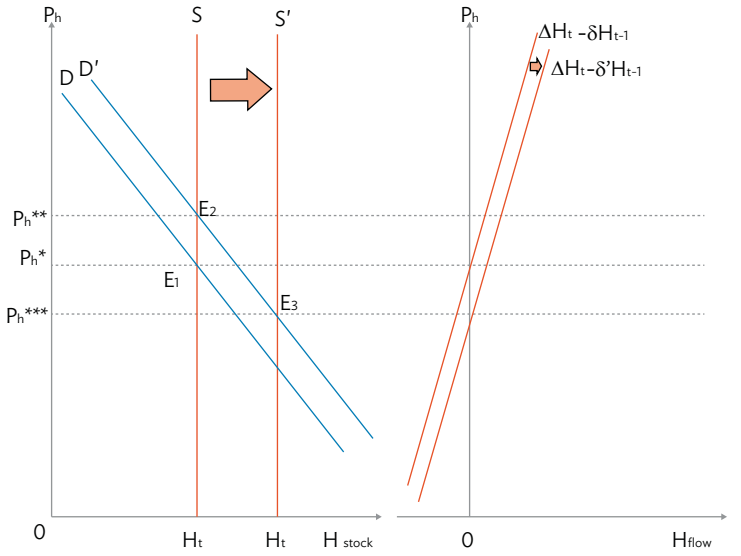
#### 1.5.1.5 Technology Improvement (reduction in depreciation rate)

We assume that quality improvements, such as enhancement of earthquake resilience or energy efficiency, lowers the pace at which houses become decrepit, translating into a decrease of $\delta$ in the two-period demand model without additional cost. Quality improvements do not affect the optimal bundle in period 1 because $\delta$ only affects the housing stock level in period 2. However, thanks to the lower depreciation rate, the second-period housing stock (inherited from the first period) increases, which results in a higher utility level. The shift of the demand curve triggers the increase in price to $P_h^{**}$ because the housing stock supply does not change in the short run. , $E_2$ will be the short-run equilibrium.

Quality investments also affect the supply of housing. Fewer demolitions, thanks to quality improvements, shift the flow of housing curve to the right (Figure 1.9). The reason for the shift is that, although new constructions are independent of the quality improvement, the remaining housing stock from the previous period increases. The rightward shift of the flow curve lowers the steady state equilibrium price from $P_h^*$ to $P_h^{***}$. The housing stock starts to grow gradually because the construction industry produces more housing at $P_h^{**}$. As new houses are constructed, the housing stock curve moves to the right. The movement of the housing stock continues until the price drops to the new steady state price, reaching the new equilibrium, $E_3$.

Japan has been promoting the improvement of housing quality in recent years. After quantitative housing needs had been met in the 1970s, the emphasis shifted to factors relating to the quality of housing, including residential environments and housing performance (The Building Center of Japan 2014). The Basic Act for Housing enacted in 2006 aims to promote safe, secured, and high-quality housing and to

**Figure 1.9: Effects of Quality Improvement on Housing Flow and Housing Stock**




Source: Authors.

develop housing safety nets for people with difficulties securing a house. The law attempts to achieve enhanced residential living standards for the Japanese today and in the future. Enhancement of earthquake resilience and energy efficiency, and promotion of elderly accessible houses are high priorities. So far, it has managed to enhance housing quality and living conditions, according to recent studies.[3]

### 1.5.1.6 Property Tax on the Purchase of Housing

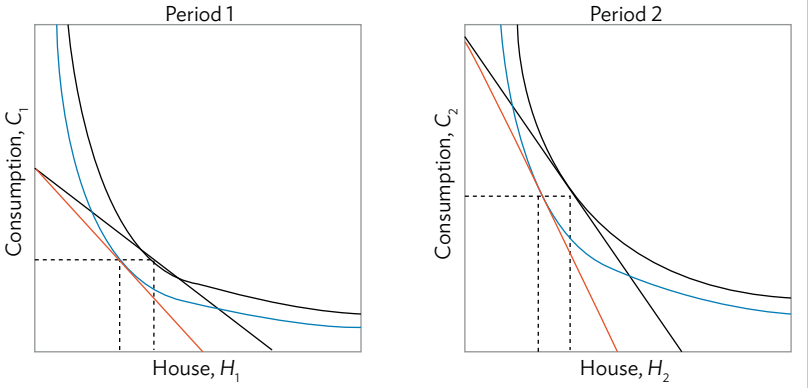
The introduction of a property tax on the purchase of housing has the effect of increasing the price of housing. The introduction of the tax thus rotates the budget constraint inward and lowers housing consumption in both periods (Figure 1.10). The change in the price for a housing unit,

[3] *A Quick Look at Housing in Japan May 2014*, edited by the Building Center of Japan, reported that the percentage of households living in dwellings below the minimum housing standard has shrunk to approximately 5%, while the number of households living in dwellings exceeding the targeted housing standard is above 50%.

however, does not affect the choice of how many consumption goods are consumed due to our parameter setting. The substitution effect and the income effect exactly offset each other again.

The tax introduction cools down demand for housing and the increase in the housing price makes the household worse off.

**Figure 1.10: Introduction of a Property Tax**




Source: Authors.

A property tax is typically used to curb speculation in the housing market. For example, in 2003, Hong Kong, China began to introduce several stamp duties as part of its 10-year Long Term Housing Strategy—special stamp duty, buyer stamp duty, and ad valorem stamp duty. The level of the special stamp duty rates depends on the holding period of properties. The buyer stamp duty is imposed on residential properties acquired by any person except a Hong Kong, China permanent resident. These stamp duties did indeed manage to lower demand from nonlocal buyers and speculators. However, it did not completely stop the housing price from further increasing.[4]

Similarly, the People's Republic of China (PRC) introduced a property tax as a pilot program in Shanghai and Chongqing in 2011. The

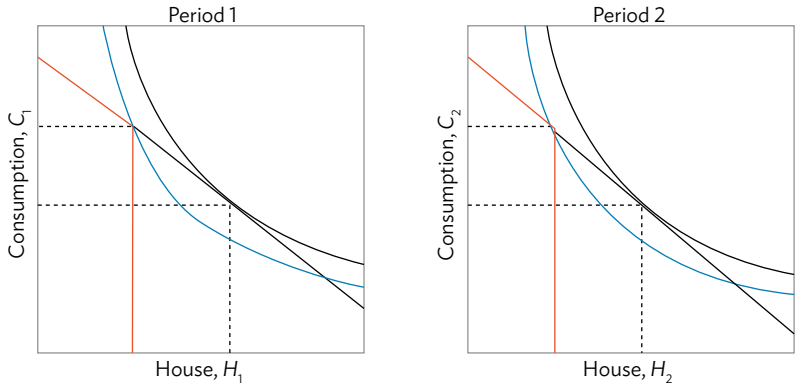
[4] Under the 10-year Long Term Housing Strategy, 470,000 new housing units are to be built to improve the affordability of housing.

main objective was to curb speculation on luxurious housing and to limit new homebuyers. Another objective was to give incentives to rent out more apartments, thereby reducing the number of vacant apartments. However, the program has not yet been extended nationwide, as it has faced strong opposition from local governments, property developers, as well as the public, who saw their investment opportunities constrained. Another objective was to stimulate economic growth—real-estate construction has continuously made an important contribution to economic growth in the PRC.

#### 1.5.1.7 Introduction of the Loan-to-Value and Debt-to-Income Ratio Regulations

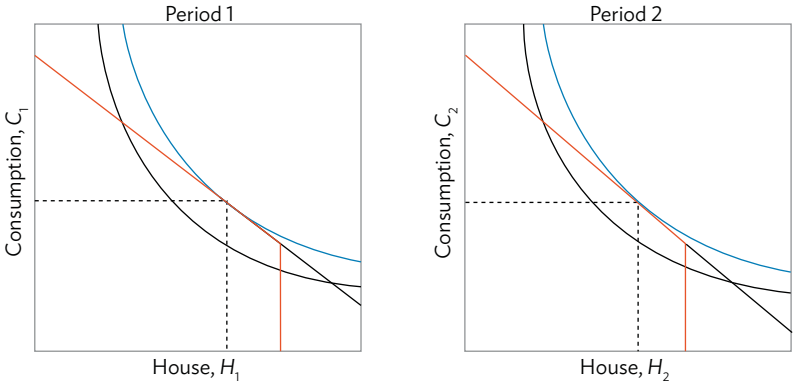
Under the LTV and DTI ratio regulations, households are not allowed to borrow money above a certain level. In our model, this type of restriction bends the budget constraint because the amount of housing units that can be purchased is strictly restricted through the limited availability of mortgages (Figure 1.11). If the regulation is binding, households become worse off because they cannot choose the optimal level of housing units that would be feasible before the introduction of the regulation. If the constraint is not binding, they can still choose the optimal bundle and have the same level of utility as before (Figure 1.12).

**Figure 1.11: Introduction of Loan-to-Value and Debt-to-Income Ratio Regulations (when regulations are binding)**




Source: Authors.

**Figure 1.12: Introduction of Loan-to-Value and Debt-to-Income Ratio Regulations (when regulations are not binding)**



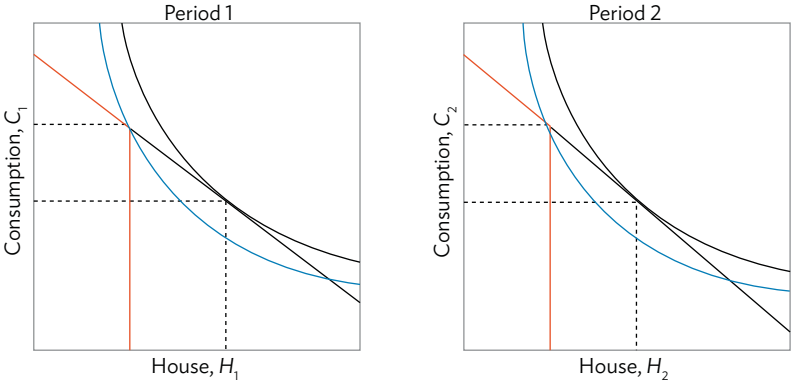

Source: Authors.

Examples of the use of LTV and DTI ratio regulations are ample. In 2003, the Republic of Korea adjusted the LTV and DTI ratio ceilings to suppress demand for housing loans as the housing market was overheating and posing a systematic risk. In 2004, Singapore reduced the LTV ratio and introduced the DTI ratio to lower investment demand under Prime Minister Hsien Loong. In both countries, LTV and DTI regulations curbed speculative demand for housing and helped to prevent further price hikes.

### 1.5.1.8 Restriction of Housing Purchase

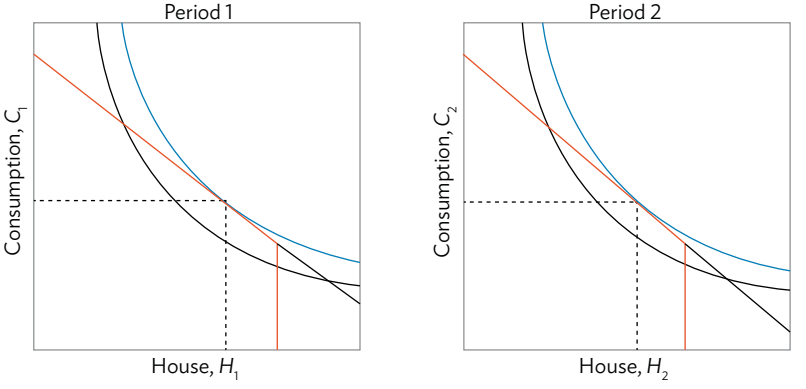
Another housing policy that has recently become popular is placing restrictions on additional housing purchases. The objective is to prohibit a household from buying additional homes to lower housing demand. In our model, we assume that households are allowed to buy housing units only up to a certain level (Figure 1.13). The economic effect is similar to the LTV and DTI ratio regulation. Households that are facing such a restriction spend more on their other consumption instead of on housing purchase, but their utility becomes smaller compared with a situation without any restrictions. If the regulation does not influence their optimal decision, they can still choose the same amount of housing units and consumption goods as before (Figure 1.14).

## Figure 1.13: Restricted Purchases with Binding Regulation




Source: Authors.

## Figure 1.14: Restricted Purchase with Nonbinding Regulation




Source: Authors.

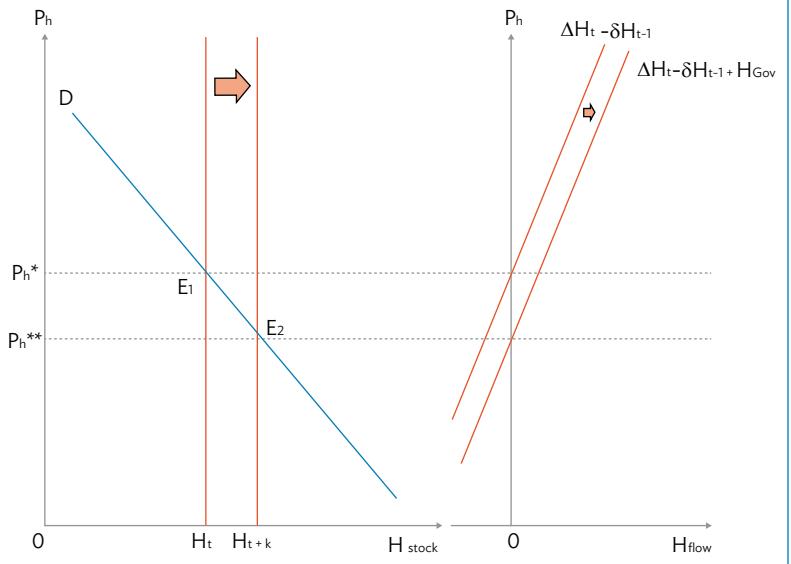
Switzerland provides a recent example of this policy. The county started to ban the construction of new second homes in areas with a high share of second homes to limit the sprawling of empty second homes in tourist areas. As a consequence, the demand for second homes in the affected municipalities dropped drastically. The lower housing prices made owner-occupied primary homes more affordable for young local residents. However, local owner-occupiers and owners of second homes in the targeted areas were made worse off, as their housing prices fell. Moreover, no reduction was found in overall sprawling as demand for second homes just shifted from areas constrained by the ban to unconstrained areas.

Another example is found in the PRC. In 2010, the PRC started to restrict purchases in 45 cities to limit ownership of more than two properties and to avoid potential housing bubbles. Nonlocal residents or foreigners were no longer allowed to buy a second house and local residents needed to have at least 2-year intervals before buying a second house. Furthermore, those wishing to buy a second or third house with a loan were required to have a higher down payment. The restriction policy showed positive effects in terms of preventing housing prices from rising further or eventually bringing down housing prices substantially. However, many local governments felt that the price drop went too far and the unsold housing inventory quickly increased. In 2014, many local governments decided to lift and loosen the restrictions on purchasing housing. By the beginning of 2015, 42 cities had abolished all restrictions.

#### 1.5.1.9 Government Provision of Housing and Subsidy to Suppliers

Another option to promote the provision of housing is through the construction of houses by the government. Under the assumption that the government provides a certain number of new housing units independent of the current housing price level, construction outside the private market shifts the flow curve rightward in a parallel fashion, which lowers the steady state equilibrium price to $P_h^{**}$ (Figure 1.15). The additional construction by the government increases the stock of housing in every period and the equilibrium changes along the demand curve. Once the short-run equilibrium price reaches the new steady state equilibrium price, the supply becomes stable at $E_2$. Using the same logic and diagram, we can analyze the case where the government gives a fixed amount of subsidy to private construction companies.

**Figure 1.15: Government Provision of Housing**

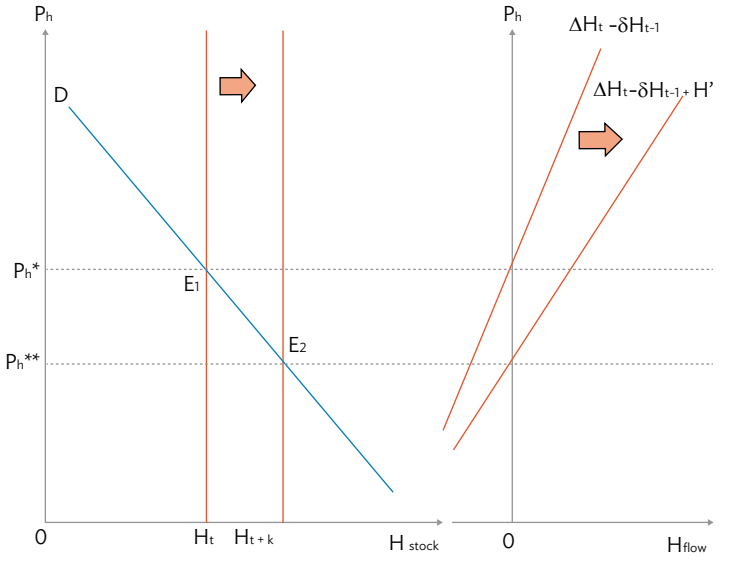



Source: Authors.

The lower price makes housing more affordable, but public housing construction has a few disadvantages compared with demand-side policies. Weicher (1979) introduced several studies showing that the cost of new public housing is higher than that of new private housing. Moreover, when there is a plentiful supply of pre-owned housing, new housing construction is much more costly than demand-side policies. Even the least expensive construction is usually more expensive than the reuse of secondhand housing. According to Harvey (2000: 301), "Often governments have been so preoccupied with new building programmes that present stock has been neglected by being allowed to remain unoccupied or to fall into disrepair." And O'Sullivan (1996) showed that public housing produces a relatively small increase in recipient welfare per dollar.

When the amount of subsidy to the private constructing industry depends on the units the private sector supplies, the flow curve shows a different movement. The more housing the private sector supplies, the more subsidy is paid. As a result, the flow curve pivots, as Figure 1.16 demonstrates. The steady state equilibrium price goes down and the steady state equilibrium changes from $E_1$ to $E_2$.

**Figure 1.16: Subsidy to Housing Suppliers**



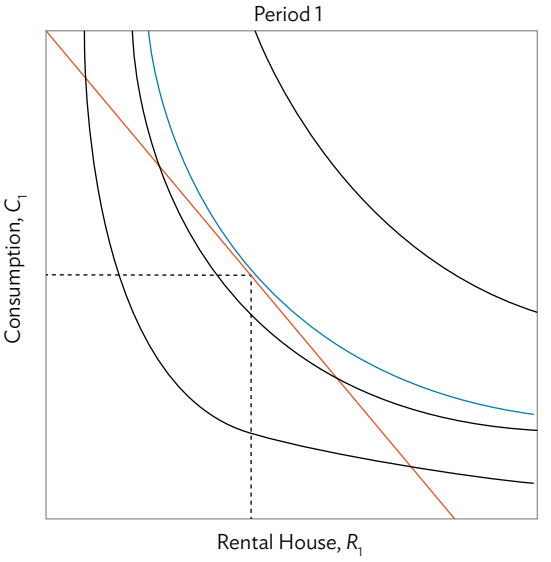

Source: Authors.

In 1989, the Republic of Korea started the Two Million New Housing Construction Project to overcome its housing shortage and housing price hike. As one of the main measures, the Government of the Republic of Korea increased the supply of developable land through public sector developers. Despite the fact that the massive supply of land resulted in a lack of diversity and overstretched the capacity of the construction industry, the measure helped to boost housing construction, eliminate the housing shortage, and stabilize housing prices.

## 1.5.2 Rental Housing Market

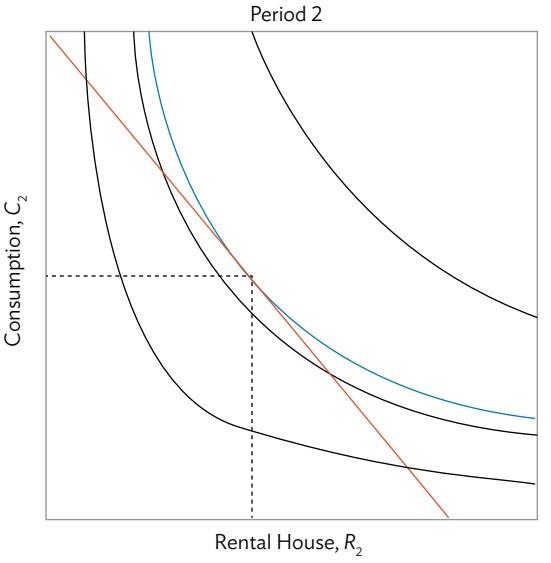
As shown in Figures 1.17 and 1.18, households choose the optimal bundle of $(C_t, R_t)$ such that they maximize their utility in each period. Next we analyze different housing policies for rental houses.

**Figure 1.17: The Optimal Bundle of Tenants in Period 1**




Source: Authors.

**Figure 1.18: The Optimal Bundle of Tenants in Period 2**



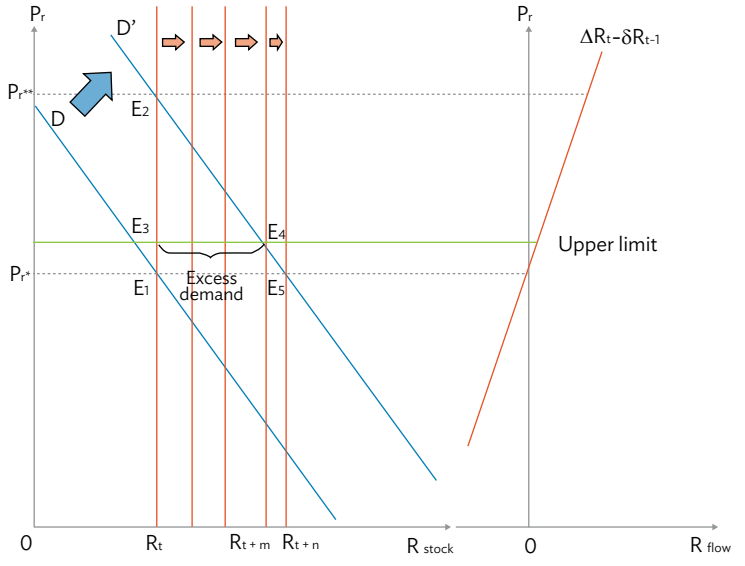

Source: Authors.

#### 1.5.2.1 Rent Control

First, we assume that the housing market starts in equilibrium, $E_1$ (Figure 1.19). Let us suppose that the demand curve shifts rightward due to the increase in the population, it pushes up the equilibrium price to $P_r^{**}$, and the equilibrium changes from $E_1$ to $E_2$. Suppose the government, however, sets an upper limit of rent, which is below the market equilibrium price. This rent control translates into an excess demand in the constrained equilibrium under the rent control, $E_3$. When the upper limit of rent is set below the short-run equilibrium price, $P_r^{**}$, the supply curve shifts very slowly and it takes even longer for the stock to grow. This is because the constrained price level is not attractive enough to encourage producers to supply housing promptly. The excess demand is cleared only after the housing stock reaches $R_{t+m}$ (m>0), where the equilibrium becomes $E_4$. The growth of housing stock still continues because the upper limit of rent is still higher than the steady state equilibrium price. When the stock finally reaches $R_{t+n}$ (n>m>0), the market equilibrium price returns to the original steady state equilibrium price at $E_5$ and the supply curve shift stops. If rent were controlled exactly at the original steady state equilibrium level, $P_r^*$, the supply would not move and excess demand could not be eliminated through the market adjustment process because the housing stock does not change in the face of the controlled rent. In short, rent control reduces the incentive to construct new housing and causes excess demand. The controlled lower rent prolongs the process of the shortage elimination.

In addition to the slow adjustment process, the excess demand due to rent control is also problematic from a viewpoint of efficient allocation. Those who are willing to pay most cannot necessarily find their dwellings. Households that only need to pay a low controlled rent are reluctant to move out, which makes it difficult for households that have high willingness to pay to access proper housing. Only the first generation of renters can become "winners" under the rent control policy. Landlords are obviously worse off and subsequent-generation tenants are also worse off because they will face higher search cost. In this sense, the rent control tends to allocate housing inequitably. The misallocation benefits go only to households enjoying the low controlled rent and this market distortion negatively affects social welfare. That is to say, the social surplus cannot be maximized under rent control. The lower controlled rent also discourages landlords from maintaining dwellings. As a result, their reduced profit may be recouped by their cutting maintenance cost, resulting in lower durability and quality of housing.

**Figure 1.19: Demand Shift and Rent Control**




Source: Authors.

To control the decrease in supply because of the rent control, several adjustments are usually made to rent control. The first way to diminish the supply decrease is to exempt new housing from rent control. If new housing is not affected by rent control, a potential price increase stimulates the supply of new housing, offsetting the loss in housing stock as a result of rent control. However, if builders and landlords suspect that the rent of new housing might come under rent control in the future, they may become reluctant to supply new housing. The second option is to subsidize new construction to diminish the decrease in the housing supply caused by rent control. The third option is to adjust the controlled rent with regularity. For example, allowing for a periodic increase in controlled rent can mitigate the negative effect of rent control. However, O'Sullivan (1996: 440) pointed out that "in most rent-control cities that use rent adjustment, controlled rents rise more slowly than the cost of building and maintaining rental housing." The fourth way is to control rents only of existing tenants. Whenever a new tenant moves into the dwelling, the rent can be freely adjusted. This moderate form of rent control slackens some negative aspects, but is still highly

ineffective. Most importantly, the incentive of the owners to invest into maintenance is low. Tenants are also still very reluctant to move even though their needs in terms of space and location change drastically. For example, retired couples might decide to remain in their apartment in the business district, as they would have to pay substantially higher rents when moving to a new apartment with a new lease, whereas young couples wishing to be closer to work see themselves obliged to commute into the city center.

The major alternatives to rent control are income redistribution by the national government through use of a land tax. Although rent control itself has a function of income redistribution, it is not always efficient because the "winners" of rent controls can be both low-income and high-income households. Whoever can continue to dwell in a house for which rent is controlled are beneficiaries of the policy. Redistribution by use of a land tax has an advantage over rent control in that the land tax does not affect the supply of land or the supply of housing because the land supply is totally inelastic to price.

Rent control can be seen in many cities. Rent controls in New York City after World War II are a well-known example. Rent control was implemented in Switzerland in 1936 to stabilize rents and combat urban sprawl. Until today, rents of current tenants are tied to mortgage interest rates. The policy was reasonably successful in stabilizing rents, but it led to significant excess demand. Vacancy rates in the bigger cities, such as Basel, Geneva, and Zurich are notoriously low, typically less than 1%. The other two major drawbacks are the low level of maintenance as well as a mismatch in the allocation of apartments.

#### 1.5.2.2 Rent Certificates

Rent certificates are typically distributed to low-income groups, and are in effect a direct subsidy. They provide financial assistance for eligible households residing in standard quality housing. The basic idea is that the eligible household is not allowed to spend more than the fair market rent, which is determined as the prevailing rent in a competitive rental housing market for a standard low-income dwelling. If the household wanted to rent a house for which rent is higher than the fair market rent, it would not be able to get a rent certificate and would have to pay the entire rent out of pocket.

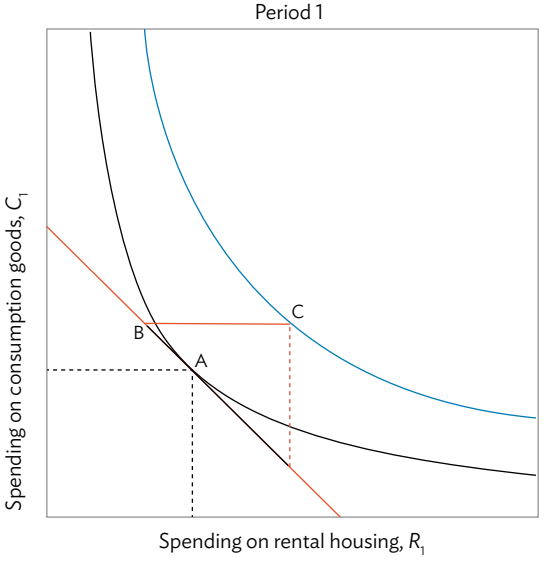
Let us assume that an eligible household spends 30% of its income on housing and that it receives a rent certificate that covers the rest of the actual rent:

Actual rent = Rent certificate + 0.3*Income

The government covers the difference between the 30% of the household's income and the actual rent, in case the actual rent exceeds 30% of the household's income. Thanks to the rent certificate, the household has more income available to spend on consumption goods. The budget constraint line becomes horizontal in the area where the actual rent is below the fair market rent.

Figure 1.20 shows the effects of a rent certificate program on housing consumption. To make the discussion simpler and more intuitive, we use a slightly different diagram compared with the previous section. Figures 1.20 and 1.21 now show on the horizontal axis the spending on housing, instead of the amounts of housing units consumed in the previous graphs.[5] Having a graph on spending helps to better visualize rent certificates and housing vouchers as both of them are relative to spending on housing.

**Figure 1.20: Rent Certificate Program**




Source: Authors.

[5] The vertical axis measures spending on other goods. Given that we assume that these goods are the numeraire for prices, the scale does not change.

In Figure 1.20, the optimal bundle of housing and consumption is A, under the initial budget constraint. Once the rent certificate program is implemented, the budget constraint bends at point B. As the household could not get any subsidy if it wished to live in a dwelling with rent higher than the fair market rent, the new budget constraint has a discontinuity at point C on the fair market rent. Under the new discontinuous budget constraint, the household chooses point C, which gives the highest utility of all feasible points. The distance between B and C is subsidized by the government.

#### 1.5.2.3 Housing Voucher

Similar to rent certificates, housing vouchers also are in effect a direct subsidy to the eligible household. However, housing vouchers are different from rent certificates because housing vouchers can be used for any type of dwellings as long as the dwellings meet certain minimum standards. There is as such no upper limit on how much the household can spend on rent.

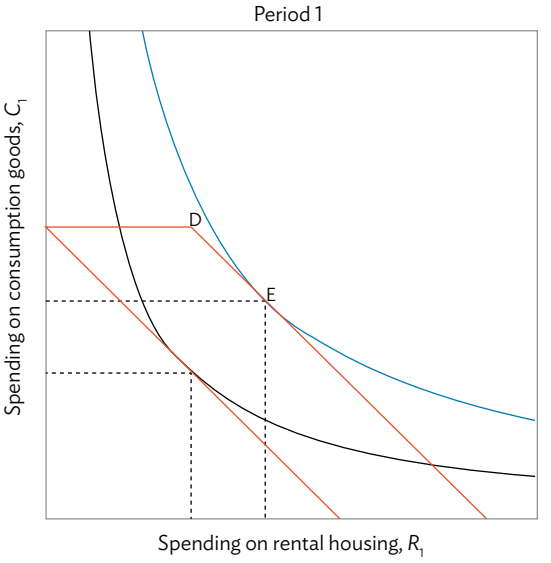
Similar to the certificates, let us assume that the household has to spend 30% of its income on rent. The face value of the voucher is thus the difference between the fair market rent and 30% of the household's income. The amount of the housing voucher is based on the fair market rent and thus independent of the actual rent. In other words, the amount of subsidy is fixed, no matter what type of housing they choose to rent. As a consequence, if the household rents a dwelling that costs more than the fair market rent, it will still receive the same housing voucher, but will have to spend more than 30% of the household's income to pay the rent.

Housing voucher = Fair market rent – 0.3*Income

In contrast to the rent certificate policy, under the housing voucher program the household's maximum expenditure on housing is not limited. The recipients of the housing vouchers are even allowed to live in luxurious dwellings for which rent is higher than the fair market rent.

Figure 1.21 illustrates the effects of housing vouchers on household utility. To make our argument consistent, we employ the same diagram settings as in Figure 1.20. Thanks to the housing voucher program, the budget constraint line shifts upward. However, the household is not allowed to spend more on consumption goods than would be feasible without the housing voucher program, because the housing vouchers cannot be used for consumption goods. This requirement produces a kink in the budget constraint line at point D. Under the new budget constraint, the household chooses point E, which gives the highest utility of all the feasible points.

**Figure 1.21: Housing Voucher Program**




Source: Authors.

Housing vouchers have several advantages compared with rent certificates. First, rent certificates do not provide incentives to households to look for low-rent housing. As the subsidy fully covers the difference between the actual rent and 30% of households' income, households choose the most expensive rental housing as long as the rent does not exceed the fair market rent. In contrast, under a housing voucher program, the face value of the housing voucher is fixed wherever households decide to live. Households thus efficiently choose their optimal rental housing and pay a lower rent than before.

Additionally, under certain assumptions, we can show that the housing voucher program gives households higher utility compared with rent certificates, even if the subsidy paid to the eligible households is the same. This is because the voucher program as a lump-sum cash transfer gives the households more options to choose their optimal consumption bundle compared with the rent certificate program (details are explained in section 1.5.1.2).

However, it does not always mean that housing vouchers are a superior policy instrument compared with rent certificates. If the

objective of housing policy is to increase housing consumption rather than increase utility, rent certificates could be more effective.

In the Republic of Korea, a housing voucher program was launched in 2015 aiming to ensure the minimum housing standard will be met. The amount of monthly cash subsidy is determined based on household income, rent, family size, and location of residence. The effectiveness of the program still needs to be assessed.

#### 1.5.2.4 Slum Prevention and Rehabilitation

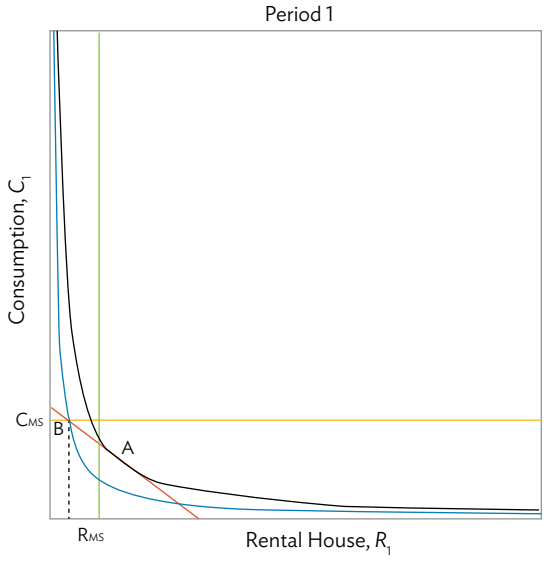
Poor households typically find it difficult to access adequate housing. The main reason is that their income is too low to be able to afford the rent for a dwelling of a minimum standard. Most of their income is spent on expenditure for basic survival.

In our model, we can easily introduce such minimum standards for survival as well as minimum standards for housing. In Figure 1.22, $C_{MS}$ stands for the minimum consumption for survival and $R_{MS}$ denotes the rent of the smallest possible dwelling of a minimum housing standard. We assume that every household needs to keep its consumption at or above $C_{MS}$ to survive. If the income is too small to access minimum standard housing while having to maintain the minimal level of consumption, the household's only choice is to sacrifice part of its housing consumption for survival. The housing units consumed then fall below $R_{MS}$, which means the household is forced to live in substandard quality housing. These are often slums, where dwellings tend to be overcrowded and lack adequate ventilation, light, or sanitation. Moreover, access to safe drinking water is often limited and security of tenure tends to be lacking. Figure 1.23 illustrates the case of a household's income being too low to be able to afford living in a standard quality house and is forced to live in a substandard dwelling.

The objective of slum prevention policies is typically to create an affordable housing stock by increasing the supply of housing of a minimum housing standard. The increase of the housing supply lowers the price for housing and it allows poor households to access dwellings of a minimum standard (Figure 1.23). It is hoped that once a household's income becomes larger, it will be able to choose the optimal bundle with a consumption level above the minimum line.

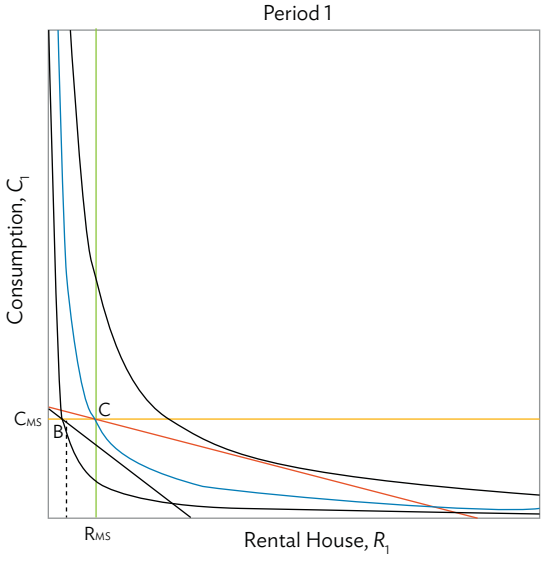
In 2013, India's government started a large slum prevention program, which attempts to give slum dwellers access to appropriate housing, while at the same time tackling the process by which slums are created. The main policy instrument is to provide affected people with shelter or housing free of cost. The program will run until 2022 and has the ultimate goal of making India slum free by that time.

## Figure 1.22: Substandard Quality Housing




Source: Authors.

## Figure 1.23: Slum Prevention and Rehabilitation



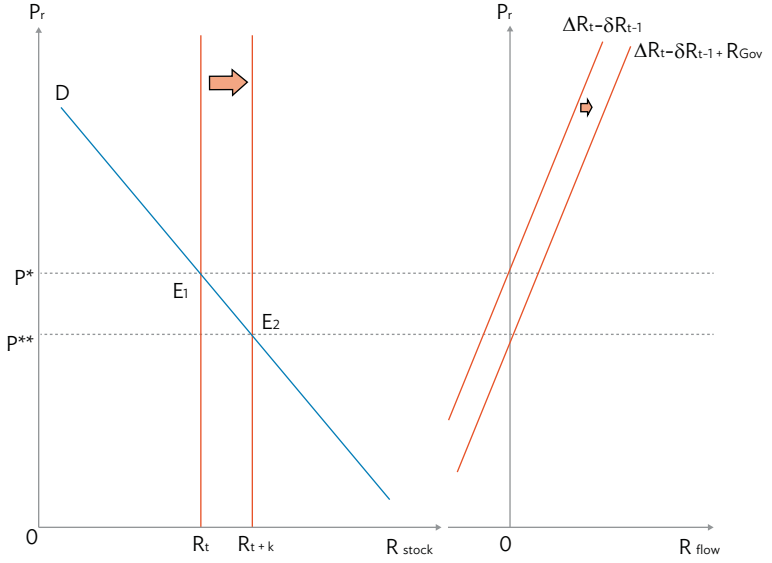

Source: Authors.

### 1.5.2.5 Government Provision of Rental Houses

Another option for the government to intervene in the rental market is to directly invest in construction of public rental housing. Especially after World War II, governments of countries affected by the war decided to provide public rental houses to ensure their citizens found adequate shelter.

Suppose in our model that the government promotes the construction of rental houses to address the shortage of housing. The construction shifts the flow curve rightward, which lowers the steady state equilibrium price (Figure 1.24). The additional construction by the government increases the stock of housing in every period and the equilibrium changes along the demand curve. Once the short-run equilibrium price has reached the new steady state equilibrium price, the supply becomes stable.

**Figure 1.24: Government Construction of Public Rental Housing**




Source: Authors.

Since we employ the same stock-flow supply model for rental houses as for owner-occupied housing, the supply-side policy applied to the rental housing market shows the same effects as we discussed in the previous section.

Public rental housing has been provided in various countries. Japan, for example, enacted the Publicly-Operated Housing Act in 1951 and supplied publicly operated low-rent housing for low-income people through local government units. The act enabled the central government to provide subsidies to local governments to increase the housing supply. In 1995, the Japan Housing Corporation, which was the predecessor of the Urban Renaissance Agency established in 2004, started the collective construction of rental housing for low- to middle-income households mainly living in major cities to overcome a housing shortage caused by an influx of people into urban areas. By 1973, the total number of houses exceeded the total number of households in all metropolitan areas and prefectures. Japan had reached its goal of one house per household, ending 2 decades of postwar housing shortages (The Building Center of Japan 2014).

## 1.6 Conclusion

Together with food and clothing, housing can be considered as one of three basic material needs of every person. To respond to these needs, governments around the world have made various efforts to facilitate access to housing for their citizens, especially for lower-income groups.

The objective of this chapter was to give an overview of some of the most commonly applied housing policies and to illustrate their impact on households' welfare. To facilitate the analysis, we first set up a simple two-period housing demand model for owner-occupied houses and rental houses. We then introduced a standard stock-flow housing supply model. Given this modeling framework, we explained the qualitative effects of various housing policies on supply and demand.

The theoretical model presented in this chapter can be extended in several directions. One possibility is to explicitly model the externalities that housing exhibits to society. For example, well-maintained houses not only help to increase the health of the dwellers, but also exhibit a positive externality to the neighborhood. Another option would be to include moving costs in our model. It is well documented in the literature (e.g., O'Sullivan 1996) that moving costs may prevent households from benefiting from better housing opportunities. Yet another interesting extension could be to model the link between the markets for homeowners and renters. The implementation of a policy in one of the two markets certainly affects the other one. Finally, like for food and clothing, housing conditions need to meet certain standards to be adequate and deliver the expected benefits. In this chapter, we

assumed that all housing units meet the same standards. However, in many developing countries, large numbers of dwellings are below the minimum standard. A more nuanced analytical approach to the question of housing standards could be a worthwhile undertaking.

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# Appendix

## Derivation of Equations (10)–(13)

Setting the following Lagrangian function,

$$L = u(C_1, H_1) + \beta u(C_2, H_2) + \lambda\left\{(1\text{-}t_y)Y_1 + \frac{(1\text{-}t_y)(1+g)Y_1}{1+r} + G_1 + \frac{G_1}{1+r}\text{-}C_1\text{-}\frac{C_2}{1+r}\text{-}(1+t_h)P_hH_1)\right\} \quad (42)$$

or

$$L = ln\,(C_1) + bln(H_1) + \beta\{\ln\,(C_2) + bln[(1-\delta)H_1]\} + \lambda\left\{(1\text{-}t_y)Y_1 + \frac{(1\text{-}t_y)(1+g)Y_1}{1+r} + G_1 + \frac{G_1}{1+r}\text{-}C_1\text{-}\frac{C_2}{1+r}\text{-}(1+t_h)P_hH_1)\right\} \quad (43)$$

Taking first order conditions with respect to $C_1, C_2, H_1,$ and $\lambda$, we obtain

$$\frac{1}{C_1} = \lambda \quad (44)$$

$$\frac{\beta}{C_2} = \lambda\frac{1}{1+r} \quad (45)$$

$$\frac{b}{H_1} + \frac{\beta b}{H_1} = \lambda(1+t_h)P_h \quad (46)$$

$$(1\text{-}t_y)Y_1 + \frac{(1\text{-}t_y)(1+g)Y_1}{1+r} + G_1 + \frac{G_1}{1+r} = C_1 + \frac{C_2}{1+r} + (1+t_h)P_hH_1 \quad (47)$$

Substituting (44) into (45) and (46), we get

$$\beta(1+r)C_1 = C_2 \quad (48)$$

$$b(1+\beta)C_1 = (1+t_h)P_hH_1 \quad (49)$$

(47) to (49) and $H_2 = (1-\delta)H_1$ give

$$H_1^* = \frac{b}{(1+t_h)(1+b)P_h}\left\{(1-t_y)Y_1 + \frac{(1-t_y)(1+g)}{1+r\text{-}rt_y}Y_1 + G_1 + \frac{G_2}{1+r\text{-}rt_y}\right\}$$

$$H_2^* = (1-\delta)H_1^* = \frac{(1-\delta)b}{(1+t_h)(1+b)P_h}\left\{(1-t_y)Y_1 + \frac{(1-t_y)(1+g)}{1+r\text{-}rt_y}Y_1 + G_1 + \frac{G_2}{1+r\text{-}rt_y}\right\}$$

$$C_1^* = \frac{1}{(1+\beta)(1+b)}\left\{(1-t_y)Y_1 + \frac{(1-t_y)(1+g)}{1+r\text{-}rt_y}Y_1 + G_1 + \frac{G_2}{1+r\text{-}rt_y}\right\}$$

$$C_2^* = \frac{\beta(1+r\text{-}rt_y)}{(1+\beta)(1+b)}\left\{(1-t_y)Y_1 + \frac{(1-t_y)(1+g)}{1+r\text{-}rt_y}Y_1 + G_1 + \frac{G_2}{1+r\text{-}rt_y}\right\}$$

## Derivation of Equations (24)–(27)

Setting the following Lagrangian function,

$$L = u(C_1, R_1) + \beta u(C_2, R_2) + \lambda\left\{(1\text{-}t_y)Y_1 + \frac{(1\text{-}t_y)(1+g)Y_1}{1+r} + G_1 + \frac{G_1}{1+r}\text{-}C_1\text{-}\frac{C_2}{1+r}\text{-}P_rR_1\text{-}\frac{P_rR_2}{1+r}\right\} \quad (50)$$

or

$$L = ln\,(C_1) + bln(R_1) + \beta\{\ln\,(C_2) + bln[R_2]\} + \lambda\left\{(1+t_y)Y_1 + \frac{(1+t_y)(1+g)Y_1}{1+r} + G_1 + \frac{G_1}{1+r}\text{-}C_1\text{-}\frac{C_2}{1+r}\text{-}P_rR_1\text{-}\frac{P_rR_2}{1+r}\right\} \quad (51)$$

Taking first order conditions with respect to $C_1, C_2, R_1, R_2$, and $\lambda$ we obtain

$$\frac{1}{C_1} = \lambda \quad (52)$$

$$\frac{\beta}{C_2} = \lambda\frac{1}{1+r} \quad (53)$$

$$\frac{b}{R_1} = \lambda P_r \quad (54)$$

$$\frac{\beta b}{R_2} = \lambda\frac{P_r}{1+r} \quad (55)$$

$$(1+t_y)Y_1 + \frac{(1+t_y)(1+g)Y_1}{1+r} + G_1 + \frac{G_1}{1+r} = C_1 + \frac{C_2}{1+r} + P_rH_1 + \frac{P_rR_2}{1+r} \quad (56)$$

Substituting (52) into (53), (54) and (55), we get

$$\beta(1+r)C_1 = C_2 \tag{57}$$

$$bC_1 = P_r R_1 \tag{58}$$

$$\beta b(1+r)C_1 P_r R_2 \tag{59}$$

(56) to (59) give

$$R_1^* = \frac{b}{(1+\beta)(b+1)P_r}\left\{\left(1-t_y\right)Y_1 + \frac{(1-t_y)(1+g)}{1+r}Y_1 + G_1 + \frac{G_2}{1+r}\right\}$$

$$R_2^* = \frac{b\beta(1+r)}{(1+\beta)(b+1)P_r}\left\{\left(1-t_y\right)Y_1 + \frac{(1-t_y)(1+g)}{1+r}Y_1 + G_1 + \frac{G_2}{1+r}\right\}$$

$$C_1^* = \frac{1}{(1+\beta)(b+1)}\left\{\left(1-t_y\right)Y_1 + \frac{(1-t_y)(1+g)}{1+r}Y_1 + G_1 + \frac{G_2}{1+r}\right\}$$

$$C_2^* = \frac{\beta(1+r)}{(1+\beta)(b+1)}\left\{\left(1-t_y\right)Y_1 + \frac{(1-t_y)(1+g)}{1+r}Y_1 + G_1 + \frac{G_2}{1+r}\right\}$$

CHAPTER 2

# A Simulation of Housing Policies: Numerical Analysis

*Naoyuki Yoshino, Matthias Helble, and Toshiaki Aizawa*

## 2.1 Introduction

The graphic analysis in the previous chapter has given us valuable insights into how housing, the consumption of other goods, and household utility changes after the introduction of different housing policies with the two-period housing demand model. This chapter introduces a numerical analysis of the housing policies. The simulation based on the two-period demand model allows us to compare the effectiveness of demand policies. The purpose of this chapter is to measure the impact and effectiveness of housing policies by implementing a cost-effectiveness analysis.

In the previous chapter, we obtained the optimal demand level of owner-occupied housing and rental housing from the utility maximization problem of representative household.

For owner-occupied housing, the utility maximization problem of the household is

$$\max_{\substack{C_1,H_1,\\ C_2,H_2}} u(C_1,H_1)+\beta u(C_2,H_2), \quad \beta \in (0,1)$$

$$s.t. \quad C_1 + P_r R_1 + S = \left(1 - t_y\right)Y_1 + G_1$$

$$C_2 + P_r R_2 = \left(1 - t_y\right)Y_2 + (1 + r)S + G_2$$

$$Y_2 = (1 + g)Y_1$$

where $u(C_t, H_t) = ln(C_t) + b\ ln(H_t)$

$$H_2 = (1 - \delta)H_1$$

Then we obtain

$$H_1^* = \frac{b}{(1+t_h)(1+b)P_h}\left\{\left(1 - t_y\right)Y_1 + \frac{(1-t_y)(1+g)}{1+r}Y_1 + G_1 + \frac{G_2}{1+r}\right\}$$

$$H_2^* = (1 - \delta)H_1^* = \frac{b(1-\delta)}{(1+t_h)(1+b)P_h}\left\{\left(1 - t_y\right)Y_1 + \frac{(1-t_y)(1+g)}{1+r}Y_1 + G_1 + \frac{G_2}{1+r}\right\}$$

$$C_1^* = \frac{1}{(1+\beta)(1+b)}\left\{\left(1 - t_y\right)Y_1 + \frac{(1-t_y)(1+g)}{1+r}Y_1 + G_1 + \frac{G_2}{1+r}\right\}$$

$$C_2^* = \frac{\beta(1+r)}{(1+\beta)(1+b)}\left\{\left(1 - t_y\right)Y_1 + \frac{(1-t_y)(1+g)}{1+r}Y_1 + G_1 + \frac{G_2}{1+r}\right\}$$

For rental housing, the utility maximization problem of the household is

$$\max_{\substack{C_1,R_1,\\ C_2,R_2}} u(C_1, R_1) + \beta u(C_2, R_2), \quad \beta \in (0,1)$$

$$\text{s.t.} \quad C_1 + P_r R_1 + S = \left(1 - t_y\right)Y_1 + G_1$$

$$C_2 + P_r R_2 = \left(1 - t_y\right)Y_2 + (1 + r)S + G_2$$

$$Y_2 = (1 + g)Y_1$$

where

$$u(C_t, R_t) = ln(C_t) + b\ ln(R_t), \quad \theta = \omega = 1$$

Then we derived:

$$R_1^* = \frac{b}{(1+\beta)(b+1)P_r}\left\{(1-t_y)Y_1 + \frac{(1-t_y)(1+g)}{1+r}Y_1 + G_1 + \frac{G_2}{1+r}\right\}$$

$$R_2^* = \frac{b\beta(1+r)}{(1+\beta)(b+1)P_r}\left\{(1-t_y)Y_1 + \frac{(1-t_y)(1+g)}{1+r}Y_1 + G_1 + \frac{G_2}{1+r}\right\}$$

$$C_1^* = \frac{1}{(1+\beta)(b+1)}\left\{(1-t_y)Y_1 + \frac{(1-t_y)(1+g)}{1+r}Y_1 + G_1 + \frac{G_2}{1+r}\right\}$$

$$C_2^* = \frac{\beta(1+r)}{(1+\beta)(b+1)}\left\{(1-t_y)Y_1 + \frac{(1-t_y)(1+g)}{1+r}Y_1 + G_1 + \frac{G_2}{1+r}\right\}$$

Tables 2.1 and 2.2 summarize the qualitative results of all demand-side policies discussed in the previous chapter. For simplicity, we focus on demand-side policies and ignore their effects on the supply side. The next section estimates the impacts of housing policies numerically by changing the value of policy variables.

**Table 2.1: Policy Effects on the Demand and Utility (Owner-occupied houses)**

| Owner-Occupied Houses | Period 1 | | | Period 2 | | |
|---|---|---|---|---|---|---|
| **Policy** | $H_1$ | $C_1$ | $U_1$ | $H_2$ | $C_2$ | $U_2$ |
| Cash subsidy | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ |
| Housing subsidy | ↑ | ← | ↑ | ↑ | ← | ↑ |
| Mortgage interest rate reduction | ↑ | ↑ | ↑ | ↑ | ↓ | ↓ |
| Mortgage interest deduction from income tax | ↑ | ↑ | ↑ | ↑ | ↓ | ↓ |
| Quality improvements | ← | ← | ← | ↑ | ← | ↑ |
| Introduction of property tax on housing purchase | ↓ | ← | ↓ | ↓ | ← | ↓ |
| LTV, DTI ratio regulations | ↓ | ↑ | ↓ | ↓ | ↑ | ↓ |
| Restrictions on purchases | ↓ | ↑ | ↓ | ↓ | ↑ | ↓ |

DTI = debt-to-income, LTV = loan-to-value.

Source: Authors.

**Table 2.2: Policy Effects on Demand and Utility (Rental houses)**

| Rental Houses | Period 1 | | | Period 2 | | |
|---|---|---|---|---|---|---|
| **Policy** | $R_1$ | $C_1$ | $U_1$ | $R_2$ | $C_2$ | $U_2$ |
| Cash subsidy | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ |
| Rent aid | ↑ | ← | ↑ | ↑ | ← | ↑ |
| Rent certificates | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ |
| Housing vouchers | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ |

Source: Authors.

## 2.2 Numerical Examples of Housing Policies

The first step in our simulation is to choose all parameters that are exogenously given and not subject to change in our simulations. For our two-period housing model we assume the following values for these variables:

- Discount factor for future utility: $\beta = 0.95$
- Coefficient of relative risk aversion: $\theta = 1.0$, $\omega = 1.0$
- Weight for house in utility: $b = 1.0$
- Income in the first period: $Y_1 = 10$
- Economic growth rate: g = 0.02
- Income tax rate: $t_y = 0.10$
- Price for house per housing unit: $P_h = 1.5$
- Rent per housing unit: $P_r = 0.75$

We will study the effect of housing policies on demand and utility when changing the value of the following policy variables:

- Subsidy in period 1 and in period 2: $G_1 = 0$, $G_2 = 0$
- Interest rate: $r = 0.05$
- Depreciation rate of house: $\delta = 0.10$
- Property tax rate: $t_h = 0.00$

Table 2.3 shows the housing demand, the consumption goods demand, and the utility level, under these assumptions. These values will be used as a benchmark (status quo), when we analyze numerical impacts of selected housing policies.

**Table 2.3: Optimal Demand Levels and Utility**

| H1 | C1 | U1 | H2 | C2 | U2 | H1+βH2 | C1+βC2 | U1+βU2 |
|---|---|---|---|---|---|---|---|---|
| 5.91 | 4.55 | 3.29 | 5.32 | 4.54 | 3.18 | 10.97 | 8.86 | 6.32 |
| **R1** | **C1** | **U1** | **R2** | **C2** | **U2** | **R1+R2** | **C1+C2** | **UI+βU2** |
| 3.03 | 4.55 | 2.62 | 3.18 | 4.54 | 2.67 | 6.22 | 9.09 | 5.16 |

Source: Authors.

We provide numerical simulation results of demand-side policies by slightly changing the policy variables shown in Table 2.4.

**Table 2.4: Housing Policy and Its Policy Variables**

| Policy | Policy Variable | |
|---|---|---|
| Cash subsidy for potential homeowners | $G_1$ | ↑ |
| Housing subsidy | $P_h$ | ↓ |
| Mortgage interest rate reduction | $r$ | ↓ |
| Mortgage interest deduction from income tax | $rt_yL^*$ | ↑ |
| Technology improvement | δ | ↓ |
| Property tax on the purchase of housing | $t_h$ | ↑ |
| Cash subsidy for tenants | $G_1$, $G_2$ | ↑ |
| Rent aid | $P_r$ | ↓ |

Source: Authors.

Our main interest lies in the percentage change of the housing units demanded ($\Delta H$) and the change in utility ($\Delta U$). In addition to the changes in housing demand and utility, we are interested in the change of the housing price in the short run. The short-run price level is defined as the price level immediately after the implementation of the new policy and it thus reflects the initial shock. In the medium to long run, our model predicts that supply will respond and adjust the housing stock according to the new demand. The housing price will eventually return to the steady state equilibrium level, as long as the policy does not alter the supply side or change the steady state housing price. In other words, in our model the supply reacts in the medium to long run in a way that excess demand or excess supply is cleared, whereas in the short run the excess demand or the excess supply is cleared by the change in the price, not in the supply change. In this chapter, we will also analyze the policy effect on the short-run housing price.

## 2.2.1 Demand Policies for Owner-Occupied Housing

### 2.2.1.1 Cash Subsidy

In Table 2.5, the first column $G_1$ denotes the possible cash subsidies by the government (from 0 to 5). The upper part of the table shows the absolute demand for housing units, consumption goods, mortgage loans, and utility for the cases of 0 to 5 units of cash subsidies. The lower part of the table lists the percentage changes from the benchmark. Figure 2.1 illustrates the percentage change of housing demand, consumption goods demand, and the lifetime utility when the amount of cash subsidy changes.

Suppose that the government grants a fixed amount of subsidy in period 1 to every household that wishes to buy a new house. In our numerical example, one unit of subsidy is equivalent to a 10% increase in households' income in the first period. As a consequence, the demand for housing units and the demand for consumption goods both increase at the same rate of 5.64%. Looking at the change in utility, we see that the subsidy improved the welfare of households by 3.33%. Every additional unit of subsidy increases the total utility in a concave way, that is, the marginal increase in utility by the one-unit additional subsidy becomes smaller as the absolute number of subsidy becomes larger. The concave relation is clear in Figure 2.1. Furthermore, the subsidy program reduces the need of the households to seek a loan, because the subsidy mitigates the necessity for the households to rely on a mortgage for the purchase of new housing. A subsidy of one unit lowers mortgage demand by 5.51%.

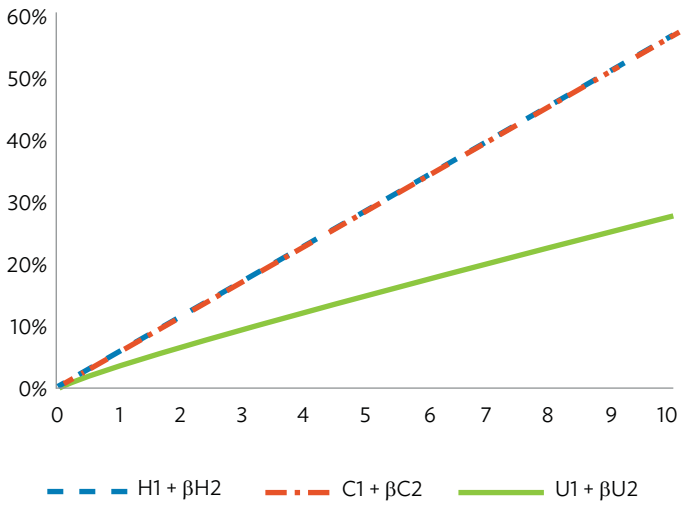
In the second period, demand for housing units and consumption goods remains larger compared with the situation without intervention. The increase is equal to that observed in the first period. The utility in the second period also increases, and its response is even bigger compared with the first period. As the cash subsidy increases demand for housing, in the short run we observe an increase in the housing price. One unit of additional subsidy pushes up the housing price by 5.64% in the short run, thus exactly offsetting the demand increase. (Remember that we assume a vertical housing supply in the short run.)

## Table 2.5: Numerical Simulation of Cash Subsidy

| G1 | H1 | C1 | U1 | L | H2 | C2 | U2 | H1+βH2 | C1+βC2 | U1+βU2 | Ph short run |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 5.914 | 4.549 | 3.292 | 4.421 | 5.323 | 4.538 | 3.185 | 10.971 | 8.861 | 6.318 | 1.500 |
| 1 | 6.248 | 4.806 | 3.402 | 4.177 | 5.623 | 4.794 | 3.294 | 11.589 | 9.360 | 6.532 | 1.585 |
| 2 | 6.581 | 5.062 | 3.506 | 3.934 | 5.923 | 5.050 | 3.398 | 12.208 | 9.859 | 6.734 | 1.669 |
| 3 | 6.914 | 5.319 | 3.605 | 3.690 | 6.223 | 5.305 | 3.497 | 12.826 | 10.359 | 6.927 | 1.754 |
| 4 | 7.248 | 5.575 | 3.699 | 3.447 | 6.523 | 5.561 | 3.591 | 13.444 | 10.858 | 7.111 | 1.838 |
| 5 | 7.581 | 5.832 | 3.789 | 3.203 | 6.823 | 5.817 | 3.681 | 14.063 | 11.358 | 7.286 | 1.923 |
| 6 | 7.914 | 6.088 | 3.875 | 2.959 | 7.123 | 6.073 | 3.767 | 14.681 | 11.857 | 7.454 | 2.007 |
| 7 | 8.248 | 6.344 | 3.957 | 2.716 | 7.423 | 6.328 | 3.850 | 15.299 | 12.356 | 7.615 | 2.092 |
| 8 | 8.581 | 6.601 | 4.037 | 2.472 | 7.723 | 6.584 | 3.929 | 15.918 | 12.856 | 7.769 | 2.176 |
| 9 | 8.914 | 6.857 | 4.113 | 2.229 | 8.023 | 6.840 | 4.005 | 16.536 | 13.355 | 7.918 | 2.261 |
| 10 | 9.248 | 7.114 | 4.186 | 1.985 | 8.323 | 7.096 | 4.079 | 17.154 | 13.855 | 8.061 | 2.345 |
| **G1** | **H1** | **C1** | **U1** | **L** | **H2** | **C2** | **U2** | **H1+βH2** | **C1+βC2** | **U1+βU2** | **Ph short run** |
| 0 | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| 1 | 5.64% | 5.64% | 3.33% | -5.51% | 5.64% | 5.64% | 3.44% | 5.64% | 5.64% | 3.38% | 5.64% |
| 2 | 11.27% | 11.27% | 6.49% | -11.02% | 11.27% | 11.27% | 6.71% | 11.27% | 11.27% | 6.59% | 11.27% |
| 3 | 16.91% | 16.91% | 9.49% | -16.53% | 16.91% | 16.91% | 9.81% | 16.91% | 16.91% | 9.64% | 16.91% |
| 4 | 22.54% | 22.54% | 12.35% | -22.04% | 22.54% | 22.54% | 12.77% | 22.54% | 22.54% | 12.55% | 22.54% |
| 5 | 28.18% | 28.18% | 15.08% | -27.55% | 28.18% | 28.18% | 15.59% | 28.18% | 28.18% | 15.33% | 28.18% |
| 6 | 33.82% | 33.82% | 17.70% | -33.06% | 33.82% | 33.82% | 18.29% | 33.82% | 33.82% | 17.98% | 33.82% |
| 7 | 39.45% | 39.45% | 20.20% | -38.57% | 39.45% | 39.45% | 20.89% | 39.45% | 39.45% | 20.53% | 39.45% |
| 8 | 45.09% | 45.09% | 22.61% | -44.08% | 45.09% | 45.09% | 23.37% | 45.09% | 45.09% | 22.97% | 45.09% |
| 9 | 50.72% | 50.72% | 24.92% | -49.59% | 50.72% | 50.72% | 25.77% | 50.72% | 50.72% | 25.33% | 50.72% |
| 10 | 56.36% | 56.36% | 27.15% | -55.10% | 56.36% | 56.36% | 28.07% | 56.36% | 56.36% | 27.59% | 56.36% |

Source: Authors' calculations.

**Figure 2.1: Numerical Simulation of Cash Subsidy**




Source: Authors.

### 2.2.1.2 Housing Subsidy

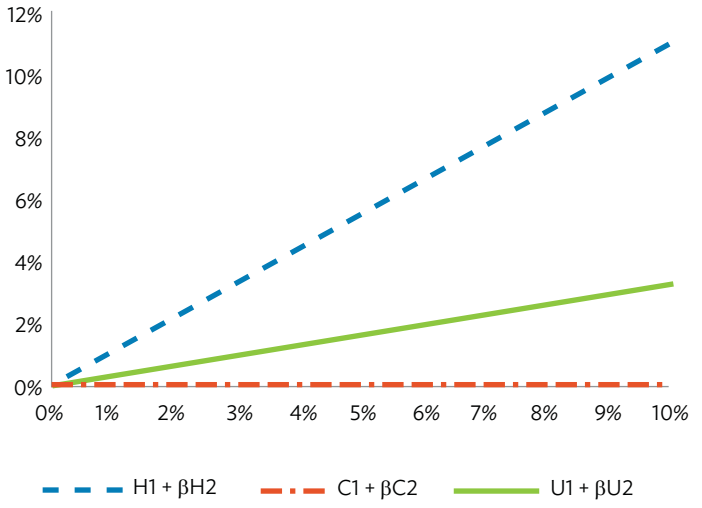
As discussed in the last chapter, the government may decide to give a subsidy proportional to the housing cost and which can only be used to buy housing. The simulation results for different levels of housing subsidies are summarized in Table 2.6. Similar to Table 2.6, the upper part of Table 2.7 shows the absolute changes and the lower part the relative changes. Figure 2.2 illustrates the percentage change of housing demand, consumption goods demand, and the lifetime utility when subsidy rate changes.

We observe that, when more generous rates of subsidy are offered, demand for housing grows more than proportionally. In other words, housing demand responds more strongly as the percentage point change of the subsidy rate increases. For example, when the subsidy rate is 2% (a 2 percentage point change from the status quo), housing demand increases by 2.04% compared with the status quo. When the subsidy rate changes from 2% to 4% (the same 2 percentage point change), housing

demand shows a 2.13 percentage point increase. Given our model assumptions, the housing subsidy does not affect the consumption of other goods. The reason is that the substitution effect exactly offsets the income effect. Finally, the utility exhibits a convex increase in response to any additional housing subsidy (Figure 2.2).

In the second period, the demand for housing changes by the same amount as in period 1. However, the response of the utility to the housing subsidy in period 2 is larger compared with period 1. When the subsidy rate is 6%, for example, the utility increase in period 1 is 1.88% and the increase in period 2 is 1.94%. The increase in lifetime utility (last column) is 1.91%, which is between the percentage change in the first period and the second period. As the housing subsidy increases the demand for housing, we observe a corresponding increase in the housing price in the short run.

**Figure 2.2: Numerical Simulation of Housing Subsidy**




Source: Authors.

## Table 2.6: Numerical Simulation of Housing Subsidy

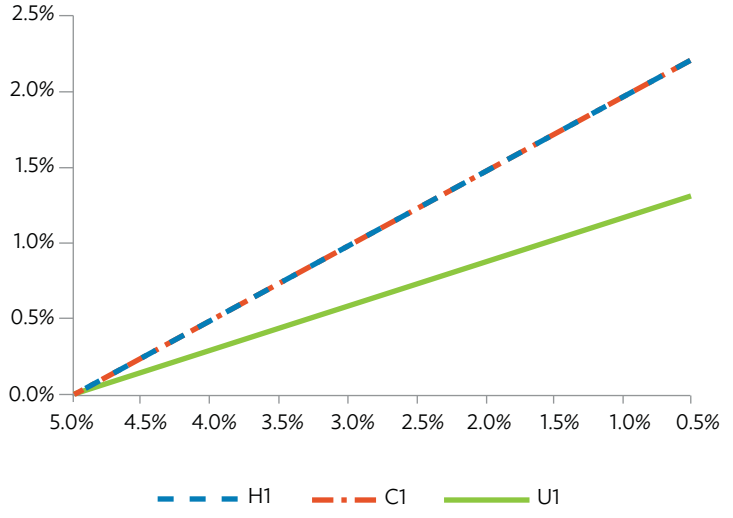
| Subsidy rate | H1 | C1 | U1 | L | H2 | C2 | U2 | H1+βH2 | C1+βC2 | U1+βU2 | Ph short run |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0% | 5.914 | 4.549 | 3.292 | 4.421 | 5.323 | 4.538 | 3.185 | 10.971 | 8.861 | 6.318 | 1.500 |
| 1% | 5.974 | 4.549 | 3.302 | 4.421 | 5.377 | 4.538 | 3.195 | 11.082 | 8.861 | 6.337 | 1.515 |
| 2% | 6.035 | 4.549 | 3.313 | 4.421 | 5.431 | 4.538 | 3.205 | 11.195 | 8.861 | 6.357 | 1.531 |
| 3% | 6.097 | 4.549 | 3.323 | 4.421 | 5.487 | 4.538 | 3.215 | 11.310 | 8.861 | 6.377 | 1.546 |
| 4% | 6.161 | 4.549 | 3.333 | 4.421 | 5.545 | 4.538 | 3.225 | 11.428 | 8.861 | 6.397 | 1.563 |
| 5% | 6.226 | 4.549 | 3.344 | 4.421 | 5.603 | 4.538 | 3.236 | 11.548 | 8.861 | 6.418 | 1.579 |
| 6% | 6.292 | 4.549 | 3.354 | 4.421 | 5.663 | 4.538 | 3.246 | 11.671 | 8.861 | 6.438 | 1.596 |
| 7% | 6.359 | 4.549 | 3.365 | 4.421 | 5.724 | 4.538 | 3.257 | 11.797 | 8.861 | 6.459 | 1.613 |
| 8% | 6.429 | 4.549 | 3.376 | 4.421 | 5.786 | 4.538 | 3.268 | 11.925 | 8.861 | 6.480 | 1.630 |
| 9% | 6.499 | 4.549 | 3.387 | 4.421 | 5.849 | 4.538 | 3.279 | 12.056 | 8.861 | 6.502 | 1.648 |
| 10% | 6.571 | 4.549 | 3.398 | 4.421 | 5.914 | 4.538 | 3.290 | 12.190 | 8.861 | 6.523 | 1.667 |
| **Subsidy rate** | **H1** | **C1** | **U1** | **L** | **H2** | **C2** | **U2** | **H1+βH2** | **C1+βC2** | **U1+βU2** | **Ph short run** |
| 0% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| 1% | 1.01% | 0.00% | 0.31% | 0.00% | 1.01% | 0.00% | 0.32% | 1.01% | 0.00% | 0.31% | 1.01% |
| 2% | 2.04% | 0.00% | 0.61% | 0.00% | 2.04% | 0.00% | 0.63% | 2.04% | 0.00% | 0.62% | 2.04% |
| 3% | 3.09% | 0.00% | 0.93% | 0.00% | 3.09% | 0.00% | 0.96% | 3.09% | 0.00% | 0.94% | 3.09% |
| 4% | 4.17% | 0.00% | 1.24% | 0.00% | 4.17% | 0.00% | 1.28% | 4.17% | 0.00% | 1.26% | 4.17% |
| 5% | 5.26% | 0.00% | 1.56% | 0.00% | 5.26% | 0.00% | 1.61% | 5.26% | 0.00% | 1.58% | 5.26% |
| 6% | 6.38% | 0.00% | 1.88% | 0.00% | 6.38% | 0.00% | 1.94% | 6.38% | 0.00% | 1.91% | 6.38% |
| 7% | 7.53% | 0.00% | 2.20% | 0.00% | 7.53% | 0.00% | 2.28% | 7.53% | 0.00% | 2.24% | 7.53% |
| 8% | 8.70% | 0.00% | 2.53% | 0.00% | 8.70% | 0.00% | 2.62% | 8.70% | 0.00% | 2.57% | 8.70% |
| 9% | 9.89% | 0.00% | 2.86% | 0.00% | 9.89% | 0.00% | 2.96% | 9.89% | 0.00% | 2.91% | 9.89% |
| 10% | 11.11% | 0.00% | 3.20% | 0.00% | 11.11% | 0.00% | 3.31% | 11.11% | 0.00% | 3.25% | 11.11% |

Source: Authors' calculations.

### 2.2.1.3 Mortgage Interest Rate Reduction

Table 2.7 indicates that when the mortgage interest rate is lowered, demand for housing units and other consumption goods in period 1 increases. Figures 2.3 and 2.4 shows the percentage change of housing demand, consumption goods demand, and utility in period 1 and 2 respectively, and Figure 2.5 demonstrates the percentage change of those aggregated changes discounted by β. When the interest rate falls from 5% to 4% (a 1 percentage point decrease from the status quo), the housing units and other goods demanded increase by 0.47%, resulting in a 0.29% utility increase. The 1 percentage point reduction in the mortgage interest rate leads to 1.44% greater use of mortgages. In our parameter settings, the increase in demand for housing units and consumption goods exhibits a linear relation to the percentage point change in the mortgage interest rate (Figure 2.3).

**Figure 2.3: Numerical Simulation of Mortgage Interest Rate at Period 1**



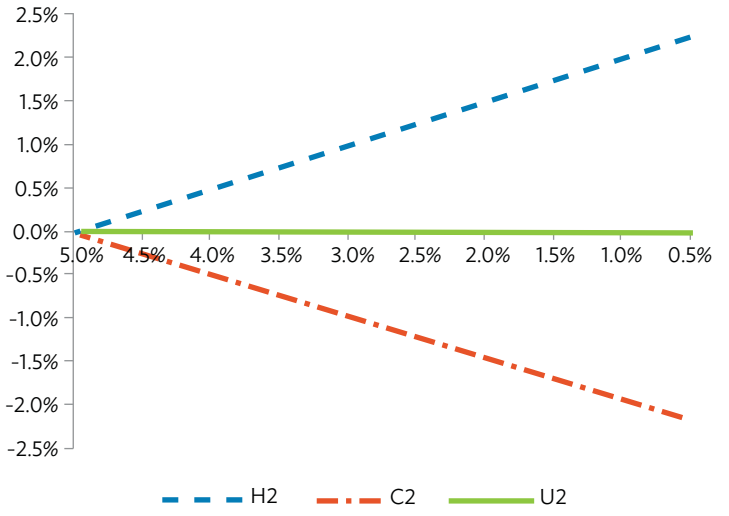

Source: Authors.

## Table 2.7: Numerical Simulation of Mortgage Interest Rate

| r | H1 | C1 | U1 | L | H2 | C2 | U2 | H1+βH2 | C1+βC2 | U1+βU2 | Ph short run |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.0% | 5.914 | 4.549 | 3.292 | 4.421 | 5.323 | 4.538 | 3.185 | 10.971 | 8.861 | 6.318 | 1.500 |
| 4.5% | 5.928 | 4.560 | 3.297 | 4.453 | 5.335 | 4.527 | 3.184 | 10.997 | 8.861 | 6.322 | 1.504 |
| 4.0% | 5.942 | 4.571 | 3.302 | 4.484 | 5.348 | 4.516 | 3.184 | 11.023 | 8.861 | 6.327 | 1.507 |
| 3.5% | 5.957 | 4.582 | 3.307 | 4.517 | 5.361 | 4.505 | 3.184 | 11.049 | 8.862 | 6.332 | 1.511 |
| 3.0% | 5.971 | 4.593 | 3.311 | 4.549 | 5.374 | 4.494 | 3.184 | 11.076 | 8.862 | 6.337 | 1.514 |
| 2.5% | 5.985 | 4.604 | 3.316 | 4.582 | 5.387 | 4.483 | 3.184 | 11.103 | 8.863 | 6.341 | 1.518 |
| 2.0% | 6.000 | 4.615 | 3.321 | 4.615 | 5.400 | 4.472 | 3.184 | 11.130 | 8.864 | 6.346 | 1.522 |
| 1.5% | 6.015 | 4.627 | 3.326 | 4.649 | 5.413 | 4.461 | 3.184 | 11.157 | 8.865 | 6.351 | 1.525 |
| 1.0% | 6.030 | 4.638 | 3.331 | 4.683 | 5.427 | 4.450 | 3.184 | 11.185 | 8.866 | 6.356 | 1.529 |
| 0.5% | 6.045 | 4.650 | 3.336 | 4.717 | 5.440 | 4.439 | 3.184 | 11.213 | 8.867 | 6.361 | 1.533 |
| r | H1 | C1 | U1 | L | H2 | C2 | U2 | H1+βH2 | C1+βC2 | U1+βU2 | Ph short run |
| 5.0% | 0.00% | 0.00% | 0.00% | 0.000% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| 4.5% | 0.24% | 0.24% | 0.14% | 0.716% | 0.24% | -0.24% | 0.00% | 0.24% | 0.00% | 0.07% | 0.24% |
| 4.0% | 0.47% | 0.47% | 0.29% | 1.438% | 0.47% | -0.48% | 0.00% | 0.47% | 0.01% | 0.15% | 0.47% |
| 3.5% | 0.71% | 0.71% | 0.43% | 2.168% | 0.71% | -0.72% | 0.00% | 0.71% | 0.01% | 0.22% | 0.71% |
| 3.0% | 0.96% | 0.96% | 0.58% | 2.905% | 0.96% | -0.97% | -0.01% | 0.96% | 0.02% | 0.30% | 0.96% |
| 2.5% | 1.20% | 1.20% | 0.73% | 3.649% | 1.20% | -1.21% | -0.01% | 1.20% | 0.03% | 0.38% | 1.20% |
| 2.0% | 1.45% | 1.45% | 0.87% | 4.400% | 1.45% | -1.45% | -0.01% | 1.45% | 0.04% | 0.45% | 1.45% |
| 1.5% | 1.70% | 1.70% | 1.02% | 5.158% | 1.70% | -1.69% | -0.01% | 1.70% | 0.05% | 0.53% | 1.70% |
| 1.0% | 1.95% | 1.95% | 1.17% | 5.924% | 1.95% | -1.93% | -0.01% | 1.95% | 0.06% | 0.61% | 1.95% |
| 0.5% | 2.21% | 2.21% | 1.33% | 6.698% | 2.21% | -2.17% | 0.00% | 2.21% | 0.08% | 0.69% | 2.21% |

Source: Authors' calculations.

**Figure 2.4: Numerical Simulation of Mortgage Interest Rate at Period 2**



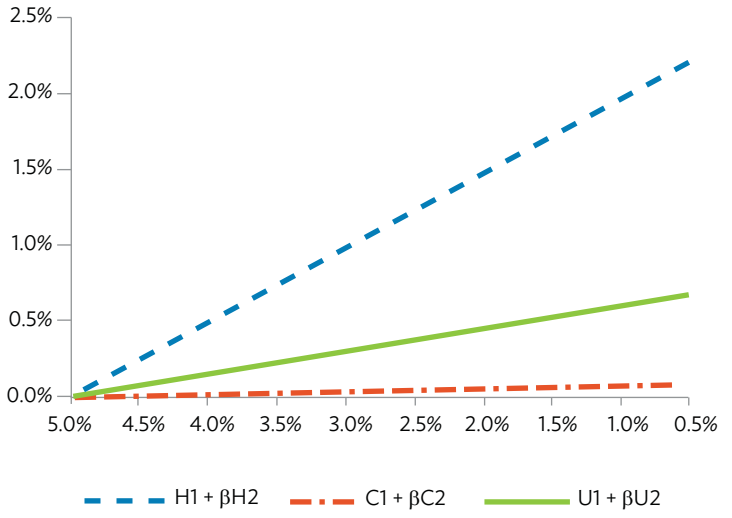

Source: Authors.

While housing consumption in period 2 increases at the same rate as in period 1, the change in the demand for consumption goods is negative (Figure 2.5). In case of a 1 percentage point decrease in the interest rate from 5%, housing demand increases by 0.47%, whereas consumption of other goods falls by 0.48%. Why? The change in the utility in the second period is close to zero, irrespective of the decrease in mortgage interest rates. However, the lifetime utility becomes larger compared with the status quo (Figure 2.5). For example, a 4 percentage point decrease in the interest rate leads to a 0.61% increase in lifetime utility. As observed above, the demand increase pushes up the housing price in the short run at the same rate.

#### 2.2.1.4 Mortgage Interest Rate Deduction from Income Tax

When mortgage interest deduction from income tax is introduced, income in the second period increases by $rt_h L^*$ (Table 2.8). The mortgage

**Figure 2.5: Numerical Simulation of Mortgage Interest Rate**




Source: Authors.

interest deduction increases demand for housing and consumption goods equally, by 0.24%, in the first period. It increases utility by 0.14% and mortgage use by 0.72%. In period 2, however, demand for consumption goods falls by 0.24%. In contrast, demand for housing increases by 0.24% compared with the status quo.[1] Overall, demand for housing increases by 0.24%, whereas demand for consumption goods stays the same. Lifetime utility increases by 0.07%. We estimate a 0.24% increase in the housing price after the introduction of the deduction system.

[1] As a result, utility in the second period marginally falls, from 3.18451 to 3.18445.

**Table 2.8: Effect of Mortgage Interest Deduction from Income Tax**

| | H1 | C1 | U1 | L | H2 | C2 | U2 | H1+βH2 | C1+βC2 | U1+βU2 | Ph short run |
|---|---|---|---|---|---|---|---|---|---|---|---|
| status quo | 5.914 | 4.549 | 3.292 | 4.421 | 5.323 | 4.538 | 3.185 | 10.971 | 8.861 | 6.318 | 1.500 |
| MID | 5.928 | 4.560 | 3.297 | 4.453 | 5.335 | 4.527 | 3.184 | 10.997 | 8.861 | 6.322 | 1.504 |
| | H1 | C1 | U1 | L | H2 | C2 | U2 | H1+βH2 | C1+βC2 | U1+βU2 | Ph short run |
| status quo | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| MID | 0.24% | 0.24% | 0.14% | 0.72% | 0.24% | -0.24% | 0.00% | 0.24% | 0.00% | 0.07% | 0.24% |

MID = mortgage interest deduction.

Source: Authors' calculations.

### 2.2.1.5 Technology Improvement

In our model, technology improvements translate into a lower depreciation rate. In the following numerical example, we will only look at the demand-side effects of a lower depreciation rate and ignore possible supply-side effects. As Table 2.9 shows, quality improvements do not affect demand or utility in the first period because the housing demand in the first period is independent of $\delta$, but it increases housing consumption in period 2, resulting in higher utility in period 2. A 2% decrease in the depreciation rate leads to a 2.22% increase in the housing demand in period 2. Utility responds to a fall in the depreciation rate in a concave way, i.e., the marginal increase in utility becomes smaller as the depreciation rate decreases.

When the depreciation rate is 2 percentage point lower, overall demand for housing units increases by 1.02%. Lifetime utility also shows a concave relation with the depreciation rate reduction (Figure 2.8). When the depreciation rate changes from 10% to 4% (a 6 percentage point decrease from the status quo), lifetime utility increases by 0.97%. In the short run, the housing price does not change.[2]

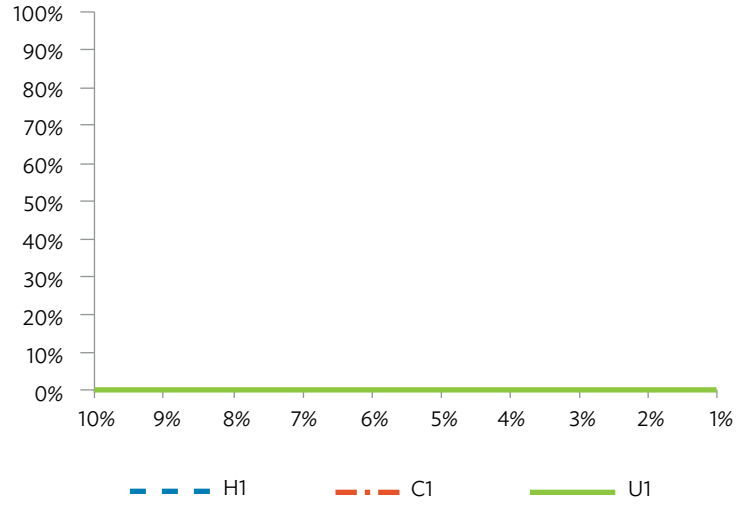
[2] This is because we only look at the changes of demand of the representative household. Actually, due to the demand increase in the second period, the aggregated demand in the market pushes up the price in the short run, because the market is composed of numerous households with overlapping generations. Moreover, the housing price will decrease in the long run because of the supply-side effect of this policy, as discussed in the last chapter.

## Table 2.9: Numerical Simulation of Technology Improvement

| δ | H1 | C1 | U1 | L | H2 | C2 | U2 | H1+βH2 | C1+βC2 | U1+βU2 | Ph short run |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10% | 5.914 | 4.549 | 3.292 | 4.421 | 5.323 | 4.538 | 3.185 | 10.971 | 8.861 | 6.318 | 1.500 |
| 9% | 5.914 | 4.549 | 3.292 | 4.421 | 5.382 | 4.538 | 3.196 | 11.027 | 8.861 | 6.328 | 1.500 |
| 8% | 5.914 | 4.549 | 3.292 | 4.421 | 5.441 | 4.538 | 3.206 | 11.083 | 8.861 | 6.339 | 1.500 |
| 7% | 5.914 | 4.549 | 3.292 | 4.421 | 5.500 | 4.538 | 3.217 | 11.140 | 8.861 | 6.349 | 1.500 |
| 6% | 5.914 | 4.549 | 3.292 | 4.421 | 5.559 | 4.538 | 3.228 | 11.196 | 8.861 | 6.359 | 1.500 |
| 5% | 5.914 | 4.549 | 3.292 | 4.421 | 5.619 | 4.538 | 3.239 | 11.252 | 8.861 | 6.369 | 1.500 |
| 4% | 5.914 | 4.549 | 3.292 | 4.421 | 5.678 | 4.538 | 3.249 | 11.308 | 8.861 | 6.379 | 1.500 |
| 3% | 5.914 | 4.549 | 3.292 | 4.421 | 5.737 | 4.538 | 3.259 | 11.364 | 8.861 | 6.389 | 1.500 |
| 2% | 5.914 | 4.549 | 3.292 | 4.421 | 5.796 | 4.538 | 3.270 | 11.420 | 8.861 | 6.399 | 1.500 |
| 1% | 5.914 | 4.549 | 3.292 | 4.421 | 5.855 | 4.538 | 3.280 | 11.477 | 8.861 | 6.408 | 1.500 |
| δ | H1 | C1 | U1 | L | H2 | C2 | U2 | H1+βH2 | C1+βC2 | U1+βU2 | Ph short run |
| 10% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| 9% | 0.00% | 0.00% | 0.00% | 0.00% | 1.11% | 0.00% | 0.35% | 0.51% | 0.00% | 0.17% | 0.00% |
| 8% | 0.00% | 0.00% | 0.00% | 0.00% | 2.22% | 0.00% | 0.69% | 1.02% | 0.00% | 0.33% | 0.00% |
| 7% | 0.00% | 0.00% | 0.00% | 0.00% | 3.33% | 0.00% | 1.03% | 1.54% | 0.00% | 0.49% | 0.00% |
| 6% | 0.00% | 0.00% | 0.00% | 0.00% | 4.44% | 0.00% | 1.37% | 2.05% | 0.00% | 0.65% | 0.00% |
| 5% | 0.00% | 0.00% | 0.00% | 0.00% | 5.56% | 0.00% | 1.70% | 2.56% | 0.00% | 0.81% | 0.00% |
| 4% | 0.00% | 0.00% | 0.00% | 0.00% | 6.67% | 0.00% | 2.03% | 3.07% | 0.00% | 0.97% | 0.00% |
| 3% | 0.00% | 0.00% | 0.00% | 0.00% | 7.78% | 0.00% | 2.35% | 3.58% | 0.00% | 1.13% | 0.00% |
| 2% | 0.00% | 0.00% | 0.00% | 0.00% | 8.89% | 0.00% | 2.67% | 4.10% | 0.00% | 1.28% | 0.00% |
| 1% | 0.00% | 0.00% | 0.00% | 0.00% | 10.00% | 0.00% | 2.99% | 4.61% | 0.00% | 1.43% | 0.00% |

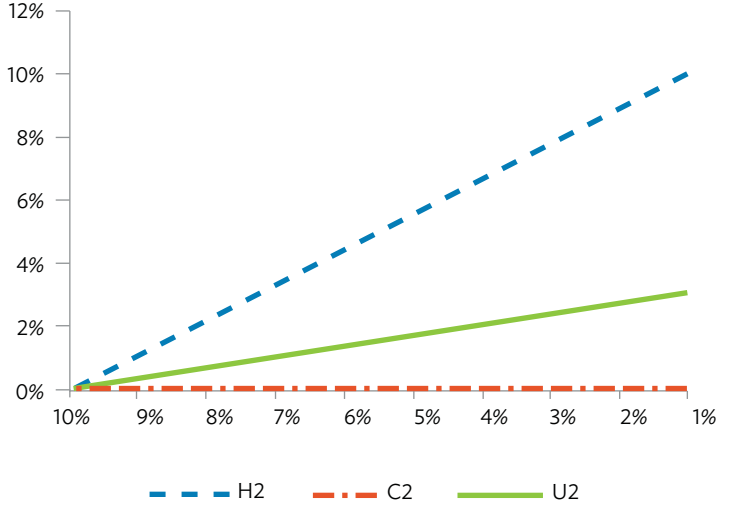
Source: Authors' calculations.

**Figure 2.6: Numerical Simulation of Technology Improvement in Period 1**



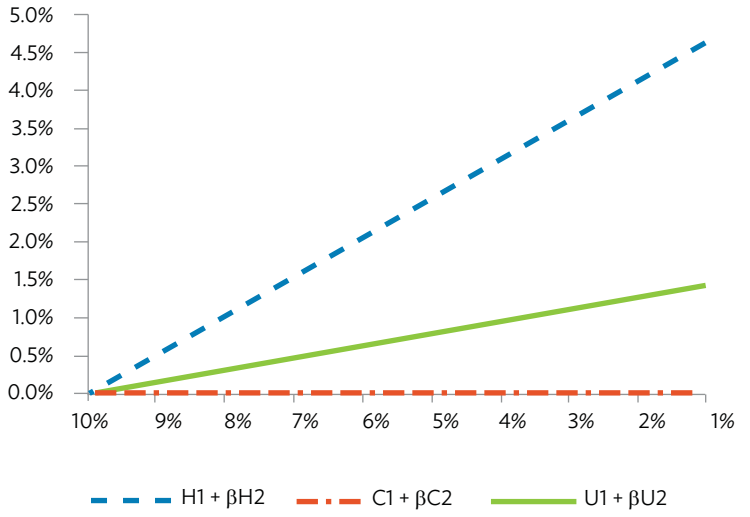

Source: Authors.

**Figure 2.7: Numerical Simulation of Technology Improvement in Period 2**




Source: Authors.

**Figure 2.8: Numerical Simulation of Technology Improvement**




Source: Authors.

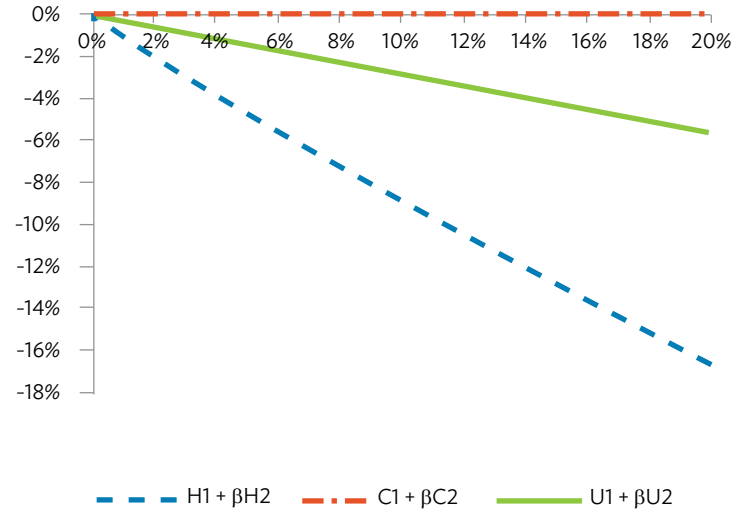
### 2.2.1.6 Property Tax on the Purchase of Housing

The introduction of a property tax lowers demand for housing units (Table 2.10). However, it does not affect demand for consumption goods, because the substitution effect and the income effect exactly offset each other (Figure 2.9). The decrease in demand for housing is less than proportional to the change in the rate of the property tax (Figure 2.9). In other words, the marginal decrease in housing demand becomes smaller as the tax rate becomes higher. Similarly, utility is decreasing, but its marginal change becomes smaller as the interest rate of the tax becomes higher. For example, if the rate of property tax changes from 0% to 2% (a 2 percentage point change from the status quo), housing demand and utility decrease by 1.96% and 0.60%, respectively. However, when it changes from 2% to 4% (the same 2 percentage point change), they decrease by 1.89% and by 0.59%, respectively.

In the second period, demand for housing units decreases at the same rate as in the first period in response to the increase in the tax rate. The tax does not affect consumption goods for the same reason mentioned above. The percentage point loss of utility in period 2 is bigger than that in period

1. Therefore, the change rate of lifetime utility lies between the change rate in the first period and that in the second period. The percentage point change of overall demand for housing units shows the same value as in period 1 and in period 2. Property tax lowers the short-run housing price at the same rate as the fall in housing demand.

**Figure 2.9: Numerical Simulation of Property Tax Interest**




Source: Authors.

## 2.2.2 Demand Policies for Rental Housing

### 2.2.2.1 Subsidy for Tenants

A unit of subsidy increases demand for rental houses and for consumption goods equally by 5.50% (Table 2.11). Because of the diminishing marginal utility, the marginal response of utility to the additional subsidy becomes smaller and smaller as the amount of subsidy increases (Figure 2.10). The second period shows almost the same percentage increase, but the change in utility is slightly bigger than that in the first period. In both periods, the housing price surges in the short run to equalize the increased housing demand. Lifetime utility follows the same concave trend and its increase is between that in the first period and that in the second period.

## Table 2.10: Numerical Simulation of Property Tax Interest

| ty | H1 | C1 | U1 | L | H2 | C2 | U2 | H1+βH2 | C1+βC2 | U1+βU2 | Ph short run |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0% | 5.914 | 4.549 | 3.292 | 4.421 | 5.323 | 4.538 | 3.185 | 10.971 | 8.861 | 6.318 | 1.500 |
| 2% | 5.798 | 4.549 | 3.273 | 4.421 | 5.218 | 4.538 | 3.165 | 10.756 | 8.861 | 6.279 | 1.471 |
| 4% | 5.687 | 4.549 | 3.253 | 4.421 | 5.118 | 4.538 | 3.145 | 10.549 | 8.861 | 6.241 | 1.442 |
| 6% | 5.580 | 4.549 | 3.234 | 4.421 | 5.022 | 4.538 | 3.126 | 10.350 | 8.861 | 6.204 | 1.415 |
| 8% | 5.476 | 4.549 | 3.215 | 4.421 | 4.929 | 4.538 | 3.108 | 10.158 | 8.861 | 6.168 | 1.389 |
| 10% | 5.377 | 4.549 | 3.197 | 4.421 | 4.839 | 4.538 | 3.089 | 9.974 | 8.861 | 6.132 | 1.364 |
| 12% | 5.281 | 4.549 | 3.179 | 4.421 | 4.753 | 4.538 | 3.071 | 9.796 | 8.861 | 6.097 | 1.339 |
| 14% | 5.188 | 4.549 | 3.161 | 4.421 | 4.669 | 4.538 | 3.053 | 9.624 | 8.861 | 6.062 | 1.316 |
| 16% | 5.099 | 4.549 | 3.144 | 4.421 | 4.589 | 4.538 | 3.036 | 9.458 | 8.861 | 6.028 | 1.293 |
| 18% | 5.012 | 4.549 | 3.127 | 4.421 | 4.511 | 4.538 | 3.019 | 9.297 | 8.861 | 5.995 | 1.271 |
| 20% | 4.929 | 4.549 | 3.110 | 4.421 | 4.436 | 4.538 | 3.002 | 9.143 | 8.861 | 5.962 | 1.250 |
| ty | H1 | C1 | U1 | L | H2 | C2 | U2 | H1+βH2 | C1+βC2 | U1+βU2 | Ph short run |
| 0% | 0.00% | 0.00% | 0.000% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| 2% | -1.96% | 0.00% | -0.601% | 0.00% | -1.96% | 0.00% | -0.62% | -1.96% | 0.00% | -0.61% | -1.96% |
| 4% | -3.85% | 0.00% | -1.191% | 0.00% | -3.85% | 0.00% | -1.23% | -3.85% | 0.00% | -1.21% | -3.85% |
| 6% | -5.66% | 0.00% | -1.770% | 0.00% | -5.66% | 0.00% | -1.83% | -5.66% | 0.00% | -1.80% | -5.66% |
| 8% | -7.41% | 0.00% | -2.338% | 0.00% | -7.41% | 0.00% | -2.42% | -7.41% | 0.00% | -2.38% | -7.41% |
| 10% | -9.09% | 0.00% | -2.895% | 0.00% | -9.09% | 0.00% | -2.99% | -9.09% | 0.00% | -2.94% | -9.09% |
| 12% | -10.71% | 0.00% | -3.442% | 0.00% | -10.71% | 0.00% | -3.56% | -10.71% | 0.00% | -3.50% | -10.71% |
| 14% | -12.28% | 0.00% | -3.980% | 0.00% | -12.28% | 0.00% | -4.11% | -12.28% | 0.00% | -4.04% | -12.28% |
| 16% | -13.79% | 0.00% | -4.508% | 0.00% | -13.79% | 0.00% | -4.66% | -13.79% | 0.00% | -4.58% | -13.79% |
| 18% | -15.25% | 0.00% | -5.027% | 0.00% | -15.25% | 0.00% | -5.20% | -15.25% | 0.00% | -5.11% | -15.25% |
| 20% | -16.67% | 0.00% | -5.538% | 0.00% | -16.67% | 0.00% | -5.73% | -16.67% | 0.00% | -5.63% | -16.67% |

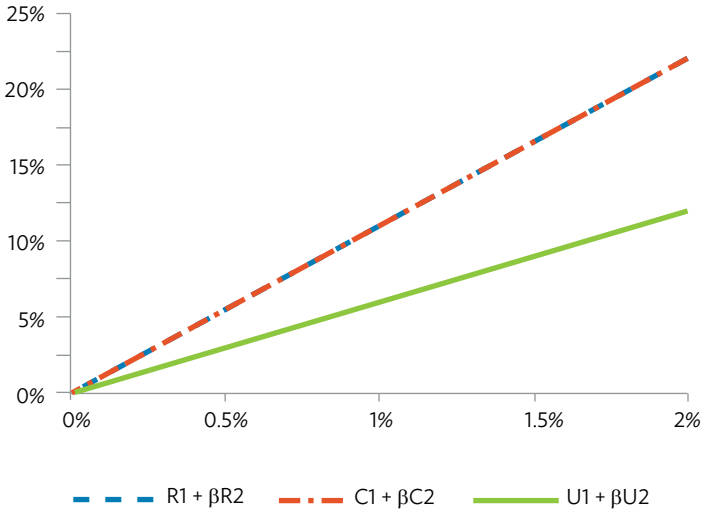
Source: Authors' calculations.

## Table 2.11: Numerical Simulation of Cash Subsidy for Rental Houses

| G1 | G2 | R1 | C1 | U1 | Pr 1 short run | R2 | C2 | U2 | Pr 2 short run | R1+βR2 | C1+βC2 | U1+βU2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 6.066 | 4.549 | 3.318 | 0.750 | 6.051 | 4.538 | 3.313 | 0.750 | 11.814 | 8.861 | 6.465 |
| 0.25 | 0.25 | 6.233 | 4.675 | 3.372 | 0.771 | 6.217 | 4.663 | 3.367 | 0.771 | 12.139 | 9.104 | 6.571 |
| 0.5 | 0.5 | 6.400 | 4.800 | 3.425 | 0.791 | 6.384 | 4.788 | 3.420 | 0.791 | 12.464 | 9.348 | 6.674 |
| 0.75 | 0.75 | 6.567 | 4.925 | 3.476 | 0.812 | 6.550 | 4.913 | 3.471 | 0.812 | 12.789 | 9.592 | 6.774 |
| 1 | 1 | 6.733 | 5.050 | 3.526 | 0.833 | 6.717 | 5.037 | 3.521 | 0.833 | 13.114 | 9.836 | 6.872 |
| 1.25 | 1.25 | 6.900 | 5.175 | 3.575 | 0.853 | 6.883 | 5.162 | 3.570 | 0.853 | 13.439 | 10.079 | 6.967 |
| 1.5 | 1.5 | 7.067 | 5.300 | 3.623 | 0.874 | 7.049 | 5.287 | 3.618 | 0.874 | 13.764 | 10.323 | 7.061 |
| 1.75 | 1.75 | 7.234 | 5.426 | 3.670 | 0.894 | 7.216 | 5.412 | 3.665 | 0.894 | 14.089 | 10.567 | 7.152 |
| 2 | 2 | 7.401 | 5.551 | 3.716 | 0.915 | 7.382 | 5.537 | 3.711 | 0.915 | 14.414 | 10.811 | 7.241 |
| 2.25 | 2.25 | 7.568 | 5.676 | 3.760 | 0.936 | 7.549 | 5.662 | 3.755 | 0.936 | 14.739 | 11.054 | 7.327 |
| G1 | G2 | R1 | C1 | U1 | Pr 1 short run | R2 | C2 | U2 | Pr 2 short run | R1+βR2 | C1+βC2 | U1+βU2 |
| 0 | 0 | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| 0.25 | 0.25 | 2.75% | 2.75% | 1.64% | 2.75% | 2.75% | 2.75% | 1.64% | 2.75% | 2.75% | 2.75% | 1.64% |
| 0.5 | 0.5 | 5.50% | 5.50% | 3.23% | 5.50% | 5.50% | 5.50% | 3.23% | 5.50% | 5.50% | 5.50% | 3.23% |
| 0.75 | 0.75 | 8.25% | 8.25% | 4.78% | 8.25% | 8.25% | 8.25% | 4.79% | 8.25% | 8.25% | 8.25% | 4.78% |
| 1 | 1 | 11.00% | 11.00% | 6.29% | 11.00% | 11.00% | 11.00% | 6.30% | 11.00% | 11.00% | 11.00% | 6.30% |
| 1.25 | 1.25 | 13.75% | 13.75% | 7.77% | 13.75% | 13.75% | 13.75% | 7.78% | 13.75% | 13.75% | 13.75% | 7.77% |
| 1.5 | 1.5 | 16.51% | 16.51% | 9.21% | 16.51% | 16.51% | 16.51% | 9.22% | 16.51% | 16.51% | 16.51% | 9.22% |
| 1.75 | 1.75 | 19.26% | 19.26% | 10.62% | 19.26% | 19.26% | 19.26% | 10.63% | 19.26% | 19.26% | 19.26% | 10.62% |
| 2 | 2 | 22.01% | 22.01% | 11.99% | 22.01% | 22.01% | 22.01% | 12.01% | 22.01% | 22.01% | 22.01% | 12.00% |
| 2.25 | 2.25 | 24.76% | 24.76% | 13.34% | 24.76% | 24.76% | 24.76% | 13.36% | 24.76% | 24.76% | 24.76% | 13.34% |

Source: Authors' calculations.

**Figure 2.10: Numerical Simulation of Cash Subsidy for Rental Houses**




Source: Authors.

### 2.2.2.2 Rental Subsidy

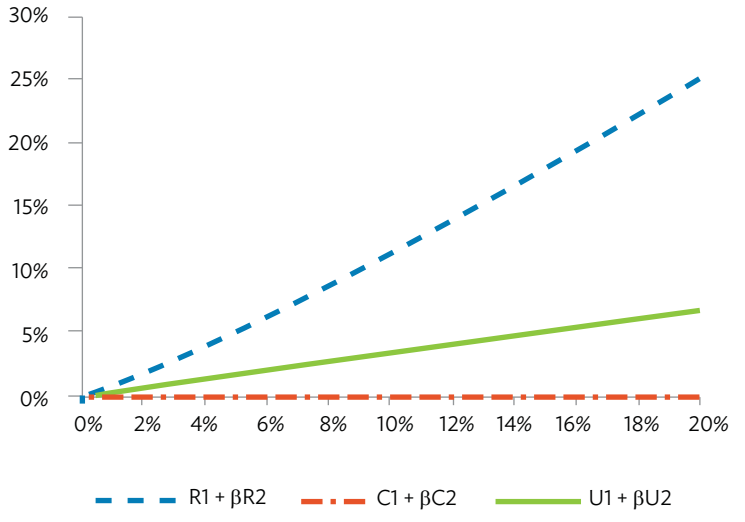
In case the household receives a rental subsidy in both periods, the household increases its housing consumption in both periods (Table 2.12). In contrast to housing demand, demand for consumption goods stays the same in both periods, because the substitution effect exactly offsets the income effect under the assumption, $\theta = \omega = 1$. The utility also increases in response to the introduction of the rental subsidy. Since both periods show the same increase, lifetime demand and utility follow the same convex response (Figure 2.11). As in the other cases, the short-run rental price in both periods increases in response to the housing demand increase.

## Table 2.12: Numerical Simulation of Rent Aid

| Subsidy rate | R1 | C1 | U1 | Pr 1 short run | R2 | C2 | U2 | Pr 2 short run | R1+βR2 | C1+βC2 | U1+βU2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0% | 6.066 | 4.549 | 3.318 | 0.750 | 6.051 | 4.538 | 3.313 | 0.750 | 12.117 | 9.088 | 6.465 |
| 2% | 6.190 | 4.549 | 3.338 | 0.765 | 6.174 | 4.538 | 3.333 | 0.765 | 12.364 | 9.088 | 6.504 |
| 4% | 6.319 | 4.549 | 3.359 | 0.781 | 6.303 | 4.538 | 3.354 | 0.781 | 12.622 | 9.088 | 6.544 |
| 6% | 6.453 | 4.549 | 3.380 | 0.798 | 6.437 | 4.538 | 3.375 | 0.798 | 12.890 | 9.088 | 6.585 |
| 8% | 6.593 | 4.549 | 3.401 | 0.815 | 6.577 | 4.538 | 3.396 | 0.815 | 13.170 | 9.088 | 6.627 |
| 10% | 6.740 | 4.549 | 3.423 | 0.833 | 6.723 | 4.538 | 3.418 | 0.833 | 13.463 | 9.088 | 6.670 |
| 12% | 6.893 | 4.549 | 3.446 | 0.852 | 6.876 | 4.538 | 3.441 | 0.852 | 13.769 | 9.088 | 6.714 |
| 14% | 7.053 | 4.549 | 3.469 | 0.872 | 7.036 | 4.538 | 3.464 | 0.872 | 14.089 | 9.088 | 6.759 |
| 16% | 7.221 | 4.549 | 3.492 | 0.893 | 7.203 | 4.538 | 3.487 | 0.893 | 14.425 | 9.088 | 6.805 |
| 18% | 7.397 | 4.549 | 3.516 | 0.915 | 7.379 | 4.538 | 3.511 | 0.915 | 14.776 | 9.088 | 6.852 |
| 20% | 7.582 | 4.549 | 3.541 | 0.938 | 7.563 | 4.538 | 3.536 | 0.938 | 15.146 | 9.088 | 6.900 |
| **Subsidy rate** | **R1** | **C1** | **U1** | **Pr 1 short run** | **R2** | **C2** | **U2** | **Pr 2 short run** | **R1+βR2** | **C1+βC2** | **U1+βU2** |
| 0% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| 2% | 2.04% | 0.00% | 0.61% | 2.04% | 2.04% | 0.00% | 0.61% | 2.04% | 2.04% | 0.00% | 0.61% |
| 4% | 4.17% | 0.00% | 1.23% | 4.17% | 4.17% | 0.00% | 1.23% | 4.17% | 4.17% | 0.00% | 1.23% |
| 6% | 6.38% | 0.00% | 1.87% | 6.38% | 6.38% | 0.00% | 1.87% | 6.38% | 6.38% | 0.00% | 1.87% |
| 8% | 8.70% | 0.00% | 2.51% | 8.70% | 8.70% | 0.00% | 2.52% | 8.70% | 8.70% | 0.00% | 2.52% |
| 10% | 11.11% | 0.00% | 3.18% | 11.11% | 11.11% | 0.00% | 3.18% | 11.11% | 11.11% | 0.00% | 3.18% |
| 12% | 13.64% | 0.00% | 3.85% | 13.64% | 13.64% | 0.00% | 3.86% | 13.64% | 13.64% | 0.00% | 3.86% |
| 14% | 16.28% | 0.00% | 4.55% | 16.28% | 16.28% | 0.00% | 4.55% | 16.28% | 16.28% | 0.00% | 4.55% |
| 16% | 19.05% | 0.00% | 5.26% | 19.05% | 19.05% | 0.00% | 5.26% | 19.05% | 19.05% | 0.00% | 5.26% |
| 18% | 21.95% | 0.00% | 5.98% | 21.95% | 21.95% | 0.00% | 5.99% | 21.95% | 21.95% | 0.00% | 5.99% |
| 20% | 25.00% | 0.00% | 6.73% | 25.00% | 25.00% | 0.00% | 6.74% | 25.00% | 25.00% | 0.00% | 6.73% |

Source: Authors' calculations.

**Figure 2.11: Numerical Simulation of Rent Aid**




Source: Authors.

## 2.2.3 Comparison of Housing Policies

Suppose that the government decides to intervene in the housing market by providing a subsidy. One of the most important questions is about the effectiveness of its intervention. In other words, what is the increase in households' welfare as a result of a particular policy intervention? As our main interest lies in those policies intended to make housing more accessible for low-income households, we focus solely on policies for stimulating housing demand (and not on policies that suppress it).

We make a comparison based on an analysis of cost-effectiveness. The costs of a policy are defined as the discounted government expenditure or the discounted revenue loss of the government over the two periods. Table 2.13 shows the details of how the policy costs are calculated. For instance, the policy cost of a lower mortgage interest rate can be interpreted in two ways. First, the lower interest rate lessens the revenue of the government and the lost revenue is measured as policy

cost. The second interpretation is that the government compensates the private finance sectors for its losses caused by offering a lower mortgage interest rate compared with the market interest rate. The change in discounted lifetime utility for each household measures the benefit of each housing policy.

**Table 2.13: Policy Cost for Housing Demand Policies**

| Policy | Policy Cost (discounted) |
|---|---|
| Cash subsidy for potential homeowners | $G_1$ |
| Housing subsidy | (subsidy rate)$P_h H_1$ |
| Mortgage interest rate reduction | $\beta r L^*$ |
| Mortgage interest deduction from income tax | $\beta r t_y L^*$ |
| Cash subsidy for tenants | $G_1 + \beta\ G_2$ |
| Rent aid | $(subsidy\ rate) P_r R_1 + \beta\ (subsidy\ rate) P_r R_2$ |

Source: Authors.

Table 2.14 shows the summary of the numerical analysis and the ratio of the increase in lifetime utility and the policy cost that measures the policy effectiveness. To compare the effectiveness, this ratio between benefits and costs are used as a criterion for comparison. However, since our utility function is nonlinear, the marginal benefit per additional one-unit cost is not independent of the level of the cost. We therefore need to hold the policy costs constant to be able to properly compare the effectiveness of each policy. The technology improvement will not be considered because we assume that it does not incur any additional cost. Therefore, it is not suitable for the cost-effectiveness analysis.

In Table 2.15, we compare the effectiveness of four housing policies that have the same cost (0.02215). The second last column of Table 2.15 shows the absolute change in utility after the introduction of the new policy. The final column lists the percentage change in utility compared with the status quo. Comparing the effectiveness on the basis of the size of the increase in utility, Table 2.15 indicates that the mortgage interest reduction policy yields the highest return in terms of welfare increase. The mortgage interest deduction has the second-highest policy effectiveness. As was discussed in section 1.5.1.2, housing subsidy is less efficient than cash subsidy when the amount of the subsidy necessary for them is the same. This theoretical prediction is confirmed in our numerical simulation. A housing subsidy thus becomes the least effective policy in our table.

## Table 2.14: Benefits and Costs of the Demand Policy

| | Policy | Policy Variable | Change | | ΔUtility | Policy Cost | ΔUtility/ Policy Cost |
|---|---|---|---|---|---|---|---|
| | | | From | To | | | |
| Owner-occupied house | Cash subsidy for potential homeowners | G1 | 0 | 1 | 0.214 | 1.000 | 0.214 |
| | | | | 2 | 0.417 | 2.000 | 0.208 |
| | | | | 3 | 0.609 | 3.000 | 0.203 |
| | | | | 4 | 0.793 | 4.000 | 0.198 |
| | | | | 5 | 0.968 | 5.000 | 0.194 |
| | Housing subsidy | Subsidy rate, Ph | 0% | 2% | 0.039 | 0.181 | 0.218 |
| | | | | 4% | 0.080 | 0.370 | 0.215 |
| | | | | 6% | 0.121 | 0.566 | 0.213 |
| | | | | 8% | 0.163 | 0.771 | 0.211 |
| | | | | 10% | 0.205 | 0.986 | 0.208 |
| | Mortgage interest rate reduction | r | 5% | 4% | 0.009 | 0.042 | 0.224 |
| | | | | 3% | 0.019 | 0.085 | 0.223 |
| | | | | 2% | 0.029 | 0.129 | 0.222 |
| | | | | 1% | 0.038 | 0.174 | 0.221 |
| | Mortgage interest deduction from income tax | rtyL* | - | MID | 0.005 | 0.022 | 0.209 |
| | Quality improvement | δ | | | | | |
| Rental house | Cash subsidy for tenants | G1, G2 | 0 | 0.5 | 0.209 | 0.975 | 0.214 |
| | | | | 1 | 0.407 | 1.950 | 0.209 |
| | | | | 1.5 | 0.596 | 2.925 | 0.204 |
| | | | | 2 | 0.776 | 3.900 | 0.199 |
| | | | | 2.5 | 0.948 | 4.875 | 0.194 |
| | Rent aid | Subsidy rate, Pr | 0% | 2% | 0.039 | 0.185 | 0.212 |
| | | | | 4% | 0.080 | 0.379 | 0.210 |
| | | | | 6% | 0.121 | 0.580 | 0.208 |
| | | | | 8% | 0.163 | 0.790 | 0.206 |
| | | | | 10% | 0.205 | 1.010 | 0.203 |

MID = mortgage interest deduction.

Source: Authors.

**Table 2.15: Comparison of the Effectiveness of the Demand Policy for Homeowners**

| | Policy | Policy Variable | Change | | Policy Cost | ΔUtility | ΔUtility(%) |
|---|---|---|---|---|---|---|---|
| | | | From | To | | | |
| Owner-occupied house | Cash subsidy for potential homeowners | G1 | 0 | 0.02115 | 0.02115 | 0.004646 | 0.07354% |
| | Housing subsidy | Subsidy rate | 0% | 0.23783% | 0.02115 | 0.004643 | 0.07350% |
| | Mortgage interest rate reduction | r | 5% | 4.46204% | 0.02115 | 0.005004 | 0.07921% |
| | Mortgage interest deduction from income tax | rtyL* | 0 | 0.02115 | 0.02115 | 0.004649 | 0.07360% |

Source: Authors.

Similar to the government interventions in the owner-occupied housing market, we can compare interventions in the rental housing market. Table 2.16 shows the effectiveness of two basic policy interventions in the rental housing market—cash subsidies for tenants and rent aid. In contrast to the case of owner-occupied housing, we assume that the government grants a subsidy in both periods. The policy cost is thus discounted by β. Our simulations indicate that a cash subsidy is preferable to rent aid. This result is consistent with what our microeconomic model predicted in the last chapter.

**Table 2.16: Comparison of the Effectiveness of the Demand Policy for Tenants**

| | Policy | Policy Variable | Change | | Policy Cost | ΔUtility | ΔUtility(%) |
|---|---|---|---|---|---|---|---|
| | | | From | To | | | |
| Rental house | Cash subsidy for tenants | G1 and G2 | 0 | 0.51781 | 1.00973 | 0.216116 | 3.34299% |
| | Rent aid | Subsidy rate | 0% | 10% | 1.00973 | 0.205453 | 3.17805% |

Source: Authors.

## 2.3 Conclusion

This chapter provided an estimation of the quantitative impact of selected housing policies with the two-period demand model introduced in the previous chapter. First, we simulate policy variables and estimate the effect of them on demand and utility of the representative household. Then we calculate the effectiveness of policies, which is measured by the ratio between the incremental lifetime utility and the policy cost. Since our utility function is nonlinear, the effectiveness of policy is also not nonlinear. The effectiveness is therefore dependent on sizes of policy variable changes as Table 2.16 suggests. To make discussion simple and intuitive, we compare the effectives of several policies under the same policy cost. Our numerical simulations indicate that, in terms of effectiveness, the reduction of mortgage interest rate is the most preferable of demand-side policies for owner-occupied housing and that cash subsidy is preferred to rent aid for tenants.

In this chapter, we analyzed the effects of housing policies on the demand of households but did not take account of the supply side. Therefore, we need to keep in mind that the simulation does not show the impacts on the housing level in the equilibrium point, but on the housing demand. This gap becomes prominent in the short and medium run, because demand shock is initially offset by the hike in price and housing stock grows only gradually to absorb the demand increase. However, as our supply curve becomes horizontal in the long run at the steady state price level, this numerical example shows a good approximation of the long-run equilibrium level of housing consumption under the steady state price.

We hope that the model's versatility and its numerical analysis are of great help for policy makers in understanding the economic consequences of various housing policies.

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# Part II
# Housing Policies in Advanced Economies

CHAPTER 3

# Housing Policies in the Republic of Korea

*Kyung-Hwan Kim and Miseon Park*

## 3.1 Introduction

The housing policy of the Republic of Korea shows how the government has responded to housing problems as they have emerged. In the early phase, the most pressing housing problem was a shortage caused by the increased demand for housing thanks to the country's rapid economic growth and urbanization. Beginning in the 1980s, the Republic of Korea addressed this challenge through a pragmatic approach of engaging the private sector within a regulatory framework. The government provided developable land on a large scale through public sector developers, extended financing through the National Housing Fund, implemented regulations on the production and allocation of new housing, and provided tax incentives and subsidies to suppliers and consumers where appropriate. The government also pursued the goal of one house for each household by giving priority to potential first-time homebuyers in the distribution of new housing. Investment demand for housing by owners of more than one house was considered an undesirable act of speculation responsible for sporadic house price hikes and, hence, was subjected to sanctions.

Thanks to these policies, the absolute housing shortage was resolved by the early 2000s. The quality of the housing stock and, hence, overall housing standards improved remarkably. Housing also became more affordable in general, although not necessarily in and around Seoul. In fact, soon the problem of mismatch between demand and supply arose with respect to the location, dwelling type, and house size in Seoul and other large cities. As the prices of apartments for owner occupation rose rapidly in Seoul between 2002 and 2005, especially

in popular submarkets such as Gangnam, the government mobilized various instruments to suppress demand and to stabilize housing prices.

Yet by the time the housing market stabilized, the impact of the global financial crisis took a toll. The market sentiment turned against homeownership due to the economic slump and concern about the rapid aging of the population and slowing population growth. The demand for owner-occupied housing softened, and housing prices stagnated. As more households looked for rental options instead of ownership, stabilizing the rental market became a major policy challenge. As of 2015, the level of housing market activity continues to recover, and the rental market remains tight in the Republic of Korea.

Although overall housing conditions have improved substantially over the past several decades, enhancing the housing welfare of low-income households and the disadvantaged remains a crucial issue. The first policy measure specifically targeted at these groups was a program to build 250,000 public rental units as an integral component of the Two-Million Housing Drive (TMHD), 1988–1992. A more systematic program, which started around 2000, encompassed a 10-year plan to supply 1 million public rental units. However, it has imposed a serious financial burden on the Land and Housing Corporation, the state-owned enterprise in charge of providing and managing most of the public rental units. Another policy instrument of the housing welfare policy is a housing benefit scheme. The current housing benefit was transformed from the housing component of the general welfare grant for the lowest income groups and became a stand-alone program in July 2015.

Currently, the Republic of Korea is going through some fundamental changes that affect the housing market and housing policy environment. The rate of economic growth is slowing down, income distribution is becoming more concentrated, the total fertility rate is declining, and the population is aging rapidly. In addition, the housing policy needs to consider its linkages with the wider economy and environmental sustainability. The political landscape of housing policy is becoming more complex as well.

## 3.2 Trends in Housing Conditions and Housing Affordability

### 3.2.1 Housing Quantity and Quality

Over the past 40 years or so, housing conditions in the Republic of Korea have improved enormously in terms of both quantity and quality

(Table 3.1). The housing supply ratio is the most popular measure of the housing policy of the Republic of Korea and is defined as the ratio of the number of dwellings to the number of households. This ratio has increased significantly since 1990, as the pace of the increase in housing stock exceeded that of households by a wide margin. By the early 2000s, there were as many dwelling units as households in the country, and the housing supply ratio increased past 100% thereafter.

However, originally, this definition was somewhat flawed, because the numerator used to count multidwelling structures registered under one owner as a single dwelling unit, and the denominator excluded single-member households. The definition was modified in 2005, and the 2014 figure of the new housing supply ratio was 103.5%, which is substantially lower than 118.1% that is presented in Table 3.1.

**Table 3.1: Housing Stock, Number of Households, and Housing Supply Ratio**

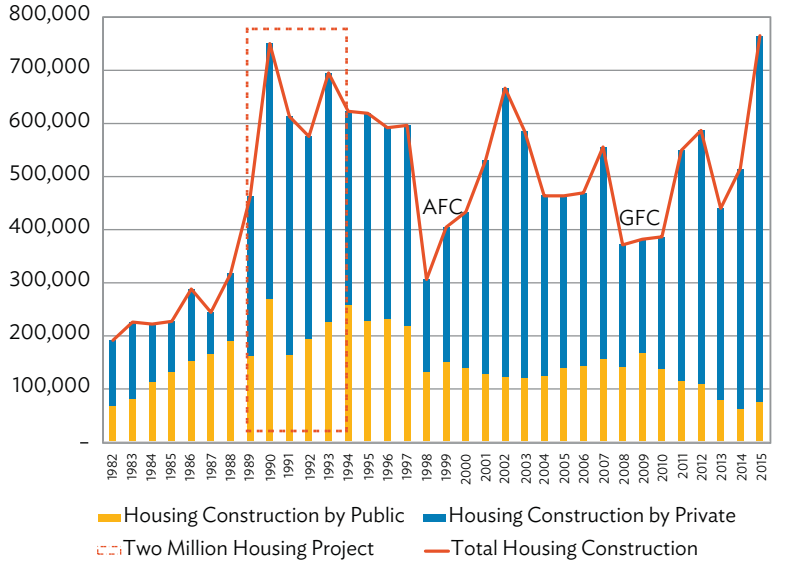
| | 1970 | 1980 | 1990 | 2000 | 2010 | 2013 | 2014 |
|---|---|---|---|---|---|---|---|
| Number of housing units ('000) ≡ A | 4,360 | 5,319 | 7,357 | 11,472 | 14,677 | 15,628 | 15,989 |
| Number of households ('000) ≡ B | 5,576 | 7,470 | 10,167 | 11,928 | 12,995 | 13,395 | 13,535 |
| Housing supply ratio (%) ≡ (A/B) × 100 | 78.2 | 71.2 | 72.4 | 96.2 | 112.9 | 116.7 | 118.1 |
| Housing supply ratio (new) (%) | | | | | 101.9 | 103.0 | 103.5 |

Source: Statistics Korea, http://kostat.go.kr; MOLIT (2015).

The rapid expansion of housing stock is attributable to the high level of new housing construction[1] due to the TMHD; annual housing construction increased from 200,000–250,000 units to over 500,000 until the 1997/98 Asian financial crisis (Figure 3.1). As the economy recovered, housing construction picked up in 2002 and settled within 400,000–500,000. New housing construction fell again due to the global financial crisis, but has subsequently bounced back.

[1] The data on new housing construction presented here are based on building permits. The data on housing starts and completions are available since 2005.

**Figure 3.1: New Housing Construction, 1982–2015**




AFC = Asian financial crisis, GFC = global financial crisis.

Source: MOLIT, http://stat.molit.go.kr

Another measure of new housing construction is the share of housing investment as a percentage of gross domestic product (GDP). Housing investment includes the value of the structure (but not the land) of new housing and renovation of existing housing. For the Republic of Korea, the long-term average for the ratio over 1970–2014 was 5.1%, which is comparable with the United States figure of about 5.0%.

Table 3.2 presents the average annual ratio of housing investment to GDP over a 5-year period since 1988. This indicator was highest during the early 1990s, took a dip due to the Asian financial crisis, bounced back during the housing boom of 2003–2007, and then fell again in the wake of the global financial crisis. This is consistent with the behavior of new housing construction.

**Table 3.2: Housing Construction and Housing Investment, 1988–2014**

| | 1988–1992 | 1993–1997 | 1998–2002 | 2003–2007 | 2008–2012 | 2013–2014 |
|---|---|---|---|---|---|---|
| Housing investment to GDP (%) | 6.5 | 6.7 | 4.6 | 5.3 | 3.9 | 4.0 |
| New housing construction (units) | 543,602 | 625,159 | 468,126 | 507,624 | 455,218 | 477,684 |
| Gross national income per capita ($) | 7,983 | 12,059 | 12,735 | 23,033 | 24,696 | 28,180 |

GDP = gross domestic product.

Source: MOLIT, http://stat.molit.go.kr; Bank of Korea, http://ecos.bok.kr

Burns and Grebler (1977) posited that there is an inverted U-shaped relationship between per capita income and the housing investment–GDP ratio, yet such a relationship is not found in the Republic of Korea. This is understandable given the fact that the level of housing market activity was influenced strongly by government policy (Kim 2004). Regarding the allocation of capital between the housing and nonhousing sectors, Kim and Suh (1991) found evidence of underinvestment in housing relative to nonhousing capital until the mid-1980s in the Republic of Korea. This underinvestment reflected the low priority given to housing in the allocation of resources.

In tandem with the expansion of the housing stock, housing quality has improved steadily since 1980. Table 3.3 presents selected indicators of housing quality since 1980. Consumption of housing space has more than doubled between 1980 and 2010, as has the number of dwellings per 1,000 inhabitants. The share of dwellings equipped with piped water, modern kitchens, modern toilets, and hot water all increased dramatically during the same period. The main reason for such improvements is that most new dwellings were apartments featuring modern facilities.

Between 1980 and 2010, the share of apartments in the total housing stock increased from 23% to 59%, whereas that of single-family detached houses decreased from 66% to 27% (Table 3.4).

Despite the remarkable improvement in the overall housing conditions over the past 4 decades, international comparison of key indicators suggests that there is room for further improvement (Table 3.5). The two most important indicators are the number of dwellings per 1,000 inhabitants and floor space per person. In both indicators, the Republic of Korea falls short of high-income countries. As for

housing tenure, the owner-occupancy rate in the Republic of Korea is substantially lower than those of France, Japan, the United Kingdom, and the United States.

**Table 3.3: Selected Housing Quality Indicators, 1980–2010**

| | 1980 | 1990 | 2000 | 2010 |
|---|---|---|---|---|
| Average number of rooms per household | 2.2 | 2.5 | 3.4 | 3.7 |
| Average floor area per person (square meters) | 10.1 | 14.3 | 20.2 | 25.0 |
| Average floor area per household (square meters) | 45.8 | 51.0 | 63.1 | 67.4 |
| Dwellings per 1,000 inhabitants | 142 | 170 | 249 | 364 |
| Share of dwellings with piped water (%) | 56.1 | 74.0 | 85.0 | 97.9 |
| Share of dwellings with modern toilets (%) | 18.4 | 51.3 | 86.9 | 97.0 |
| Share of dwellings with bathroom (%) | 22.1 | 44.1 | 89.1 | 98.4 |
| Share of dwellings with hot water (%) | 9.9 | 34.1 | 87.4 | 96.9 |

Source: Statistics Korea, http://kostat.go.kr

**Table 3.4: Change in the Composition of Housing Stock, 1980–2010** *(%)*

| | 1980 | 1990 | 2000 | 2010 |
|---|---|---|---|---|
| Single-family detached houses | 87.5 | 66.0 | 37.2 | 27.3 |
| Apartments | 7.0 | 22.8 | 47.8 | 59.0 |
| Row houses | 3.0 | 6.8 | 7.4 | 3.7 |
| Others | 2.5 | 4.4 | 7.5 | 10.0 |

Source: Statistics Korea, http://kostat.go.kr

Two points must be noted. First, the homeownership rate in the Republic of Korea was 61% in 2010 (Figure 3.4), which was about the same as that in Japan and not much lower than those in the United States, the United Kingdom, and France. The reason for the large gap between the owner-occupancy rate and homeownership rate in the Republic of Korea is the separation of residence and ownership by many renters, which is detailed in the next subsection. Second, there is neither an optimal homeownership rate nor a direct relationship between the homeownership rate and housing standards across countries.

The Republic of Korea's public rental housing sector is also smaller than those of many European countries, but the share of public rental housing as a percentage of total housing stock varies considerably across

countries depending on the approach to housing policy. There is also no universally accepted norm for this indicator.

**Table 3.5: International Comparison of Selected Housing Indicators**

| | Republic of Korea | Japan | United States | United Kingdom | France |
|---|---|---|---|---|---|
| Dwellings per 1,000 inhabitants | 364 (2010) | 451 (2008) | 421 (2010) | 441 (2010) | 532 (2010) |
| Floor space per person (square meters) | 25.0 (2010) | 37.3 (2008) | 74.3 (2010) | 44.0 (2002) | 39.9 (2006) |
| Owner-occupancy rate (%) | 54.2 (2010) | 61.1 (2008) | 65.1 (2013) | 64.6 (2013) | 64.3 (2013) |
| Public rental housing as a share of total housing stock (%) | 5.0 (2012) | 6.1 (2008) | 0.9 (2012) | 17.5 (2010) | 19.0 (2007) |
| GDP per capita ($) | 23,838 (2013) | 39,321 (2013) | 52,839 (2013) | 39,049 (2013) | 42,991 (2013) |

GDP = gross domestic product.

Note: Figures in the parentheses represent the year of reference.

Source: CECODHAS (2011); Demographia (2015); Dol and Haffner (2010); EMF (2014); Ministry of Land, Infrastructure, Transport and Tourism, Government of Japan, http://www.mlit.go.jp/statistics/details/t-jutaku-2_tk_000002.html

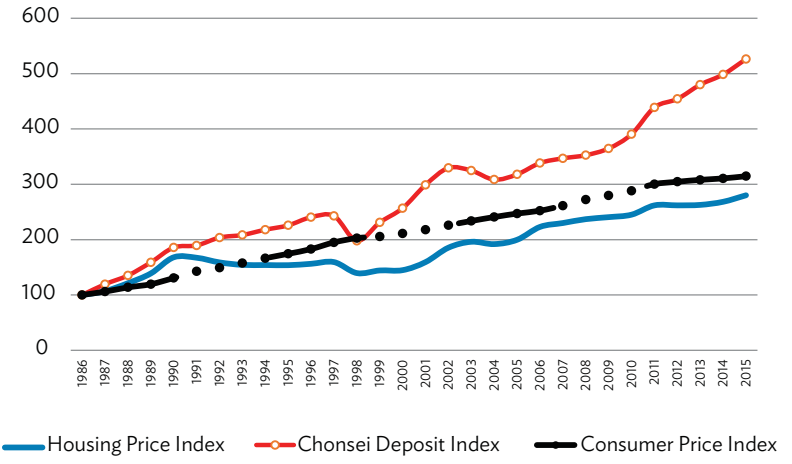
## 3.2.2 Housing Prices and Affordability

Housing prices have been and continue to be one of the most important variables for housing policy in the Republic of Korea. Systematic housing price data are available only from 1986. The housing price index was first compiled by the Korea Housing Bank and was taken over by Kookmin Bank in 2001, when the two entities merged. Figure 3.2 illustrates the trend of the housing price index and the *chonsei* (i.e., a unique rental lease, detailed in the next subsection) deposit index, as well as that of the consumer price index since 1986.

Table 3.6 shows their average annual rates of change over subperiods since 1988.

Several points must be made on the behavior of the price indexes. First, the increase in the inflation-adjusted housing price of the whole country was moderate during the two housing booms (i.e., 1988–1992 and 2003–2007) and was negative during the years following the massive increase in housing supply through the TMHD and, in recent years, affected by the global financial crisis. Second, the

**Figure 3.2: Housing Price Indexes and Consumer Price Index, 1986–2015**




Source: MOLIT, http://stat.molit.go.kr; Bank of Korea, http://ecos.bok.kr

**Table 3.6: Changes in Housing Prices and Consumer Prices, 1988–2014**

| | 1988–1992 | 1993–1997 | 1998–2002 | 2003–2007 | 2008–2012 | 2013–2014 |
|---|---|---|---|---|---|---|
| Change in housing price index (%) | 9.3 | 0.1 | 3.5 | 4.8 | 2.7 | 1.3 |
| Change in *chonsei* deposit index (%) | 13.7 | 3.8 | 7.4 | 1.1 | 6.2 | 4.8 |
| Change in consumer price index (%) | 7.4 | 5.0 | 3.5 | 2.9 | 3.3 | 1.3 |

GDP = gross domestic product.

Source: MOLIT, http://stat.molit.go.kr; Bank of Korea, http://ecos.bok.kr

*chonsei* deposit index increased much faster than the housing price index, except during 2003–2007. Another point relates to the co-movement of the housing price index and the *chonsei* deposit index. The correlation coefficient between the rates of changes in the two indexes was 0.83 for Seoul and 0.86 for the Capital Region during 1999–2008. The figures changed to –0.65 and –0.77, respectively, between 2009 and 2014. This pattern of decoupling is a new phenomenon in the housing market.

There is a perception that housing prices are too high relative to income in the Republic of Korea. The two most popular measures of housing affordability are the house price–income ratio (PIR) and the housing affordability index. The PIR is the ratio between the median house price and median household income. The housing affordability index measures the debt service burden by the median income household purchasing the median priced house using a standard mortgage loan. It is defined so that a smaller value represents greater affordability. Table 3.7 shows that housing affordability has improved in recent years.

**Table 3.7: Key Housing Affordability Indicators**

| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|---|---|---|
| House price–income ratio | 4.2 | | 4.3 | | 4.3 | | 5.1 | | 4.7 |
| Rent–income ratio | 18.7 | | 17.5 | | 19.2 | | 19.8 | | 20.3 |
| House affordability index | 66.1 | 73.1 | 75.3 | 70.7 | 63.8 | 66.9 | 59.9 | 53.8 | 54.3 |

Source: MOLIT, http://stat.molit.go.kr; Korea Housing Finance Corporation, http://hf.go.kr/

International comparisons of the PIR are not straightforward due to possible differences in its definition and the quality of available data across countries and cities. Demographia (2015), however, located data on the PIRs for Australia; Canada; the People's Republic of China; Hong Kong, China; New Zealand; Singapore; the United Kingdom; and the United States (Table 3.8).

The PIR for the Republic of Korea was computed by Demographia using data compiled by Kookmin Bank. The national average PIR is 3.7, which is almost the same as that of the United States, the country with the most affordable housing among the sample. Seoul's PIR is 7.7, which is slightly lower than that of London, while the figures for Incheon and Gyeonggi Province were 5.1 and 5.4, respectively (Figure 3.3). Thus, housing in the Republic of Korea cannot be said to be less affordable than in most other economies, nor is Seoul among the most expensive metropolitan cities in the world.[2]

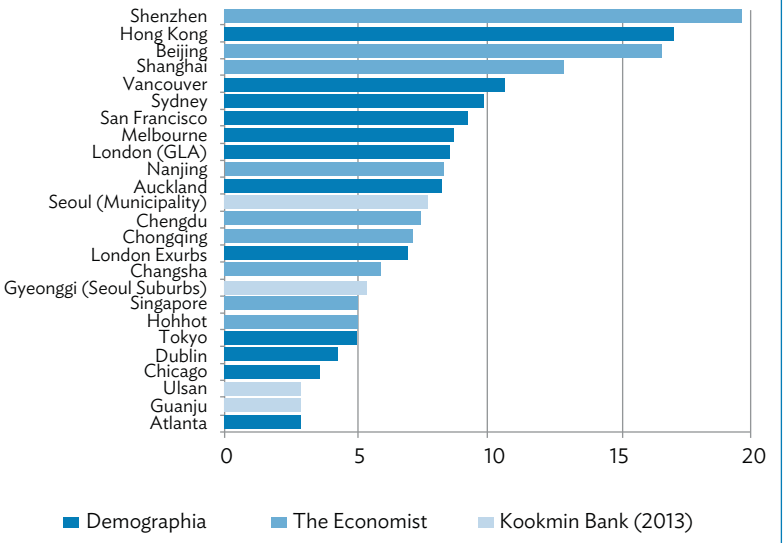
[2] In a highly regulated market, housing affordability may not necessarily equal housing accessibility, because available housing options may not best suit consumer demand although they are affordable. Rent control is one example. In the Republic of Korea, the size distribution of new apartments was distorted by government regulation (Kim and Kim 2000).

## Table 3.8: House Price–Income Ratio: International Comparison

| | Affordable (3.0 and under) | Moderately Unaffordable (3.1–4.0) | Seriously Unaffordable (4.1–5.0) | Severely Unaffordable (5.1 and Over) | Total No. of Cities | Median Ratio |
|---|---|---|---|---|---|---|
| Australia | 0 | 0 | 0 | 5 | 5 | 6.4 |
| Canada | 0 | 2 | 2 | 2 | 6 | 4.3 |
| Hong Kong, China | 0 | 0 | 0 | 1 | 1 | 17.0 |
| Ireland | 0 | 0 | 1 | 0 | 1 | 4.3 |
| Japan | 0 | 1 | 1 | 0 | 2 | 4.4 |
| New Zealand | 0 | 0 | 0 | 1 | 1 | 8.2 |
| Singapore | 0 | 0 | 1 | 0 | 1 | 5.0 |
| United Kingdom | 0 | 1 | 10 | 6 | 17 | 4.7 |
| United States | 14 | 23 | 6 | 9 | 52 | 3.6 |
| Total | 14 | 27 | 21 | 24 | 86 | 4.2 |
| Republic of Korea | 0 | 2 | 0 | 3 | 5 | 3.7 |

Source: Demographia (2015).

## Figure 3.3: House Price-to-Income Ratio, Major Metropolitan Areas




Note: "Hong Kong" refers to the entire urbanized area within Hong Kong, China.

Source: Demographia (2015: 25).

### 3.2.3 Housing Tenure

It was an accepted presumption, until recently, that the population in the Republic of Korea has strong aspirations for homeownership. In that context, the rental-housing sector was considered a residual of the owner-occupied sector, which accommodates those who cannot afford to buy homes. In recent years, however, an increasing number of households have chosen to rent homes—although they are capable of purchasing homes.

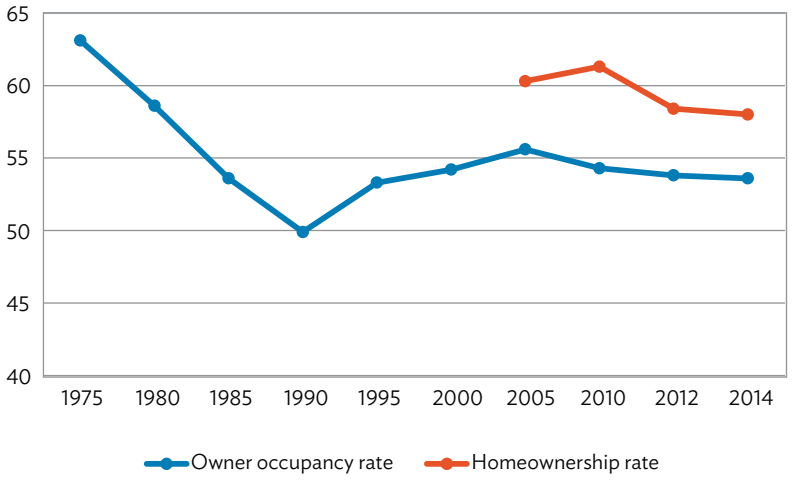
Rental tenure in the Republic of Korea is more complex than in other countries because *chonsei*, monthly rentals with deposits (MRDs), and monthly rentals with small security deposits exist. For many years, the dominant rental lease in the housing market was *chonsei*, an asset-based lease. Under a *chonsei* contract, the tenant makes a large upfront deposit to the landlord at the signing of the lease and does not pay monthly rent throughout the lease period. The landlord then invests the deposit to generate a return equivalent to rents. The deposit is fully refundable at the termination of the lease. *Chonsei* emerged naturally during the times of housing shortages, high interest rates, rising house prices, and inadequate mortgage financing.

When housing was in short supply, landlords had greater bargaining power than tenants, and the sizable upfront deposit eliminated the risk of rental delinquency. High interest rates provided the landlord opportunities for profitable investment of the deposit. Increasing house prices were a major source of investment return for the landlord, which kept the deposit smaller than the price of the house. *Chonsei* was also used by some landlords to finance the purchase of an extra house to rent out when mortgage loans were difficult to obtain. In this context, *chonsei* represents an informal loan to a landlord extended by the tenant in return for the right to reside in the rented house during the lease period. As for the tenants, *chonsei* was considered a stepping-stone to homeownership, because the accumulated deposit could later be used as seed money for home purchases.

Another unique feature of housing tenure in the Republic of Korea is the substantial discrepancy between the homeownership rate and owner-occupancy rate. According to the 2010 Population and Housing Census, 54.2% of the housing stock was occupied by owners, but 61.3% of households owned at least one house (Statistics Korea 2011). Since the public rental sector accommodates only 7.8% of households, about 38.0% of households live in the extra houses owned by individuals (Son 2014).

Figure 3.4 shows the trend in owner-occupancy rate and homeownership rate. The owner-occupancy rate fell from 63% in 1975 to 50% in 1990, and then it rose to 55% by 2005. The current figure is slightly lower than 55%.

**Figure 3.4: Trends in Owner-Occupancy Rate and Homeownership Rate** *(%)*




Source: Statistics Korea, http://kostat.go.kr

The discrepancy between the homeownership and owner-occupied rates can be attributed to the separation of residence from ownership. Table 3.9 shows the share of renters who own at least one house somewhere else as a percentage of all households and of all renters in 2005 and 2010. The figures are presented for Seoul, Incheon, and Gyeonggi Province (surrounding Seoul) with highs and lows among the districts and municipalities within each.

The number of renters who own elsewhere as a share of all households and all renters increased between 2005 and 2010. This trend is most marked in Seoul, where such "renting owners" represent 10% of all households and 17% of all renters. Moreover, there is a wide variation in the figures across districts in Seoul and Incheon and across municipalities in Gyeonggi Province. In 2010, the share of renting owners in total renters ranged from 10% to 31% in Seoul, from 12% to 23% in Incheon, and from 12% to 34% in Gyeonggi Province.

There are several drivers underlying the behavior of these renting owners, such as better access to workplaces, more convenient means of transport, and better-quality schools for their children. The relative

importance of these factors tends to vary across locations.[3] Kim, Choi, and Ko (2009) found that the incidence of separation of residence from ownership is higher in submarkets with higher housing prices due to better public schools and other urban services. They also report that the phenomenon is more apparent among younger households and larger dwellings. Renting owners may own houses to benefit from tax advantages available to owners of one house and from possible capital gains.

**Table 3.9: Separation of Ownership and Residence** (%)

| | Owner-Renters/All Homeowners | | Owner-Renters/Renters | |
|---|---|---|---|---|
| | 2005 | 2010 | 2005 | 2010 |
| Republic of Korea | 4.2 | 5.6 | 10.2 | 15.2 |
| Seoul | 5.6 | 10.0 | 10.5 | 17.4 |
| high | 11.3 | 17.3 | 21.1 | 31.2 |
| low | 3.3 | 5.7 | 5.9 | 10.1 |
| Incheon | 3.9 | 6.7 | 10.6 | 15.7 |
| high | 5.9 | 9.0 | 16.5 | 23.7 |
| low | 1.8 | 3.2 | 8.1 | 12.7 |
| Gyeonggi | 5.4 | 8.9 | 12.3 | 18.3 |
| high | 16.2 | 19.7 | 28.7 | 34.6 |
| low | 2.7 | 3.3 | 5.7 | 12.0 |

Source: Jang and Hwang (2011).

The separation of residence and ownership has several implications. First, all renters cannot be classified as the less-well-to-do who require policy attention, since a substantial share of renters choose to rent although they could buy houses if they wished. Another implication is that these renters may call for a raise in the deposits on the units that they lease out to finance the increase in the deposits on the units in which they reside, which may impose further pressure on the *chonsei* deposit.

[3] To the extent that most new houses are developed in the suburbs where public sector developers provide serviced land for housing, the separation of residence and ownership is inefficient.

### 3.2.4 Housing Welfare

Ensuring minimum housing standards for low-income households and the disadvantaged is another important objective of housing policy. The Republic of Korea has established minimum housing standards and has been trying to reduce the number of households living in substandard housing units. The minimum housing standards, first introduced in 2000, were specified in terms of the number of rooms and floor area, differentiated by the size and composition of households. The minimum standards were upgraded in 2011 by increasing the minimum floor area as well as requiring a modern kitchen, toilet, and bath/shower (Table 3.10).

**Table 3.10: Minimum Housing Standards, 2000 and 2011**

| Number of Household Members | Household Composition | Number of Rooms and Facilities | Floor Area (square meters) | |
|---|---|---|---|---|
| | | | 2000 | 2011 |
| 1 | Single | 1 K | 12 | 14 |
| 2 | Couple | 1 D K | 20 | 26 |
| 3 | Couple + 1 child | 2 D K | 29 | 36 |
| 4 | Couple + 2 children | 3 D K | 37 | 43 |
| 5 | Couple + 3 children | 3 D K | 41 | 46 |
| 6 | Couple + parents of the couple + 2 children | 4 D K | 49 | 53 |

D = dining room, K = kitchen.

Source: MOLIT (2015).

The indicator regarding the number of households living in substandard dwellings has improved substantially over the years. Choi, Kim, and Kwon (2012) computed the number of households living in houses not meeting the 2011 standards using census data. They reported that the share of such households as a percentage of all households dropped from 46.3% in 1995, to 28.7% in 2000, 16.1% in 2005, and 11.8% in 2010.

### 3.2.5 Current State of the Housing Market and Government Response

The housing market in the Republic of Korea has gone through several cycles in the past 3 decades for which period systematic data are available. There was a price hike between 1988 and 1991, a short-lived collapse in 1997–1998, a housing price run-up during 2002–2006, and a spell of stagnation from 2009 until 2013 due to the global financial crisis. It has been recovering since 2014. The number of building permits issued, housing construction starts and completions, and subscriptions of new houses offered for presale are all increasing, while the number of unsold units has decreased to the lowest level since 2006. The number of transactions of existing dwellings in 2015 was the highest since the government started publishing transactions data in 2006.

Housing prices have appreciated at a moderate pace and have fallen short of the general inflation rate in recent years but the pace accelerated in 2015. The rental market remains tight for *chonsei,* but the rent on MRDs has been falling. Table 3.11 shows the recent trends in housing prices, *chonsei* deposits, and MRDs, showing how the sluggish housing market coexists with the tight *chonsei* market and soft MRD market.

**Table 3.11: Key Housing Indicators since 2008**

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|
| Housing permit (unit) | 371,285 | 381,787 | 386,542 | 549,594 | 586,884 | 440,116 | 515,251 | 765,328 |
| Housing transaction (unit) | 893,790 | 870,353 | 799,864 | 981,238 | 735,414 | 851,850 | 1,005,173 | 1,193,691 |
| Change of price index (%) | 3.11 | 1.46 | 1.89 | 6.86 | −0.03 | 0.31 | 1.71 | 3.51 |
| Change of *chonsei* index (%) | 1.68 | 3.39 | 7.12 | 12.3 | 3.52 | 4.7 | 3.4 | 4.85 |
| Change of MRD index, Seoul (%) | | | | 1.01 | −0.81 | −2.33 | −2.37 | 0.09 |

MRD = monthly rental with deposit.

Source: Onnara Real Estate Information Portal, http://onnara.go.kr

The current state of the housing market described above reflects the close linkages among the owner-occupied housing market, *chonsei*

market, and MRD market in the context of the structural changes taking place. As the housing shortage was resolved, housing prices have stabilized, and interest rates have fallen to record lows, *chonsei* has become economically unviable due to conflicts of interest between landlords and tenants. Today, the tenant prefers a *chonsei* to an MRD because the former offers a lower user cost. To be more specific, the interest rate that is used to convert a deposit into monthly rent is much higher than the interest rates banks charge on loans for *chonsei* deposits. At the same time, however, the landlord prefers an MRD to a *chonsei* because the former generates a larger cash flow for the same reason.

The interaction between demand and supply forces has resulted in increasing *chonsei* deposits and a shortage of houses available on *chonsei* leases. Stabilizing *chonsei* deposits has become an important policy issue, as a *chonsei* lease has long been the most popular rental tenure for the middle class. *Chonsei* deposits will stabilize only if either demand decreases or supply increases. Thus, the government has tried to divert the demand for *chonsei* to homeownership by providing tax incentives and favorable mortgage terms to homebuyers. The government has also encouraged the supply of rental housing by investors who own two or more houses by removing disincentives for rental housing, such as a high rate of taxation on capital gains for these owners. It has also increased the supply of public rental housing. Recently, the government introduced a package of incentives to promote large-scale private rental business by attracting major developers and financial investors. At the same time, the government is trying to alleviate the increasing burden borne by moderate- and low-income households through tax deductions on rental payments and a housing benefit, respectively.

## 3.3 Evolution and Assessment of Housing Policy

### 3.3.1 Evolution of Housing Policy and Major Achievements

In the 1960s, the housing policy was carried out as a component of the 5-year economic development plan, which was initiated in 1962. The institutional structure of the housing policy and its implementation began to emerge. The Ministry of Construction (now the Ministry of Land, Infrastructure and Transport) was in charge of housing policy, and the Korean National Housing Corporation and Korea Housing Bank began operations in 1968 and 1969, respectively. Some important

laws and regulations, such as the Housing Bank Law and Emergency Measures to Deter Real Estate Speculation, were established in 1967. In this regard, the 1960s was a period of institution building for housing policy.[4]

The biggest challenge of the housing policy was to address the problem of housing shortages, which became particularly serious in the 1970s, as supply failed to increase to meet the growing demand caused by the growing urban population and rising incomes. The government drafted a 10-year plan for housing construction to expand supply and to stabilize prices. More institutions were created, and a legal framework was established to facilitate housing production by public sector developers. Two pairs of housing and land development laws and institutions were critical in this regard: the Housing Construction Promotion Law (1972) and the Korea National Housing Corporation (1973); and the Land Development Promotion Law (1980) and the Korea Land Development Corporation (1979). Vested with the power of eminent domain in land acquisition, the Korea National Housing Corporation and Korea Land Development Corporation played crucial roles in land development and housing production thereafter. The two organizations merged to form a new entity, the Land and Housing Corporation, in 2009.

The shortage of decent housing cumulated over a period of rapid economic growth, resulting in a sharp increase of housing prices across major cities in the late 1980s. Political pressure on the government also grew, following the wave of democratization. The government responded by announcing the TMHD, a plan to supply 2 million new housing units between 1988 and 1992 to expand supply, including the development of five new towns in the suburbs of Seoul. To implement the plan, the government expanded the supply of developable land through the Korea National Housing Corporation and Korea Land Development Corporation, and increased the provision of housing loans through the National Housing Fund.

The TMHD was a milestone in housing policy because it entailed a quantum leap in the annual volume of housing construction. It was also the first attempt to allocate housing units by target income groups according to their ability to pay (i.e., permanent public rental housing for the lowest-income households, small for-sale units and rental housing for low- to moderate-income groups, and larger for-sale housing for the middle class by the market) (Table 3.12). At the same time, mechanisms were put in place to steer new housing to the target groups, including

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[4] See Cho and Kim (2011) for more details.

mandatory savings for housing subscription, an application system for prospective buyers, and counterspeculation measures.

**Table 3.12: Two-Million Housing Drive, 1988–1992**

| Category | Income Class | Housing Type | No. of Units Built | Financing | Developers/ Suppliers |
|---|---|---|---|---|---|
| Public sector | Urban poor | Permanent rental units (20–36 $m^2$) | 250,000 | Government budget | KNHC, local government |
| | Potential middle class | Long-term rental units (33–50 $m^2$) | 350,000 | National Housing Fund | KNHC, local government, construction companies |
| | | Small houses (40–60 $m^2$) | 250,000 | | |
| Private sector | Middle class | Medium-sized houses (60–85 $m^2$) | 480,000 | None | Construction companies |
| | Above middle class | Medium-sized or large (85 $m^2$ or above) houses | 670,000 | None | Construction companies |

KNHC = Korea National Housing Corporation, $m^2$ = square meter.

Source: Ministry of Construction and Transportation (2002).

As shown in Table 3.13, the TMHD delivered more than 2 million units within 5 years. Private sector homebuilders surpassed the goal by more than 30%, whereas the public sector came short of its goal. It is important to note that there was effective demand for housing supported by income growth to absorb the large number of new houses supplied through the TMHD. Moreover, thanks to the successful implementation of the TMHD, housing prices remained stable throughout the 1990s.

The 1997/98 Asian financial crisis was a turning point in housing policy (Kim 2000). In the wake of the unprecedented economic crisis, unsold apartments piled up, and housing prices fell sharply while many homebuilders went bankrupt. The government intervened to boost the housing sector by stimulating demand with financial support through the National Housing Fund. In addition, acquisition and registration taxes were temporarily lowered. Reduction in the volume of new housing supply during 1998–2001, and the expansion of mortgage credit, resulted in escalating housing prices in Seoul and its suburbs from 2002.

The government, however, mobilized various policy instruments to contain the housing price increases (Kim 2004). It legislated a new, highly progressive national tax on real estate holdings (i.e., the Comprehensive

Real Estate Tax); introduced a special levy on unrealized income from redevelopment of old apartments; raised the capital gains tax on owners of two or more houses; and expanded the coverage of the price ceiling on new apartments. In addition, macroprudential regulations, such as ceilings on the debt-to-income ratio and loan-to-value ratio, were introduced or tightened to prevent excessive lending.

### Table 3.13: Goals and Achievement of the Two-Million Housing Drive

| | Goals | Achievements | | | | | Ratio |
|---|---|---|---|---|---|---|---|
| | 1988–1992 (A) | 1988 | 1989 | 1990 | 1991 | Total (B) | B/A (%) |
| Total | 2,000 | 317 | 462 | 750 | 613 | 2,143 | 107.2 |
| Public Sector | 900 | 115 | 161 | 270 | 164 | 700 | 79.0 |
| – Permanent rental units | 190 | | 43 | 60 | 50 | 153 | 80.5 |
| – Houses for working class | 250 | | | 61 | 37 | 98 | 39.2 |
| – Long-term rental units | 150 | 52 | 39 | 65 | 15 | 171 | 114.0 |
| – Small houses for sale | 310 | 63 | 79 | 84 | 63 | 289 | 93.2 |
| Private Sector | 1,100 | 202 | 301 | 480 | 449 | 1,432 | 130.2 |

Source: Joo (1994: 295).

Another important thrust of housing policy was to enhance the housing welfare of vulnerable households. The government drafted a housing welfare road map in 2003 with a plan to supply 1 million public rental units over a 10-year period (Table 3.14).

### Table 3.14: Housing Welfare Road Map

| Income Decile | Characteristics | Assistance |
|---|---|---|
| 1 (bottom) | Unable to pay market rents | Small public rental units<br>Housing benefit |
| 2–4 | Unable to purchase homes | Small or medium-sized public rental units<br>Concessional loans for *chonsei* deposits |
| 5–6 | Able to purchase homes with some assistance | Small or medium-sized houses at subsidized prices<br>Concessional mortgage loans |
| 7 and above | Able to purchase homes with own means | Tax benefits |

Source: Ministry of Construction and Transportation (2003).

Housing prices peaked in 2007 and remained stable until they started to decline in real terms in the aftermath of the global financial crisis. The housing market plunged into a downturn, which was aggravated by the spread of pessimism about future housing prices. In response, the government tried to stimulate the market through deregulation and easing of the taxation and macroprudential regulations introduced by the previous administration (Kim 2012). In addition, a two-tiered supply strategy was implemented. In the inner cities, areas for new "town-in-town" developments were designated, and regulations on redevelopment projects were lifted. On the periphery, a small fraction of greenbelt land was released to accommodate public housing, known as *bogemjari jutaik* (sweet homes).

The incumbent government, which took office in 2013, has focused on normalizing the housing market and enhancing housing welfare. It has implemented a round of packages, including deregulation and modification of tax laws, to encourage new housing supply and to facilitate home purchases. It has also introduced a new brand of public housing called *haengbok jutaik* (happy homes) targeted to the younger generation, and promulgated a law to promote the institutionalized private rental-housing sector. The government further initiated a new version of a housing benefit scheme for the lowest-income group.

### 3.3.2 Housing Policy Programs and Their Beneficiaries

Housing policy programs in the Republic of Korea can be classified into four distinct categories: supply side, demand side, finance, and macroprudential regulations (Table 3.15). The most important example of the supply-side policy is the TMHD to overcome the severe housing shortage and to provide public rental housing for the most vulnerable households. Major instruments to implement the TMHD were the provision of developable land by public sector developers and expansion of funding through the National Housing Fund. The TMHD also helped stabilize housing prices by increasing new housing supply on a large scale and improving the quality of the housing stock. However, the massive supply scheme resulted in a lack of diversity and overstretched the capacity of the construction industry.

Regarding demand-side policy, the new housing benefit scheme that started in July 2015 is the latest and most important. It originated from a component of the general welfare grant under the National Livelihood Protection Law, which was designed to ensure that every person can meet minimum living costs. Unlike the old scheme that provided the grant regardless of rent level and local housing conditions, the new

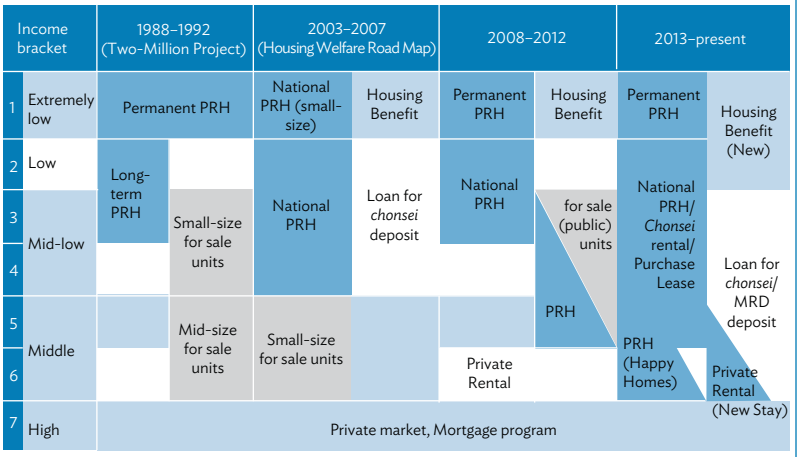
housing benefit is differentiated according to household income, family size, tenure type, rent level, and location of residence.

Housing finance programs through the National Housing Fund offer affordable mortgages to assist home purchases by moderate- to middle-income households. A housing credit guaranty is provided through the Housing Credit Guaranty Fund operated by the Korea Housing Finance Corporation, a government-owned institution in charge of issuing mortgage-backed securities to tap the capital market as well as reverse mortgages to qualified elderly homeowners.

Finally, macroprudential regulations were introduced in 2003 to suppress the demand for housing loans in an overheated housing market and to prevent systemic risk that could arise from the mortgage market. The government has also changed the debt-to-income ratio and loan-to-value ratio ceilings according to housing market conditions. This is believed to have helped prevent the boom-bust in housing prices but might have reduced opportunities for home purchases by some households.

Since the inception of the TMHD, housing policy programs have been designed to meet the needs of different income groups with different programs. Figure 3.5 illustrates the structure of housing programs with the intended target income groups. The government utilized three types of subsidies for different income groups to provide homes and/or to relieve rent burdens by (i) providing public housing for renting and owner occupation as a conventional and direct method, (ii) providing housing benefits as demand-side assistance, and (iii) low-interest loans for *chonsei* deposits.

## Figure 3.5: Housing Programs by Target Income Group




MRD = monthly rental with deposit, PRH = (subsidized) public rental housing.

Source: Authors.

## Table 3.15: Housing Policy Matrix

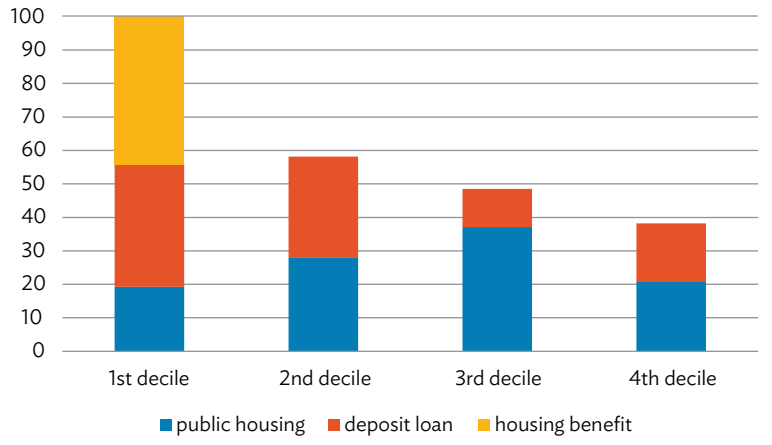
| | Supply-Side Policy | Demand-Side Policy | Housing Finance Policy | Macroprudential Regulations |
|---|---|---|---|---|
| **Program** | Two-Million Housing Drive | Housing benefit | Liberalization of housing finance market<br><br>Establishment of secondary mortgage market | Ceilings on loan-to-value ratio and debt-to-income ratio |
| **Timeline** | 1989–1992 | 2015 (first introduced in 1999 as a component of general welfare grant) | 1999–2004 | Since 2003 |
| **Policy Goals** | To overcome housing shortage and housing price hikes<br><br>To provide public rental housing to the lowest-income group | To relieve rent burden<br><br>To ensure the minimum housing standard be met | To assist home purchases<br><br>To expand housing finance by tapping the capital market | To suppress the demand for housing loans in an overheated housing market<br><br>To prevent systemic risk from the housing market |
| **Intended Target** | All income groups | Low- and moderate-income groups | Middle-income households | Borrowers of housing loans |
| **Instruments and Contents** | Supply of developable land through public sector developers<br><br>Expansion of funding for housing (National Housing Fund) | Monthly cash subsidy based on household income, rent, family size, and location<br><br>New Housing Benefit Act<br><br>Public inspection of housing conditions and monitoring of rents | Interest-rate deregulation<br><br>Creation of the secondary mortgage market institution (Korea Housing Finance Corporation)<br><br>Introduction of reverse mortgage | Adjustment to loan-to-value and debt-to-income ratios ceilings |
| **Merits** | Helped stabilize housing prices and improve the quantity and quality of the housing stock | Too early to evaluate (targeted demand subsidy) | Helped increase homeownership | Helped prevent the boom-bust in housing prices |
| **Demerits** | Massive supply resulted in the lack of diversity and overstretched the capacity of the construction industry | Too early to evaluate | Increased household debt | Limited the opportunity for home purchases for some households |

Source: Authors.

Regarding the beneficiaries of the various policy programs, the lowest-income group is eligible for at least one of the above-mentioned subsidies. Among the lowest-income group, almost 20% live in public rental housing, 33% borrow a *chonsei* deposit loan, and over 50% receive the housing benefit. It implies that most households belonging to the lowest-income group could enjoy at least one eligible subsidy scheme and that some may benefit from two. For example, a substantial portion of tenants residing in public rental units also receives the housing benefit.

However, because the housing benefit narrowly targets the lowest-income group, the recipients decrease substantially for the second-lowest 10% group; only 53% of them receive a subsidy. Also, 44% of the third-lowest income group and 35% of the fourth-lowest group are either public housing residents or borrowers of low-interest *chonsei* deposit loans. The incidence of benefits of housing programs decreases with income, which is consistent with the principle of vertical equity. Yet the proportion of households covered by the subsidy programs falls drastically going from the lowest-income group to the next lowest-income group (Figure 3.6).

**Figure 3.6: Coverage of Housing Subsidies by Income Group** *(%)*




Source: Authors calculation based on the MOLIT data, MOLIT (2014), and MOLIT (2015).

## 3.4 The Changing Environment and Policy Challenges

Today, the housing policy is at a crossroads, as the environment surrounding the housing market undergoes major socioeconomic changes related to demographics, the housing–macroeconomy nexus, linkages between owner-occupied and rental markets, composition of rental lease types, and political economy of housing policy.

### 3.4.1 Demographics

The Republic of Korea has been experiencing rapid aging of its population and declining fertility, slowing population growth and shrinking household sizes. Total population growth is expected to continue until 2030, but the productive population (i.e., ages 15–64 years) is expected to reach its maximum in 2016 and start falling thereafter. In addition, population aging is proceeding very fast. The percentage of the population that is 65 years or older was 12.2% in 2013, and it is expected to rise to 14.0% (i.e., an aged society) by 2018 and 20.0% (i.e., a super-aged society) by 2026. The pace of population aging is faster than even that of Japan.

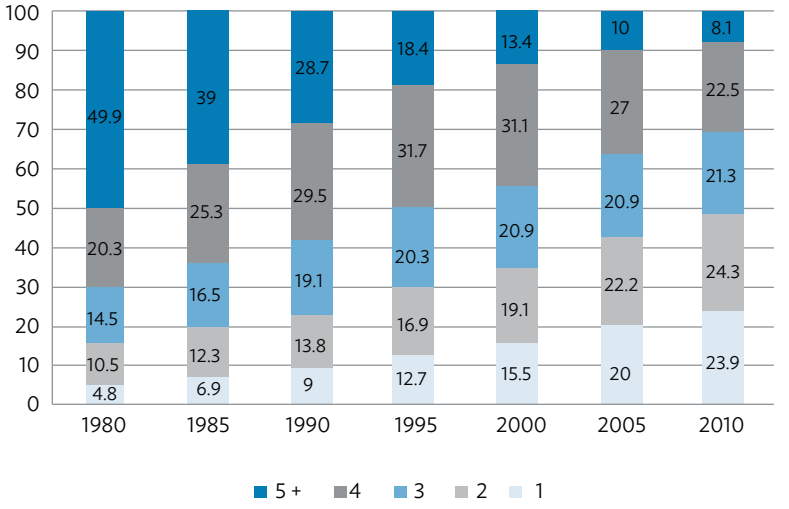
Further, the total fertility rate is 1.2, among the lowest among Organisation for Economic Co-operation and Development (OECD) countries. Household size is shrinking rapidly (Figure 3.7). Between 1980 and 2010, the share of one- or two-member households increased from 15% to 48%, and that of four- or five-member households dropped from 70% to 30%. The number of households is projected to increase until 2040, but the trend in shrinking household sizes is expected to continue.

Other things being equal, the slowdown in population growth and household formation, rapid aging, and shrinking household size will have a negative effect on housing demand and, hence, future housing prices. In fact, Takats (2012) predicted that the Republic of Korea would suffer most seriously from the impact of demographic changes on housing prices.

Demographic factors are not the only determinant of housing demand. Income is another key determinant, because growing incomes increase demand for new housing and for upgrading of existing housing. Changing aspirations about homeownership among the younger generation is also a factor. Survey data show that the proportion of renters who want to become homeowners has declined in recent years. It is unclear whether this is a permanent change in the propensity to own homes or a temporary disruption caused by stagnant housing prices and

the insecurity of incomes and employment in recent years. Obviously, demand for owner occupation is driven by investment demand, which, in turn, is affected by the expectation about future housing prices. That said, the observed decrease in aspiration for homeownership may be reversed if the housing market turns for the better.

**Figure 3.7: Changing Distribution of Households by Size, 1980–2010** *(%)*




Source: Statistics Korea, http://kostat.go.kr

Population aging creates additional challenges to housing policy. Providing adequate housing for the elderly requires modifications to physical design in new housing and retrofitting existing houses to make them safer to live in. Another major concern about population aging is the high incidence of poverty among the elderly. About 35% of elderly people, many of them living alone, are in absolute poverty based on the disposable income criterion. The relative poverty rate among people aged 65 years and above is 49%—more than three times higher than the rate for all age groups, which is 15% (KIHSA 2014). In light of the large percentage of the elderly population in relative poverty, providing affordable rental options is another important task of housing policy.

For elderly homeowners who need to finance their retirements mainly with their housing assets, unlocking housing wealth is also a significant issue. Housing is the dominant asset in the portfolio held by the elderly. According to the 2010 census, 70% of people aged 60–70 years and 75% of people aged 70 years and above were homeowners (Statistics Korea 2011). The average share of assets in real estate was 68% (including 36% in owner-occupied houses) in 2014, but the share among the elderly was 82% according to the 2014 survey of household finance and welfare.

In 2007, the government introduced a reverse-mortgage system (called the "housing pension" in Korean) with a guaranty provided through the Korea Housing Finance Corporation. The initial response from the potential subscribers to the program was lukewarm. The government relaxed the requirements for eligibility, such as age and the value of the house, to make the product more attractive. As of the end of June 2016, about 34,500 people have joined the program.

### 3.4.2 Housing–Macroeconomy Nexus and Household Debt

One important dimension of housing policy is the nexus between housing and the macroeconomy. Housing represents the largest asset for households, and the level of housing activity influences those in various other industries, such as furniture and home appliances as well as real estate–related services. Housing prices and housing investments affect aggregate demand of an economy, and the macroeconomic performance, in turn, affects housing prices and level of housing market activity.

Housing affects aggregate demand through three major channels. The first channel is housing investment. Housing investment, defined as the market value of a new housing structure and that of an improvement of existing housing stock, represents a substantial share of GDP. Although the share of housing investment in GDP in the Republic of Korea has fluctuated around 5% over time, it has been falling since the late 2000s and has been slightly below 4% in recent years (Table 3.16). The share of housing investment in total fixed capital formation also shows a declining trend.

A second channel is the wealth effect on consumption. Housing prices affect the value of housing wealth and, hence, private consumption expenditure. Although the estimates of the magnitude of the housing wealth effect in the Republic of Korea are not as large as that in the United States, the housing wealth effect is sizable and larger than the wealth effect from stocks.

A third channel is the collateral effect. Changes in housing prices affect the collateral value of housing and, hence, access to mortgage credit. The scope of the second and the third channels is conditioned by the housing finance system.

Housing finance lagged behind economic development in the Republic of Korea. The housing finance market was dominated by the National Housing Fund, government housing fund, and Korea Housing Bank (i.e., the state-owned housing bank) until the outbreak of the Asian financial crisis. Access to mortgage loans was very limited, with a loan-to-value ratio of about 30%, and the interest rate was subsidized. It was not until the early 2000s that a market-based housing finance system was established following financial liberalization. Currently, commercial banks are the major lenders in the housing finance market. The ratio of the mortgage debt outstanding to GDP, which is a measure of the size of the housing finance market, is 31%, and the ratio increases to 36% if housing loans held by the Korea Housing Finance Corporation are included.

**Table 3.16: Household Debt and Mortgage Debt Outstanding since 2000**

| | 2000 | 2004 | 2008 | 2010 | 2012 | 2014 |
|---|---|---|---|---|---|---|
| A. Consumer credit | 266.9 | 474.7 | 688.2 | 843.2 | 963.8 | 1,089.0 |
| Household debt | 241.1 | 449.4 | 648.3 | 793.8 | 905.9 | 1,029.3 |
| Deposit banks | 157.6 | 355.5 | 515.3 | 593.5 | 660.0 | 745.8 |
| Housing loans | | | 254.7 | 289.6 | 318.2 | |
| Mortgages | | 169.2 | 239.7 | 284.5 | 318.2 | 365.6 |
| Nonbank deposit-taking financial institutions | 50.4 | 79.2 | 126.7 | 162.1 | 192.6 | |
| Housing loans | | | 56.4 | 73.2 | 86.0 | |
| Mortgages | | | 56.0 | 73.1 | 85.9 | 95.0 |
| Credit card loans | 25.8 | 25.3 | 39.9 | 49.4 | 58.5 | 59.6 |
| B. Mortgage debt outstanding | | 169.2 | 295.7 | 357.6 | 404.1 | 460.6 |
| C. Nominal GDP | 635.2 | 876.0 | 1,104.5 | 1,265.3 | 1,377.5 | 1,485.1 |
| A/C (%) | 42.0 | 54.2 | 62.3 | 66.6 | 70.0 | 73.3 |
| B/A (%) | | 35.6 | 43.0 | 42.4 | 41.9 | 42.3 |
| B/C (%) | | 19.3 | 26.8 | 28.3 | 29.3 | 31.0 |

GDP = gross domestic product.

Source: Bank of Korea, http://ecos.bok.kr

There is a concern about excessive indebtedness of the household sector. In fact, the Republic of Korea ranks high among OECD countries in terms of the ratio of household debt outstanding to per capita income. However, the current size of the mortgage market, adjusted for the size of the economy (i.e., the mortgage debt outstanding–GDP ratio), is about on par with other countries with similar levels of development (i.e., per capita GDP on a purchasing power parity base) (Kim and Cho 2014).

In addition, the so-called mortgage loans include home-equity loans as well as loans for home purchases. In fact, just about 50% of mortgages are for home purchases, and the remaining half are for financing working capital and livelihood expenses. The problem is that the mortgage market is dominated by the adjustable-rate mortgage with bullet payments that require a lump-sum payment for the entire loan at maturity. Aware of the potential weaknesses of the current structure, the government has been implementing measures to encourage the transformation of adjustable-rate mortgages into fixed-rate mortgages repayable in equal installments. Recently, the government also introduced new loan products through the National Housing Fund, such as shared appreciation mortgages and equity loans such as in the United Kingdom (Miles 2013).

Macroprudential regulations are playing an important role in recent years, as large and increasing household debt is considered a potential risk to the macroeconomy. These regulations are designed to contain the systemic risk that can arise from abrupt changes in housing prices. Ceilings on the loan-to-value ratio and debt service-to-income ratio were established as a key policy instrument. The current limit on the loan-to-value ratio is 70%, and the actual average of the loan-to-value ratio on existing loans is about 50%. There is some empirical evidence in support of the effectiveness of the macroprudential regulations (Igan and Kang 2011) but additional research is needed to establish their full impact (Jácome and Mitra 2015).

### 3.4.3 Structural Change in the Rental Housing Market

Since the nature of structural changes taking place in the rental-housing sector was explained in section 3.2.5, some data are now presented showing the magnitude of the changes in this section. Table 3.17 shows that the share of *chonsei* in total rental lease contracts dropped from 67% to 56%, whereas that of MRDs rose from 33% to 44% during the past 4 years. The decline in *chonsei* is expected to continue in the current market environment.

**Table 3.17: Rental Contract Transactions by Lease Type**

| | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|
| Total rental contracts ('000) | 1,321 | 1,324 | 1,373 | 1,467 | 1,472 |
| *Chonsei (%)* | 67.0 | 66.0 | 60.6 | 59.0 | 55.8 |
| Monthly rent with deposit (%) | 33.0 | 34.0 | 39.4 | 41.0 | 44.2 |

Source: MOLIT, http://rt.molit.go.kr

An analysis of more detailed data reveals that the composition of rental leases as well as that of *chonsei* leases by deposit amounts vary across regions and across submarkets within each region. For example, the share of *chonsei* leases is higher in Seoul and the Capital Region, while the share of MRDs is higher in the southeastern part of the country (Park 2015).

### 3.4.4 Political Economy of Housing Policy

Housing policy is a sensitive matter, and the process of its formulation and implementation is influenced by the interplay among various stakeholders. The dynamics of the political economy of housing policy in the Republic of Korea is changing in significant ways. The legislature is overpowering the administrative branch of government. Thus, the housing policy has become more politicized, and some policies announced by the government may not be realized as planned, due to delays in passage of relevant laws.

Relationships among key players in housing policy are also changing. The Ministry of Finance and Strategy, Bank of Korea (i.e., the central bank), and Financial Supervisory Committee are playing greater roles, while the role of the Ministry of Land, Infrastructure and Transport is somewhat decreasing as taxation and finance become more important policy tools compared with land-use control and development regulations. Coordination among the government units and that between the central and local governments is also becoming crucial in implementing housing policies.

The housing policy is an important intergenerational issue as well (Kim 2015). A substantial portion of the baby-boomer generation has accumulated housing wealth in the past, and they are concerned that housing prices may fall and erode their purchasing power. On the other hand, the younger generation is frustrated by the fact that homeownership is beyond their reach. They want to see housing prices fall further, and housing become more affordable.

Another dimension relates to intergenerational transfer of housing wealth. People in their 20s and 30s rely heavily on their parents and relatives for raising funds for home purchases and mobilizing deposits for *chonsei* leases. A 2012 Housing Conditions Survey showed that 48% of homebuyers in their 20s and 22% in their 30s received financial assistance from their parents, and that the size of the financial assistance was 77% and 59% of the total funds for home purchases for the two respective age groups. The same survey also showed that 42% and 21% of *chonsei* tenants in their 20s and 30s received 75% and 54%, respectively, of the deposits in financial assistance from their parents (Kim 2015). This has two important implications. The transfer of wealth will widen the inequality in wealth distribution among the younger generation. It also imposes a serious financial burden on parents who have already financed the education of their children and are ill-prepared for their own retirements.

## 3.5 Conclusions

Originally, the fundamental housing problem in the Republic of Korea was that of absolute housing shortages. The government did not allocate many resources to housing, however, because housing was regarded as a low-priority sector compared with manufacturing or infrastructure in facilitating economic development; underinvestment in new housing was a major reason for the chronic housing shortage in the 1960s through the mid-1980s (Kim and Suh 1991). It was not until the late 1980s that the government initiated a program involving massive supply to meet the increasing demand for quality housing by the middle class and allocated a significant amount of the budget to address the housing needs of low-income households.

The approach to housing policy was to engage the market system, supplemented by the public sector monopoly in the supply of developable land, government regulations, and incentives, to expand the housing stock and to distribute the incremental stock to intended target groups according to the rules set by the government. This approach succeeded in improving overall housing conditions in terms of quantity and quality as well as facilitating the formation of wealth by the middle class through housing.

A key element of the housing policy was also to contain speculation. The first example of this endeavor was the legislation of a special tax to discourage real estate speculation in 1968, which was consolidated into the capital gains tax later. The guiding principle was to encourage

each household to own one house; government treated owning two or more houses, often regardless of the value of the houses, as an act of speculation and, hence, imposed sanctions and levied heavy taxes. For example, the capital gains tax law had a provision for a higher rate (40%) for the owners of two houses, and an even higher rate (60%) for those owning three or more houses. The provision, which was abolished in December 2014, has an important implication for the private rental-housing sector dominated by the unorganized market, in which houses to let are provided by owners of two or more houses. The abolition of the punitive capital gains taxation means that these owners are to be treated as legitimate suppliers of rental housing.

The housing policy in the Republic of Korea was integrated with urban planning as new supplies of housing were made available through large-scale land development with adequate infrastructure. The best examples are the five new towns developed as an integral component of the TMHD in the suburbs of Seoul, and the second-generation new towns developed in locations farther from Seoul in the 2000s. New housing was provided in large quantities together with onsite infrastructure as well as access to the transport network connecting the new towns to Seoul and other cities in the region surrounding the capital.

Another feature of the housing policy was that public sector institutions played a key role in housing supply. The major public sector players were the Korea National Housing Corporation and Korea Land Development Corporation, which were merged to form the current Land and Housing Corporation in 2009. The two state-owned enterprises accounted for 81% of the volume of residential land development and 14% of total housing stock as of September 2013 (Son 2014). The basic principle was that the gains from land development should be recouped by the public sector to finance the provision of infrastructure and affordable low-income housing. All large-scale land development projects were implemented by these state-owned enterprises vested with the power to purchase nonurban land through eminent domain. This mechanism facilitated the timely provision of developable land for housing and the construction of housing itself.

The public sector–dominated land development system excluded the participation of private developers from major projects and the possible efficiency gain from diversity in the provision of housing, however. The whole process—selecting the location and size of land development projects, determining the number and composition of houses to be built on the developed and serviced land, and allocating the houses to would-be homebuyers—was regulated by government plans and regulations. The role of the private sector players was essentially limited to that of contractors to the public sector developers with guaranteed profits.

Despite the apparent success in increasing the quantity and improving the quality of the housing stock over the past 30 years, housing policy in the Republic of Korea has faced criticisms and new challenges. Experts consider the housing policy too complex, rigid, and politicized. The cumulated effects of numerous regulations governing the supply of developable land and housing are believed to have made supply inelastic (Renaud 1989; Kim, Malpezzi, Kim 2008). Many ordinary people feel that housing prices are still too high, homeownership is unaffordable, and rental options are inadequate and expensive. As the most familiar form of rental lease, *chonsei,* is giving way to MRDs, renters find their disposable income decreasing. The problem is felt most seriously by the young and the elderly, who typically have inadequate incomes. Increasing the provision of affordable housing, especially for the underserved, remains a crucial task in the Republic of Korea. Fundamental socioeconomic changes such as low fertility, population aging, and slower economic growth also posit new challenges to the housing policy.

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CHAPTER 4

# Housing Policies in Japan

*Masahiro Kobayashi*

## 4.1 Introduction

Housing policies in Japan after World War II were focused on the quantitative supply of houses to address the backlog of 4.2 million units. Japan's housing policy in the latter half of the 20th century comprised three pillars with a wide range of targeted groups: public rental houses, the Japan Housing Corporation (now the Urban Renaissance Agency [UR]), and the Government Housing Loan Corporation (now the Japan Housing Finance Agency [JHF]).

The restoration of the housing stock was successful in that the total number of houses exceeded that of households in the mid-1960s, but the collapse of the property bubble in the early 1990s had a negative impact on the real economy and created persistent loss of confidence among the Japanese people, which was exacerbated by deflation and negative demographic factors (decrease of the population and aging of society).

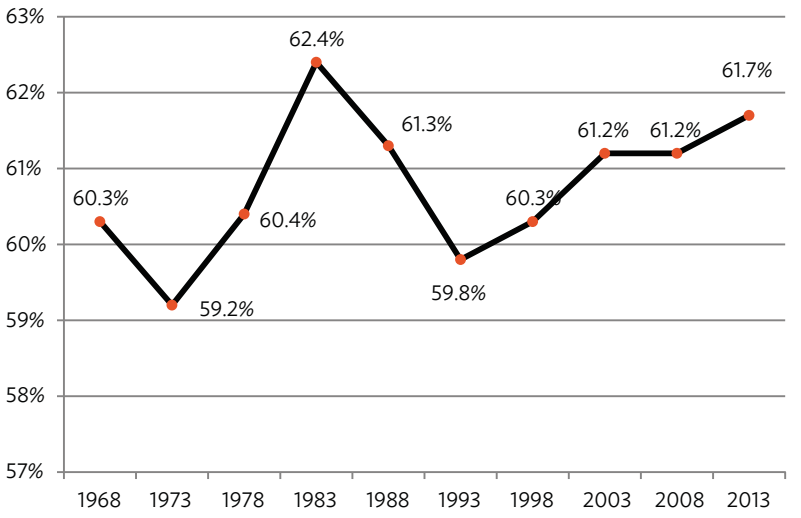
Enhancement of the quality of houses became an important part of housing policy in Japan in the 21st century, but, at the same time, there needs to be a balance between new construction and the activation of existing housing stocks.

In this paper, we explain the current status of the housing market in Japan, and discuss and evaluate the housing policies in the 20th century. We then explain the challenges of the housing market and housing policies in the 21st century, and draw some implications for other countries, and then conclude.

## 4.2 Current Status of the Housing Market

The homeownership ratio in Japan was 61.7% in 2013 (Figure 4.1). The level has been around 60% for nearly the last half century, with minor fluctuations, which is almost the same as the United States (US), (64.0% in 2014), the United Kingdom (UK) (64.6% in 2013), and France (64.3% in 2013), but higher than Germany (52.6% in 2013).[1]

**Figure 4.1: Homeownership Rate in Japan (%)**



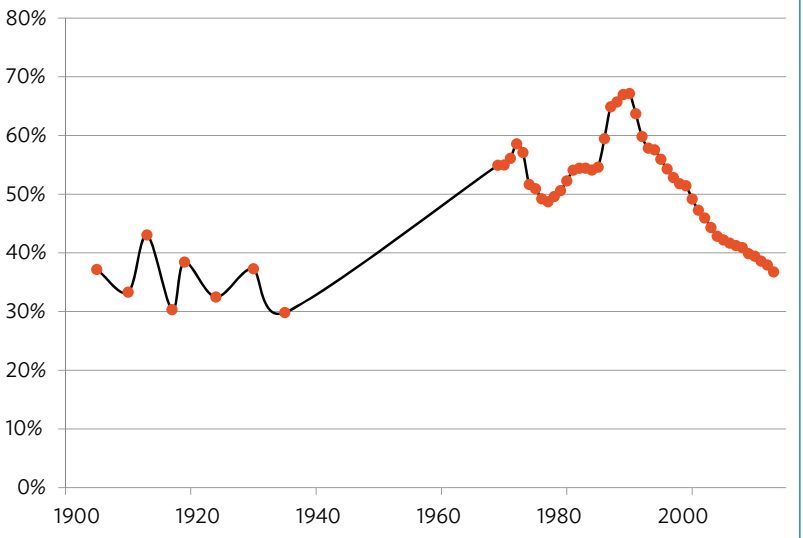

Source: Government of Japan, Statistics Bureau, Ministry of Internal Affairs and Communications.

Owner occupancy was not a major form of tenure in Japan before World War II and many people, especially in metropolitan areas, lived in rental properties, although there are no official statistics at the national

[1] The homeownership rate increased between 2008 and 2012, whereas it dropped in the US and the UK after the 2008–2009 global financial crisis. This is partly due to a change in the demographic composition, that is, the share of the elderly population, which usually has higher homeownership rate, has increased. However, the increase of the homeownership rate is minimal or moderate, at best.

level. The ratio of the value of land to the national net worth[2] was 30%–40% before the war, but increased to 50%–70% after, which illustrates the strong demand and subsequent increases of land prices after the war (Figure 4.2).

**Figure 4.2: Value of Land per National Net Worth** *(%)*




Note: The values before World War II do not include the occupied territories outside Japan as of today.

Sources: Government of Japan, Economic Planning Agency. Survey on National Net Worth before the War; Government of Japan, Cabinet Office. National Accounts for 1998 (68SNA, benchmark year = 1990) (1969–1993), National Accounts for 2013 (93SNA, benchmark year = 2005) (1994–2013).

As of October 2013, there were 60.63 million housing units in Japan, of which 8.20 million were vacant; thus, the vacancy rate was 13.5%. Based on the American Housing Survey,[3] the vacancy ratio for the US

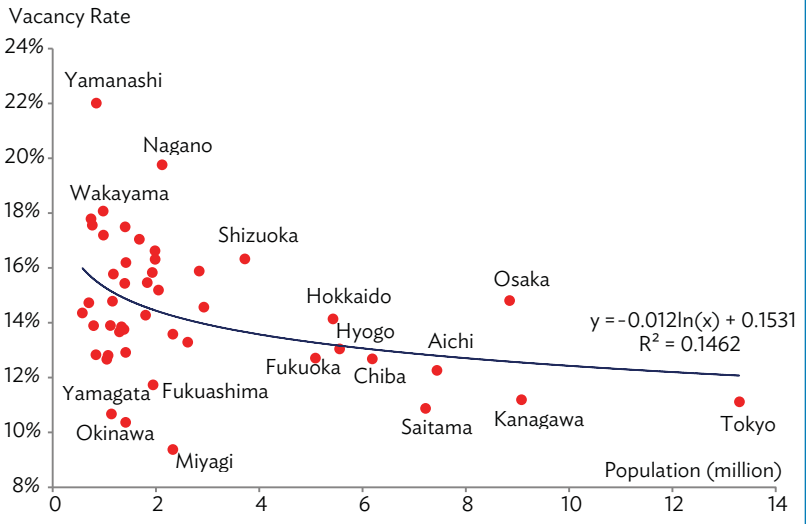
[2] The national net worth is the aggregated net worth of the domestic sectors including households, financial, and nonfinancial corporate businesses and the government sector.

[3] Table C-00-AH, American Housing Survey, Seasonal and Vacant Characteristics—All Housing Units, National Summary Tables – AHS 2013, Census Bureau, US Department of Commerce.

was 12.8% in 2013, but the figure for the US includes more second homes than in Japan. The vacancy rate is higher in regions with less population in Japan (Figure 4.3).

There are discussions whether Japan is constructing too many houses. The number of housing starts in Japan has been above 1 million units for the 40 years from 1968 to 2008 (Figure 4.4).

**Figure 4.3: Vacancy Rate in Japan by Prefectures, 2013**

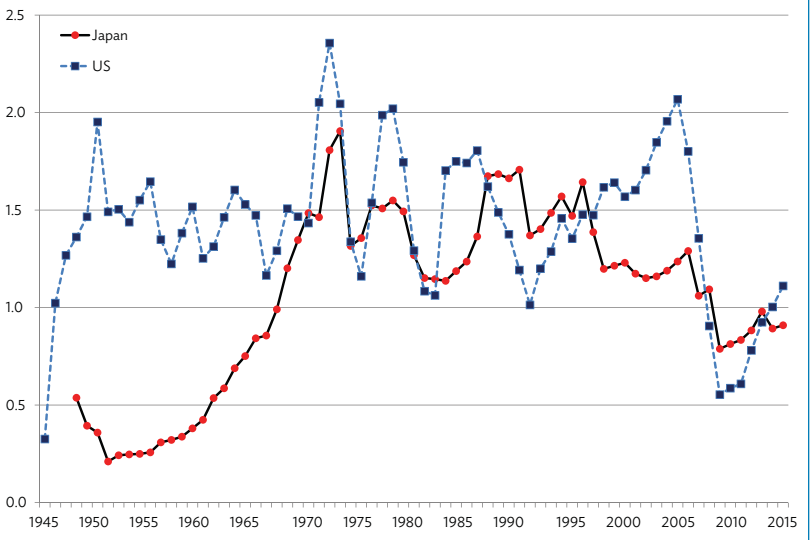



Source: Government of Japan; Ministry of Internal Affairs and Communications.

In 2009, the number of housing starts in Japan declined to 0.79 million units because of the global financial crisis and, since then, it has not returned to 1 million units. In 2013, it was 0.98 million units because of the rush of construction before the consumption tax rate change that was scheduled to be increased from 5% to 8% in April 2014.

This increased consumption tax rate in April 2014 adversely affected domestic demand, including housing construction, and the number of housing starts declined again to 0.89 million units in 2014. The Government of Japan postponed for 18 months the second phase of the increase of the consumption tax rate from 8% to 10%. To make the economic recovery more sustainable, the government introduced economic stimulus packages, which are discussed in a later section.

**Figure 4.4: Number of Housing Starts after World War II in Japan and the United States** (million units)




US = United States.

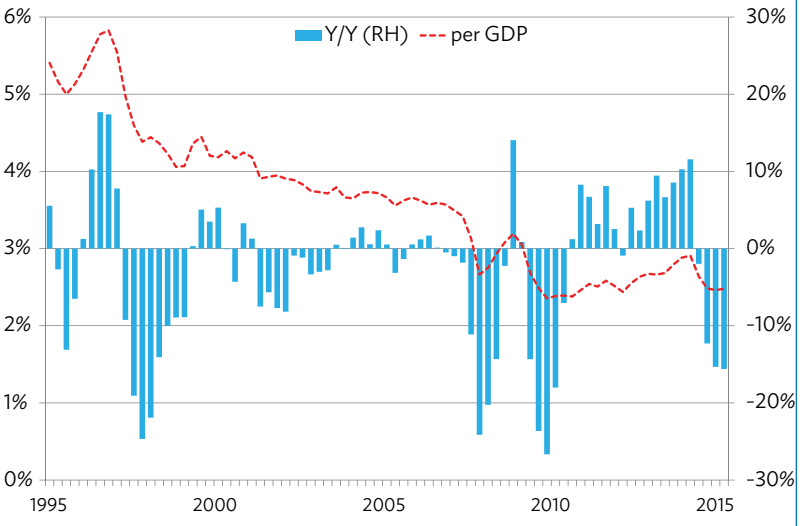
Note: Housing starts for the US before 1959 are derived from Federal Reserve Archival System for Economic Research (FRASER). Original source is United States Bureau of the Census. Historical Statistics of the United States: Colonial Times to 1970.

Sources: Federal Reserve Bank of St. Louis; Ministry of Land, Infrastructure, Transport and Tourism; US Department of Commerce.

Through the mid-1990s to this century, the share of private residential investments per gross domestic product (GDP) declined as well (Figure 4.5). It used to be above 5% in the previous century, but it is now below 3%.

Although the population of Japan is only 40% of that in the US (127 million in Japan and 316 million in the US in 2013), the number of housing starts used to be comparable. Nonetheless, the share of private residential investments per GDP is almost the same in Japan and the US. This reflects the difference of per unit investment.

**Figure 4.5: Private Residential Investments per GDP and its Year-over-Year Change**

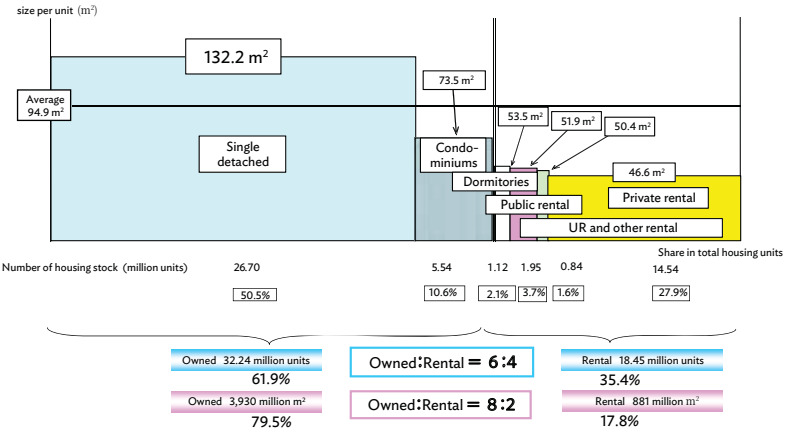



GDP = gross domestic product, RH = right hand axis, Y/Y = year-over-year.
Source: Government of Japan, Cabinet Office.

The average size of newly constructed, single-family detached houses was 125 square meters ($m^2$) for Japan and 247 $m^2$ for the US in 2013. Also the share of multifamily units, which are usually smaller than single-family detached houses, is much higher in Japan than in the US. Owner-occupied houses account for around 60% of the total housing stock, but represents 80% in terms of floor area (Figure 4.6). Compared with continental Europe, the size of single-family detached houses is almost the same, but the size of rental houses is significantly smaller.

There used to be no national home price index in Japan until recently. The Tokyo Stock Exchange developed a home price index using the repeat sale method similar to the Standard & Poor's/Case–Shiller Home Price Index in the US, computation of which was transferred to the Japan Real Estate Institute in 2015. This index, however, covers only condominiums in the Tokyo Metropolitan Area and goes back to June 1993.

## Figure 4.6: Distribution and Average Size of Houses in Japan by Tenure, 2013




m² = square meter, UR = Urban Renaissance Agency.

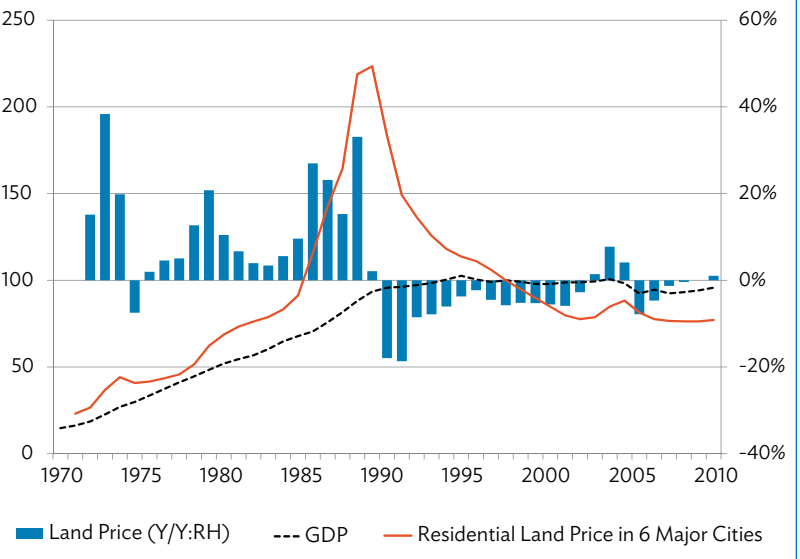
Source: Ministry of Land, Infrastructure, Transport and Tourism.

Considering that most of the fluctuation of home prices is mainly influenced by the changes of land prices, using the land price index as a proxy to the home price index is justified to some extent in Japan.

The land prices in Japan skyrocketed in the late 1980s, which turned out to be a property bubble in retrospect. The residential land prices in six major cities recorded their peak in 1991 and then started to plummet, resulting in 13 years of continuous declines from 1992 to 2005 (Figure 4.7).

In the meantime, the growth of nominal GDP also stagnated and Japan faced notorious "lost decades" amid persistent deflation. The impact of deflation on the housing market is discussed in the next section.

**Figure 4.7: Land Price and the Real Economy in Japan**




GDP = gross domestic product, Y/Y = year over year.

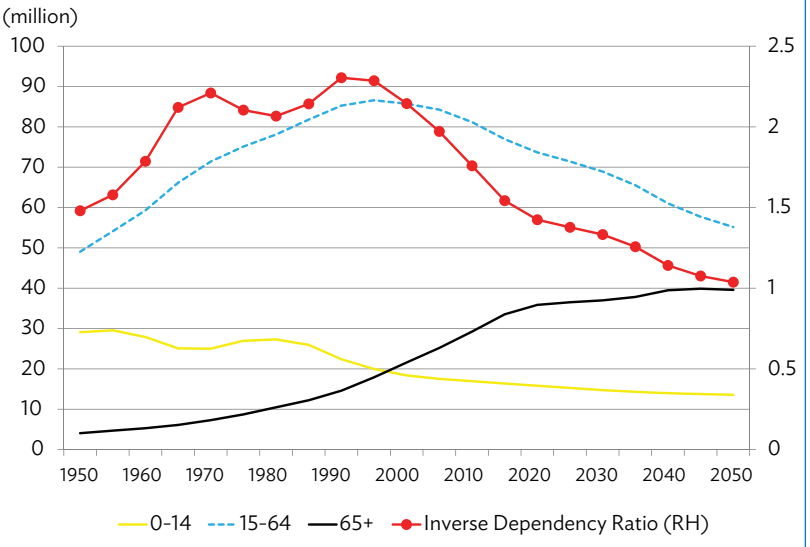
Sources: Japan Real Estate Institute; Government of Japan, Cabinet Office.

## 4.3 Challenges and Risks

The most important challenge for the housing market in Japan is the adverse demographic trend. Not only has the population of Japan started to decrease, but also the share of the working-age population against the dependent-age population is declining sharply (Figure 4.8). There are discussions whether Japan should continue to construct as many new houses as of today, even though there are 8 million vacant units.

The inverse dependency ratio (population aged 15–64 divided by the dependent-age population) has a positive correlation with housing statistics in Japan. There are two peaks of the inverse dependency ratio, one in the late 1960s and the other in the early 1990s, which coincide with the peaks of housing starts (Figure 4.9).

**Figure 4.8: Population Size in Age Group and the Inverse Dependency Ratio**




RH = right hand axis.

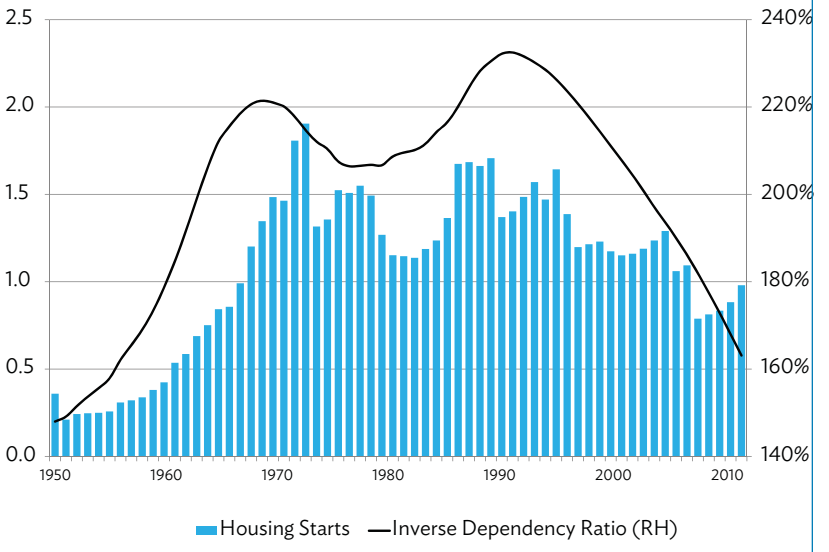
Note: Estimates start from 2015.

Source: United Nations, Department of Economic and Social Affairs, Population Division. 2015. World Population Prospects: The 2015 Revision, DVD Edition.

These two peaks of the inverse dependency ratio are eras when baby boomers (called "Dankai [group of mass] generations" in Japan) and the children of baby boomers (called Dankai junior in Japan) reached the working-age bracket and these periods are called "population bonus" periods in Japan. In the first wave of the population bonus, there was also a massive urban migration from rural agricultural areas, which boosted the demand for houses in urban areas. The population bonus period also coincided with the peak of real land prices (denominated by the consumer price index) (Figure 4.10).

Population projection is one of the most reliable social projections and many people in Japan believe that it is difficult to change the current demographic trend, and, if this situation persists, it will be difficult for

**Figure 4.9: Housing Starts and the Inverse Dependency Ratio**
(million units)



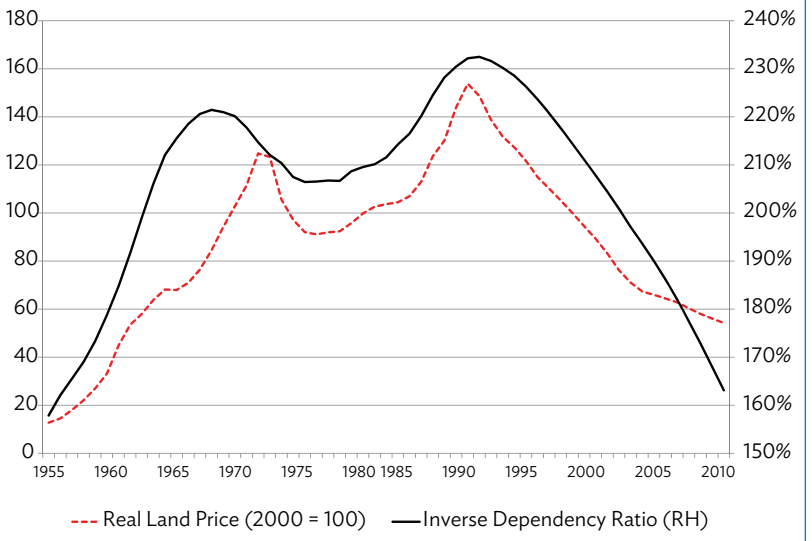

RH = right hand axis.

Sources: Ministry of Internal Affairs and Communications; Ministry of Land, Infrastructure, Transport and Tourism.

the Japanese economy to get out of deflation because of the weakening domestic demand.[4]

[4] To try to change this pessimistic view, the Government of Japan and the Bank of Japan released the "Joint Statement of the Government and the Bank of Japan on Overcoming Deflation and Achieving Sustainable Economic Growth" in January 2013 and, subsequently, the Bank of Japan introduced Quantitative and Qualitative Monetary Easing in April 2013. With strong monetary accommodation by the Bank of Japan, the inflation rate picked up to be positive in 2014. "Three arrows" comprising extraordinary monetary accommodation, flexible fiscal policy, and growth strategy (often understood as structural reform in a foreign context) is expected to convert the Japanese economy back to sustainable growth. Japan is undergoing a huge social experiment, and this will have many implications for the European countries that have similar symptoms with Japan and are facing adverse demographics and are on the brink of deflation.

**Figure 4.10: Real Land Price and the Inverse Dependency Ratio**



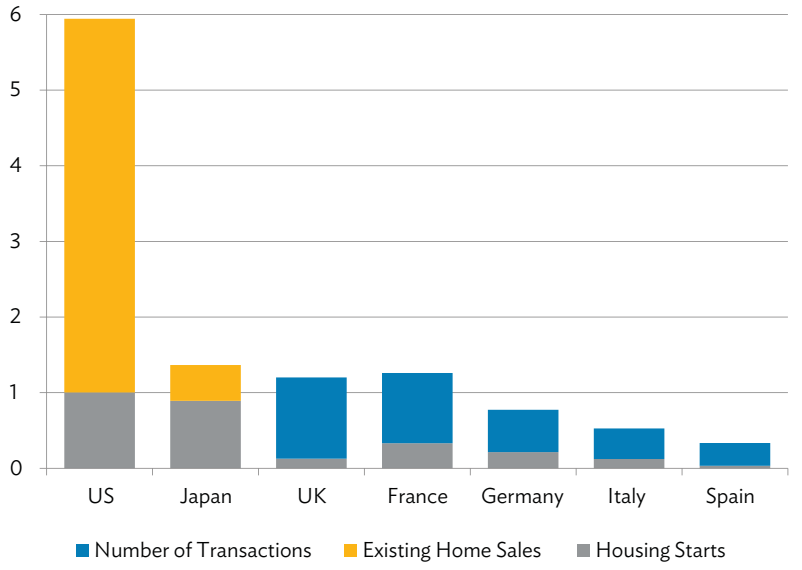

RH = right hand axis.

Sources: Japanese Real Estate Institute; Ministry of Internal Affairs and Communications.

Compared with relatively large new construction projects, the sales of existing homes are small in Japan relative to the US (Figure 4.11). There are several statistics that cover the number of existing home sales, and one of the largest figures is the estimate by the Association of Real Estate Agents of Japan (Fudosan–Ryutu–Keieikyoukai). The Fudosan–Ryutu–Keieikyoukai estimates that the number of existing home sales was 473,000 units in 2012. This is almost half of new housing starts in Japan.[5]

[5] According to the "Survey on Housing Market Trends 2013" by the Ministry of Land, Infrastructure, Transport and Tourism (MLIT), the vast majority of homebuyers who purchased or constructed new houses responded that they did not choose existing homes just because they feel happy with new buildings, while the vast majority of homebuyers who purchased existing homes responded that they bought existing homes because they are less expensive. There is a strong propensity for new houses in Japan, partly due to the difference of quality between new homes and existing homes and that possible structural defects for existing houses are hard to detect.

**Figure 4.11: Size of the Housing Market in Terms of Number of Transactions** (million units)



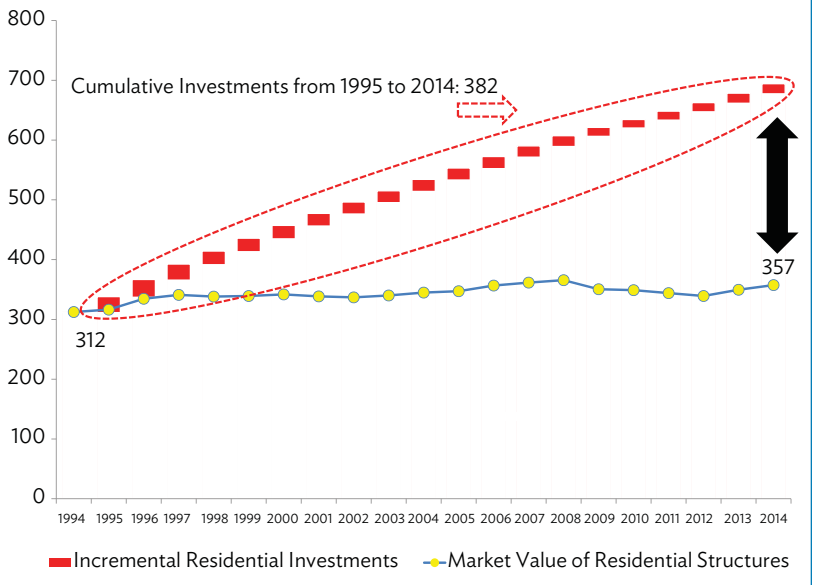

FRK = Fudosan–Ryutu–Keieikyoukai, UK = United Kingdom, US = United States.

Note: Existing home sales in Japan are for 2012 and estimates by the FRK. "Housing Starts" in Germany is "Housing Completions." Other figures for the US and Japan are for 2014 and for Europe are for 2013. "Number of transactions" includes both new and existing homes.

Sources: Association of Real Estate Agents of Japan; European Mortgage Federation; National Association of Realtors; Ministry of Land, Infrastructure, Transport and Tourism; US Department of Commerce.

The low turnover of existing houses is one of the causes of the sharper decline of the value of properties by age. It is inevitable for existing homes to depreciate, but the degree of depreciation in Japan is higher than other developed economies. From 1995 to 2014, the cumulative amount of nominal residential investment was ¥382 trillion. The market value of existing residential structures in 1994 was ¥312 trillion. If automatically added, the market value of existing residential structures in 2013 should have reached ¥694 trillion, but the actual value was only ¥357 trillion (Figure 4.12).

**Figure 4.12: Value of Residential Investments** (¥ trillion)




Source: Government of Japan, Cabinet Office.

How to enhance the value of existing homes and increase the sale of existing homes is one of the major challenges for the Japanese housing market, and the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) is launching various policy measures to address this matter (to be discussed later).

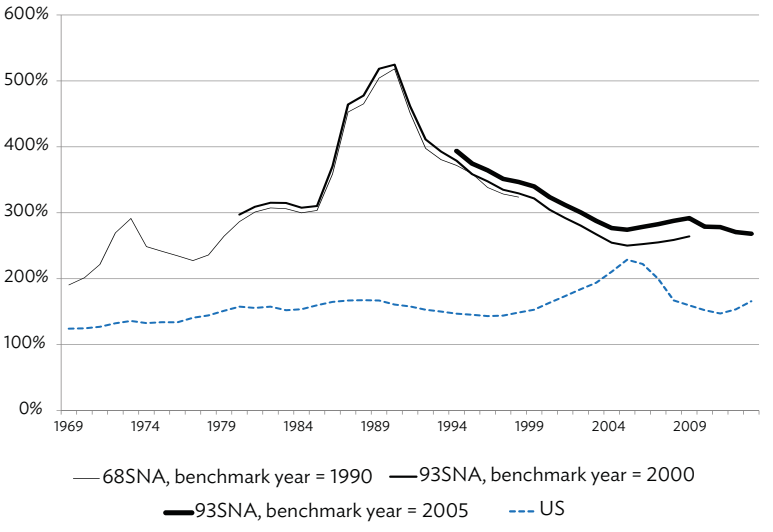
Another major challenge for the housing market in Japan is the frequency of natural disasters. It is 5 years since Japan was hit by the Great East Japan Earthquake on 11 March 2011. It is noted also that the western part of Japan was hit by the Great Hanshin–Awaji Earthquake on 17 January 1995. Enhancing the earthquake resilience of residential structures remains an important challenge, which is discussed in the housing policy section.

Some people think that Japanese property prices are still high.[6] If we compare the national aggregate of house values (including vacant

[6] It is to be noted that a major challenge for policy makers in Japan in the late 1980s was how to curb the skyrocketing housing prices and enhance affordability of houses especially in urban areas. The rapid appreciation of property prices turned out to be a bubble that burst naturally. The priority of housing policy regarding house prices has turned 180 degrees since then.

land because there are no statistics in Japan that are the same as Z1[7] in the US), their ratios to nominal values of GDP remain higher in Japan than in the US (Figure 4.13).

**Figure 4.13: Value of Housing Structure and Residential Land per GDP in Japan and the United States (%)**




GDP = gross domestic product, SNA = system of national accounts, US = United States.

Sources: Government of Japan, Cabinet Office; US Federal Reserve; US Department of Commerce.

Nonetheless, the average home price is four to six times the household income and the debt-to-income (debt-service) ratio is around 20%, partly because of the low interest rates (Table 4.1).

[7] B.101 Balance Sheet of Households and Nonprofit Organizations (1), Financial Accounts of the United States–Z1, Federal Reserve.

## Table 4.1: Key Housing Statistics in Japan

**Survey on Housing Market Trend (2013)**

| | Built to Order | | House for Sale | | Existing Home | |
|---|---|---|---|---|---|---|
| | w/o Land | With Land | Detached | Condos | Detached | Condos |
| Household Income (¥ million) | 6.16 | 6.16 | 6.75 | 6.89 | 5.80 | 6.13 |
| Home Price (¥ million) | 28.82 | 40.17 | 36.27 | 35.83 | 23.11 | 22.53 |
| Borrowings (¥ million) | 17.80 | 26.50 | 24.91 | 23.69 | 13.45 | 11.63 |
| Down Payment (¥ million) | 11.02 | 13.67 | 11.37 | 12.13 | 9.66 | 10.90 |
| Price-to-Income Ratio | 4.7 | 6.5 | 5.4 | 5.2 | 4.0 | 3.7 |
| Loan-to-Value Ratio | 62% | 66% | 69% | 66% | 58% | 52% |

**JHF Profile of F35 Borrowers (2013)**

| | Built to Order | | House for Sale | | Existing Home | |
|---|---|---|---|---|---|---|
| | w/o Land | With Land | Detached | Condos | Detached | Condos |
| Household Income (¥ million) | 5.85 | 5.91 | 5.77 | 7.48 | 5.22 | 5.99 |
| Home Price (¥ million) | 30.15 | 36.37 | 33.20 | 38.62 | 22.53 | 25.62 |
| Borrowings (¥ million) | 23.75 | 31.74 | 27.76 | 30.11 | 19.16 | 21.07 |
| Down Payment (¥ million) | 6.40 | 4.63 | 5.43 | 8.50 | 3.37 | 4.55 |
| Price-to-Income Ratio | 5.2 | 6.2 | 5.7 | 5.2 | 4.3 | 4.3 |
| Loan-to-Value Ratio | 79% | 87% | 84% | 78% | 85% | 82% |

F35 = Flat 35; JHF = Japan Housing Finance Agency; MILT = Ministry of Ministry of Land, Infrastructure, Transport and Tourism; w/o =without.

Sources: Ministry of Ministry of Land, Infrastructure, Transport and Tourism; Japan Housing Finance Agency.

What is interesting is that during 1994–2014, the value of land owned by the household sector decreased by ¥480 trillion, but this sector increased the balance of net financial assets by ¥530 trillion (Figure 4.14).

**Figure 4.14: Change of Balance for Households in Japan, 1994–2014** (¥ trillion)

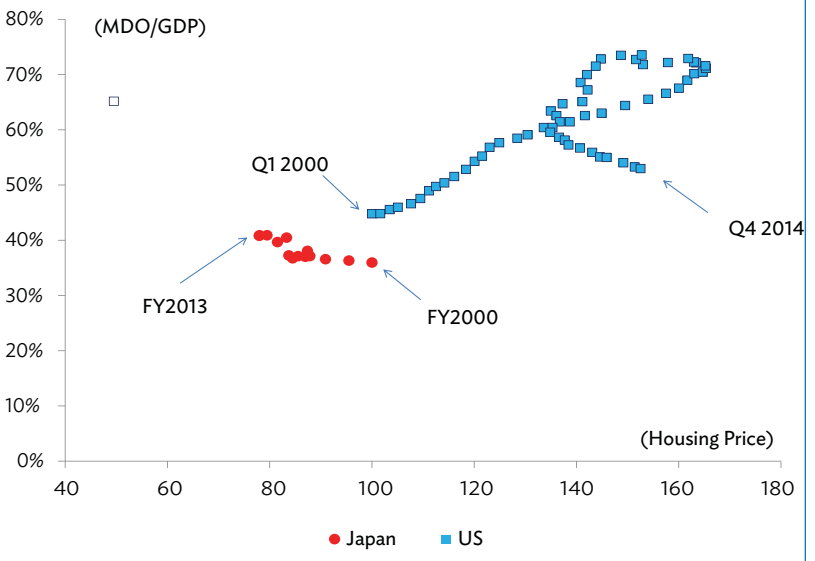

Source: Government of Japan, Cabinet Office.

It is sometimes pointed out that the mortgage debt outstanding (MDO) per GDP in Japan is lower than in other developed economies. The MDO/GDP in Japan has remained around 40% since the beginning of the 21st century. The figure for the US was also below 50% at the beginning of this century. The MDO/GDP in the US increased to 70% amid the housing bubble in the early 2000s (Figure 4.15).

The inflation of the MDO/GDP ratio in the US is, to a large extent, attributable to the appreciation of property values, whereas there was no such phenomenon in Japan. Also, many people in Japan thought it was more advantageous to prepay outstanding mortgage debts because the interest rate in Japan was extremely low and curtailment (partial prepayment) composed a significant part of prepayment in Japan.[8]

[8] There is income tax deduction for mortgages in Japan (to be discussed later), but the incentive to maintain outstanding balances to enjoy tax benefits is not as big as in the US because of the adverse interest rate environment in Japan.

**Figure 4.15: MDO/GDP and Housing Prices in Japan and the United States**




FY = fiscal year, GDP = gross domestic product, MDO = mortgage debt outstanding, Q = quarter, US = United States.

Sources: Bank of Japan, Government of Japan, Cabinet Office; FHFA = Federal Housing Finance Agency; US Federal Reserve; US Department of Commerce.

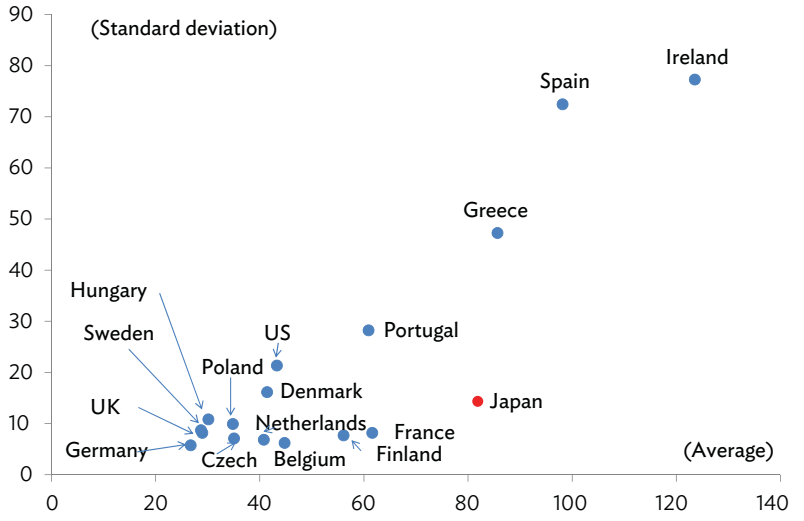
Housing construction was maintained at a high level despite the decreases in housing prices and large vacancies in Japan, partly due to the short life of existing houses to be replaced by new investments, and partly due to the strong demand for new houses with higher quality among homebuyers (which may be amplified by economic stimulus measures to some extent).

It is also noted, however, that although housing starts per capita in Japan are higher than in the US, it is not necessarily too high compared with some European countries (Figure 4.16).

Ireland, Spain, and Greece had a larger amount of housing construction than Japan, on average, although their markets crashed after the mid-2000s. France, which had a large amount of housing construction, however, had a stable market in terms of housing prices. Also, the UK had small housing supply and this constraint on supply is

considered to be one of the causes of high property prices in the UK. However, Germany, which had a similar small housing supply, did not experience the same movement of housing prices as the UK.

**Figure 4.16: Housing Starts per 10,000 Capita, 2002–2013**




UK = United Kingdom, US = United States.

Note: The value for Germany starts from 2003; the values for Japan, the US, and France end in 2014; and the values for Germany, Hungary, the Netherlands, Ireland, and Portugal are housing completions instead of housing starts.

Sources: EMF Hypostat 2014; Eurostat; Ministry of Internal Affairs and Communications; Ministry of Land, Infrastructure, Transport and Tourism; National Institute of Statistics and Economic Studies (France); US Department of Commerce.

## 4.4 Housing Policies in Japan

### 4.4.1 1945–2000

When World War II ended in 1945, there was a shortage of housing in Japan—around 4.2 million units. To address this shortfall, the housing policy priority of the Government of Japan was to increase the quantitative supply of housing, and several government agencies were

established. First, the Ministry of Construction was established on 10 July 1948. Then, the so-called "three pillars for housing policy" to increase housing units were introduced in the 1950s as follows, in the order of establishment:

(1) The Government Housing Loan Corporation (GHLC) was established on 5 June 1950 to assist housing construction financially by providing liquidity to the mortgage markets, which were virtually nonexistent previously.
(2) The Public Housing Act (Act No. 193 of 1951) was enacted in 1951 to authorize local government units (LGUs) to construct public rental houses for low-income people.
(3) The Japan Housing Corporation (JHC) was established in 1955 to promote collective construction of housing and the large-scale supply of residential land for middle-income people, mainly in major urban areas.

The government enacted the Housing Construction Plan Law in 1966 and stipulated the target of housing supply under each Housing Construction Five-Year Program. The amount of housing stock exceeded the number of households in 1968.

#### 4.4.1.1 Government Housing Loan Corporation

##### *Outline of the Government Housing Loan Corporation*

The Government of Japan established the GHLC in 1950 to provide low-interest, fixed-rate mortgages. When established, the GHLC received paid-in capital[9] from the government.

To achieve the massive supply of housing, however, the funding mechanism that was dependent on payment of capital from the government proved to be insufficient both for the GHLC and the JHC. Both these entities borrowed from the Fiscal Investment and Loan Program (FILP) under the Ministry of Finance (Figure 4.17).

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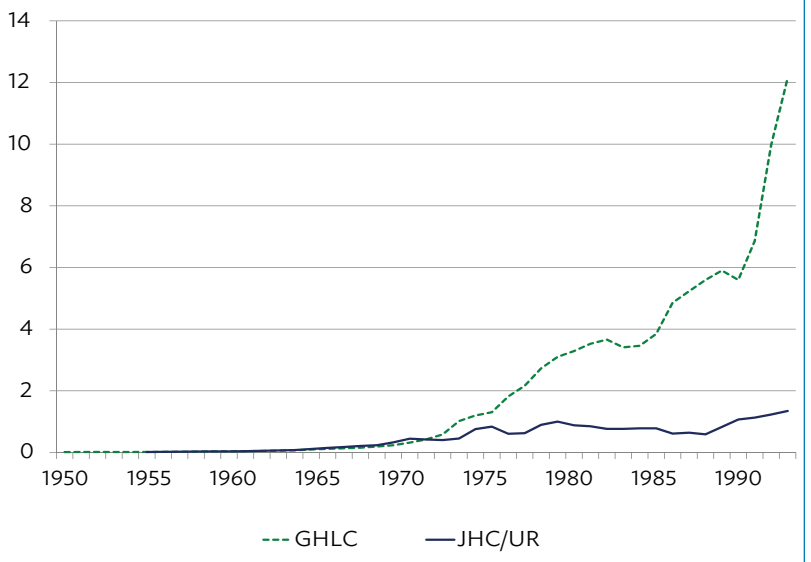
[9] When established, the GHLC received capitalization from a special account of the Government of Japan that used the reversal of the foreign assistance from the US: the Government Appropriation for Relief in Occupied Area and the Economic Rehabilitation in Occupied Area. The amount of this appropriation was ¥10 billion and the GHLC also received capitalization from the general account of the Government of Japan amounting to ¥5 billion in 1950. The payment from the Government of Japan to the GHLC to increase the capital continued until 1967. Since then, the capital of the GHLC remained at ¥97.2 billion until 2007 when the GHLC was replaced by the JHF.

As Figure 4.17 illustrates, the GHLC was one of the heaviest users of FILP borrowings and, therefore, it is desirable to explain how the GHLC funding worked in the 20th century. Among the three pillars of housing policy, the GHLC made the largest contribution to the supply of houses in terms of quantity (Figure 4.18).[10]

From 1950 to 2007, the GHLC financed 19.41 million housing units. The total housing starts for the same period in Japan were 64.1 million units. The GHLC contributed to nearly 30% of the postwar housing construction.

**Figure 4.17: FILP Gross Borrowing for the GHLC and the JHC/UR** (¥ trillion)

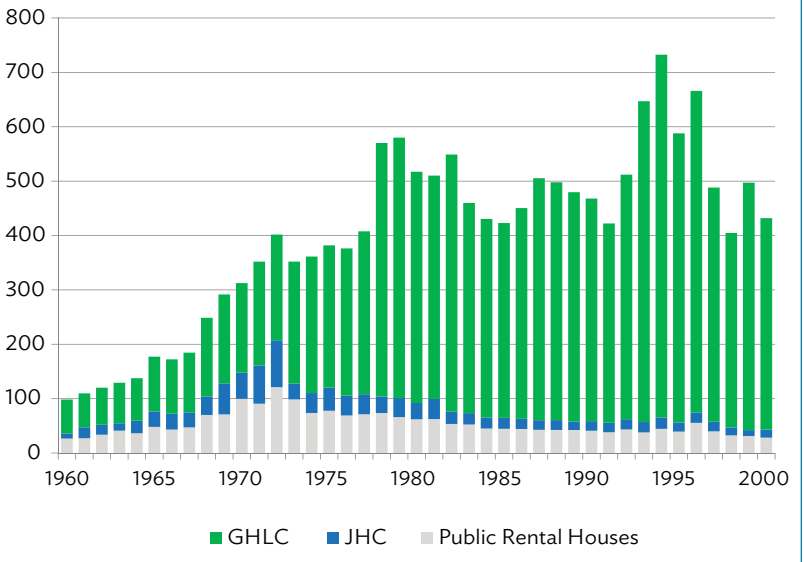



FILP = Fiscal Investment and Loan Program, GHLC = Government Housing Loan Corporation, JHC = Japan Housing Corporation, UR = Urban Renaissance Agency.

Source: Ministry of Construction. 50-Year History of the Ministry of Construction.

[10] Kanemoto (1997) argues that one of the demerits of a GHLC loan was that it did not contribute to the enhancement of the quality of houses because the subsidized loan was available only for small houses (up to 125 $m^2$). However, the average size of GHLC-financed houses was not smaller than privately financed houses.

**Figure 4.18: Number of Housing Starts by Source of Funds**
(1,000 units)



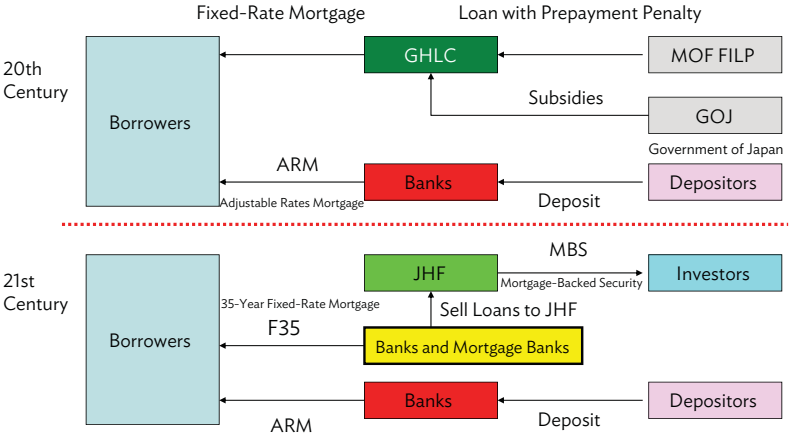

GHLC = Government Housing Loan Corporation, JHC = Japan Housing Corporation.

Source: Ministry of Land, Infrastructure, Transport and Tourism.

To promote homeownership, there was a cap on the lending rate that the GHLC could charge to borrowers. It was set at 5.5% for low-middle-income borrowers by GHLC law. Any negative interest margin between the lending rate and the funding cost were supposed to be reimbursed with subsidies from the general account of the Government of Japan (Figure 4.19).

High-income people were also eligible to borrow from the GHLC, but the interest rate was not concessional. Furthermore, there was a ceiling for the price of the houses, and luxurious houses were not eligible for GHLC loans. The GHLC established a proprietary structural standard for houses it financed, in addition to the Building Standard Law that applied to all construction works (with minor exceptions). The GHLC was mandated to enhance the quality of houses in Japan, but allocation of resources was more focused on low- and middle-income borrowers.

**Figure 4.19: Mortgage Market Reform in Japan**




ARM = adjustable rates mortgage, F35 = Flat 35, FILP = Fiscal Investment and Loan Program, GHLC = Government Housing Loan Corporation, GOJ = Government of Japan, JHF = Japan Housing Finance Agency, MBS = mortgage-backed securities.

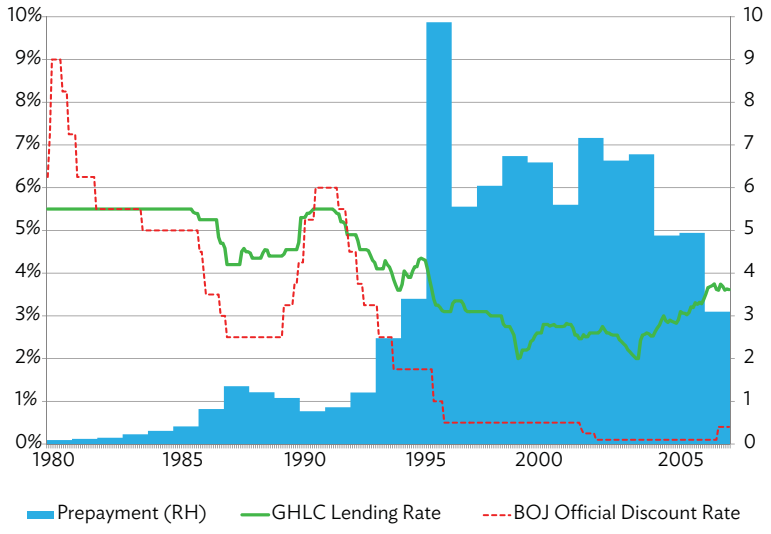
Source: Japan Housing Finance Agency.

The GHLC was, however, competing with private banks in the primary lending market. For banks that depended on deposits, it was difficult to provide fixed-rate mortgages in the 20th century. After the collapse of the bubble in the real estate market in the early 1990s, banks suffered from nonperforming loans and struggled to find business opportunities to restore profitability. The GHLC, on the other hand, was asked by the government to expand its lending program to stimulate the economy.

During the 1990s when the economy was struggling, interest rates continued to decline, partly due to the monetary policies of the Bank of Japan and partly due to the decline of the inflation rate. During this time, the fiscal position of the government deteriorated and the ratio of public debt to GDP increased substantially.

The decline of interest rates triggered prepayment on the outstanding mortgage assets of the GHLC. The amount of prepayment increased to ¥9.9 trillion in fiscal year (FY) 1995 (Figure 4.20).

**Figure 4.20: Interest Rate and Prepayment on GHLC Loans**
(¥ trillion)




BOJ = Bank of Japan, GHLC = Government Housing Loan Corporation, RH = right hand axis.

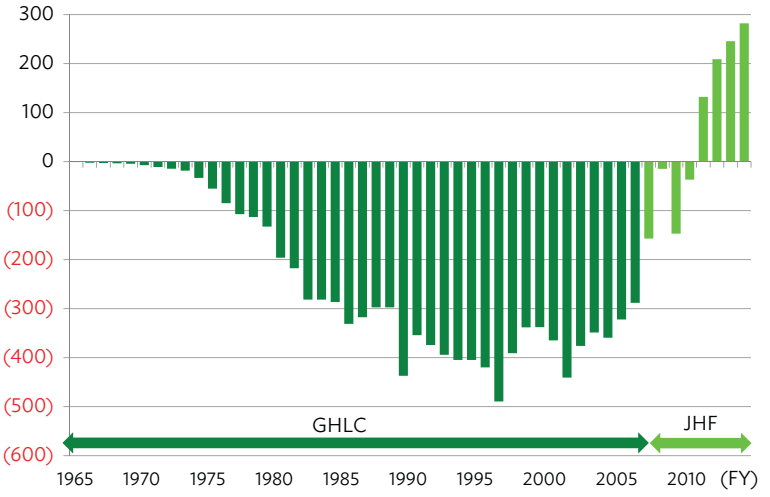
Sources: Bank of Japan; Japan Housing Finance Agency.

The borrowers of GHLC loans could prepay without penalty, but the GHLC had to pay a penalty to FILP if it were to prepay. The subsidy for the GHLC was around ¥400 billion through the 1990s (Figure 4.21). Such a fiscal burden became difficult for the government to appropriate and it decided to wind down the GHLC and replace it with another government agency, the JHF.

### *Merits and Demerits of the Housing Policy Related to the Government Housing Loan Corporation*

The most significant merit of GHLC loans was that they enabled the restoration of the housing stock in a very short period of time with simultaneous improvements to the housing quality. Just after World War II, there was a huge shortage of houses and many barracks were built to provide places for people to live. The GHLC established proprietary structural criteria for its lending, which improved the quality of houses and, at the same time, contributed to securing the collateral value.

**Figure 4.21: Amount of Subsidy to GHLC** (¥ billion)




FY = fiscal year, GHLC = Government Housing Loan Corporation, JHF = Japan Housing Finance Agency.

Source: Japan Housing Finance Agency.

Private banks were not willing to originate mortgages during the postwar period and the GHLC established a de facto standard for mortgage documents, underwriting, foreclosure, and other operational practices for housing in Japan. Massive provision of liquidity was enabled by the FILP, which raised funds from the Postal Savings and the National Pensions nationwide, thus, mobilizing unutilized financial resources that otherwise might have been kept in the form of cash.

The GHLC financed 19.4 million housing units from 1950 to 2007. The cost for this funding was the sum of subsidies it received from the general account of the national budget, which was ¥400 billion in the late 1990s. The demerit of a GHLC loan was that it competed with private banks in the primary lending market. As private banks expanded their business, the GHLC was not prepared for the massive prepayment that occurred in the late 1990s.

As the business environment changed, the role of the GHLC needed to be changed. Thus, the government decided to wind down the GHLC in December 2001. The GHLC was replaced by the JHF in April 2007.

#### 4.4.1.2 Public Rental Housing

##### *Outline of Public Rental Housing*

The Public Housing Act (No. 193 of 1951) was introduced to promote the construction of public rental houses for low-income people.[11] Under this scheme, the Government of Japan is mandated to extend fiscal assistance for LGUs that construct and operate public rental houses. Unlike the GHLC/JHF or the JHC/UR, the implementing entity is not a national agency but LGUs. Fiscal assistance from the Government of Japan to LGUs includes a subsidy for the construction of public rental houses and a subsidy to compensate the operational margins including rent assistance for very low-income renters.

Because of the highly subsidized nature of the program, the beneficiaries are limited to low-income renters and the criteria to select the occupants are established in accordance with a certain formula. Up to 2013, there were 1.96 million public rental houses nationwide.

##### *Target Income Group of Public Rental Houses*

The average rent for public rental houses is lower than for private rental houses (Figure 4.22). There is an income limit for eligibility to apply for public rental houses. Furthermore, rent assistance for public rental houses is restricted to the lower 40% of the income bracket.

If the income of residents of public rental houses increases above the threshold, the residents are recommended to leave the units, but actual eviction is quite difficult.

##### *Merits and Demerits of Public Rental Houses*

Public housing was aggressively built in the 1950s and 1960s (Ito 1994). The number of public rental houses reached close to 2 million units in 1973. It contributed to addressing the needs of low-income people who had difficulty finding affordable houses through the normal market mechanism.

However, due to the advantageous pricing, there was a long waiting list in urban areas, and Kanemoto (1997: 636) notes that "the average number of applicants per unit (was) 35.5 for housing provided by Tokyo prefecture in 1989." There was an inequality among those who won the public lottery selection and those who lost among low-income people.

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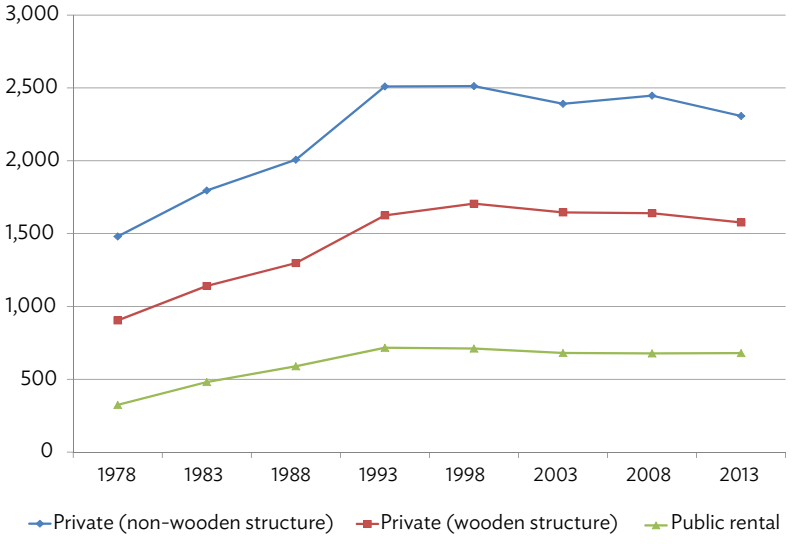
[11] This act is considered to be related to Article 25 of the Constitution that states: "All people shall have the right to maintain the minimum standards of wholesome and cultured living."

**Figure 4.22: Average Rent** (per $m^2$)




$m^2$ = square meter.

Source: Ministry of Land, Infrastructure, Transport and Tourism.

Another demerit was that the occupants were not willing to return the key to vacate the units even after their income reached above the income threshold. Eviction of those unqualified occupants was a difficult task for the LGUs. (A new framework to substantially increase the rent for unqualified occupants was introduced later.)

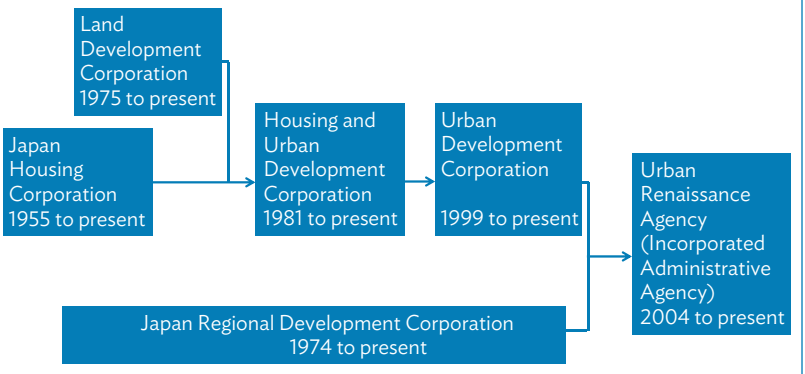
Investment of public rental houses was concentrated in the postwar period. In this regard, "many of the units built in those years are now considered to be too small" (Ito 1994: 224) based on the current status of housing market conditions. Renovation of public rental houses was promoted, but fiscal constraints and the unwillingness of elderly residents remains a challenge for smooth implementation of the renovation of existing public rental housing stock.

#### 4.4.1.3 Japan Housing Corporation

***Outline of the Japan Housing Corporation***

The third, but not the least, pillar of postwar housing policies in Japan is the JHC, which was established in 1955 to mainly address the need of people migrating from rural areas to urban areas. The JHC underwent several organizational transformations with other government agencies through mergers. At the end of the 20th century, it was reorganized into the Urban Development Corporation (UDC) (Figure 4.23).

**Figure 4.23: History of the Transformation from the JHC to the UR**




JHC = Japan Housing Corporation, UR = Urban Renaissance Agency.

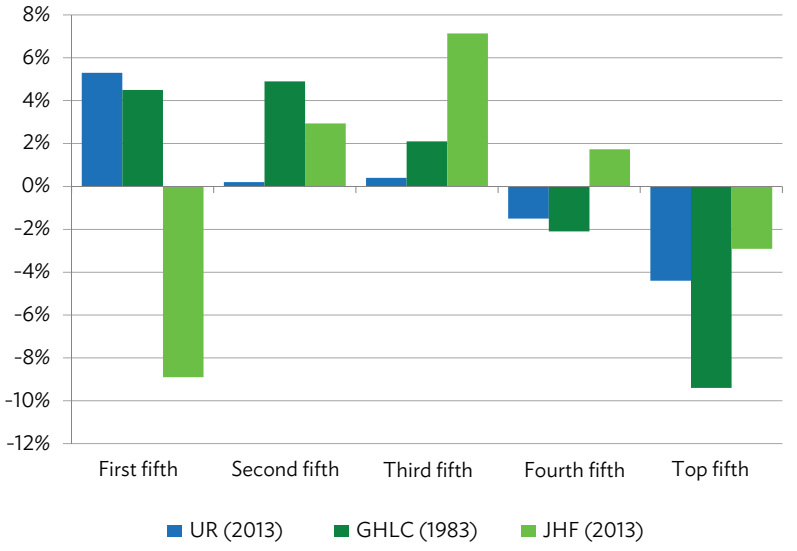
Source: Urban Renaissance Agency.

In 2004, the UDC undertook part of the operations of the Japan Regional Development Corporation and reorganized it into the Urban Renaissance Agency (UR), which still exists today.

***Target Income Group of the Urban Renaissance Agency and the Government Housing Loan Corporation/Japan Housing Finance Agency***

The UR and the GHLC provided assistance to low- to middle-income people. If we take a look at the distribution of the income bracket of the UR in 2013 and the GHLC in 1983, both have a larger share in the lower-income bracket than the overall population but a smaller share in the

**Figure 4.24: Targeted Group by Income Bracket**
(difference from benchmark) (%)




GHLC = Government Housing Loan Corporation, JHF = Japan Housing Finance Agency, UR = Urban Renaissance Agency.

Sources: Japan Housing Finance Agency; Urban Renaissance Agency.

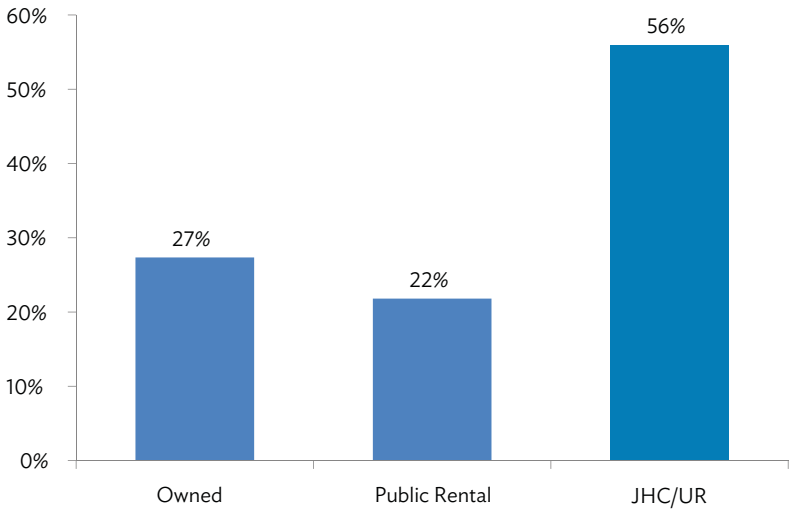
higher-income bracket. However, the JHF, having a lower share in the high-income bracket, has a lower share in the lowest 20% (Figure 4.24).

The GHLC used to receive a subsidy from the government whereas the JHF does not. The JHF assists people who have the ability to pay, resulting in more focus on the middle-income bracket.

The GHLC used to receive a subsidy from the government whereas the JHF does not. The JHC used to provide rental houses as well as houses for sale, including condominiums. What was unique for the JHC was that it was mainly focused on the housing problems in urban areas. As of 2013, the UR administered 855,500 housing units, of which 478,300 units are located in the Tokyo Metropolitan Area.[12] This accounts for 55.9% of the total UR houses and shows high geographic concentration (Figure 4.25).

[12] Tokyo, Kanagawa, Chiba, and Saitama prefectures.

**Figure 4.25: Share of Tokyo Metropolitan Areas (%)**




JHC = Japan Housing Corporation, UR = Urban Renaissance Agency.

Source: Ministry of Internal Affairs and Communications.

### *Merits and Demerits of the Japan Housing Corporation*

The JHC pioneered the large-scale residential site development known as the "new town development" in Japan. It created Tama New Town in the Tokyo Metropolitan Area and Senri New Town in the Osaka Metropolitan Area, both of which are regarded as templates for the urban development model to be implemented by the private sector. Through these projects, the living style for multifamily residential units was established in urban areas, including housing units that had bathrooms in the units. Such wording as "3 DK" (meaning three bedrooms with separate dining room and kitchen) became popular in the 1960s.

However, the advantage of the JHC diminished "as private developers accumulate business know-how and become stronger financially" (Kanemoto 1997: 637).

The government decided to reorganize the UDC in the Cabinet Resolution of 2001, which also decided to abolish the GHLC. It was decided to wind down some of the operations of the UDC including the new town development and the construction of new rental properties in general.

The newly established UR has mandates to contribute to urban renewals and the creation of business opportunities for the private sector, among others. The UR, together with the JHF, is extending assistance for the restoration of disaster-affected areas in the Tohoku region after the earthquake on 11 March 2011.

#### 4.4.1.4 Tax Policies Related to the Housing Market

##### *Property Tax and Stamp Tax*

Property tax is a local tax that is charged on the land and structures at 1.4% of the appraised value. City planning tax is also charged on the same property at 0.3%. This appraised value is determined by the local authorities and is often lower than the prevailing market value of the properties[13] (Ito 1994). The revenue from property tax was ¥8.489 trillion in FY2012 (approximately $103 billion equivalent, using the foreign exchange rate in March 2012).

There used to be an exceptional treatment for small residential properties wherein the tax rate on the land is reduced to one-sixth of the appraised value if there remains a residential structure on it. This was cited as one of the causes of the high vacancy rate in Japan, because even after the property is not occupied and better demolished, the owner of the property has an incentive to leave the property as it is to enjoy a lower property tax rate. (This treatment was amended in 2015, and is discussed later.) Stamp tax is charged to register the title of the property. It is charged to transfer the title of the property as well.

##### *Income Tax Deduction for Mortgages*

Income tax deduction for mortgages was introduced in the FY1986 budget in Japan. This is the same year as the tax reform in the US, but the mechanism is different. In Japan, 1% of the outstanding balance of a mortgage is deducted from the amount of income tax. This is different from the mortgage interest payment deduction in the US. In the US, the payment of mortgage interest is deducted from the taxable income, and, hence, there is a regressive effect; if the marginal tax rate is higher, the amount of saved tax is higher because the income tax rate is progressive. However, in Japan's case, the marginal tax rate does not affect the tax benefit because a fixed amount is deducted from the income tax itself and is less regressive than the US.

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[13] According to the Cabinet Office, the value of land in Japan was ¥1,121 trillion (National Accounts for 2013). However, the value of land was estimated at ¥647 trillion and the taxable value is ¥245 trillion for FY2013 according to the Ministry of Internal Affairs and Communications, which supervises LGUs in Japan.

There are many other tax items on housing-related activities, including stamp tax on contracts and property tax, among others. There are many exemptions for housing-related activities as well, which are too complicated to explain in this paper.

***Target Income Group of Income Tax Deductions for Mortgages***

As of 2015, the maximum income eligible for income tax deduction for mortgages is ¥30 million. On the other hand, the lowest taxable income for a salaried household with husband, wife, and two children in school is ¥2.616 million, according to the Ministry of Finance; a household earning less does not pay income tax. This level is slightly higher than the 20th percentile of income, which means that the lowest 20% of incomes do not enjoy income tax deductions for mortgages because they do not pay income tax.

## 4.4.2 Japan's Housing Policies in the 21st Century

### 4.4.2.1 From the Government Housing Loan Corporation to the Japan Housing Finance Agency

The main failure of the GHLC was that it did not well anticipate the impact of prepayment on its mortgage portfolio. The GHLC loan was concessional and attractive to borrowers, and management believed such huge prepayments would not occur.

Securitization of residential mortgages started in 1999, but when the government decided to wind down the GHLC, the securitization market for private label securities (PLS) was too small to replace the GHLC lending. There was a strong request from the real estate and housing industries to preserve the 35-year, pre-payable fixed-rate mortgage market in Japan. Based on such background, the government decided to establish the JHF.

The JHF does not originate mortgages in the primary lending markets. Instead, it purchases fixed-rate mortgages originated by private banks and mortgage banks and packages these mortgages into mortgage-backed securities (MBS). Instead of competing with private banks in the primary market, the JHF assists private banks to originate fixed-rate mortgages through its secondary market operations. Instead of receiving a subsidy, the JHF recorded net income of ¥282 billion in FY2014 (Figure 4.26).

The JHF issues an MBS collateralized by 35-year fixed-rate pre-payable mortgages. If the borrowers prepay on outstanding mortgages, the balance of the MBS is proportionally reduced. This pass-through nature of the JHF MBS is intended to transfer the prepayment risk to MBS investors who have better knowledge of the market environment

than public entities. The JHF guarantees timely payment of the principal and the interest to MBS investors. The JHF underwrites the credit risk of the borrower.

**Figure 4.26: Differences between the Government Housing Loan Corporation and the Japan Housing Finance Agency**

| | GHLC | JHF |
|---|---|---|
| Established | 1950 | 2007 |
| Ownership | 100% owned by the Government of Japan | |
| Mission | • Provide liquidity to mortgage markets to low- and medium-income household<br>• Enhance quality of housing | |
| Main Products | Fixed-Rate Mortgages | |
| Main Business | Origination in primary mortgage market (Compete with private sector) | Secondary market operation (Support private sector) |
| Main Funding Source | Borrowing from the Government (MOF FILP) | Mortgage-Backed Securities (MBS) |
| Subsidy | Yes | No (in principle) |

Note: The JHF still originates mortgages for such exceptional cases as disaster mitigations. In such cases, the JHF still has access to funding from the MOF FILP and subsidies from General Appropriations.

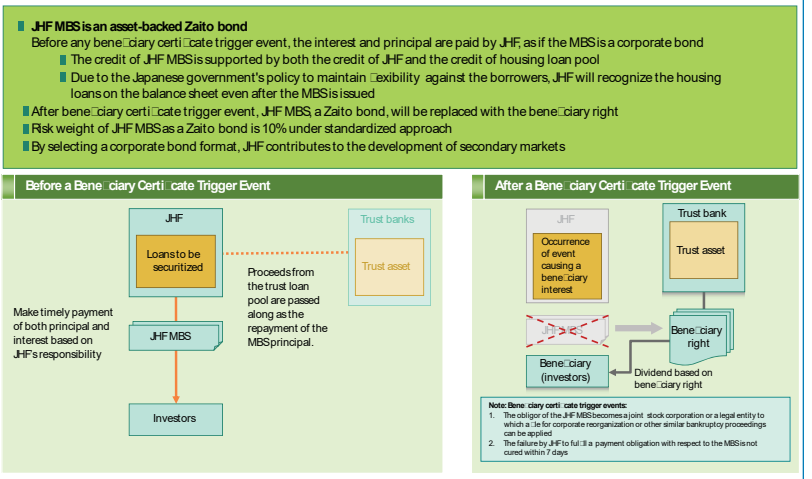
GHLC = Government Housing Loan Corporation, JHF = Japan Housing Finance Agency, MBS = mortgage-backed security, MOF FILP = Ministry of Finance Fiscal Investment and Loan Program.

Source: Japan Housing Finance Agency.

The structure of the JHF MBS has some similarities with the European-covered bond. The JHF retains mortgage assets on its balance sheet and pledges those assets as collateral for the MBS. If the JHF were to become insolvent or face similar materially adverse situations, the mortgage assets would be immediately segregated from the JHF balance sheet and transferred to a trust,[14] and the custodian would allocate the cash flow from the underlying assets to beneficiaries accordingly (Figure 4.27). The JHF retains mortgage assets because it is required to extend loss mitigation efforts including modifications of loan contracts for troubled borrowers without limit.

[14] A trust is a legal entity independent of the issuer of the MBS and provides the function of 'bankruptcy remoteness' in securitization transactions.

## Figure 4.27: Structure of the Japan Housing Finance Agency Mortgage-Backed Securities




JHF MBS = Japan Housing Finance Agency Mortgage-Backed Securities.

Source: Japan Housing Finance Agency.

This structure, which is different from the ordinary structure of securitization that transfers the assets from the originator to special purpose vehicles to achieve bankruptcy remoteness, has been proven to work. By retaining assets on its balance sheet and underwriting the credit risk of the borrower, the JHF is vigilant on the quality of mortgage assets and there is no misalignment of incentives or moral hazard that was often criticized in case of US PLS, especially for subprime loans. At the same time, the JHF is immune to prepayment risk. In this regard, the JHF MBS is a hybrid in nature of the US Agency MBS and the European-covered bond.

These elaborated structures attract confidence among investors and the JHF MBS has gained the reputation as the benchmark in Japan's capital markets. The outstanding balance of the JHF MBS is ¥11.2 trillion whereas that of PLS is ¥7.8 trillion as of June 2015, according to the Bank of Japan.

The 35-year fixed-rate mortgage is available at 1.58% in Japan as of August 2015. The mortgage products that are originated by private lenders under the JHF secondary market operations are called "Flat 35" (interest rate is fixed [flat] for the entire period of the loan for 35 years).

#### 4.4.2.2 Basic Act for Housing

The replacement of the GHLC with the JHF highlights the changing policy environment in Japan; the initial housing policy after World War II to supply a large quantity of houses was achieved within the 20th century, and the focus of the housing policy has now shifted to the quality of houses. As mentioned, there has been a drastic change of the demographics in Japan as well, which also forces the agenda of the housing policy to address such changes.

In this context, the Basic Act for Housing was enacted on 8 June 2006. The main pillar of the policy change was the shift from quantity to quality, and the 5-year program was abolished. The act stipulated the following as the principles of the housing policy:

(1) provision of safe, secured, and high-quality housing stock and living environment;
(2) establishment of a desirable housing market environment; and
(3) establishment of housing safety nets for people having difficulty to secure a house.

The housing policy in Japan is very comprehensive and we are not seeking to explain all of these policy tools. For details, please refer to Building Center of Japan (2014). In this paper, we now discuss those policies related to the elderly population, energy efficiency of housing, expansion of existing home transactions, and the recovery work from the Great East Japan Earthquake.

##### *Assistance for the Elderly*

Japan is facing an unprecedented aging society. Elderly people usually have less physical competence than the working-age population, and housing units that accommodate such people must have several different structures in terms of accessibility and others. To address such challenges, the Act on Securement of Stable Supply of Elderly Persons' Housing (Act No. 26 of 2001) was enacted in 2001, but it was amended in 2011 and several programs for the elderly were integrated into the registration system for Housing with Support Services for the Elderly.

Business entities or persons who provide these types of facilities are granted a subsidy for the construction cost, accelerated depreciation for income tax, and reduction of property tax, among others. The JHF also extends mortgages for the construction or purchase of properties for such purposes.

### *Enhancement of Energy Efficiency of Houses*

Japan is one of the most energy-efficient economies if measured by consumption of energy per GDP. However, the emission of carbon dioxide has been reduced mainly in the industry sector and more efforts are needed in the household sector. Enhancement of energy efficiency has also become more important after many nuclear reactors were shut down following the accidents at the Fukushima power plant by the Great East Japan Earthquake on 11 March 2011.

Various policy tools were introduced to enhance energy efficiency of houses, including tax benefits. One of the widely used tools is "Eco-points" wherein a voucher equivalent to a maximum of ¥300,000 is endowed when people buy or renovate a house to meet certain criteria.

Borrowers of Flat 35S (a special type of Flat 35) who purchase houses that meet energy-efficiency criteria set by the JHF also enjoy an interest rate reduction. The reduction depends on the budgetary support and, as of August 2015, the reduction is 0.6% for the initial 5 years (0.6% is an exceptional case under economic stimulus packages and, in ordinary cases, it is 0.3%). The interest rate for Flat 35S can be as low as 0.98% for the first 5 years and 1.58% for the remaining 30 years as of August 2015.

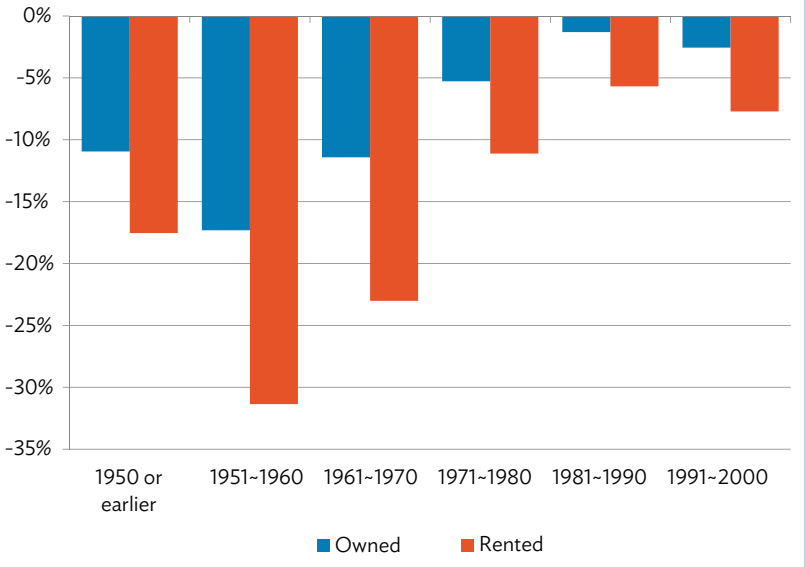
### *Expansion of Existing Home Transaction*

As noted earlier, the market for selling existing homes is smaller (in proportion to new housing starts) than in other developed economies. One of the reasons for this is that the life of a house is shorter in Japan and, hence, new construction works are higher. The average age of houses demolished in Japan is estimated to be less than 30 years. However, this does not mean that newly constructed houses have similar durability. Their life could be much longer, maybe for a century or so.

One of the causes for the high rate of demolition is that the share of rental property in Japan is higher than in the US. From 1951 to 2014, 69.9 million housing units were started in Japan, and 41.0% of these were rental houses. Rental houses have shorter life than owner-occupied houses in Japan (Figure 4.28). Rental houses are often constructed by the funds of rich elderly people in the context of an inheritance tax strategy by borrowing mortgages. Nearly 70% of rental houses are built by such persons, and only the remaining 30% are constructed by corporations or other entities.

In addition to this, homebuyers have a strong preference for new homes. It is associated with culture, to some extent, and new houses usually have better equipment as technology advances. It is not easy to measure the value of the quality of existing houses and prospective homebuyers may take this for lack of transparency. It is not mandatory

**Figure 4.28: Ratio of Demolished Houses by Year Built (change 2008–2013)** *(%)*



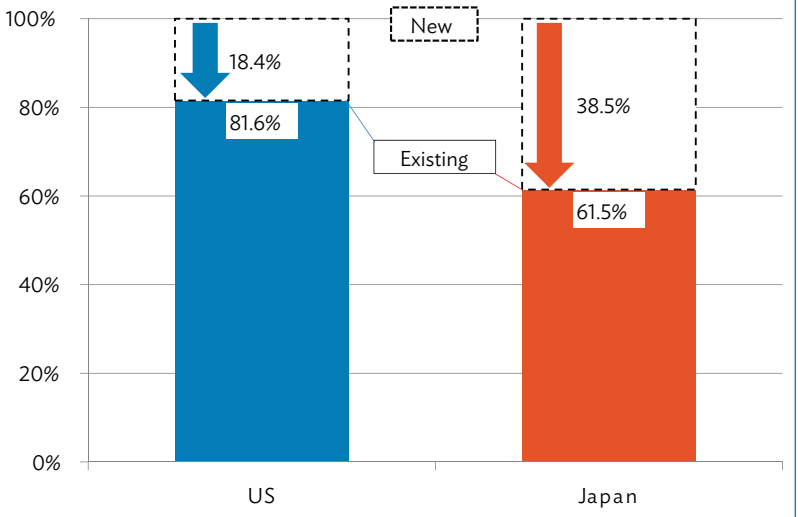

Source: Government of Japan, Cabinet Office.

in Japan for existing houses to undergo inspection and there used to be no criteria to gauge the quality of existing houses.

The prices of existing condominiums are increasing in the Tokyo Metropolitan Area, but undervalued when compared with new condominiums (Figure 4.29).

To enhance the buyer's confidence, the MLIT has launched various measures to improve the quality of existing houses and, thus, activate the transaction for them. It may sound contradictory, but Japan may need to accelerate the demolition of unutilized vacant houses, at the same time. There are 8.2 million vacant houses in Japan as of October 2013. Some are vacant because they are used as second houses. However, there are many houses that became vacant after the death of the owner and the heirs left the houses as they remain. Some of these houses have severely deteriorated and are subject to collapse or vandalism or other negative causes for the neighboring communities.

**Figure 4.29: Price of Existing Homes Compared with New Homes (average of 2004 to June 2015)** *(%)*




US = United States.

Note: Figures for the US are for single-family houses while those for Japan are per $m^2$ prices of condominiums in the Tokyo Metropolitan Area.

Sources: US Department of Commerce; National Association of Realtors; Japan Real Estate Institute; Real Estate Economic Institute Co., Ltd.

During the 20th century, property tax was reduced for a lot with residential structures. The background for this was to accelerate the high utilization of land by giving an incentive to home construction as well as to assist houses that are the basic and necessary assets for life. However, the situation has changed. Old houses that are no longer suited for residential use are left without being demolished just because the property tax rate increases if the residential structures are demolished. To remove such poor housing stock, new legislation was enacted in 2014 to accelerate the removal of such vacant houses.

Some radical advocators insist that Japan should limit the amount of new housing construction to increase existing house transactions. However, the quality of existing houses is not necessarily the same as new houses in terms of energy efficiency or earthquake resilience.

More than 11 million houses are estimated not to meet the criteria for earthquake resilience. Several policy tools have been introduced to improve the structure of such houses by reforming them, but this may not be enough to cover the entire 11 million units, and many of them must be replaced with new housing to some extent.

Considering the historical background in which Japan abolished the 5-year housing construction plan to make the housing market more market oriented, it would be quite difficult to control the supply of houses, and such a planned-economy regime may not be welcomed by the industry either, which might have an adverse effect on the other sides of policy implementation.

Japan may shift from promotion of new housing construction to promotion of existing home transactions, but such a transition would progress with some degree of gradualism, with due attention to macroeconomic implications as well as the protection of the lives of the people who live there.

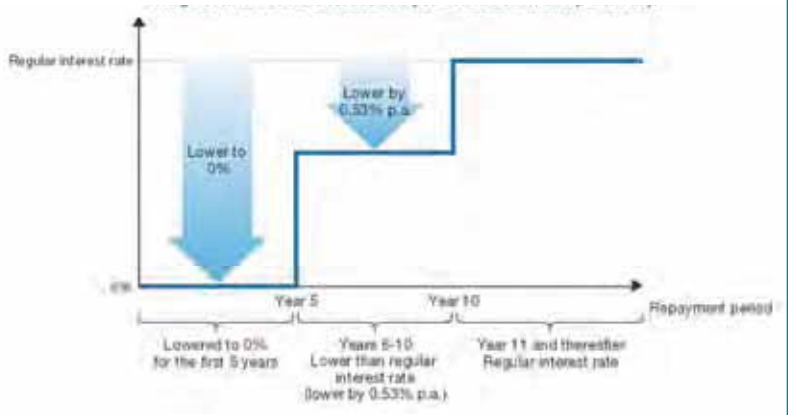
### *Recovery Works from the Great East Japan Earthquake*

The Great East Japan Earthquake on 11 March 2011 was an unprecedented natural disaster, with a magnitude of 9.0 on the Richter scale, the largest in the record of Japanese history. According to the Fire and Disaster Management Agency, 19,225 people died and 2,614 people are missing as of 1 March 2015. On the same day, 127,830 houses were totally destroyed and more than 1 million houses were partially damaged. According to the Reconstruction Agency, there were 228,863 evacuees as of 12 February 2015. The recovery from the disaster is the most important policy agenda for Japan.

From the housing perspective, the MLIT immediately acted to accelerate the construction of emergency temporary houses and 53,194 units were completed as of 1 March 2015. Many houses were washed away by the huge tsunami, as high as 130 feet at its highest point, and to avoid a similar disaster, relocation of houses along the seaside to a higher place was implemented on a substantial scale.

The JHF is extending consultations to existing borrowers on the possible rescheduling of outstanding mortgages and new special concessional mortgages for those who are going to purchase or construct houses (Figure 4.30). To reduce the interest rate, the JHF receives a subsidy from the government and receives funding from FILP as an exceptional case.

**Figure 4.30: Assistance for Disaster-Affected People**




Source: Japan Housing Finance Agency.

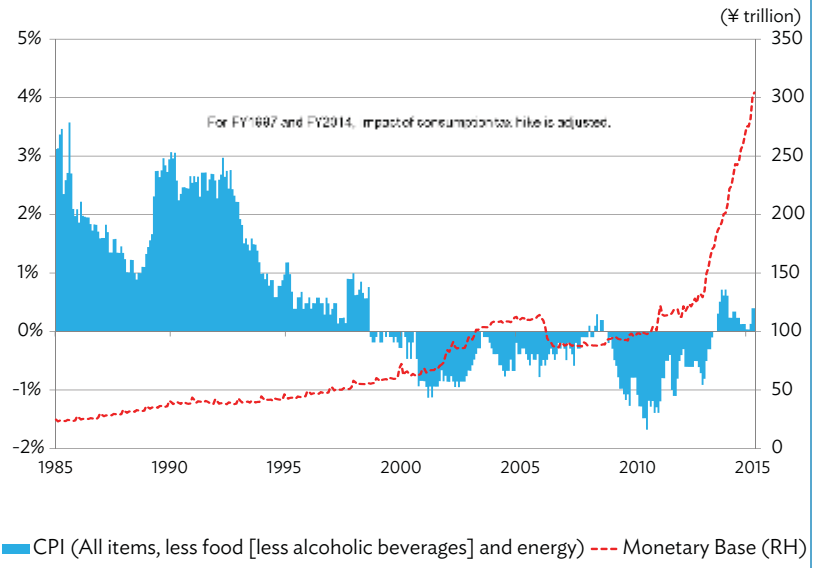
## 4.5 Challenges for the Future

### 4.5.1 Challenges for Japan's Economy

Japan's economy is recovering from 15 years of deflation because of the extraordinary monetary policies of the Bank of Japan (Figure 4.31), but the sustainability of the targeted inflation rate (2%) still remains a challenge. It depends on whether wages are increased to raise demand and the purchasing power of ordinary workers. The Government of Japan is asking industry leaders to proactively address this issue, and several blue-chip companies are responding accordingly. But it will take some time for such a movement to spread to small and medium-sized enterprises.

Deflation was the cause of the negative feedback loop in Japan's economy, and if the efforts to overcome it are successful, the economy will return to the trajectory of sustainable growth. One challenge for this is the persistent belief that it is difficult to get Japan's economy out of deflation because the population is decreasing. Such a pessimistic view, especially among some academics in Japan, insists that the current recovery of property prices is nothing but a bubble fueled by the massive money supply by the Bank of Japan under its quantitative and qualitative monetary easing policy.

**Figure 4.31: Consumer Price Index and Monetary Base**




CPI = consumer price index, FY = fiscal year, RH = right hand axis.

Sources: Bank of Japan; Ministry of Internal Affairs and Communications.

Falling property prices damage the balance sheets of financial institutions, which can cause less lending to the economy, or a credit shortage in the worst case. As the population ages, the importance of reverse mortgages will increase to supplement the national pension system. Reverse mortgages will benefit elderly homeowners who have substantial equity in their homes but don't have enough cash flow. Reverse mortgages will enable such homeowners to enjoy more fruitful lives. But it would be difficult for financial institutions to extend reverse mortgages if property prices continue to fall.

If the private sector alone cannot extend reverse mortgages, there might be some justification for the government to assist their promotion as does the Federal Housing Administration in the US under the Home Equity Conversion Mortgage program. If a similar program were to be introduced in Japan, there would be some fiscal cost incurred. The beneficiaries of such a program would be subject to fiscal disciplines in Japan as a democratic society.

### 4.5.2 Challenges for Mortgage Markets in Japan

As of February 2016, the 35-year fixed-rate mortgage is available at the low rate of 1.48% under the platform of Flat 35 sponsored by the JHF. This is much lower than the 30-year fixed-rate mortgage in the US, even discounted by the difference in the inflation rate (Figure 4.32). However, the fixed-rate mortgage in Japan is not as popular as in the US where the vast majority of borrowers choose fixed-rate mortgages.

It is not easy to predict the future path of interest rates, especially when the current monetary-easing policy is removed by the Bank of Japan. The normalization of monetary policy is a challenge for the Federal Reserve in the US too, but it is most likely, according to many market observers, that the Bank of Japan can learn a lot from the Federal Reserve, which lifted the monetary-easing policy in December 2015.

One of the causes for the subprime mortgage crisis in the US was the payment shock for hybrid adjustable rates mortgages (ARMs), especially for the 2/28 hybrid ARMs;[15] when many subprime borrowers became delinquent and defaulted.[16] After learning from such an experience, borrowers in the US became more conservative and chose fixed-rate mortgages.[17]

In Japan, extremely low interest rates continued for more than a decade and many people believe that interest rates in Japan will not rise in the near future. Banks in Japan are underwriting mortgages more prudently than in the US. When calculating the debt-to-income ratio, many of them apply higher interest rates than the nominal low interest rate for ARMs. Nonetheless, it is difficult to predict to what extent the market interest rates go up after Japan's economy gets out of deflation and if the Bank of Japan normalizes its monetary policy.

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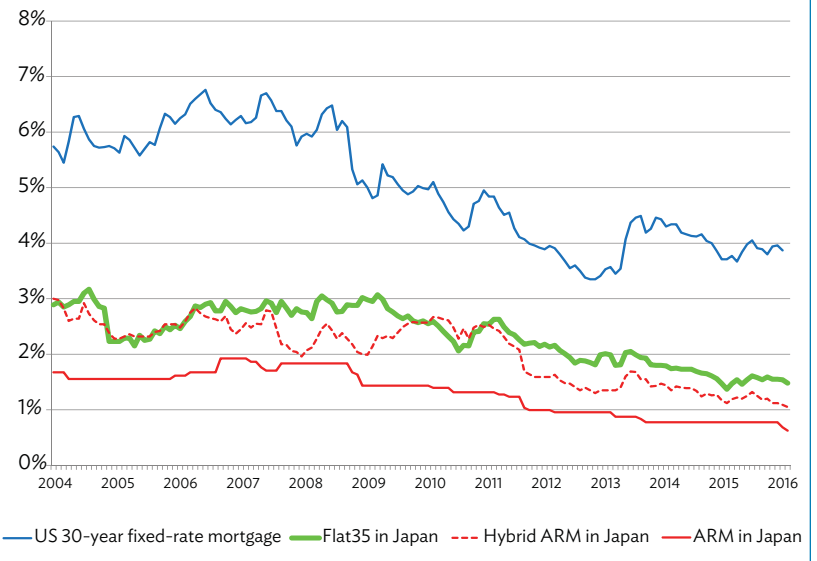
15 These are mortgage products whose interest rates are fixed for the initial 2 years (and often lowered to a "teaser rate" to attract unsophisticated borrowers) and adjusted thereafter depending on the prevailing market rate.

16 The volume of subprime mortgages increased dramatically in 2004 when the Federal Reserve started to increase the target range of the federal fund rate and, in 2006, when the interest rate for 2/28 was to be reset, the prevailing market rate was much higher than when those mortgages originated.

17 The Consumer Finance Protection Bureau, the newly established regulator in the US, requests lenders to give more detailed information on the risk of ARMs to borrowers, which also contributed to the increase of fixed-rate mortgages because lenders are not willing to waste time and money to comply with such requirements.

**Figure 4.32: Mortgage Rates in Japan and the United States**
(%)




ARM = adjustable rates mortgage, US = United States.

Sources: Japan Housing Finance Agency; US Federal Reserve.

### 4.5.3 Challenges for Mortgage-Backed Securities Markets in Japan

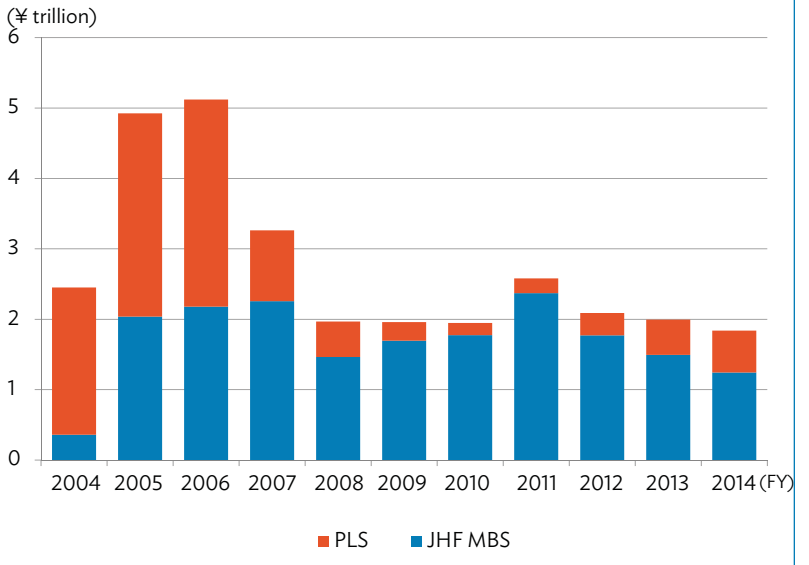
The JHF has been continuously issuing MBS amounting to around ¥2 trillion every year since FY2006, but the issuance of MBS by the private sector declined significantly since its peak in FY2006 (Figure 4.33). This is not because the JHF is crowding out the PLS, but because the regulatory and market environment has adversely changed for the PLS, as is the case in the US.

After the implementation of capital requirement rules under the Basel II Accord, the equity component, the most subordinated class under internal credit enhancement structure of securitization, was required to have the equivalent amount of capital for banks when they apply the standardized approach. This made the securitization transaction less attractive for many banks in Japan because they could no longer use the securitization to increase their profits. Most banks in

Japan have abundant liquidity in the form of deposits and do not face liquidity constraints and, hence, do not have incentives to securitize their assets unless they find some merits. One such merit used to be the recognition of profit at securitization, which is no longer available.

The other factor negatively affecting the PLS is the bad reputation for securitization after the subprime crisis; securitization served as a transmission mechanism to disperse the credit risk of the poorly underwritten US subprime mortgages to the global financial market. Many AAA-rated PLS were downgraded and their prices plummeted. After the crisis, regulators around the globe are imposing stricter standards for securitization. One such movement is the imposition of a risk retention rule wherein the securitizers are required to retain a certain percentage of the credit risk of the underlying assets, which is stipulated in the Dodd–Frank Act in the case of the US. Regulatory details are not yet clear and those who are afraid of being alleged on the breach of representations and warranties are going to other agencies (such as Fannie Mae, Freddie Mac, and Ginnie Mae) because they provide safe harbor.

**Figure 4.33: Issuance Amounts of Mortgage-Backed Securities**




FY = fiscal year, JHF MBS = Japan Housing Finance Agency Mortgage-Backed Securities, PLS = private label securities.

Source: Japan Securities Dealers Association.

Investors who incurred losses buying PLS are also reluctant to purchase them because they have to be more diligent to explain to their owners why they have invested in such instruments.

Revitalization of the PLS market still faces significant challenges. To assist private lenders to securitize mortgage assets, the JHF is providing what is called a "guarantee program" wherein the JHF provides insurance on mortgages similar to the Federal Housing Administration in the US guarantees on MBS like Ginnie Mae.

### 4.5.4 Covered-Bond Legislation

In 2008, one private bank in Japan tried to issue structured covered bonds, but was not able to in the midst of the turbulent financial market. Since then, there have been several efforts to advocate covered-bond legislation in Japan.

Contrary to private securitization where the credit risk of the underlying assets is transferred to investors and the originator is often criticized for moral hazard, covered bonds are issued as a direct obligation of the lender and the lender retains the credit risk of the underlying assets. In this regard, there is better alignment on incentives for lenders to originate mortgages more prudently when they issue a covered bond than when they issue an MBS.

In July 2014, the Financial Services Agency of Japan declined the request from an industry group to enact covered-bond legislation, noting that there is no immediate need to enact such legislation and that the Japanese financial system is sound enough to raise funds even without covered-bond legislation.

## 4.6 Lessons Learned from Japan's Experience

The most important lesson from Japan's experience is that policy makers should be vigilant to detect and prevent bubbles in property markets. A financial bubble, by definition, collapses eventually and the consequences are severe damage on the economy as evidenced by Japan's case, which was also repeated in the US. However, policy reaction to address the collapse of a bubble is as important as detecting a bubble. Decisive and immediate reaction by the Federal Reserve to provide liquidity to the capital market after the bankruptcy protection filing by Lehman Brothers prevented the US economy from falling into persistent deflation. Many economic indicators in the US including GDP,

industrial production, payroll employments, and stock prices, among others, have recovered from the pre-Lehman crisis level. This owes much to the extraordinary monetary accommodation by the Federal Reserve, which is contrary to the case in Japan in the early 1990s. Amid the falling property prices, there was strong support of public opinion in Japan to the actions taken by the Bank of Japan to punish bubbles that were already collapsing.

Once caught in deflation, it becomes difficult to get out of it, as is discussed by Bullard (2010) as "unintended steady state." Many developed economies as well as some emerging economies in Asia are facing similar demographic challenges as Japan. If the housing bubble coincides with a population bonus period, the collapse of a bubble may be followed by a decline of the inverse dependency ratio. In such a case, policy measures to enhance affordability may cause unintended consequences by reinforcing the negative feedback loop of deflation.

One of the reasons for the increase of tourists to Japan is the various efforts by the government to attract foreigners, including the relaxation of visa entry requirements for several countries. Another major reason is the depreciation of the Japanese yen against foreign currencies, especially the US dollar in the last 3 years. A weaker yen also made the Japanese real estate less expensive for foreign investors and boosted the property prices in large cities, especially in Tokyo.

A lesson for emerging markets is that government financial institutions (GFIs) might work at the initial stage of the mortgage market development, but this is not sustainable indefinitely.

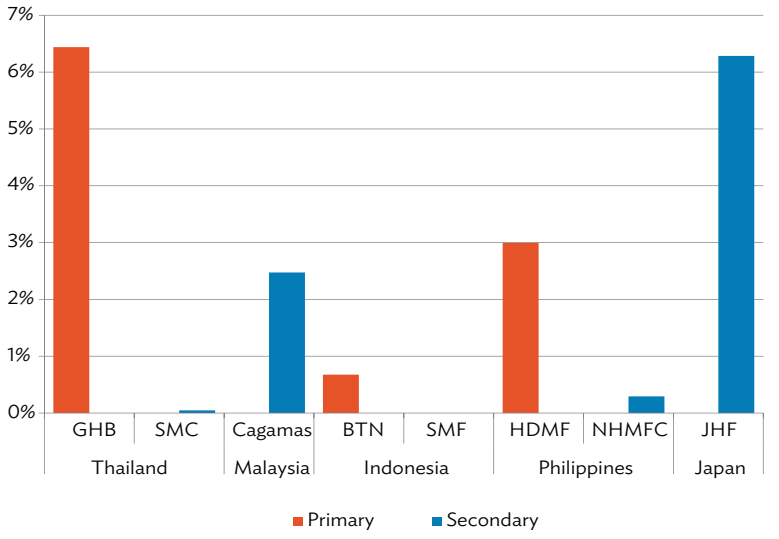
Some GFIs in Asia operate in the primary mortgage markets and others operate in the secondary mortgage markets. In several Asian countries, fixed-rate mortgages are available with subsidies, but, in general, most of the mortgage products in Asia are ARMs except for Japan. In countries where primary and secondary GFIs coexist, the presence of the primary GFIs overwhelms the secondary GFIs (Thailand, the Philippines, and Indonesia) (Figure 4.34).

In Japan, the GHLC, a primary market GFI, was replaced by the JHF, a secondary market GFI, in 2007. The streamlined transformation of the Japanese mortgage market was successful in that the JHF does not depend on subsidies from the government whereas the GHLC used to receive around 0.1% of GDP equivalent subsidy from the government.

However, Japan's case may not directly apply to other Asian GFIs. The structure of the mortgage market in the Philippines is similar to that of Thailand. Both countries have dominant primary market GFIs and have secondary market GFIs that are struggling to get market share but are less competitive than the primary market GFIs. For the moment,

these primary market GFIs have a good reputation, financial position, and political support and, hence, they are not likely to be wound down, as was the case with Japan where the government decided to wind down the GHLC and replace it with the JHF.

**Figure 4.34: Size of Government Financial Institutions and GDP in Asian Countries (%)**




BTN = PT Bank Tabungan Negara (Persero) Tbk, GDP = gross domestic product, GFI = government financial institution, GHB = Government Housing Bank, HDMF = Home Development Mutual Fund, JHF = Japan Housing Finance Agency, NHMFC = National Home Mortgage Finance Corporation, SMC = Secondary Mortgage Corporation, SMF = PT Sarana Multigriya Finansial (Persero).

Source: Japan Housing Finance Agency (2014: 9).

The securitization of mortgage assets remains an ancillary funding source, not only for commercial banks, but also for many GFIs in Asia except for Japan and Malaysia. Covered bonds are attracting attention and several countries are advocating the legislation for covered bonds. Singapore and the Republic of Korea are the forerunners in Asia in this field.

For the secondary market GFIs to expand their presence, it is important to develop proprietary distribution channels of their products

that are differentiated from their competitors. The development of capital markets to absorb the MBS will be an integral part of their strategy to extend fixed-rate mortgages with competitive interest rates. There are several options to implement such a strategy, including extending government guarantees on the MBS issued by the GFIs, preferential regulatory treatments on the same, and asking the central bank to accept those MBS as collateral for repurchase agreement transactions or to purchase them outright.

## 4.7 Conclusion

The housing policy in Japan after World War II was focused on the quantitative supply of houses with a wide range of targeted groups and public rental houses. The Japan Housing Corporation (now the Urban Renaissance Agency) and the Government Housing Loan Corporation (now the Japan Housing Finance Agency) served to address these policy targets accordingly. The restoration of the housing stock was successful, but the collapse of the property bubble in the early 1990s had a negative impact on the economy and created a persistent loss of confidence among the people of Japan, which was exacerbated by deflation and negative demographic factors (decrease of population and aging of society).

Enhancement of the quality of houses is an important part of the housing policy in Japan, but, at the same time, attention needs to be given to new construction and the renovation of existing housing stocks.

Many developed economies, especially those in Europe, will face similar demographic challenges in the near future, and some European countries are at the brink of deflation as of 2016 even after the introduction of negative interest rates on deposit facilities by the European Central Bank in June 2014. Japan's experience in these fields provides some suggestions, especially from the perspective of monetary policy.

The transformation of the mortgage market in Japan was drastic as well. The transition from primary markets to secondary markets was streamlined and successful in Japan, not only in the form of a business model, but also in the funding mechanism. Japan is one of the most successful countries to develop MBS markets, other than the US. Japan's experience has implications for emerging Asian countries where there are primary mortgage market GFIs.

Japan is still in the middle of its social experiments and needs to closely monitor the change of market trends and exchange information to help other parties concerned.

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CHAPTER 5

# Housing Policies in Singapore

*Sock-Yong Phang and Matthias Helble*

## 5.1 Introduction

In 2015, Singapore's population was 5.54 million, of which 3.38 million were citizens, 0.53 million were permanent residents, and 1.63 million were foreigners. One-fifth of its land area of 719 square kilometers ($km^2$) comprised reclaimed land (Table 5.1). Land scarcity and high population density (over 7,600 persons per $km^2$) provide justification for the dominance of the state in land ownership and housing provision, and the high level of intervention in the housing sector. The homeownership rate for the resident population has been above 90% since the early 1990s. Among resident employed households, the 2014 median household income from work was S$8,292 per month,[1] or S$99,504 per year.[2] The median house type is a four-room (approximately 90 square meters [$m^2$]) flat sold by the Housing & Development Board (HDB), the government housing agency, on a 99-year leasehold basis. The median house price (market values) to annual household income ratio for 2015 was estimated at 5.0 (Demographia 2016).

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1 Statistics are from Singapore government agency websites and Singapore Department of Statistics (2015).

2 The exchange rate on 18 July 2016 was S$1.35 = US$1.00.

**Table 5.1: Population, Land Area, and Density of Singapore, 1970–2015**

| Year | Land Area ($km^2$) | Population Density (per $km^2$) | Total Population | Singapore Residents | Proportion of Foreigners (%) |
|---|---|---|---|---|---|
| 1970 | 586 | 3,540 | 2,074,507 | 2,013,563 | 3 |
| 1980 | 618 | 3,906 | 2,413,945 | 2,282,125 | 5 |
| 1990 | 633 | 4,814 | 3,047,132 | 2,735,868 | 10 |
| 2000 | 683 | 5,897 | 4,027,887 | 3,273,363 | 19 |
| 2010 | 712 | 7,130 | 5,076,732 | 3,771,721 | 26 |
| 2015 | 719 | 7,698 | 5,535,002 | 3,902,690 | 29 |

$km^2$ = square kilometer.

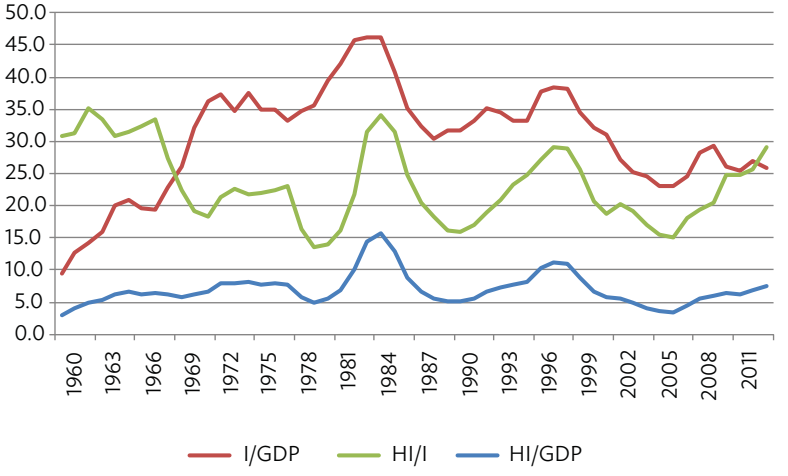
Source: Government of Singapore, Department of Statistics.

Table 5.1 shows the increase in population and its changing composition by nationality status. The foreign component of Singapore's population has increased significantly, from 10% in 1990 to 19% in 2000, and was 29% in 2015. Permanent residents (who are not citizens) accounted for another 10% and citizens comprised 61% of the population in 2015. These statistics on changes in population composition are relevant for housing policy as the housing market in Singapore is highly segmented according to households' nationality status.

In the decades since the first elections were held in 1959 for self-government and since independence in 1965, Singapore has been ruled by the People's Action Party (PAP). The successful public housing program is "a foundation stone upon which … the PAP … builds its legitimacy among Singaporeans" (Chua 1997, preface). The unique housing system has 75% of the housing stock in 2015 classified as "public housing" built predominantly by the HDB; 82% of the resident population live in HDB estates, of which 79% lived in HDB-sold flats. Demand for homeownership is driven by the housing finance system introduced in 1968 when Central Provident Fund (CPF) savings were allowed to be used for down payment and mortgage payments for HDB flats.

The HDB–CPF framework established in the 1960s has transformed the urban form of Singapore and remains largely intact 5 decades on. Between 1960 and 2013, the ratio of housing investment to gross domestic product (GDP) averaged 7%, with the ratio of housing investment to total investment averaging 23% (Figure 5.1). These ratios are high by international standards and reflect the policy attention and resources channeled into the housing sector.

**Figure 5.1: Housing Investment Ratios in Singapore, 1960–2013**
*(%)*




GDP = gross domestic product, HI = housing investment, I = total investment.

Data source: Government of Singapore, Department of Statistics website.

HDB rental and direct purchases (one unit per household) are restricted to citizens, with current monthly gross household income caps at S$1,500 for rental and S$12,000 for direct purchase, respectively. The Executive Condominium scheme, a hybrid public–private housing scheme for citizen households, has a household income cap of S$14,000. The resale HDB sector is available to citizens and Singapore permanent residents (SPRs). However, HDB housing grants are calibrated by taking into account citizenship, marital status, proximity to parents' home, and household income of purchaser households. The private housing sector is dominated by transactions by higher-income Singapore citizens, SPRs, expatriates, and foreign investors. Table 5.2 shows the distribution of resident households by dwelling type and average monthly household incomes. Of the 1.2 million resident households in 2014, 80% resided in HDB-built flats.

**Table 5.2: Resident Households by Dwelling Type and Household Income in Singapore, 2014**

| Dwelling Type | Resident Households | Average Monthly Household Income from Work among Resident Employed Households (S$) |
|---|---|---|
| **Total** | **1,200,000 = 100%** | |
| **Total HDB** | **80.4%** | |
| 1- and 2-room flats | 5.3% | 2,313 |
| 3-room flats | 18.3% | 5,805 |
| 4-room flats | 32.2% | 8,293 |
| 5-room and executive flats | 24.4% | 11,606 |
| **Private House Types** | | |
| Condominiums and other apartments | 13.5% | 19,843 |
| Landed properties | 5.8% | 27,363 |

HDB = Housing & Development Board, $m^2$ = square meter.

Note: Average HDB flat sizes estimated from 2015 resale transaction data: 1-room 33 $m^2$; 2-room 45 $m^2$; 3-room 73 $m^2$; 4-room 96 $m^2$; 5-room 115 $m^2$. Private housing has much wider variation in sizes and amenities.

Source: Government of Singapore, Department of Statistics (2015).

The housing policy in Singapore has evolved over time in response to different housing challenges. Phang (2015c, 12) states that "in the 1960s, the political turbulence of self-government, merger with Malaysia, and unexpected independence were not conducive to attracting long-term investments. On the housing front, the government was faced with a largely immigrant and growing population, a chronic housing shortage as well as insufficient private-sector resources and capacity to provide adequate solutions." Measures that had previously been undertaken by the British colonial government in town planning and the provision of rental houses and flats proved wholly inadequate. Public housing built by the Singapore Improvement Trust[3] housed 8.8% of the population by 1959, with the majority living in overcrowded prewar rent-controlled apartments lacking access to water and modern sanitation. Others faced housing conditions comparable to today's slums. Given this lack of adequate housing, the newly elected government made it a priority to

[3] See Phang (1992, Chapter 3) for a description of the Singapore Improvement Trust and other public sector agencies involved in housing development in the 1960s and 1970s.

provide homes on a large scale. The government developed its housing policies based on three pillars: the establishment of the HDB in 1960, the enactment of the Land Acquisition Act in 1966, and the expansion of the role of the CPF to become a housing finance institution in 1968.

By the 1970s, the HDB–CPF housing framework, representing a tightly integrated land–housing supply and financing system, was working effectively to channel resources into the housing sector. With the HDB–CPF system in place, the housing shortage was resolved by the 1980s. In the 1990s, the challenge was that of renewing aging estates and of creating a market for HDB transactions as households upgraded to larger flats and private housing. Housing subsidies on the demand side in the form of housing grants were also introduced. The more recent (since 2000) housing policy challenges include the need to curb speculative and investment housing demand, the increase in income inequalities, as well as an aging population. These have brought about the introduction of carefully crafted macroprudential policies, targeted housing grants to assist low- and middle-income households, and schemes to help elderly households monetize their housing equity.[4]

## 5.2 The Land Acquisition Act, 1966

Singapore, a former British colony, held its first general elections as a fully self-governing state in 1959, joined the Federation of Malaysia in 1963, and became an independent republic in 1965. The housing situation prior to independence was one of acute shortage, resulting in overcrowding, misery, slums, and squatter settlements. It was during such a period of political uncertainty and housing crisis that legislation and amendments for urban and housing sector transformations were passed. Recognizing that the prerequisite for a successful public housing program was the availability of inexpensive land, the government paid much attention to amending legislation on land acquisition by the state from the early 1960s. The Land Acquisition Act of 1966 was a crucial step in Singapore's housing policies and economic development and has had major redistribution effects (Phang 1996, 2015a).

In 1964, the Land Acquisition Bill was debated in the legislative assembly while Singapore was a part of the Federation of Malaysia. Then Prime Minister Lee Kuan Yew explained that the approach to determining compensation for land acquired by the government should be the prevention of economic windfalls to landowners (Singapore Parliamentary Reports, 10 June 1964):

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[4] See Phang (1992, 2007, 2015c) for historical accounts and updates of housing policies.

> *"First, that no private landowner should benefit from development which had taken place at public expense; and secondly, the price paid on the acquisition for public purposes should not be higher than what the land would have been worth had the Government not contemplated development generally in the area."*[5]

On the matter of land acquisition, the views expounded by the Prime Minister were, however, inconsistent with Article 13 of the Malaysian Constitution, which provides for the right to adequate compensation in the event of compulsory acquisition. Upon independence in August 1965, the Singapore Parliament adopted all the provisions of the Malaysian Constitution regarding fundamental rights except for Article 13.

The Land Acquisition Act, enacted in 1966, gives the state broad powers to acquire land:

(a) for any public purpose;
(b) by any person, corporation or statutory board, for any work or an undertaking which, in the opinion of the Minister, is of public benefit or of public utility or in the public interest; or
(c) for any residential, commercial or industrial purposes.

Landowners cannot object to the decision, and appeals on compensation can only be made to an Appeals Board and not to the courts. Initially, almost all legal owners appealed the compensation awards and, in 1973, the concept of a statutory date was introduced. In the words of the Prime Minister (K. Y. Lee 2000, 118–119):

> *"Later, I further amended the law to give the government the power to acquire land for public purposes at its value on a date fixed at 30 November 1973. I saw no reason why private landowners should profit from an increase in land value brought about by economic development and the infrastructure paid for with public funds."*

Between 1975 and 1990, the annual GDP growth rate averaged 8%. The private housing price index grew at an average real rate of 10% per year. Land prices would have increased by much more than housing prices. Many private landowners were, however, unable to avail themselves of this high rate of return as the government acquired land not at market prices but at compensation fixed at the lower of 1973 prices

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[5] See also Centre for Liveable Cities (2014: 12–18).

or market values for most of that period. Compensation was capped at 1973 levels for about 14 years between 1973 and 1987, with no allowance being made for market valuation or the landowner's purchase price. Exceptions were made on a case-by-case basis.

Singapore has since moved to a more market-based approach for compensation of acquired land. Subsequent amendments to the Land Acquisition Act changed the statutory date for purposes of valuation for compensation to 1 January of 1986, 1992, and 1995. In 2007, the use of a historical statutory date was removed by Parliament, and compensation has since been pegged to full market value.

State land, as a proportion of total land, grew from 44% in 1960 to 76% by 1985, and was about 90% by 2005.[6] A significant portion of the increase in state land can be attributed to land reclamation. Land acquisition was an important step in Singapore's housing policies. However, it meant that existing owners had to be expropriated. In most other countries, such clearance would have encountered strong resistance by dwellers. This was also the case in 1960s Singapore when resettlement was initially viewed with hostility and suspicion (Centre for Liveable Cities 2014, 21). To overcome resistance, the government's policy was to provide suitable alternative accommodation for all businesses and persons affected by its land acquisition programs. Planners at that time estimated that for every slum structure demolished then, seven new flats were required to relocate families affected (Choe 1975). This meant that the processes for public housing construction, land acquisition, slum clearance and resettlement, and urban renewal in Singapore were closely interrelated. Chua (1997, 132) shows how commitment to universal provision of housing "allowed the PAP government to take the strong moral high ground on acquisition of land for public housing."

A detailed study of land acquisition and resettlement can be found in Centre for Liveable Cities (2014). The study highlights several reasons for the relative success of land acquisition and resettlement in Singapore as compared with obstacles and resistance in other countries. These included the following factors:

(i) Legal and constitutional mandate as well as clear processes in the form of the Land Acquisition Act that established legitimacy and the rule of law in the conduct of public officials carrying out these duties.

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[6] Phang (1992: 24) and Singapore Land Authority website, http://sla.gov.sg (accessed 25 October 2005).

(ii) Meticulous and detailed processes for record keeping and calculation of compensation for squatters' assets at market value.
(iii) The superiority of alternative accommodation, business premises, and environments offered by the government to affected people to replace the land or property that had been taken from them—although squatters had no legal interest in the affected land, they were compensated for improvements (such as shacks, vegetable plots, and livestock) and were also given priority allocation of new HDB flats and land in the case of farmers.
(iv) Effective forward planning and coordination to ensure smooth resettlement due largely to the integrated housing, resettlement, and estate planning functions of the HDB because the Resettlement Department was housed within the HDB from 1963.

Subsidiary legislation in the form of the State Land Rules, 1968 provided that titles for state-owned land should be for terms not exceeding 99 years. Through the Land Acquisition Act, the government cleared low-density housing, slums, villages, and squatter areas, and assembled land parcels. State land was leased to government agencies for the development of high-rise "public" housing that were sold on a 99-year leasehold basis to eligible households, as well as for the development of industrial estates, educational institutions, and other urban public amenities. Up to half of the land acquired by the state since the enactment of the act has been allocated for housing development by both the public and private sectors (Phang 1996).

Singapore's land policies can be described as land reform in an urban setting. It involved a massive transfer of land resource from private landowners to the state in the first 2 decades after independence. That large plots of land in Singapore were owned by a small number of wealthy landowners during the 1960s helped explain why acquiring land from this group was regarded as fair by Parliament (Centre for Liveable Cities 2014: 7).[7] Chua (1997, 134) writes that "the popularity of the government's action among the overwhelming propertyless electorate enabled it to bear the rejection of this very small minority." The major acquisition and redistribution of a critical resource contributed to the development of industrial estates, the financial district, commercial developments, the large public housing program, and public sector

[7] Large agricultural plots outside the city were owned by wealthy individuals and British private companies.

infrastructure development. The Land Acquisition Act of 1966 thus underpinned the successful economic development of Singapore (Phang 1996).

Public land leasing for private sector development generally falls under the term Government Land Sales in Singapore.[8] Much urban redevelopment in Singapore has been achieved through this land sales program, administered mainly by the Urban Redevelopment Authority and, to a lesser extent, the HDB. Under the program, the government amalgamated or reclaimed land, inserted infrastructure, provided planning and urban design guidelines, and released the land for sale to private (including foreign) developers (Phang 2005). Sites are usually sold on 99-year leases for commercial, hotel, and private residential development, whereas leases for industrial sites are usually for 60 years or less. The lease tenure for other types of sites varies depending on the uses. The usual sale method is through public tender.

Proceeds from land sales do not constitute part of the government's operating revenue but are instead channeled into government reserves. Singapore's public wealth is estimated to be more than 2.5 times its GDP. These are the net assets of the two sovereign wealth funds (Temasek Holdings and the Government Investment Corporation) and the Monetary Authority of Singapore. Investment incomes from these institutions contribute to the government's annual operating revenue.

## 5.3 The Housing & Development Board–Central Provident Fund Housing Framework

The HDB is the key pillar of Singapore's housing system. The achievements of the HDB, including its dominant role in Singapore's housing sector, have been extensively documented elsewhere.[9] This section draws from the existing literature and provides a brief summary of the main features of the framework.

The HDB began operations on 1 February 1960. It replaced the Singapore Improvement Trust and was set up as a statutory board to provide "decent homes equipped with modern amenities for all those who needed them" (Teh 1975: 6). A target of 110,000 dwelling units to

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[8] See Urban Redevelopment Authority web page at https://www.ura.gov.sg/uol/

[9] Notable government publications include Yeh (1975), Wong and Yeh (1985), Fernandez (2011), and Centre for Liveable Cities and HDB (2013). Academic publications include Chua (1997), Phang (1992, 2007, 2013a, 2015c), and Kim and Phang (2013).

be built was set for 1960–1970. On 25 May 1961, a huge fire broke out in the Bukit Ho Swee squatter district, which rendered about 16,000 people homeless. Housing the victims of the fire became the HDB's first major challenge. The government compulsorily acquired the burned-out land as a site for 12,000 low-cost flats and promised to complete the first blocks of flats within 9 months. The first five blocks of flats were completed by February 1962 and all 16,000 people who had lost their homes in the fire had been rehoused on the same site by the end of 1964 (see Latif 2009: 81–84).[10]

In its initial years of operation, the HDB followed the British public housing model of providing only rental units. It began offering housing units for sale on 99-year leasehold basis from 1964 under its Home Ownership for the People scheme.[11] The HDB priced housing units affordably for households with incomes not exceeding S$800 a month and offered loans such that owners paid less in monthly mortgage payments than they would have done in rents.

Price subsidies and housing grants are given to eligible households at the point of purchase and not deferred. Government support for the HDB is in the form of (i) annual grants from the current budget to cover its deficits incurred for developing, maintaining, and upgrading of estates; (ii) loans for mortgage lending and long-term development purposes; and (iii) land allocation for HDB housing and comprehensive HDB town planning.

The HDB brought about a transformation on the housing supply side. Table 5.3 shows the rate of increase in population and the stock of housing from 1970 to 2015. Housing units increased by about 50% in each decade from 1970 to 2000, outstripping population growth. In particular, HDB housing displaced private housing as low-density shop houses, squatter settlements, and villages were acquired by the government and demolished to make way for high-rise flats. The homeownership rate doubled within 1 decade, from 29% in 1970 to 59% in 1980, and reached 88% by 1990. From 2000 to 2010, the pace of housing construction slowed dramatically and was below the population growth rate of 26% (Table 5.3).

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[10] As a consequence of the fire, an amendment was passed to allow land that had been devastated by fire to be acquired at not more than one-third of the value of the vacant site, unless the minister specified otherwise. The one-third figure was to ensure that landowners did not benefit from an appreciation in the value of their land that would then be free from encumbrances.

[11] See references in footnote 9, and the HDB website at http://www.hdb.gov.sg

## Table 5. 3: Housing Stock, Housing Supply, and Homeownership Rate, 1970–2015

| | Population ('000) | Total Housing Stock | HDB Housing | Private Housing | Persons per Dwelling Unit | HDB Dwellings as Proportion of Housing Stock | Resident Homeownership Rate |
|---|---|---|---|---|---|---|---|
| 1970 | 2,075 | 305,833 | 120,138 | 185,695 | 6.8 | 39% | 29.4% |
| 1980 | 2,414 | 467,142 | 337,198 | 129,944 | 5.2 | 72% | 58.8% |
| 1990 | 3,047 | 690,561 | 574,443 | 116,118 | 4.4 | 83% | 87.5% |
| 2000 | 4,017 | 1,039,677 | 846,649 | 193,028 | 3.9 | 81% | 92.0% |
| 2010 | 5,076 | 1,156,732 | 898,532 | 258,200 | 4.4 | 78% | 87.2% |
| 2015 | 5,535 | 1,296,304 | 968,856 | 327,448 | 4.3 | 75% | 90.3% |
| **% Change** | | | | | | | |
| 1970–1980 | 16% | 53% | 181% | –30% | –24% | 84% | 100% |
| 1980–1990 | 26% | 48% | 70% | –11% | –15% | 15% | 49% |
| 1990–2000 | 32% | 51% | 47% | 66% | –12% | –2% | 5% |
| 2000–2010 | 26% | 11% | 6% | 34% | 14% | –5% | –5% |
| 2010–2015 | 9% | 12% | 8% | 27% | –3% | –4% | 4% |

HDB = Housing & Development Board.

Source: Data from Singapore government publications and websites.

A major policy innovation in 1968 was for the government to utilize the CPF as a vehicle for housing finance. In 1968, a new law was introduced to allow withdrawals from the fund to finance the purchase of housing sold by the HDB. Both employers and employees contributed a certain percentage of the individual employee's monthly salary toward the employee's personal and portable account in the fund. When the CPF was established in 1955, the contribution rate was 10% (5% each by employees and employers) of the monthly salary. With the new law in 1968, the contribution rates were raised steadily, and by 1984, they were 25% of wages. The contribution rates in 2016 are 20% of wages for employees and 17% of wages for employers, up to a monthly salary ceiling of S$6,000.[12]

Figure 5.2 shows a schematic view of the mobilization of domestic savings for housing finance through the CPF. Between 1968 and 1981, CPF savings could only be for payments related to the purchase of public-sector-built housing (such as down payment or stamp duties). At the beginning of the 1980s, the scheme was gradually liberalized, allowing for withdrawals for other, nonhousing-related purposes such as medical expenditures. The interest rate on CPF Ordinary Account savings yields a minimum of 2.5%.[13]

The HDB receives government loans to finance its mortgage lending and pays interest at the prevailing CPF savings rate. The HDB uses the loans to provide mortgage loans and mortgage insurance to buyers of its leasehold flats (both new and resale). The typical loan represents 80% of the price of the flat. The maximum repayment period is limited to 25 years. Every household can apply for a maximum of two HDB loans. The mortgage interest rate charged by the HDB is pegged at 0.1 percentage point above the CPF ordinary account savings interest rate. (The latter is based on savings rates offered by the commercial banks, subject to a minimum of 2.5%.)

Table 5.4 shows data for net assets, contributions, and withdrawals made by CPF members as a proportion of GDP for 2014. Net assets of the CPF are 71% of GDP, contributions by members comprise 7% of GDP, and net withdrawals are 4% of GDP. Withdrawals for the purpose of housing payments dominate and comprised 55% of total net withdrawals.

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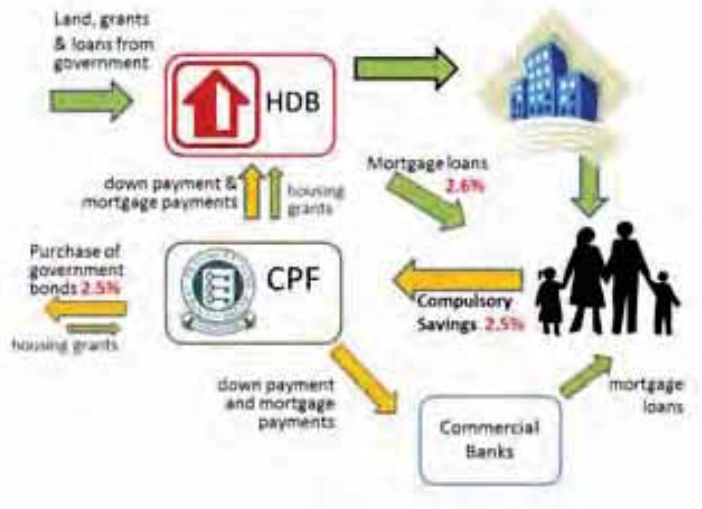
12 For details, see the CPF web page at https://mycpf.cpf.gov.sg/employers/employerguides/employer-guides/paying-cpf-contributions/cpf-contribution-and-allocation-rates

13 From 1 January 2008, an extra 1% interest per year is paid on the first S$60,000 of a member's combined balances. See the CPF web page on details of interest rates payable for various accounts at https://mycpf.cpf.gov.sg/Members/AboutUs/about-us-info/cpf-interest-rates. Historical interest rates can be found at https://mycpf.cpf.gov.sg/Assets/common/Documents/InterestRate.pdf

**Figure 5.2: Mobilization of Domestic Savings for Housing through the Central Provident Fund**




CPF = Central Provident Fund, HDB = Housing & Development Board.

Sources: Modified from Phang (2007, 2013a).

The integrated HDB–CPF framework contributed to the growth of housing loans and the development of the mortgage sector as homeownership rates increased. The ratio of housing mortgage loans to GDP was only 4% in 1970; it increased to 10% by 1980 and to 62% by 2000. In 2014, the resident households' housing mortgage loans-to-GDP ratio was 55.5%. Between 1970 and 2000, HDB outstanding mortgage loans accounted for more than 50% of total housing loans (Phang 2001). In 2002, the government amended its policy to allow banks instead of the CPF to have first claim on a property should a borrower default on his or her mortgage loan (Phang 2003). This paved the way for commercial banks to enter the HDB mortgage market from 2003. With the low interest rate environment in recent years, commercial banks have been able to offer loans at rates below the HDB mortgage loans' 2.6% interest floor. Financial institutions have since increased their share of outstanding housing mortgage loans to more than 80% of the total (see Table 5.4).

**Table 5.4: Central Provident Fund Assets, Contributions, and Withdrawals by Purpose, 2014**

| | S$ million | % of GDP |
|---|---|---|
| GDP | 390,089 | – |
| Resident households' outstanding mortgage loans with financial institutions | 179,578 | 46.0 |
| Resident households' HDB mortgages | 37,178 | 9.5 |
| CPF net assets | 277,778 | 71.2 |
| CPF contributions by members | 27,917 | 7.2 |
| CPF total withdrawals (net of refunds) | 17,298 | 4.4 |
| **Purpose of Withdrawal** | **S$ million** | **% of CPF total net withdrawals** |
| HDB housing | 6,892 | 39.8 |
| Private housing | 2,706 | 15.6 |
| Attained the age of 55 years* | 4,266 | 24.7 |
| Medisave and medical insurance | 2,162 | 12.5 |
| Purchase of life-long annuity | 2,069 | 12.0 |

– = data not available, CPF = Central Provident Fund, GDP = gross domestic product.

* Or leaving Singapore and West Malaysia permanently, as well as on grounds of death or permanent incapacitation.

Sources: Singapore Department of Statistics and CPF Financial Statements, 2014.

## 5.4 The Role of Markets

In a heavily state-dominated and highly regulated sector, marketization of HDB flats has taken place in phases. In the 1960s and 1970s, when there were long waiting lists for HDB flats, the HDB allocated flats with priority given to households affected by resettlement and on a first-come-first-served basis for other households. Separate waiting lists were maintained for rental and sale flats, and applicants could state their preferred zone and type of flat desired. The waiting lists averaged 70,000 households per year between 1971 and 1985 (Phang 1992: 166). During this period of general shortage, there was policy concern that HDB dwellings should not become a vehicle for speculation by allowing the price subsidies to be capitalized on a secondary market. There were thus numerous regulations concerning the resale of HDB flats, which restricted household mobility.

Restrictions on resale took the following forms:

- Ban on market transactions prior to 1971: The HDB required owners who wished to sell their flats to return them to the HDB at the original purchase price plus the depreciated cost of improvements.
- Minimum occupancy period: In 1971, HDB allowed owners who had resided in their flats for a minimum of 3 years to sell their flats at market prices to buyers of their choice who satisfied the eligibility requirements for HDB homeownership. The minimum occupancy period before resale was increased to 5 years in 1973 and has remained in place since.
- Debarment period: In 1971, when resale became permitted, those who sold their flat were debarred from buying another HDB flat for a year. The debarment period was increased to 2.5 years in 1975. The debarment period did not allow for household mobility within the HDB sector and was a great deterrent for any household considering sale of its dwelling. This was abolished in 1979, thereby greatly facilitating transactions within the public housing sector.
- Resale levies: In 1979, in place of the debarment period, a 5% levy on the transacted price of the dwelling was imposed on the seller to "reduce windfall profits." A system of graded resale levies, based on flat type, was introduced in 1982. Rules regarding circumstances under which levies could be waived were fine-tuned in the 1980s. The resale levy system in its current form ensures that the subsidy on the second new flat purchased by the household from the HDB is smaller than that for the first-time HDB flat buyer.

Only citizens, nonowners of any other residential property, households with a minimum size of two persons with household incomes below the income ceiling set by the HDB, were eligible to purchase new or resale HDB flats before 1989. These rules restricted mobility even as household incomes increased. Phang (1992) found that, in 1981, 31% of multiple-worker HDB households with length of tenure greater than 5 years were no longer eligible to purchase HDB flats. The consequence for commuting time was that, on average, workers residing in HDB housing commuted greater distances by 2.2 minutes of auto time or 5.6 minutes of transit time, as compared with those residing in private apartments.

As the housing shortage eased and households sought to upgrade their housing or change their location, there was a need to amend resale

regulations on the eligibility of buyers to facilitate household mobility within the HDB sector, as well as from the HDB to the private sector and vice versa. Facilitating the development of an HDB resale market through deregulation speeded up in the late 1980s and early 1990s. This could also be considered in line with the then worldwide trend toward privatization and deregulation.

The following restrictions on purchasers of HDB resale flats were relaxed in 1989:

- Income caps for buyers: The income ceiling restriction was removed for buyers of HDB resale flats.
- Nationality status of buyers: Permanent residents were allowed to purchase HDB resale flats for owner-occupancy.
- Private housing ownership: Private housing owners were allowed to purchase HDB resale flats for owner-occupancy. HDB-flat owners, who could not own any other residential property before, could also invest in private-sector–built dwellings.

From 1991, single citizens above the age of 35 years were allowed to purchase HDB resale flats for owner-occupancy. This was the first instance of HDB's recognition of the needs of single citizens to own their own homes independently.[14] In 1993, measures to deregulate HDB financing for resale flats were introduced. At that time, the HDB was the only source of finance for buyers of resale HDB flats.

The volume of transactions of resale HDB flats increased from fewer than 800 units in 1979 to 13,000 units in 1987 and 60,000 units in 1999. The number of resale transactions was 31,000 in 2004 and 37,000 in 2009; it declined to 17,000 in 2014 (a 10-year low)—a result of numerous interventions to "cool" the property market.[15] The effects of these policy measures on housing prices are further discussed in the next section.

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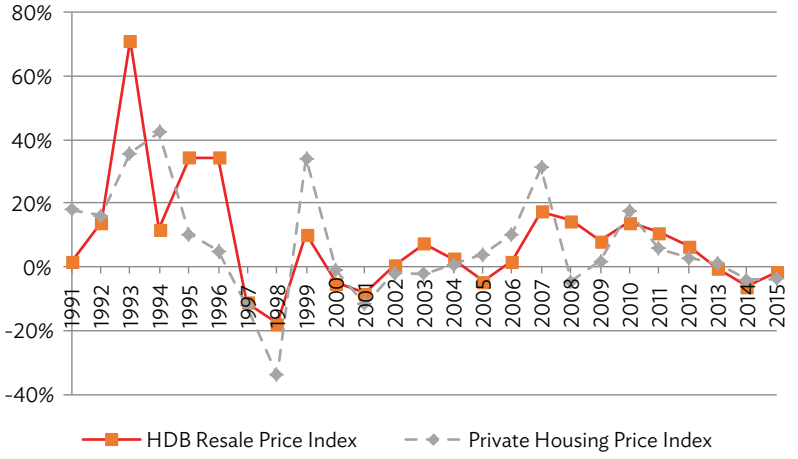
[14] The CPF housing grant was extended to single citizens (age 35 and above) in 1998. Since 2013, eligible single citizens above 35 can buy a new two-room HDB flat direct from the HDB. They may also apply for Additional and Special Housing Grants. See http://www.hdb.gov.sg/cs/infoweb/residential/buying-a-flat/new/single-singapore-citizen-scheme

[15] Resale volume data from HDB Annual Reports and HDB website at http://www.hdb.gov.sg/fi10/fi10321p.nsf/w/BuyResaleFlatNumberofResaleApplications?OpenDocument

## 5.5 Supply-Side versus Demand-Side Interventions

Consistent with the shift toward a greater reliance on the market, the government introduced CPF housing grants for the purchase of resale HDB flats in 1994. This demand-side policy was a shift from the previous supply-side interventions. The subsidy was provided to eligible first-time applicant households and deposited in their CPF accounts. The grants, however, carried the risk that they could be capitalized into housing prices. The risk was exacerbated by the simultaneous deregulation of the resale market, in particular the removal of the income ceiling and citizenship restrictions, and the resale HDB prices indeed started to increase. Figure 5.3 shows the rate of increase in price indexes for both private housing and HDB resale flats from 1991. Following housing finance deregulation in 1993, HDB resale prices increased sharply (by 71%) within the same year. The HDB resale prices rose further after the introduction of CPF housing grants in 1994. This price increase had to be expected, because resale public and private housing markets had become less segmented since high-income citizens as well as permanent residents could purchase HDB resale flats.

**Figure 5.3: Changes in Housing Price Indexes, 1991–2015**




HDB = Housing & Development Board.

Sources: Data from Urban Redevelopment Authority and HDB websites.

The government reacted by an increase in the HDB supply of new housing, the introduction of a new executive condominium scheme, as well as an increase in government land sales for private housing development. However, the housing prices continued to soar, with HDB resale price increases much higher than private housing price increases in the 1993, 1995, and 1996 (Figure 5.3). To bring prices down, the government introduced a package of antispeculation measures on 15 May 1996. These measures included capital gains taxes on the sale of any property within 3 years of purchase, stamp duty on every sale and subsale of property, limitation of housing loans to 80% of property value, as well as limiting foreigners to non-Singapore-dollar–denominated housing loans. The HDB also changed various regulations to bring demand down, such as limiting HDB flat buyers to two loans from the HDB where there had been no limit before.

The effects of these measures coincided with the onset of the Asian economic crisis in 1997 and housing prices fell sharply. The decline in HDB resale prices was less than the decline in private housing prices in 1998. To avoid too steep a fall, the government stopped land sales and reduced stepwise the CPF housing grants. As a consequence, both the private and public housing sectors were confronted with a situation of unsold units. As described in Phang (2007), in early 2002, the HDB suspended its Registration for Flats (queueing) System and ensured that new flats were only built when there was sufficient demand for them. Other major restructuring measures followed, which resulted in a sharp curtailment of the HDB building program; from 2000 to 2010, the number of HDB dwelling units increased by a mere 6% (Table 5.3).

During the global financial crisis of 2008, HDB prices were remarkably resilient and continued to increase while private housing prices fell. In the post-2008 global financial crisis period, limited supply, rapid population increase, the low interest rate environment, and high global liquidity, resulting from accommodative monetary policies of central banks in developed economies, led to accelerated price increases of Singapore property. Over the decades, the upward trend in Singapore real estate prices had caused housing (both HDB and private) to be viewed as an attractive investment class as compared with other asset classes. This view has been reinforced by official statements from the government that HDB flats are assets which it commits "to upgrade" and "whose value can be unlocked for retirement, if needed" (Ministry of National Development 2011b). This approach raises intergenerational equity implications and questions about the longer-term sustainability of relying on appreciating house prices to finance retirement (Phang 2012).

The continuous upward trend in prices and the economic and political risks of a housing bubble and increasingly unaffordable housing

compelled the government to intervene. Since 2006, the Government of Singapore has announced several consecutive rounds of "cooling" measures to curb investment demand for housing. Over the same period, to enhance housing affordability, housing grants which allowed the HDB to better price-discriminate based on household incomes became a feature of the HDB pricing policy. As eligibility for HDB new subsidized flats and CPF housing grants (of S$40,000) extended to over 80% of Singapore citizen households, subsidies needed to be better calibrated to household incomes.

The Additional CPF Housing Grant (AHG) was introduced in 2006 (and enhanced in 2007 and 2009) to allow families with lower incomes to receive a higher grant amount that could be used for either a new flat or a resale flat. The amount of the AHG depends on the average gross monthly household income. Households with monthly household incomes less than S$5,000 are eligible for the AHG. The AHG ranges from S$5,000 (for households with incomes from S$4,501 to S$5,000) to S$40,000 (for households with incomes below S$1,500).

The Special Housing Grant was introduced in 2011 to help households buy four-room or smaller new flats in non-mature estates directly from the HDB. The Special Housing Grant was enhanced in 2012, significantly expanded in 2013, and expanded again in 2015.[16] The amount of the Special Housing Grant depends on the average gross monthly household income. Households with household incomes less than S$8,500 per month are eligible for the grant. The amount of the grant ranges from S$5,000 for households with incomes from S$8,000 to S$8,500, to S$40,000 for households with incomes below S$5,000.

A Step-Up Housing Grant (of S$15,000) was introduced in 2013 to help families in subsidized two-room HDB flats in non-mature estates upgrade to purchase three-room HDB flats in non-mature estates. The net effect of these several housing grants is to allow the HDB to price its flats based on a household's ability to pay thus ensuring that almost all employed citizens can afford to own a home.

From independence, homeownership affordability has always been a very visible symbol of the government's "ability to fulfill its promise to improve the living conditions of the entire nation" (Chua 1997: 139). The ratio of the price of a new HDB four-room flat to median household income was generally 4.0 or less before 2005 (Phang 2009, 2010). HDB resale prices are generally higher than new flat prices as they are market-determined and there is no waiting period for construction

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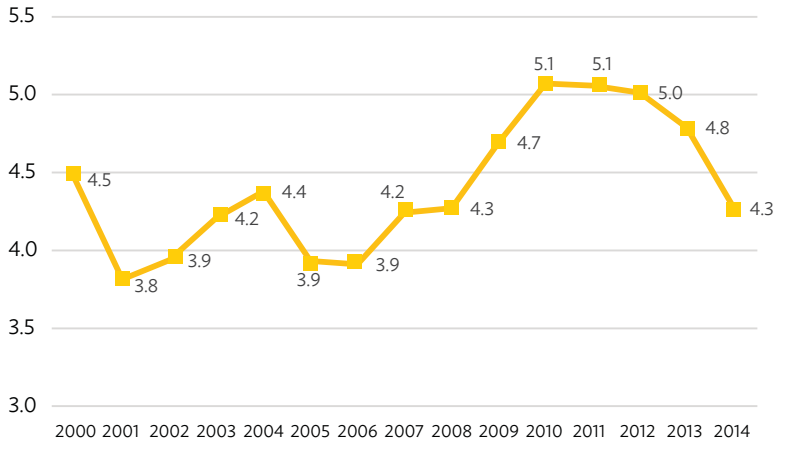
[16] In August 2015, the government increased the maximum grant amount from S$20,000 to S$40,000. The income ceiling for households to qualify to receive the Special Housing Grant was raised from S$6,500 to S$8,500.

to be completed. Figure 5.4 shows the ratio of the median HDB four-room flat resale price to median resident employed household annual income. The ratio was generally below 4.5 before 2008 and rose to above 5.0 from 2010 to 2012. As prices in the HDB resale market rose, new HDB flat prices followed a similar trend, outstripping income growth. Although the median-income household would be able to easily afford a new HDB five-room flat in a new town location at around 4 times the annual income in 2006, the price had increased to closer to 6 times the annual income by 2011 (Phang 2012). The introduction of new housing grants enhanced affordability but contributed to house price increases during the period when new HDB housing supply was minimal.

Moreover, what is affordable may not be available, as new HDB build-to-order projects were reportedly oversubscribed (e.g., by up to 5 times in a February 2011 exercise). Dissatisfaction over rising prices and difficulties in securing HDB housing were among the factors that contributed to a 6% swing in votes against the PAP in the May 2011 elections (from the 2006 elections) to 60%, its lowest since independence. The opposition Workers' Party won six seats in Parliament, including a group representation constituency of five seats, the first time a group representation constituency had been won by an opposition party. In what may be interpreted as a response to these developments, the government increased the household income ceiling for the purchase of new HDB flats from S$8,000 a month to S$10,000 a month in August 2011 (Ministry of National Development 2011a). The income ceiling for eligibility to purchase an executive condominium was also increased, from S$10,000 to S$12,000. In August 2015, the government further increased the monthly household income ceilings from S$10,000 to S$12,000 for purchasing a new HDB flat, and from S$12,000 to S$14,000 for a new executive condominium (H. L. Lee 2015). These changes enable even more young Singaporean households to enjoy housing subsidies for homeownership—the median household income among all employed households was S$8,292 in 2014 according to the Department of Statistics.

In what can be described as a retreat from the market, new HDB flats have since 2013 been offered at prices that are "delinked" from market prices. In 2013, the Minister for National Development announced that he aimed to bring down build-to-order prices from about 5.5 times applicant households' median annual income to 4 times their median annual income. In 2014, after grants, three-room build-to-order flats cost 4.57 times the annual median applicant households' annual income (Table 5.5). Four- and five-room flats were at prices that are at 5.26 times and 5.36 times applicant households' annual incomes, respectively (The Straits Times, 17 November 2014).

**Figure 5.4: Median HDB Four-Room Flat Resale Price to Median Household Income Ratio**




HDB = Housing & Development Board.

Sources: Calculated from data from Singapore government websites.

Numerous measures have been introduced to cool the housing market between 2006 and 2013. The measures introduced include the following:[17]

- Prohibiting developers from allowing purchasers to defer stamp duty and interest payments to a later date
- Prohibition of interest-only housing loans
- Seller stamp duty
- Loan-to-value ratio limits
- Additional buyer stamp duty
- Tenor restriction limit
- Three-year waiting period before new SPRs are eligible to purchase resale HDB flats
- Mortgage service ratio limit
- Total debt service ratio limit

[17] For details of these measures, see Lee et al. (2013) and http://www.srx.com.sg/cooling-measures

**Table 5.5: Price Affordability of HDB Flats in 2014**

| HDB Flat Type | Average BTO Price | Average BTO Price after Grants | Applicants' Median Annual Household Income | Ratio of Price (after Grants) to Income |
|---|---|---|---|---|
| 2-room | $110,000 | $55,000 | $19,200 | 2.86 |
| 3-room | $187,000 | $137,000 | $30,000 | 4.57 |
| 4-room | $295,000 | $265,000 | $50,400 | 5.26 |
| 5-room | $386,000 | $386,000 | $72,000 | 5.36 |

BTO = build-to-order, HDB = Housing & Development Board.

Note: BTO refers to HDB flats. Prices are for BTO flats in non-mature estates.

Source: *The Straits Times*. 17 November 2014.

With the numerous market intervention measures introduced since 2006, it is difficult to isolate the price effects of a particular cooling measure or the extent to which housing grants were capitalized (Lee et al. 2013). The measures to cool the market can be viewed as macroprudential policies to stabilize housing prices, reduce the returns for housing investors, and preempt a housing bubble from developing.

The housing tax and subsidy framework in Singapore is highly progressive. The basic idea is that wealthy property owners and investors are taxed and the receipts used to subsidize homeownership of lower-income groups. Table 5.6 provides a simplified picture of the progressivity of the housing tax and subsidy framework at the point of purchase. Aiming for a fair and targeted outcome, the effective housing subsidy is based on multiple criteria. For example, in 2015, the Proximity Housing Grant was set up to enhance grants for households purchasing a resale HDB flat close to their parents or children.

To further curb the housing demand, the government has been increasing the supply of HDB flats since 2011. With the increase in supply of both HDB and private housing, the shortage of housing has started to decline. The government, however, aims to ensure that housing remains an attractive investment; one reason being that the wealth of many citizens is locked into housing and a sudden fall of housing prices would have considerable negative wealth effects.

**Table 5.6: Progressivity of Housing Purchase Taxes and Subsidies**

| Residency/Incomes/Housing Types | Additional Buyer Stamp Duty (+) Price Subsidy (–) |
|---|---|
| Foreigners | 15% |
| SPR investors | 10% |
| Singaporean investors | 7% |
| SPR homeowners | 5% |
| Singaporean high-income homeowners | 0% |
| Executive Condominium | –10% |
| HDB 5-room | –12% |
| HDB 4-room | –20% |
| HDB 3-room | –35% |
| HDB 2-room | –50% |

HDB = Housing & Development Board, SPR = Singapore permanent resident.

Note: Estimates of price subsidies based on difference between resale market prices and new flat prices.

Source: Authors.

## 5.6 Promoting Racial Integration: The Ethnic Integration Policy

Singapore citizens and permanent residents are of different racial and religious backgrounds. The HDB's objective has always been to integrate the various income and racial groups within the public housing program and to avoid the emergence of low-income or ethnic ghettos. This policy was a consequence of events in the 1960s, when there were episodes of ethnic violence between the Chinese and the Malays that resulted in several deaths and injuries. Racial harmony has since been a goal of the government (Ooi, Siddique, and Soh 1993). Beginning in the 1970s, the HDB allocated new flats in a manner that would give a "good distribution of races" to different new towns. However, by 1988, a trend of ethnic regrouping through the resale market was highlighted as a social problem which could lead, over time, to the reemergence of ethnic enclaves.

In 1989, the government implemented the Ethnic Integration Policy under which racial limits were set for the HDB blocks and neighborhoods.[18] The Chinese, Malay, Indian/Others neighborhood

[18] Dodge (2006) devotes a chapter to Singapore's Ethnic Integration Policy in his book on Thomas Schelling. Schelling's models on the neighborhood "tipping" phenomenon that would quickly lead to total segregation of different ethnic groups were influential in the Singapore government's adoption of policies to control the movement of population groups in the public housing sector.

limits were set at 84%, 22%, and 10%, respectively.[19] The block quotas were 3% above each neighborhood limit. For new flats, a particular ethnic group will not be able to buy a flat from the HDB if the quota for that group has been reached for the particular block or neighborhood (Centre for Liveable Cities and HDB 2013: chapter 5). For the resale market, when the set ethnic group limits for a particular block or neighborhood are reached, those wishing to sell their HDB flats in the particular block or neighborhood are constrained to sell them to another household of the same ethnic group. The government had emphasized that "our multiracial policies must continue if we are to develop a more cohesive, better-integrated society. Singapore's racial harmony, long-term stability, and even viability as a nation depend on it" (quoted in Ooi, Siddique, and Soh 1993: 14).

The HDB integration policy for its housing estates has worked remarkably well in Singapore and has contributed to social integration of the different races. In a May 2015 interview, Deputy Prime Minister Tharman Shanmugaratnam described this policy as "the most intrusive policy in Singapore" which "has turned out to be the most important."[20]

However, the restriction in selling to the same ethnic group has resulted in some market-distortionary effects. In a careful study, Wong (2013) matched more than 500,000 names in the phone book to ethnicities to calculate ethnic proportions at the apartment block level. She then investigated transaction price and time-on-market duration differences for constrained and unconstrained blocks using 35,744 transactions between April 2005 and August 2006. On average, Wong (2013) found the transaction prices for Chinese-constrained units to be 5% higher than transactions in comparable unconstrained blocks. Conversely, the prices for Malay- and Indian-constrained units were 3% lower.[21] She also estimated longer time-on-market durations of between 1 and 1.4 months for constrained sellers.

In March 2010, in response to the increase in the number of SPRs living in public housing estates, the HDB introduced a new SPR quota for non-Malaysian SPR families buying flats to facilitate better integration and to prevent new SPR enclaves from forming in public housing estates. The SPR quota is set at 5% and 8% at the neighborhood and block levels,

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[19] In March 2010, in response to changing demographics, the neighborhood limit for Indian/Others was raised to 12%.

[20] "An Investigative Interview: Singapore 50 Years after Independence," 45th St Gallen Symposium, May 2015. See https://www.youtube.com/watch?v=hpwPciW74b8

[21] Using an average price of units sold (S$234,000), Wong (2013) estimated these price differences to represent 5 times the median monthly income of the Chinese (S$2,335) and 3 times the median monthly income of the Malays (S$1,790) and the Indians (S$2,167).

respectively. Malaysian SPR buyers are not subject to the SPR quota as they are considered to have close cultural and historical similarities with Singaporeans.[22]

## 5.7 Land Lease System and the Lease Buyback Scheme

### 5.7.1 Land Lease System

With about 90% of the land owned by the state, all HDB flats and most high-rise private condominiums are sold on a 99-year leasehold basis. The limited number of freehold properties command a premium over comparable leasehold properties as the value of leasehold properties at the termination of the lease is expected to fall to zero. The Singapore Land Authority provides a Leasehold Table, which expresses the value of the residual tenure as a percentage of freehold value of land.[23]

Capozza and Sick (1991) have shown that leasehold landowners will redevelop earlier and at a lower intensity as compared with freehold owners, because the value of the developed land at the termination of the lease is lower (or zero) as compared with the freehold case. This may represent an unintended consequence of having a housing and land market based on a lease structure. However, in the case of Singapore, these lower development intensity effects do not exist for land leases sold by the government because the government defines the land use, development intensity (plot ratio), and time-to-project completion under the Government Land Sales Programme. The detailed planning regulations basically strip away development options and reduce the uncertainty linked to the optimal time to exercise the real option of land development, thus accelerating investments (Cunningham 2007).

Another effect of leaseholds is that investment in maintenance for properties may be lower as compared with freehold properties. One may

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22 A non-Malaysian SPR household buyer must satisfy both the ethnic proportion and SPR quota to qualify to buy a resale HDB flat. The ethnic proportions and SPR quota are updated on the first day of every month and buyers/sellers can check the status of a unit online. See HDB web page at http://www.hdb.gov.sg/fi10/fi10296p.nsf/PressReleases/C515273FA068DD58482576DD00169155?OpenDocument

23 The Leasehold Table is used together with the Table of Development Charge for the computation of differential premiums payable when state title restrictions involving change of use and/or increase in intensity of use for leasehold land are lifted. See http://www.sla.gov.sg/Portals/0/Services/Land%20Lease%20Conditions/DP%20policy%20wef%2031%20Jul%202000.pdf

hypothesize that a similar argument may apply to HDB flats and private leasehold properties: because capital investments are lost when the lease expires, there is a disincentive for households to improve—or even hold constant—the flat quality. This disincentive may be responsible for the more rapid deterioration of the housing stock built on leased land as compared with freehold land.

In the case of Singapore, as a consequence of rapid economic growth and increases in population, economic obsolescence has preceded physical obsolescence for many buildings several decades before the typical 99-year lease runs out. Moreover, the typical housing-filtering process does not operate in Singapore because private housing does not filter to the middle-income segment of the market that is served by the HDB. In the case of privately owned properties, en bloc sales have facilitated redevelopment (Phang 2005).

Until 1991, Singapore operated with two plans for land-use purposes: the Master Plan was statutory and revised every 5 years; the Concept Plan was approved but not released to the public (Dale 1999: 85). The 1990s was another period with regard to important policy decisions for physical land-use planning. The government adopted a more open approach to planning. A major review of the Concept Plan was completed and the revised plan was made public in 1991.

The broad strategies of the 1991 Concept Plan were translated into a forward-looking Master Plan, which has since been reviewed every 5 years.[24] The development guide plans for 55 planning areas contain the planning vision for its area, and sets out the control parameters such as land use, plot ratio, building height, provision of facilities, and amenities. Zoning and plot-ratio prescriptions contained within each development guide plan could deviate from the current land use with the objective of guiding the physical development in a specific planning area and "unlocking" the redevelopment potential of privately held land parcels.

To take advantage of the increase in development potential arising from the above changes in planning regulations, the developer would have to pay a differential premium based on the development charge (which had been introduced in 1965.[25] The Development Charge Table is updated by the Ministry of National Development in consultation with the chief valuer every 6 months (on 1 September and 1 March). The current prescribed average land rates are based on 70% of estimated land

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[24] The Master Plan can be accessed at https://www.ura.gov.sg/uol/master-plan.aspx?p1=View-Master-Plan

[25] The Development Charge Table can be accessed at https://www.ura.gov.sg/uol/DC/apply-check-pay/apply-permission/DC-rates-archive.aspx

values by eight land-use groups in 118 geographic sectors. In the case of leasehold land, developers are able to apply to top up the land lease.[26]

However, many of these sites were held under residential strata title, which, prior to 1999, required that all the strata-titled property owners must unanimously agree to a sale. Many sales had to be aborted when a minority (in some cases, just one) of the owners refused to participate in the sale. Frustrated owners appealed to the government and, in 1999, the Land Titles (Strata) Act was amended to facilitate collective sales. The concerns of the majority were accepted by Parliament as legitimate and the actions of dissenting minority owners were described as "impeding efforts to maximize the development potential of en-bloc-sale sites and preventing the rejuvenation of older estates."[27]

In 1999, Parliament passed amendments to the Land Titles (Strata) Act that changed the 100% requirement for en bloc sale to a majority vote. The new provisions applied to only strata developments with more than 10 units. Where a development is less than 10 years old, there must be 90% agreement; for developments 10 years old or more, at least 80% agreement suffices for collective sales (both figures based on share values). The Strata Titles Board reviews applications for collective sales. The Land Titles (Strata Titles Boards) Regulations 1999 sets out the procedure for applications to the board, the proceedings of the board, and other matters such as appeals to the board and the High Court. A study by Christudason (2010) shows that between 1999 and 2008, there were a total of 312 collective sales that resulted in 13,755 old private housing units being displaced by 35,888 new housing units.

In the HDB sector, a spatial age gradient for HDB estates had become evident by the late 1980s. As the city expanded outward from the central business district, older estates had been built closer to the central business district and new towns were built at distances further away. Also evident was the trend of younger families moving out of older HDB towns because they were allocated new flats in outlying new towns. In 1989, HDB upgrading programs to improve existing HDB estates were announced by the government. The upgrading programs vary in nature and scale and are substantially subsidized by the government

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[26] See the Singapore Land Authority web page for the document on "The Differential Premium System" at http://www.sla.gov.sg/Portals/0/Services/Land%20Lease%20Conditions/DP%20policy%20wef%2031%20Jul%202000.pdf. The topping-up of a lease tenure allows for a better Pareto optimum to be reached, as explained by Dale-Johnson (2001). The computation of the premium payable for the topping-up of lease tenure is assessed by the chief valuer on a case-by-case basis.

[27] See Report of the Select Committee on the Land Titles (Strata) (Amendment) Bill, presented to Parliament on 19 April 1999. See Christudason (2010) for details of the legislation and the effects on private housing supply.

(Centre for Liveable Cities 2013: 20). The government also launched the Selective En bloc Redevelopment Scheme (SERS) in 1995 under which older low-density blocks of HDB flats were acquired and demolished. From 1995 to 2014, 79 sites were redeveloped through the SERS. Affected households are resettled in new and higher-density housing with fresh 99-year leases within the same neighborhood.[28]

## 5.8 Housing Wealth and Retirement Financing: The Lease Buyback Scheme

In 2015, data from household sector balance sheets show housing assets owned by the resident household sector to be about 2.1 times GDP.[29] The ratio of the net housing wealth to GDP was 1.5, while the ratio of the total net wealth to GDP was 3.8. The typical household in Singapore thus has a large fraction of its wealth invested in housing. However, housing wealth is illiquid and the study by McCarthy, Mitchell, and Piggott (2002) shows that the average worker in Singapore is often asset-rich but cash-poor upon retirement, as 75% of the retirement wealth is locked into housing assets. A report by the government-appointed Economic Review Committee (2002) came to a very similar conclusion.

With a high homeownership rate and aging homeowners, there was a need for instruments through which households could monetize their housing asset (Phang 2015b). A local insurance firm, NTUC Income, was the first to introduce a reverse mortgage scheme for private housing in 1997. In 2006, a Singaporean bank, OCBC Bank launched a reverse mortgage scheme for owners of private property, and NTUC Income extended reverse mortgages to HDB homeowners. However, both institutions have since discontinued the schemes citing a lack of demand. Koh (2015) highlighted the lease system as the primary challenge for designing a viable reverse mortgage instrument. The instruments on offer stipulated that the property had to have at least 70 years of lease remaining to be eligible, with the condition that, at the end of the reverse mortgage, there had to be at least 50 years of lease remaining.

To address the problem, the HDB introduced the Lease Buyback Scheme (LBS) in 2009 for low-income elderly (aged 63 or older) living in

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[28] See the HDB web page on the SERS at http://www.hdb.gov.sg/fi10/fi10329p.nsf/w/eSERSOverview?OpenDocument and the list of SERS sites (79 sites) from 1995 to 2014 at http://www.teoalida.com/singapore/serslist/

[29] See Department of Statistics web page at http://www.singstat.gov.sg/statistics/browse-by-theme/household-sector-balance-sheet

three-room or smaller flats. In 2014, the Prime Minister announced the enhancement of the LBS to four-room flats (H. L. Lee 2014). To illustrate, an HDB four-room flat, bought for approximately S$24,300 in 1980, lived in for 34 years, is valued at S$450,000 in 2015. It can be retained for the next 30 years, and have the 35 years of its end-lease purchased by the HDB in 2015 for S$190,000 to help finance the retirement of the now elderly homeowners. This is the provision of a retirement safety net based on ownership of an HDB flat, with the HDB taking on both interest-rate risk and housing price-depreciation risk over a long period of 30 years (Koh 2015). The housing price-depreciation risk is likely to be exacerbated by the homeowner's disincentive to invest in flat renovation and maintenance as the property approaches the end of the retained lease period. Although this disincentive might be negligible for low-income households, which may have less financial ability to meet these costs, it is likely to be significant for middle-income households. The impact of the disincentive would have increased substantially with the extension of the LBS to four-room flats.[30]

Other monetization options that have been provided or made possible by the HDB for eligible elderly households include the following:

- A Silver Housing Bonus incentive (of up to S$20,000) to sell their current flat and buy a smaller flat (right-sizing)
- A related measure, the two-room Flexi Scheme, was introduced in 2015, which allows households, whose heads are over the age of 55, to buy two-room HDB flats on shorter leases than 99 years. The shorter lease means the price of the home is significantly reduced. The household can choose the lease duration to purchase, with the minimum duration dependent on the age of the household members.[31]
- Subletting a room or putting their flat up for rental for a steady flow of income.[32]

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30 The Enhanced LBS took effect in April 2015, and the HDB received 450 applications in April and May, of which 214 were owners of four-room flats. A total of 965 households took up the LBS between 2009 and March 2015 (The Straits Times, 12 June 2015).

31 Shorter lease periods range from 15 to 45 years. Under the scheme, buyers must choose a lease period that will last them and their spouse until they are at least 95 years old. The two-room Flexi Scheme merges and replaces the two-room flat scheme and Studio Apartment (30-year lease) scheme. For details, see http://www.hdb.gov.sg/fi10/fi10321p.nsf/w/BuyingNewFlatEligibility2roomFlexiflats?OpenDocument

32 See H. L. Lee (2014) and HDB web page at http://www.hdb.gov.sg/fi10/fi10325p.nsf/w/MaxFinancesOverview?OpenDocument

## 5.9 Conclusion: Lessons Learned for Other Asian Countries

Singapore's housing system has evolved over time as a symbiotic relationship between the HDB and the CPF, with generous support from the Ministry of Finance. The HDB–CPF system has contributed to high savings and homeownership rates, and very effectively mobilized savings for housing and growth of housing loans. The provision of affordable housing has contributed to social stability, economic growth, and the development of communities. The large HDB sector with its regulations on ownership and resale contributes to reducing speculative demand for housing. The CPF rate adjustments, with their impacts on inflation and wage costs, have been useful as a macroeconomic instrument for a very open economy. It is not surprising that the HDB hosts numerous visits each year from foreign delegations wishing to learn from Singapore's housing experience.

Lessons that can be learned from the Singapore model of housing include the following:

(i) **Housing's contribution to economic development:** The housing and housing finance sectors can contribute positively and significantly to the economic and financial development of a country. Singapore's macroeconomic environment has been one of high savings and income growth, low unemployment, inflation and interest rates, and government budgetary surpluses, as well as exchange rate appreciation. Housing policy has also been used to promote racial integration, which, in turn, has contributed to social stability and economic growth.

(ii) **Homeownership affordability:** Establishing an integrated land, housing supply, and mortgage finance framework can deliver dramatic increases in housing supply and improvements in homeownership affordability.

(iii) **Urban governments:** In urban areas, governments can greatly facilitate the speed of urban development and redevelopment through appropriate legislation, regulations, and institutions that enable increases in housing supply for a growing population.

(iv) **Private sector:** Notwithstanding the importance of the government's role in urban development and mobilization of domestic savings, financial institutions and private developers play an equally important role in the real estate sector. As markets mature, governments need to review policies periodically to assess their continued relevance.

(v) **Enabling markets:** Markets are very important and creating and/or enabling markets to work more efficiently and allowing for private initiatives are very important aspects of housing policy. A symbiotic partnership between the government and private sector has helped Singapore to avoid the worst outcomes of the extremes of central planning and unplanned urbanization.

(vi) **Market transparency:** Governments can play an important role in improving market transparency through provision of timely real estate market information.

(vii) **Housing subsidies:** The short- and long-term implications of housing subsidies, explicit or implicit, supply- or demand-side, within the entire system, need to be fully understood and periodically reviewed for sustainability and effective housing market intervention.

(viii) **Macroprudential regulation:** The government has deployed multiple mitigations in parallel to reduce the risk of housing becoming a source of finance sector instability. Housing markets are carefully segmented and carefully regulated. The main source of capital for housing finance comes from domestic savings. That these are in the form of compulsory savings lowers default risks.

(ix) **Monetizing housing assets:** The CPF system has been used to mobilize retirement savings for housing mortgage payments by young households. With an aging population, it is also necessary to design instruments for elderly homeowners to monetize housing assets for retirement financing.

(x) **Governance:** The need for strong legislation and sound governance of housing agencies and financial institutions cannot be overemphasized.

The system is not, however, without its critics and risks. The mandatory nature of the CPF, together with the dominance of the HDB, could have resulted in overallocation of resources to housing. The CPF collects from members more than what is required for housing. This could have crowded out consumption (Phang 2004) and, as CPF savings are illiquid, it has been cited as a reason behind a weak domestic start-up sector (Bhaskaran 2003). The large allocation of savings for housing and the risk of housing price declines pose risks for retirement financing (McCarthy, Mitchell, and Piggott 2002; Asher 2002; Phang 2007; Low 2014). The phrase "asset rich and cash poor" neatly captures the basic problem, and policies in the past decade to help aging households monetize their housing equity, provide health subsidies for the elderly,

and workfare for lower-income workers represent steps toward a more comprehensive social security system.

The affordable rental segment of Singapore's housing market has also been marginalized by the deliberate and long-standing policy bias toward homeownership. The small proportion of HDB social rental housing comprises mostly one- and two-room flats that house low-income families.[33] There is generally a shortage of affordable market rental units in the HDB sector as evident by the higher rental yield for HDB flats as compared with private housing. With the increase in the foreign population in Singapore, there is a need to expand the affordable rental sector. One suggestion is to establish housing real estate investment trusts to help cater to the rental housing needs of an increasing number of SPRs and foreigners in Singapore as well as Singaporean households in transition (Phang 2013b; Phang et al. 2014).

While the Singapore model has attracted much interest from other Asian countries (Micklethwait and Wooldridge 2014), the transferability of Singapore's experience to other countries needs to be juxtaposed with the local political and social context. In the housing policy sphere, a housing provident fund is relatively simple to set up if designed as a savings and payments institution. The more complex institution to replicate is the HDB, in particular its resettlement, town planning, and estate management capabilities, as well as attention to developing good-quality affordable housing on a large scale. Moreover, the tactics on which Singapore relies—compulsory savings, state land ownership, and state provision of housing—can easily spawn widespread inefficiency and corruption in other sociopolitical contexts.

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[33] The government recognizes the need to support low-income households renting one- and two-room HDB flats. The reasons for their financial hardship are often social in nature, and community support workers provide support to these households. In the National Day address in August 2015, the Prime Minister introduced a Fresh Start Housing Scheme meant to help households that have sold their homes and subsequently cannot afford a new home.

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Singapore Land Authority at www.sla.gov.sg
Department of Statistics at www.singstat.gov.sg
Inland Revenue Authority at www.iras.gov.sg

CHAPTER 6

# Housing Policies in Switzerland, the United Kingdom, and the United States

*Christian Hilber and Olivier Schöni*

## 6.1 Introduction

In this chapter, we provide an analysis of the housing market and current housing policies in three developed countries: the United Kingdom (UK), Switzerland, and the United States (US). All three countries are founding members of the Organisation for Economic Co-operation and Development (OECD). They are all high-income economies with a high Human Development Index and all three are highly urbanized today: 77% of Swiss (2010), 84% of Americans (2010), and 82% of residents in England and Wales (2011) lived in urban areas according to their respective censuses.

We did not select these three countries at random. We chose the UK and Switzerland because they represent two opposite ends of the spectrum with respect to their fiscal and land-use planning policies, making them interesting cases from the point of view of a comparative analysis. The US falls between these two extremes; while it has a decentralized fiscal system (with local, state, and federal taxes) similar to the Swiss one, the country is characterized by an enormous spatial heterogeneity in land-use planning restrictiveness, ranging from very relaxed (in places such as Houston or much of the midwest) to highly restrictive (in cities such as Los Angeles, San Francisco, or New York); thus, providing useful variation that can be exploited in a comparative analysis.

The three countries do not only differ in their institutional settings but also in their housing policies. These policies have evolved over time within the institutional, political, economic, and cultural context of the respective country. In this paper we illustrate how the institutional setting—in particular a country's land-use planning and fiscal system—influences urban form, the built environment, housing market conditions, and the perceived challenges and risks (e.g., housing affordability, housing shortage, or homeownership attainment). The current housing policies attempt to tackle these problems, but—as we document—many of them have severe unintended consequences and are ineffective and costly at best and harmful at worst.

Trying to identify the origins of the key policies of the three countries and analyzing their merits and demerits provides a broader and clearer picture of the consequences of specific housing policies for given institutional settings. It may thus help governments of emerging economies in Asia (and elsewhere) to learn some lessons for the implementation of their own respective housing policies.

To begin, the UK is a highly politically and fiscally centralized country with a rigid planning system focused on urban containment. It is a country of homeowners, although homeownership has been in decline recently, falling from 69.3% in 2002 to 63.5% in 2013. The country's main political concern is the housing shortage and its corresponding lack of affordable dwellings. We document that the housing shortage and lack of affordability are a direct consequence of the planning system—implemented more than 70 years ago—as well as of the extreme form of fiscal and political centralization. We outline the key policies (e.g., Help-to-Buy) that attempt to address the housing shortage and affordability crisis. These policies have the effect of propping up demand and, because supply is severely constrained, of increasing house prices. Thus, they fail to resolve the housing affordability crisis. Homeownership attainment is another closely related political concern. Intriguingly, the evidence from recent empirical research suggests that key policies that aim to increase homeownership attainment (e.g., the Mortgage Interest Deduction in the US or Help-to-Buy in the UK) may not, in fact, positively affect aggregate homeownership rates and may even lower them in supply-constrained locations.[1]

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[1] On the one hand, subsidies to existing or prospective homeowners (such as the Mortgage Interest Deduction or Help-to-Buy) lower the cost of owner-occupied housing. On the other hand, the subsidy-induced demand increase is likely to raise prices of owner-occupied housing in supply-constrained locations, thus increasing the cost of homeownership. One might expect that the net effect may be positive or neutral depending on supply conditions (i.e., depending on whether the subsidy is fully capitalized into prices or not). In fact, Hilber and Turner (2014) outline a number of theoretical mechanisms that explain why the net effect may even be negative in places with inelastic housing supply. They also provide evidence for the US consistent with the proposition that, in supply-constrained locations, the impact of the subsidies on homeownership attainment is negative.

Switzerland in many respects is the counterpart to the UK. It is one of the most politically and fiscally decentralized countries in the world with a flexible zoning system and a unique political setting with direct democracy at all levels of government: federal, regional (cantons), and local (municipalities). While housing affordability is a concern among a fraction of lower-income households, the main housing-related policy issue in the recent past has arguably been sprawl—not so much urban sprawl in the larger cities of the country as a phenomenon that could be described as "rural sprawl" in the more touristic mountainous areas. We argue that the housing policies enacted are, to a large extent, a direct consequence of the degree of fiscal decentralization and the implemented land-use planning system. The key policy for "rural sprawl containment" is a ban on second (investment) homes in tourist areas in place since 2013. We discuss the intended and unintended consequences of this policy.

Another unique characteristic of Switzerland's housing market is its extremely low homeownership rate, still below 40%, despite a slow but steady increase over the last few decades and a steeper increase since the early 1990s. Because the median voter in Switzerland is still a renter, the implemented policies are unsurprisingly tilted toward favoring renters. The key policy in place, aimed at helping renters, is a mild form of rent stabilization that allows landlords to raise rents if a tenant changes or if some specific conditions are met such as an increase in the mortgage interest rate or a major renovation is carried out. We discuss the various merits and demerits of this policy.

Finally, the US is interesting because parts of the country—mainly the large coastal "superstar" cities such as Los Angeles, San Francisco, Boston, or New York—are confronted with strong demand pressures and rigid land-use controls. Other parts of the country—including the midwest and Texas—have lax land-use regulations. This unique setting allows us to test the hypothesis that supply constraints imposed by rigid planning make the housing supply curve inelastic and, thus, housing subsidies—such as the Mortgage Interest Deduction—are capitalized into higher house prices, offsetting the intended effects of the policy. We summarize evidence in support of this hypothesis.

We proceed as follows. For each of the three countries, we (i) review the current status of the housing market and describe the main challenges and risks facing policy makers, (ii) describe the key housing policies currently implemented, (iii) discuss the policies' intended distributional effects and other objectives, (iv) provide an analysis of the merits and demerits—often unintended consequences not considered by

policy makers—of the key policies, and (v) discuss the lessons learned from our analysis of the key policies. In a final step, we bring together the evidence from all three countries and provide a synthesis.

## 6.2 Housing Policies in the United Kingdom[2]

### 6.2.1 Current Status of the Housing Market

Housing in the UK—particularly in London and the southeast of England—is some of the most expensive and cramped[3] in the world. According to a ranking by the Global Property Guide (2015) of the buying price per square meter of a "comparable apartment" in a prime inner-city area of a country's prime city—in the UK, this is London—the UK comes second. It is only topped by the tiny city-state and tax haven, Monaco. Not only UK house prices, but also UK rents, are extraordinarily high. The same comparable apartment in London is also the second-most expensive in the world, again topped only by Monaco.

Table 6.1 provides the relative housing costs by economy (city), with the UK (London) being the benchmark (100%). Astonishingly, housing costs in the UK are almost twice as high as those in the US (New York, 53.6%) and they are significantly more than twice as high as those in Switzerland (Geneva, 44.2%), despite Switzerland being one of the wealthiest countries in the world and Geneva, typically, being one of the cities at or near the top of life-quality rankings.

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[2] The discussion of UK housing policies in this section builds on a recent analysis in Hilber (2015a).

[3] New houses in the UK are 38% smaller than in densely populated Germany and 40% smaller than in the more densely populated Netherlands (Statistics Sweden 2005). Not only are new housing units small in an international comparison, but allegedly also the existing housing stock. Moreover, the existing stock in the UK tends to be substantially older and, partly as a consequence of this, of poorer quality compared with other OECD countries with similar standards of living, such as the US or Switzerland.

**Table 6.1: International Comparison of Relative Housing Costs**
(prices and rents per square meter; by economy (city)—UK (London) = 100%; 2014)

| Economy (City) | Price/m² in % relative to UK (London) | (Rank) | Rent/m² in % relative to UK (London) | (Rank) |
|---|---|---|---|---|
| Monaco | 174.1% | (1) | 101.8% | (1) |
| **United Kingdom (London)** | **100.0%** | **(2)** | **100.0%** | **(2)** |
| Hong Kong, China | 66.1% | (3) | 58.5% | (4) |
| US (New York) | 53.6% | (4) | 63.9% | (3) |
| France (Paris) | 53.3% | (5) | 47.2% | (6) |
| Russian Federation (Moscow) | 46.4% | (6) | 46.4% | (7) |
| Switzerland (Geneva) | 44.2% | (7) | 42.8% | (8) |
| Singapore | 44.2% | (8) | 39.1% | (9) |
| India (Mumbai) | 33.2% | (9) | 24.5% | (16) |
| Japan (Tokyo) | 31.2% | (10) | 48.4% | (5) |
| Israel (Tel Aviv) | 27.5% | (11) | 29.4% | (11) |
| Sweden (Stockholm) | 27.3% | (12) | NA | |
| Finland (Helsinki) | 24.3% | (13) | 26.9% | (14) |
| Canada (Toronto) | 23.9% | (14) | 27.4% | (13) |
| Italy (Rome) | 23.2% | (15) | 27.6% | (12) |
| Luxembourg | 22.2% | (16) | 26.4% | (15) |
| Australia (Sydney) | 22.1% | (17) | 31.1% | (10) |

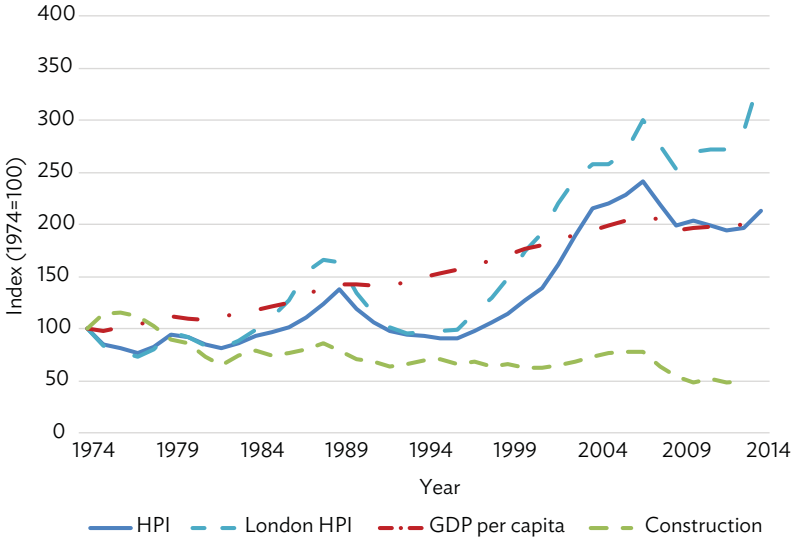
UK = United Kingdom, US = United States.

Source: Hilber (2015a). All data are derived from www.globalpropertyguide.com/most-expensive-cities (accessed 1 February 2015). Relative prices and rents are based on own calculations.

Housing costs in the UK are not only high in absolute terms but also relative to incomes. Conventionally measured "housing affordability"—median house price to median income—in the Greater London Area is currently at its worst since data became available. The price-to-income multiple in the Greater London Area in 2014 was 8.5. The UK, as a whole, was somewhat less unaffordable with a multiple of 5.0 (Demographia 2015).

UK house prices are not only extraordinarily high but also exceptionally volatile. Real house price swings in the UK—illustrated in Figure 6.1—were substantially larger during the last full real estate cycle (i.e., the upswing of the 1980s and the downturn of the 1990s) than those in the single-most volatile metropolitan area in the US (Hilber and Vermeulen 2016).

**Figure 6.1: UK House Price Index (real), UK GDP per Capita Index (real), and Construction Index (1969 = 100)**




GDP = gross domestic product, HPI = House Price Index, UK = United Kingdom.

Sources: Authors' calculations based on Nationwide. www.nationwide.co.uk/about/house-price-index/download-data#xtab:uk-series (accessed 12 December 2015); Office for National Statistics. www.ons.gov.uk/ons/datasets-and-tables/data-selector.html?cdid=IHXW&dataset=ukea&table-id=X11 (accessed 12 December 2015); Department for Communities and Local Government. www.gov.uk/government/statistical-data-sets/live-tables-on-house-building (accessed 12 December 2015).

The current housing affordability crisis has been developing slowly over the last 40 years. House price growth in the UK has been faster than in any other OECD country over this period. Figure 6.1 illustrates the country's real house price index (HPI) and real gross domestic product (GDP) between 1974 and 2014. UK house prices are today more than twice as high, in real terms, as they were in 1974. The UK's HPI, which rose by 113% (from 100% to 213%), slightly exceeds the real GDP growth per capita, which grew by 105%. Within the UK, the price growth has been most pronounced in London: the ratio of London house prices to average UK house prices has increased substantially since the mid-1990s. London housing prices have displayed a staggering increase in the last few years. In 2014, the London HPI reached an all-time high

value of 344% with respect to the 1974 base year, outstripping the real GDP growth per capita of about 140%. This explains why housing is most unaffordable in London and the southeast, even when holding earnings constant.

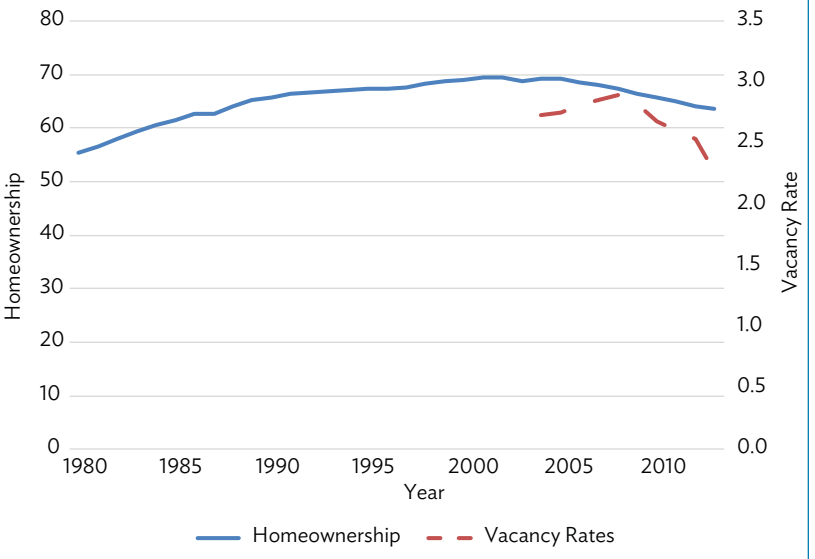
Despite rising real incomes and significant population growth driven by net immigration and despite strongly growing nominal and real housing prices, construction of new permanent dwellings has been decreasing dramatically since the late 1960s, leading to a substantial housing shortfall. According to the Department for Communities and Local Government (2015a), the UK built nearly 380,000 new homes in the fiscal year of 1969, when statistics began. Housing construction subsequently declined until it fell markedly below 200,000 from 1990–1991 onward. Residential construction reached a record low in 2012 with less than 135,510 new homes. In 2013, figures were only slightly higher at 140,930, reflecting the typical increase in housing construction associated with an economic recovery. As illustrated in Figure 6.1, between 1974 and 2013, housing construction fell by 50% despite strongly rising real house prices.

The extremely high UK house prices, particularly in London and the southeast of the country, have also affected homeownership attainment. Homeownership has been on the rise since World War II. As Figure 6.2 illustrates, homeownership also increased markedly during the 1980s. This can be mainly attributed to the so-called "Right-to-Buy" scheme introduced by Margaret Thatcher's Conservative government in 1980. At that point, merely 55.4% of UK households were homeowners, 33.1% were social renters, and 11.4% rented privately. The share of social renters has been falling significantly since then, while the homeownership rate has taken the opposite direction. The homeownership rate continued to grow during the 1990s and it reached its peak in 2002 with 69.6%. At that point, 20.9% and 9.8% of dwellings were socially and privately rented, respectively. Since 2002, the homeownership rate has been in decline, reaching a tentative low point of 63.6% in 2013, the latest year with available numbers (DCLG 2015b). At the same time, the private rental rate has increased very substantially to 18.6%, while the social rental rate fell to 18%.

Interestingly, given the massive housing shortage in the UK, which can perhaps most accurately be described as a "construction drought," the residential vacancy rate has been stable during the last decade, ranging between 2.3% and 2.9% from 2004 to 2013 (Figure 6.2). The UK vacancy rate is lower than that of the US. This is not surprising given the massive overbuilding and subsequent foreclosure crisis in the US during the 2007–2009 global financial crisis. What is perhaps more surprising is the fact that the residential vacancy rate is currently substantially higher

in the UK than in Switzerland, despite a massive housing shortfall in the UK and a minor housing construction boom in Switzerland in recent years. This could, in part, be driven by the fact that the UK, in contrast to Switzerland, contains numerous struggling and declining cities (such as Liverpool, Blackpool, and Sunderland) with stagnating or declining populations and, thus, comparably weak housing demand, likely causing some houses to be empty. In part, it could also be driven by the strict local planning constraints in the UK: in places with strict regulatory constraints, the supply of new housing, and the characteristics of the existing stock are less well adapted to the structure of demand for housing characteristics and, thus, may be more likely to stay empty. See Cheshire, Hilber, and Koster (2015) for evidence on the latter.

**Figure 6.2: UK Homeownership and Vacancy Rates (%)**




UK = United Kingdom.

Source: Department of Communities and Local Government. https://www.gov.uk/government/statistical-data-sets/live-tables-on-dwelling-stock-including-vacants (accessed 12 December 2015).

### 6.2.2 Explaining the Current Status of the Housing Market: The Role of the UK Land-Use Planning System

Long-standing empirical research points clearly to the UK's land-use planning system—in conjunction with strong demand for housing in some regions, notably the Greater London Area and the southeast—as the main cause of the UK's housing affordability crisis (Ball, Allmendinger, and Hughes 2009; Barker 2003, 2004, 2006; Cheshire 2009 and 2014; Cheshire, Nathan, and Overman 2014; Hilber 2015a; Hilber and Vermeulen 2010 and 2016; Overman 2012).[4]

The UK planning system,[5] which dates back to the Town and Country Planning Act of 1947,[6] is extraordinarily rigid by world standards. This is a consequence of urban containment through so-called "green belts" (introduced during the mid- and late-1950s), strict controls on height, and lack of fiscal incentives to develop at the local level. The system's rigidity is exacerbated by the use of so-called "development control."

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[4] The negative effects of the UK's planning system are not confined to housing. Cheshire and Hilber (2008) provide evidence that firmly links regulatory constraints to the extraordinarily expensive price of UK office space. Cheshire, Hilber, and Kaplanis (2015) demonstrate that "Town Centre First" policies in England imposed a loss of output of 32% on a typical store opening after the rigorous implementation of the policy in 1996. Cheshire, Hilber, and Sanchis-Guarner (2014) provide evidence that Town Centre First policies paradoxically made shopping trips less "sustainable" via nudging suburban residents to shop in congested town centers rather than in big-box retailers out-of-town. Moreover, tight planning constraints in the UK may also have increased commuting times (e.g., due to commuters having to "jump" the green belt) or may have discouraged new buildings and renovations, thus generating older housing of poorer quality relative to other comparable countries. Of course land-use planning can also generate benefits through correcting for various market failures (internalizing negative and positive externalities and providing local public goods such as public parks or the preservation of historically important buildings). The net welfare effect of the existing planning regime is not in itself clear but the scarce evidence for the UK is indicative that the net welfare impact is, in fact, negative (Cheshire and Sheppard 2002; Hilber and Vermeulen 2016).

[5] We somewhat casually refer here to the "UK planning system" even though there are notable differences between the planning systems of the four UK countries: England, Northern Ireland, Scotland, and Wales. While the planning systems in the four countries all follow the same guiding principles, there are some significant differences in how rigorously these principles are applied. For example, Town Centre First policies are applied much more rigorously in England than in Scotland and Northern Ireland.

[6] To be more precise the Town and Country Planning Act of 1947 was an Act of Parliament in the UK passed by the postwar Labour government. It came into effect on 1 July 1948 along with the Town and Country Planning (Scotland) Act of 1947. It is the foundation of modern town and country planning in the UK.

This makes all decisions about whether development can go ahead subject to local political calculations and, therefore, more uncertain. Development control also facilitates "not in my backyard" (NIMBY) behavior.

Early empirical evidence by Hall et al. (1973) suggests that the UK planning system may have already imposed binding constraints on construction as early as the beginning of the 1970s. While rigorous empirical evidence on this point is lacking, it is highly plausible that the green-belt constraints—which affect all major UK cities—started to become binding around 1970, when growing demand for housing, in effect, hit the green-belt boundaries. When this happened, NIMBY homeowners (and private landlords) residing near green belts started to oppose new construction in their local authorities, effectively imposing gradually more severe "horizontal" constraints on construction. This, in conjunction with various "vertical" constraints (i.e., building height restrictions or so-called "view corridors"[7]), gradually made housing supply less and less price elastic. Thus, as the demand for housing continued to grow, especially in the Greater London Area (the UK's economic powerhouse), real house prices started to rise drastically, and commuters, desperate for affordable housing, started to "jump" the green belts.

Increasingly binding planning constraints are the likely explanation why housing construction numbers have been in continued decline since the late 1960s. In 1970, the UK built close to 380,000 new homes, almost three times as many as today. In those days, there were fewer constraints on where new housing could be built. Price signals still provided important information to developers, architects, and builders on where and how much to build. Today, the planning system completely ignores price signals and effectively tries to prevent residential development nearly anywhere, particularly where it would be attractive to build. If price signals were taken into account, more housing would be built in attractive areas, with more high-rise buildings in town centers, and more single-family homes further out (Hilber 2015c).

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[7] View corridors, by means of limiting the height of nearby buildings, aim to preserve an unobstructed view to places deemed of particular value. London's St. Paul's Cathedral, for example, is protected by six view corridors imposing constraints on construction in large parts of Central London. One such view corridor—created in 1710—imposes a view from King Henry VIII's Mound in Richmond Park to St. Paul's Cathedral at a distance of over 10 miles (16 kilometers). The view frames the cathedral through a special gap in a hedge, down a specially maintained clear avenue and then all the way across London. This particular view, still enforced today, has severely limited development around Liverpool Street Station—the third most frequented train station in the UK and one of the most central and busy areas in London.

Hilber and Vermeulen (2016) provide the arguably most rigorous econometric evidence to date for England on the impact of local land-use planning restrictiveness and other types of supply constraints on local house prices. What the study finds is that local-earnings shocks lead to much greater local house price increases in severely planning-constrained locations. The study provides evidence that can be interpreted in a causal sense: regulatory restrictiveness causally affects house prices. While regulatory constraints appear to be binding everywhere, the effects are starkest in London and the southeast, where refusal rates (i.e., the proportion of planning applications that are refused by local planning authorities) are highest and land-use planning restrictions most binding.[8] Housing is not being built in the most desirable areas, where demand pressure is greatest, but in those local authorities where it is still feasible to get the green light for development. Often these are local authorities with high unemployment rates, which have economic incentives to permit local development: construction creates local jobs, if only temporarily.

To give a sense of the economic magnitude of the effects, according to the estimates in Hilber and Vermeulen (2016), house prices would have risen by about 100% less in real terms between 1974 and 2008 if, hypothetically, all regulatory constraints were removed. Removing all regulatory constraints is of course neither realistic nor desirable. More pragmatically, if the southeast (UK's regions with the most severe planning constraints) had the regulatory restrictiveness of the northeast of England (the least restrictive UK region, but still highly restrictive in an international comparison), its house prices would have been roughly 25% lower in 2008 and—based on forecasted trends—about 30% lower in 2015.

Hilber and Vermeulen (2016) also find that regulatory constraints are not the only constraints that are binding. There are also constraints

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[8] Hilber and Robert-Nicoud (2013) provide a theoretical argument for why not all regions and local authorities are equally restrictive. They argue that land-use restrictions benefit owners of developed land via increasing prices but hurt owners of undeveloped land via increasing development costs. In such a setting, more desirable locations are more developed and, as a consequence of political economy forces, more regulated. Translating this theoretical argument to the institutional setting of the UK, this implies that, in the wealthiest and most desirable local authorities with the strongest demand pressures (mainly in the Greater London Area), homeowners and private landlords have most assets to protect so they have the strongest incentives to restrict local development either via voting and NIMBYism-objections (homeowners) or lobbying (private landlords). Struggling places with weak demand and high unemployment (mainly in the north of the country) may be more prone to permit commercial, or even residential development, in an attempt to create local retail or office jobs, or, temporarily, local construction jobs.

due to scarcity of developable land. These are confined to highly urbanized areas. However, in these areas—most pronounced in the Greater London Area—the effect is large, in the sense that, due to scarcity constraints, house prices increase more strongly in response to given positive demand shocks. Put differently, house prices in London would still be high by world standards if the various regulatory constraints were relaxed. Topographical constraints were also found to be binding but the effect of these constraints was quantitatively less meaningful, perhaps because England is largely a flat country with few slopes that really hinder construction severely.

The UK planning system also has important distributional effects. The groups of the young, and not so young, would-be buyers are the obvious losers of the constraints imposed by the UK planning system. However, young home-owning families are also losers of the broken system, although they often don't realize it. They lose out because they (i) live in artificially cramped housing, and (ii) are increasingly priced out from moving to a larger home that would be more adequate for their growing family. Trading up becomes increasingly difficult and the problem is made worse by the UK Stamp Duty Land Tax that heavily taxes housing transactions (Hilber 2015c; Hilber and Lyytikäinen 2015).

Elderly homeowners could be argued to be the winners of the system because their houses have experienced tremendous (untaxed) capital gains since the late 1960s and early 1970s and they typically no longer live in cramped housing since their children have moved out. If anything, given the reduced household size, they may well now over-consume housing and may well have gardens too big to maintain.

The trouble from the perspective of elderly homeowners is that they cannot really access their housing wealth unless they sell their home—a costly and burdensome endeavor especially for the elderly—and either downsize or move to a cheaper location, thereby often having to give up their local social ties. Equity release (in US parlance: reverse mortgages) may represent an alternative option for elderly homeowners to monetize their housing wealth. However, according to Burgess, Monk, and Williams (2012), equity release represented only about 2.1% of mortgage sales in the first half of 2011 in the UK. This low percentage may be due to several factors such as a perceived lack of transparency of the instruments, concerns about the quality of the financial advice, drawbacks linked to concerns about having to move out of the property, and absence of long-term planning for old age. Private renting is not a better option for elderly homeowners because it is similarly costly (to owning) and legal protection of renters in the UK is poor.

Hence, the only real winners of the broken UK planning system are arguably those elderly homeowners who are prepared to sell their house,

pocket the proceeds, and move to a country with cheaper housing. For those who stay put, it is the children who will eventually benefit. The children of renters lose out. The planning system, thus, cements wealth inequality (Hilber 2015c).

### 6.2.3 Key Housing Policies, Their Objectives, Merits, and Demerits

As the previous section documented, the UK's affordability crisis has been developing slowly over the last 40 years. In contrast to real incomes, real house prices and, presumably, real private rents[9] have grown faster in the UK than in any other OECD country (Hilber and Vermeulen 2016). Especially younger and lower-income households struggle to get their feet on the housing ladder.

The key housing policies that were adopted in the past and, especially those that were implemented in recent years, not surprisingly, thus reflect the stylized fact that housing affordability has been the key concern of voters and politicians of all stripes. Below we briefly discuss the UK's key policies that have been implemented with the intent to address the affordability crisis. We discuss their objectives, as well as their merits and demerits.

#### 6.2.3.1 Social Housing

The birth year of social housing in the UK goes back to 1919. This is the year when local authorities (councils) had been required by law to provide the so-called "council housing" (also called "council estates") (Wheeler 2015). Local authorities had been the main provider of social housing in the UK until 2007. In 2008, housing associations[10] outstripped local councils for the first time to provide the majority of social homes in the UK.

Originally, the aim of council housing was to provide decent housing for army recruits. However, the age of social housing only truly arrived after World War II, when the Labour Government built more than 1 million homes, 80% of which were council homes, largely to replace

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9 A good time-series on rents is not publicly available.

10 Housing associations are private, nonprofit-making organizations that provide low-cost housing for households in need of a home. They have been operating an increasing share of social housing properties in the UK since the 1970s. Although formally independent of the government, housing associations are regulated by the state and receive public funding.

those destroyed during the war. The house-building boom continued throughout the 1950s but near the end of the decade the emphasis shifted toward slum clearance (Wheeler 2015). By the early 1970s, the downsides of social housing became more visible. In the words of Wheeler (2015):

> By the early 1970s, the concrete walkways and "streets in the sky" that had once seemed so pristine and futuristic, were becoming grim havens of decay and lawlessness. And there was a powerful smell of corruption emanating from some town halls as the cosy relationship between local politicians and their friends in building and architecture was laid bare, along with the shoddy standard of many of the "system-built" homes they had created. It was against this backdrop that "right to buy" [discussed below] began to take off, with the number of council houses sold in England going up from 7,000 in 1970 to nearly 46,000 in 1972.

The provision of social housing has certainly helped the lowest-income households and the most vulnerable people to obtain more adequate housing than they could have in the absence of such intervention. Whether public spending on social housing in certain areas ("helping places") was more effective as a policy than giving the same amount of funding directly to low-income households and vulnerable people ("helping people") is a difficult question to answer. Normally, the answer would be that helping people directly is a more effective means of achieving the desired outcome. However, because the planning system has increasingly not been responding to price signals nearly everywhere in the country, market forces are muted and subsidies to people that raise demand may not actually lead to much additional private construction of housing. Hence, what would normally be a good policy when market forces work properly, may become a policy doomed to fail.

Still, even when we abstract from this general argument that makes assumptions about a counterfactual outcome, the track record of social housing is mixed. One concern associated with social housing estates is that, through the concentration of low-income households, social housing may be associated with negative peer effects, for example, adversely affecting student performance. Weinhardt (2014) estimated the effect of living in a deprived neighborhood—as identified by a high density of social housing—on the educational attainment of 14-year-olds in England. He first points out that neighborhoods with markedly high concentrations of social housing have very high unemployment rates and

extremely low qualification rates, as well as high building density (social housing is typically mid- or high-rise buildings). To identify the causal impact of neighborhood deprivation on pupil attainments, Weinhardt (2014) then exploits the timing of moving into these neighborhoods. He argues that the timing of a move can be taken as exogenous because of long waiting lists for social housing in high-demand areas. Using this approach, the study finds no evidence of negative effects of social housing neighborhoods on student attainment.

Another obvious concern with social housing is the fact that when the price of rental housing is kept below the market price, inevitably there will be a shortage of rental housing: given below-market prices, more households demand social housing than there is supply (and given below-market prices, developers will not have sufficient incentives to provide additional social rental housing). We consider this phenomenon in more depth when we analyze the rent control system in Switzerland that also arguably generates below-market prices. Because the subsidy associated with social housing in the UK is substantial, the waiting list is long. Such a long waiting list is obviously inefficient and associated with a deadweight loss. Social housing waiting lists also tend to favor the "clever" and "persistent" among low-income households rather than those most vulnerable (e.g., clinically depressed people).

A policy related to social housing is the so-called "Section 106 agreements," which require private-sector developers to offer "affordable housing" as a condition of obtaining planning permission. This policy has similar adverse effects to social housing in the sense that the demand for such subsidized housing far outstrips supply.

#### 6.2.3.2 Right-to-Buy

The downturn of social housing began in 1980, when Margaret Thatcher introduced Right-to-Buy. In brief, the policy allows social tenants to purchase their homes at a significantly subsidized price, with the effect that some of the best social housing stock moved from socially rented to privately owned. Right-to-Buy is a crucial factor helping to explain the significant rise in homeownership from 1980 until 2002, as illustrated in Figure 6.2.

In their recent election manifesto, the Conservative Party proposed to extend the Right-to-Buy to tenants of housing associations. What are the merits and demerits of this new policy?

First, consider the likely effect on homeownership attainment. To the extent that the discount granted to tenants is substantial, it will have the effect of incentivizing many housing association tenants to become homeowners, perhaps reversing the decline in the homeownership rate, observed since 2002.

Increasing homeownership attainment may be desirable. There is some evidence for the US that homeownership is associated with social benefits (DiPasquale and Glaeser 1999). This is true particularly in places with tight supply constraints (Hilber and Mayer 2009, and Hilber 2010). However, there is also evidence suggesting that (leveraged) homeownership impairs the labor market (for example, Blanchflower and Oswald 2013) or adversely affects entrepreneurship (Bracke, Hilber, and Silva 2015). So, it is not clear whether the Right-to-Buy subsidy to housing association tenants—which essentially randomly benefits some lower-income households—is justifiable from a social welfare point of view.

Second, the policy imposes significant costs upon the tax payer. This is because housing associations receive public funding; they presumably must be compensated for their losses. Otherwise, Right-to-Buy would significantly harm housing associations and endanger their ability to finance new homes, which would effectively decrease housing supply.

Finally, while extending Right-to-Buy will help the selective group of tenants of housing associations, the policy will not solve the affordability crisis for the rest of the population. If anything, it is likely to make it worse, even if the ability of housing associations to finance new homes is unaffected. This is for two reasons: First, a transition from housing association tenant to homeowner neither affects total housing demand nor total housing supply, so does not create any new homes. Second, the incentive of a converted homeowner to oppose new construction is likely much larger than that of the identical person as a tenant. In aggregate, this will make building new homes even more difficult (Hilber and Robert-Nicoud 2013) and will, thus, if anything, accelerate the housing affordability crisis.

#### 6.2.3.3 Help-to-Buy

The so called Help-to-Buy policy was introduced in 2013. The aim of the scheme—arguably the flagship housing policy of the previous coalition government—has been to stimulate housing demand (Gov.uk 2015). The Help-to-Buy scheme consists of four instruments: equity loans, mortgage guarantees, shared ownership, and a "new buy" scheme that allows buyers to purchase a newly built home with a deposit of only 5% of the purchase price. The promoters of the policy hoped that the increase in demand would translate into new housing being supplied and higher homeownership attainment.

Some simple stylized facts, however, cast serious doubt on this optimistic view. Help-to-Buy appears to have hindered people to buy. To illustrate this, in the year following the announcement of Help-to-

Buy, between the second quarter (Q2) of 2013 and Q2 2014, according to Nationwide,[11] the price of the average dwelling in London increased by 25.8% from £318,200 to £400,400 and a building boom failed to emerge.

The stylized fact that mortgage subsidies may create a house-price boom, thus discouraging homeownership attainment, rather than stimulating it, is consistent with evidence from the US. Hilber and Turner (2014) suggest that there is only a very weak link at best between mortgage subsidies and homeownership attainment across the US. They document that in tightly regulated metropolitan areas (which may be most comparable with tightly contained UK cities) the subsidies have a negative effect on homeownership attainment because the price effect—through increased demand—more than offsets the income effect from the tax deduction. They also find that in less-regulated metropolitan areas (more comparable to sprawling Swiss cities), subsidies do have a positive effect on homeownership attainment, but only for higher-income groups.

As outlined in the previous section, there is longstanding evidence documenting that housing supply in the UK is incredibly unresponsive to demand shocks, in large part, because of an extraordinarily inflexible planning system. Consistent with this, a related study finds that central government grants in the UK are roughly fully capitalized into house prices, i.e., the present value of the change in the grant allocation roughly equals the change in house price (Hilber, Lyytikäinen, and Vermeulen 2011). The effect of Help-to-Buy, which also works through stimulating the demand side, can thus be expected also to become fully capitalized, consistent with the observed extraordinary price increase in London after the introduction of the policy.

Apart from not achieving its main intended objective, the policy has a number of additional drawbacks. First, taxes are needed to finance the Help-to-Buy schemes and these have a deadweight loss—a pure welfare loss to society. Second, the scheme has created a systemic risk in that the government (or perhaps more accurately, the taxpayer) assumes most of the risks associated with the guarantee schemes. The remaining risk is assumed by the "marginal homebuyers," those who could not obtain loans in the absence of the scheme. Third, the policy may have undesirable distributional consequences. The beneficiaries of the scheme are existing homeowners, who benefit from the capital gains. First-time buyers who take up the scheme may not be better off, because the price increase, quite plausibly, offsets the present value of the subsidy

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[11] Nationwide. House Price Index. http://www.nationwide.co.uk/about/house-price-index/headlines (accessed 12 December 2015).

they receive. Moreover, they increase their financial leverage beyond what they could do without Help-to-Buy; they thus expose themselves to a greater risk of defaulting. Would-be buyers who are discouraged to purchase a home, as a consequence of the policy-induced price increases, also lose out because they still finance the policy as taxpayers. Fourth, introducing the scheme is fairly straightforward. However, withdrawing it may pose a threat to the macroeconomy. This is because a withdrawal will create some obvious (perceived) losers and will likely also have an adverse effect on house prices, especially if the withdrawal coincides with an economic downturn that forces the government to review its costly spending programs. There are a number of further concerns with Help-to-Buy and related schemes that are designed to stimulate housing demand. These are discussed in Hilber (2013, 2015b, and forthcoming).

#### 6.2.3.4 Housing-Related Tax Policies

Housing-related taxes can have important effects on housing affordability, especially in a setting with a rigid planning regime. This is because, in supply-constrained areas, higher (lower) taxes likely have the effect of being capitalized into lower (higher) property prices. Any tax-related policy reforms ought to be considered in this light. Below, we briefly discuss the key housing-related taxes in the UK, as well as their merits and demerits.

##### *Central Government Grants to Local Authorities and the Council Tax*

Most local expenditures in the UK are financed via central government grants, not via local taxes. These grants are distributed to local authorities on a "needs" basis according to some complicated formulas that take into account numerous characteristics of the local authorities and their residents. The distribution mechanism amounts to an "equalization system." One significant shortcoming of this is that there is only a very weak link at best between permitting new residential development, on the one hand, and permanent grant revenue, on the other.

In brief, local authorities face most of the cost of providing the infrastructure and local public services for the newly built residential development. At the same time, the central government grants provide virtually no fiscal incentives to local authorities to permit development. This is even more so because NIMBY homeowners and private landlords will try to put additional pressure on local authorities to resist new development. Local authority politicians interested in reelection have strong incentives not to permit residential development in their council.

If local tax revenue was linked to the amount of local residential development, this could provide the necessary incentives to local

authorities to permit such development in the first place, even under a "development control" system. In the UK, however, such tax incentives are lacking almost entirely. The only local tax in the UK is the council tax, which is a tax based on property value. The tax has little weight in the tax system, however, compared with other countries (and compared with what it would be under an efficient tax system (Mirrlees et al. 2011). It thus is not substantial enough to provide any meaningful incentives to local authorities to permit residential development. Moreover, because all local revenue is subject to the equalization system, this will largely eliminate any council tax revenue gain in the medium term for local authorities that permit comparably more development. The council tax has one important additional flaw. There has not been a revaluation of the tax base since 1992. This has had the consequence that it now bears little relation to current underlying property values and has become increasingly regressive over time.

### *Stamp Duty Land Tax*

Stamp duty, which is a tax on real estate transactions (i.e., on land and property), was introduced in the UK during the 1950s. It is formally paid by the buyer and is a percentage share of the purchase price of the house. The economic incidence, however, may be at least partially on the seller. The stamp duty effectively drives a wedge between the price obtained by the seller and the price paid by the buyer. Basic economic intuition suggests that the stamp duty–induced transaction costs result in fewer housing transactions and fewer moves, *all else equal*.[12]

Until early December 2014, the progressive schedule was a defining feature of the UK stamp duty system. The latest reform—announced in the government's 2014 Autumn Statement—eliminated this long-standing anomaly of the tax: Under the old rules, homebuyers had to pay the tax at a single rate on the entire property price. For example, a tax rate of 1% levied on a house worth £250,000 resulted in a tax payment of £2,500. A tax of 3% was imposed on a house worth £250,001, leading to a tax payment of £7,500—a difference of £5,000. Thus, the old rules led to large discontinuous jumps in the tax paid at the threshold prices (in our example £250,000). Under the new rules, homebuyers only have to pay the rate of tax on the part of the property price within each tax band. This reform has been a small step in the right direction

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[12] Of course, there are many other factors that affect household mobility such as labor market conditions, prevalence of rent control, or homeownership rates. Moreover, we note that many other countries also impose taxes on land and property transfers, often—especially in Southern European and less developed countries—exceeding those of the UK.

in that it has eliminated the large discontinuous jumps in the tax and corresponding distortions. It did not address, however, the fundamental flaw of the stamp duty land tax (SDLT), which is that the tax creates a disincentive to move house. This potentially has adverse consequences for the functioning of housing and labor markets.

Empirical research strongly suggests that the adverse effects of the SDLT on housing transactions and household mobility are substantial. Besley, Meads, and Surico (2014) and Best and Kleven (2015) both examine the effect of the 2008–2009 stamp duty "holiday" (i.e., in September 2008 the UK government implemented an increase of the threshold for paying the SDLT from £125,000 to £175,000 for 1 year to stimulate the housing market). While, Besley, Meads, and Surico (2014) find that the tax holiday temporarily increased transactions by 8%, Best and Kleven (2015) estimate the effect on the transaction volume to be 20% in the short run. Hilber and Lyytikäinen (2015) find that the increase in stamp duty from 1% to 3% at the cut-off of £250,000—prior to the 2014 stamp-duty reform—reduced the annual rate of mobility by 2 to 3 percentage points (a large effect given that the average rate of mobility is 4.6%). This adverse effect is confined to short-distance and non-job–related moves, suggesting a distortion in the housing rather than the labor market. The key conclusion of this research is that the SDLT is a highly inefficient tax. Importantly, it discourages downsizing of the elderly and expansion of young families.

A revenue-neutral replacement of the SDLT and the council tax with an annual local tax on the true value of property should be a strongly preferred outcome. This is for at least two reasons. First, such a tax does not affect the decision to move house, and, thus does not distort housing and, possibly, labor markets. Second, annual local taxes on the true value of property (with the revenue not to be equalized) provide greater incentives to local authorities to permit residential development.

### 6.2.4 Lessons Learned

Our analysis of the UK housing market and its policies suggests that the UK's rigid planning system is the main culprit of the housing affordability crisis. The planning and fiscal systems are incredibly inflexible and provide insufficient incentives to permit residential development, respectively, making the local housing supply curves inelastic. In such a setting, the main effect of policies that stimulate housing demand—such as Help-to-Buy—is to push up house prices rather than increase supply. These demand-focused policies may, thus, be a waste of taxpayer resources at best. They may even be counterproductive in that they may effectively price out young would-be-buyers from the market.

If policy makers are serious about addressing the housing affordability crisis, then they need to fix the planning system, rather than introduce yet more demand-focused policies that push up house prices to even higher stratospheres. It is important to stress here that fixing the planning system does not mean abandoning it. Planning is both necessary and it can generate important benefits to society. However, the planning system should not be merely focused on constraining residential (and other development) to often unattractive brownfield sites in unattractive locations. Instead, the basic principle should be that reforms reflect issues of market failure so as to ensure that land-based public goods (e.g., urban open spaces, wildlife habitats, national parks, areas of outstanding natural beauty, historical districts, or heritage buildings) are adequately supplied and positive and negative externalities arising from the proximity of different land uses are internalized. Positive externalities can be internalized, e.g., through mixed land-use zones (which spur mutually beneficial activities arising from proximity of land uses). Negative externalities can be internalized through separation of incompatible land uses. In brief, the planning system ought to be focused on addressing market failures.

Hilber (2015a) discusses various reforms on the supply side, distinguishing between short-term reforms and more fundamental longer-term reforms. In the particular case of the UK, in the short term, the boundaries of green belts could be revised to release some accessible land with low or negative environmental value and low amenity value (Cheshire 2014).

In the longer term, one could revert to protecting all land only on the basis of its environmental or amenity value, taking account of other cost factors (infrastructure, carbon footprint, among others). This could be done in a way to retain all areas of outstanding natural beauty and all national parks but using observed land-price differentials as price signals to inform planners where or when land would be more usefully released for residential use. If the land-price differentials cannot be justified by environmental or amenity benefits, then there would be a presumption in favor of development (Cheshire and Sheppard 2005).

Other supply-side reforms could work via altering tax incentives at the local level. In an ideal world, the existing council tax and the stamp duty land tax—two highly distortive taxes (Hilber 2015a; Hilber and Lyytikäinen 2015)—are replaced with a proper annual local property tax with automatic annual revaluation based on neighborhood-specific price changes. Such a tax reform could be designed to be revenue neutral in the aggregate.

An alternative and less radical proposal would be to provide incentives to local authorities through the central government's grant

allocation system. This could be done by tweaking the grant allocation formula and taking account of the amount of housing development granted. Local authorities that facilitate residential development could be compensated with permanent and generous "development grants" that exceed the cost they have to bear. Alternatively, local authorities could be allowed to tax developers so they are compensated for any extra infrastructure or any other expenses that are required to accommodate additional development. Last, planning laws could be altered to allow developers (potential winners) to compensate NIMBYs (potential losers) in an attempt to reach a mutually beneficial (i.e., Pareto-superior) outcome.

## 6.3 Housing Policies in Switzerland

Switzerland has one of the most decentralized governments in the world. The jurisdictional decentralization is reflected in the political autonomy of regional (cantons) and local (municipalities) administrative units. This autonomy provides two main instruments to municipalities to attract new taxpayers, both of which have a significant impact on the housing market. The first instrument is the fiscal package offered by the local municipality. The fiscal package consists of the local income tax rate (a lower tax rate will attract more and higher income taxpayers, all else equal) and the nature and level of local public services provided. Households will sort into the respective municipalities that provide their preferred local public goods package; better local public services, all else equal, are more desirable. This autonomy is the central idea of "fiscal competition": cantons and municipalities compete against each other to attract (wealthy) taxpayers.

In principle, municipalities could compete on both the tax rate and the local public services offered. In practice, however, competition is mainly one of tax rates. This is because both the federal government and the cantons require high minimum standards of local public good provision. For example, primary and secondary school class sizes must not exceed 23–25 students in any of the cantons. Thus, local public services offered in Switzerland end up being relatively homogenous across municipalities within a canton. As a consequence, there is relatively little evidence of capitalization of local public services, all else equal. However, there is strong evidence that local income tax rates are, at least partially, capitalized into house prices.

In an early paper, Hilber (1998) found that an annual tax increase of CHF 1,000 for an average taxpayer reduces rents in the Canton of Zurich

by roughly CHF 720. The present value of a tax increase of CHF 1,000 reduces house values by roughly CHF 940 and land values between CHF 560 and CHF 1,620, depending on the specification estimated. This suggests, roughly, full capitalization.

In a more recent and econometrically rigorous analysis, Basten, von Ehrlich, and Lassmann (2014) look at all of Switzerland and employ a boundary-discontinuity design approach that corrects for unobservable location characteristics. They estimate the income tax elasticity of rents to be about 0.26 (compared with 0.54 based on a conventional estimating approach). That is, a tax increase of 10% reduces rents by about 2.6%. Basten, von Ehrlich, and Lassmann (2014) estimate that about two-thirds of the tax elasticity is due to direct capitalization effects. About one-third can be traced back to the sorting of high-income households into low-tax municipalities. This latter study suggests that the extent of house-price capitalization may be only very partial in Switzerland, consistent with a more elastic housing supply curve compared with the UK.

The second, less well documented, instrument is land-use controls. Municipalities may implement lax or tight land-use controls to attract households with particular housing needs. One instrument is the so-called "Ausnützungsziffer", a utilization intensity factor that determines what fraction of land on a given plot may be physically developed. It is a type of exclusionary zoning, similar in nature to the "minimum lot size restriction" in the US. By setting a low Ausnützungsziffer, municipalities may attract better-off taxpayers who can afford a less-intensive use of land.

Municipalities also have to comply with mandatory land-use regulations emanated at the federal level, such as the sectorial plan for cropland protection. The plan aims to guarantee a sufficient supply of food for the country during times of crisis and war, protect the soil, and preserve good agricultural land in the long term. Due to the heterogeneous geographic features of the Swiss territory, about 77% of the land protected by the plan is concentrated in only seven cantons possessing large agricultural areas, thus, making the plan more binding for some municipalities than others. With the possible exception of Geneva, however, the impact of the plan on local housing prices seems to be weak for most of the cantons. In the case of Geneva, protected cropland effectively amounts to a green belt similar to the ones surrounding UK cities. The surrounding mountains, Lake Geneva, the Swiss boundary with France, and other fairly tight local land-use controls (including height restrictions)—which all make property supply inelastic—jointly explain the fact that Geneva has the most volatile property prices in Switzerland—in fact, resembling the price volatility in the UK.

The fact that a local municipality's tax revenue is directly determined by the number and nature of taxpayers provides strong incentives to (i) permit local development, and (ii) set local tax rates to attract high-income households. This, in contrast to the setting in the UK, suggests that local housing supply curves may be elastic.

Besides affecting local housing markets by encouraging tax competition among local authorities, the Swiss tax system also potentially affects the country's homeownership rate. In fact, the Swiss tax system is fairly neutral with respect to homeownership at all levels. It is possible to deduct mortgage interest from taxable income in a similar fashion as under the US tax system. Importantly, the deductibility applies to both homeowners and landlords, so there is no differential tax treatment between the two. In a similar fashion, homeowners have to pay taxes on "imputed rents," whereas landlords have to pay taxes on their rental income. Tax treatment is again neutral between the two groups. Thus, in contrast to most other countries, Switzerland's tax and housing policies have little (or no) bias in favor of homeownership.

In contrast to banking policies adopted in other European countries, Swiss banks do not require households to fully pay back their mortgage loans over a given period. Coupled with mortgage interest deduction, this creates a strong tax incentive for households—even wealthy ones—to never fully repay their mortgage debts. This explains why Switzerland has one of the highest outstanding mortgage debt-to-GDP ratios in the world—exceeding 140% in 2012—despite the low homeownership rate of the country and despite the fact that initial loan-to-value ratios are low in an international comparison.

In addition to the consequences arising from a decentralized government, Switzerland has to cope with another specific factor strongly influencing its housing market, i.e., the particular geographic features of its territory. In contrast to the UK, which has a fairly homogeneous flat landscape, Switzerland's geographic features affect both local housing supply and demand. On the one hand, lakes, mountains, and country borders strongly impede the development of major urban areas like Geneva and Zurich, thus reducing the elasticity of the housing supply in these places. On the other hand, the country's geographic attributes increase the demand for investment homes (called "second homes" in Switzerland) by attracting wealthy foreigners in prestigious locations where ski resorts are located.

Foreign second-home investments are affected by the Swiss franc exchange rate. Many foreign investors consider the Swiss housing market as a "safe bet," providing significant returns once real estate capital gains

are converted into home currencies.[13] The pressure of foreign buyers on the Swiss housing markets is not only due to second-home investors, but also due to a significant immigration inflow of persons who—for tax and quality of life purposes—transfer their primary residence to Switzerland. According to the Federal Statistical Office, in 2013, 23.8% of Swiss residents were foreigners, one of the highest rates of all European Union countries.

### 6.3.1 Current Status of the Housing Market

Switzerland regularly appears in world rankings as one of the countries with the highest per capita incomes,[14] one of the most competitive economies,[15] and the highest quality of life (Kekic 2012). Given the state of the country's economy and the high standard of living, one might expect that most households own their home. The reality, however, is different. Switzerland displays one of the lowest homeownership rates—if not the lowest—among all developed countries (Figure 6.3) (missing years have been computed by linear interpolation). In 2013, it was 37.5%, increasing by 2.9% from 2000. The increase in the homeownership rate is arguably due to the negative trend in mortgage interests. In particular, from mid-2008, fixed mortgage interest rates have shown a strong negative trend and are presently below 2%.[16] Bourassa and Hoesli (2010) suggested that high house prices and imputed rent taxation may represent two factors partially explaining Switzerland's exceptionally low homeownership rate. As pointed out by Shiller (2013), the taxation of imputed rents distinguishes Switzerland from most other developed countries: in the US imputed rent taxation was abolished by the Supreme Court in 1934. The UK tried to adopt it, but the proposal was relinquished in 1963.

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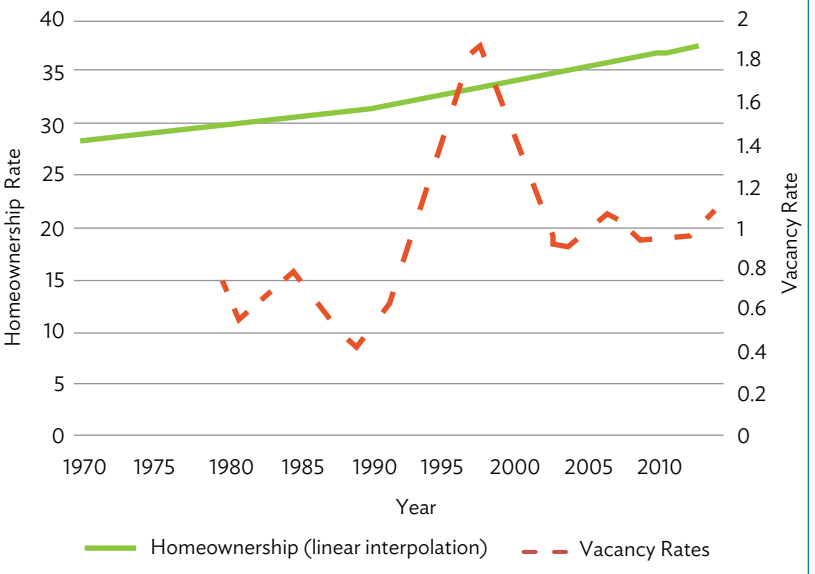
13 In contrast to what is observed in Japan, where the yen devaluation has arguably led to an increase of foreign investment into the residential sector, the Swiss franc appreciation of the last few years—and the corresponding price increase faced by foreign real-estate investors—did not negatively affect their investments. In fact, the Swiss franc traditionally represents a safe-store currency preserving capital gains from exchange rate fluctuations, thus being particularly attractive to foreign investors in times of economic and political instability. This is particularly true for foreign investors with large financial assets in Swiss banks.

14 See The World Bank. Data. http://data.worldbank.org/indicator/NY.GDP.PCAP.CD

15 See World Economic Forum. Competitiveness Rankings. http://reports.weforum.org/global-competitiveness-report-2014-2015/rankings/

16 See https://en.comparis.ch/hypotheken/zinssatz/zinsentwicklung.aspx

**Figure 6.3: Swiss Homeownership and Vacancy Rates (%)**



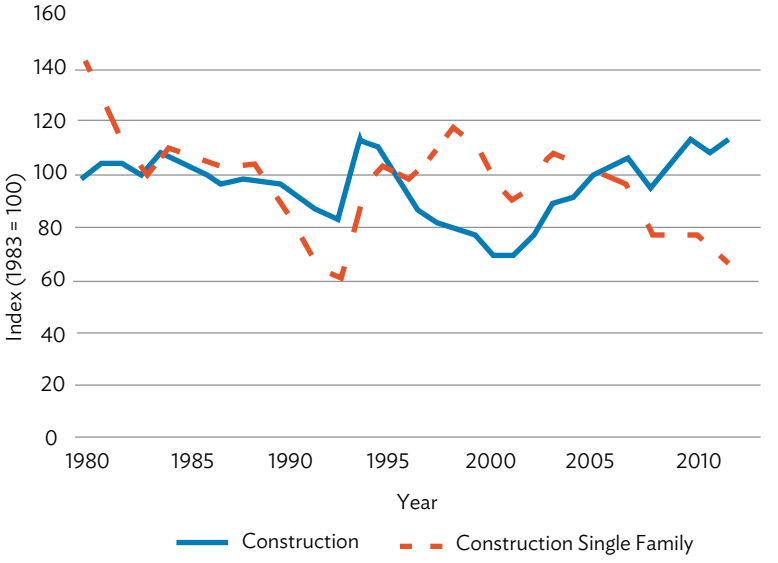

Source: Swiss Federal Statistical Office. http://www.bfs.admin.ch/bfs/portal/de/index/themen/09/01/new.html and http://www.bfs.admin.ch/bfs/portal/de/index/themen/09/02/blank/key/leerwohnungen/entwicklung.html (accessed 12 December 2015). Authors' calculations.

Figure 6.3 also depicts the incredibly low vacancy rates of the Swiss housing market, which ranged from 0.43% in 1989 to 1.85% in 1998. In the last 10 years, vacancy rates appear to have stabilized around 1%. This low number may be, in part, driven by the Swiss rent-control system, explained below. We note that vacancy rates are particularly low in major urban areas. For example, the vacancy rates in Geneva and Basel City are only 0.36% and 0.24%, respectively. These exceptionally low rates may be explained by two factors. First, rent control is particularly important in urban areas because they have extremely low homeownership rates, typically in the range of 10%. Second, a spatial shift of housing demand toward the major Swiss agglomerations can explain why few housing units remain empty in these places. According to the Swiss Federal Statistical Office, in 2012, major agglomeration centers accounted for 59% of the total population, covered only 12% of the country's surface, and provided 70% of the employment.[17]

[17] See Statistik Schweiz. http://www.bfs.admin.ch/bfs/portal/de/index/regionen/11/geo/raeumliche_typologien/00.html

In contrast to the UK, where construction numbers have been falling dramatically since the late 1970s, in Switzerland construction numbers since 1980 are cyclical but the long-run trend is roughly stable. Figure 6.4 shows construction indexes for *all* and for *single-family* construction. One interesting trend since about 2005 has been that more flats and fewer single-family houses were constructed. Between 2002 and 2011, the construction of new flats has increased markedly. The yearly construction of new flats during this time period increased from 28,644 units to 47,174. In 2012 and 2013, however, the number of newly constructed dwellings has remained stable at around 45,000–46,000 units. In 2014, according to Credit Suisse and the Swiss Association of Contractors and Builders, a general reduction of the residential construction sector could be observed and is expected to continue through 2015. As Waltert and Müggler (2014) point out, this may, in part, be due to both the implementation of the Second Home Initiative (discussed below), and the decision of the Swiss National Bank not to support the minimum exchange rate against the euro anymore (causing a significant appreciation of the Swiss franc).

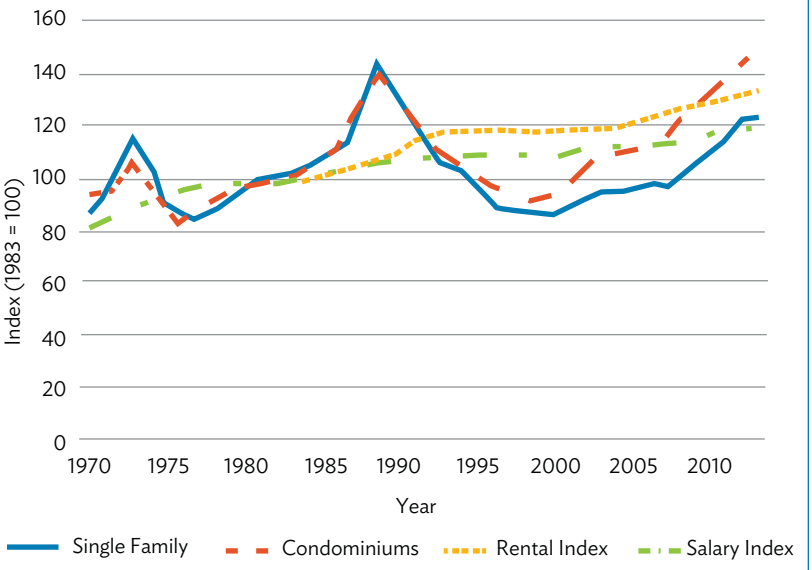
**Figure 6.4: Swiss Construction Indexes: Total and Single-Family Houses (1983 = 100)**




Source: Swiss Federal Statistical Office. http://www.bfs.admin.ch/bfs/portal/de/index/themen/09.html (accessed 12 December 2015). Authors' calculations.

Price dynamics also show major differences compared with the UK housing market (Figure 6.5). Three stylized facts are worth highlighting. First, real house prices in Switzerland are cyclical; three boom periods can be observed since 1970 (early 1970s, mid-to-late 1980s, and the period since 2000). Second, in contrast to the UK, where real house prices more than doubled since the early 1980s, in Switzerland real house prices merely increased by 23% (single-family prices) and 50% (condominiums) respectively. The difference in the growth rate between these two categories reflects the fact that the housing demand has shifted toward major urban areas, as suggested by the vacancy rate differentials observed between rural and urban areas. This hypothesis is further supported by the drop in vacancy rates observed from 2000 onward, which coincides with a strong growth in condominium prices. Third, rent growth is about halfway between the price growth of single-family houses and condominiums, and amounts to 33% since 1983. These increases are not too distant from the salary index growth (about 20% since 1983).

**Figure 6.5: Swiss Single-Family and Condominium Price Indexes (both real), Swiss Rental Index (CPI Subindex) (real), and Salary Index (real) (1983 = 100)**




CPI = consumer price index.

Sources: Swiss National Bank. www.snb.ch/en/iabout/stat/statpub/statmon/stats/statmon/statmon_O4_3 (accessed 12 December 2015); Wüest and Partner (www.wuestundpartner.com/en/online-services/immobilienindizes.html (accessed 12 December 2015); Swiss Federal Statistical Office. www.bfs.admin.ch/bfs/portal/de/index/themen/05/06/blank/key/index.html (accessed 12 December 2015); Authors' calculations.

The Swiss government has recently implemented several measures aimed at dampening the price growth of the owner-occupied housing sector (which may have been driven by the all-time low mortgage interest rates). Under government pressure, banks tightened lending conditions from July 2012 onward. In particular, the own funds required to have access to mortgage lending—typically 20% of the property price—cannot be exclusively constituted by the retirement provisions cumulated in the occupational pension funds. The part of own funds represented by retirement provisions is limited to 10% of the property price. Additionally, the loan-to-value ratio must at most be equal to 2/3 after 20 years. To reduce the risk exposure borne by mortgage lenders, in June 2014 the Swiss government forced banks to increase the part of capital held against mortgage loans by an additional 2%.

## 6.3.2 Key Housing Policies and Their Objectives

In this section, we review two policies that currently have a strong impact on the Swiss housing market: rent control and the Second Home Initiative. The discussion on rent control builds on Werczberger (1997).

### 6.3.2.1 Rent Control

The history of rent control in Switzerland is quite tormented. The control of rents was first introduced during World War I. It was subsequently abolished in 1924. Due to the Great Depression, rent control was reintroduced in 1936. Once World War II ended, the control's extent was progressively reduced, and, subsequently, abolished in 1970. This led to a significant increase in rents, inducing the government to reintroduce rent control in 1972. Since then, several law modifications of rent control have been proposed, but a general consensus has not been reached and rent control is currently subject to controversy in political debates. Rohrbach (2014) provides a detailed exposition of the history of rent control in Switzerland.

The current level of renters' protection is high in Switzerland. According to the existing federal law, landlords have to justify the magnitude of rent increases to their tenants.[18] Rent levels can be adjusted according to two main economic indicators. The first indicator is the so-called rent reference index, which is based on the average of mortgage

[18] The biggest private landlords in Switzerland are insurance companies and banks, while the army and the national railway company are the two major institutional landlords. However, figures on the market shares of these landlords are not publicly available.

interest rates provided by banks for the whole of Switzerland. The index cannot only be used by landlords to justify rent increases, but it can also be used by tenants to ask for rent reductions. The second indicator is the Swiss consumer price index (CPI). Up to 40% of the inflation, as measured by the Swiss CPI, can be passed on as higher rents. Although these measures might seem restrictive, the adjustment of rent levels to economic indexes was established to prevent abusive rent increases, while at the same time, providing landlords with reasonable returns on their investments. In addition to these two economic indicators, landlords can generally modify rents under two circumstances. First, the landlord performs a major renovation of the property and/or bears increased maintenance costs, which would lead to a reduction of the return on the investment. Second, rents are usually adjusted when a new tenancy starts, provided that the new rent is in line with the prevailing rent level observed in the same area. Importantly, new tenants are allowed to challenge a rent even after having taken possession of the property. This rule effectively prevents landlords from arbitrarily increasing rents between tenancies.

Rent control also protects tenants against abusive evictions. Landlords are not allowed to rescind the tenancy contract simply to obtain more advantageous contract terms or to induce tenants to buy the property. Moreover, a change in the family status of a tenant, which does not inflict damage on the landlord, is not a sufficient reason for an eviction.

#### 6.3.2.2 Ban on Second (Investment) Homes: The Second Home Initiative

Fiscal competition in conjunction with significant immigration inflows strongly shapes urban development in Switzerland. In particular, as documented by Jaeger and Schwick (2014) urban sprawl has strongly increased during the last few decades. The apparent eagerness of Swiss citizens to protect their country's landscape with its natural beauty and the widespread perception that second-home investors, in particular foreign real estate investors, were "disfiguring" the countryside, creating ghost towns (outside of tourist seasons) in mountainous areas, and inflating local housing costs, has led to a political backlash.

The Second Home Initiative (SHI) was launched to address these concerns.[19] The initiative was approved by the Swiss population in

[19] See: http://www.zweitwohnungsinitiative.ch/home.html for details (in German, French or Italian). A brief summary in English is provided here: http://www.ffw.ch/en/camp_detalle/second-homes-initiative-switzerland/2/11

March 2012 by the narrowest of margins. Only 50.6% of the voters and 13.5 of the 26 cantons voted in favor of the initiative (for historical reasons, six cantons count as "half cantons").[20] The resulting ordinance, which came into force on 1 January 2013, prohibits the creation of new second homes in municipalities in which the second-home share of the housing stock exceeds 20%. Importantly, in these municipalities, the initiative also forbids the conversion of primary residences built after January 2013 into second homes. Primary homes built prior to that can, in principle, still be converted into second homes. This is a concession by the lawmakers during the legislation process with the aim to protect the property rights of existing homeowners in the affected municipalities. However, to avoid speculative behavior worsening the sprawl phenomenon, primary homes built before January 2013 can be converted into second homes only if this does not lead to the construction of a new primary home in the same or nearby municipality facing the restriction. So, existing homeowners, who wish to convert their primary homes into second homes, effectively have to leave their home region. The regulation is far from being marginal, figures from the Federal Office for Spatial Development suggest that approximately one municipality out of five faces the restriction.

The definition of "second home" depends on the amount of time the owner of the property spends in it. A "primary home" is a property in which the owner spends most of the time. All other properties a person may possess are considered to be second homes. Although the concept may sound vague, it is based on precise and long-established tax rules that have implications going far beyond the initiative's regulations. In particular, the tax burden faced by households depends on where their primary home is located. The number of second homes in a given municipality is then simply approximated as the total number of dwellings minus the number of primary homes.

### 6.3.3 Merits and Demerits of Policies

In this section, we illustrate the merits and unintended effects of rent control and of the SHI.

There is a vast and well-established literature on the negative consequences of implementing rent control. Rent control has been shown, among other things, to cause rent increases of not regulated units (Caudill 1993), perturb optimal allocation mechanisms (Glaeser and Luttmer 2003), lower housing quality (Gyourko and Linneman 1990),

[20] Interestingly, from a political-economical point of view, the most touristic cantons (and municipalities) that were most strongly affected all rejected the initiative.

and reduce household mobility (Ault, Jackson, and Saba 1994). Our aim is not to extensively review this literature but, rather, to compare the specific effects of rent control observed in the Swiss housing market with those predicted by the literature.

The effects of the SHI—a recent policy reform—are currently being investigated by us and, to our knowledge, no empirical study on its effects exists. Therefore, only preliminary evidence concerning its effects is presented here.

Rent control in Switzerland has several merits. First, as illustrated in Figure 6.5, real rents tend to grow slowly. Since 1983, real rents have grown only 13% more than salaries. The dampening effect of rent control becomes apparent when the price growth of condominiums—typically good substitutes for rented units—is considered. In the last few years, asking prices for condominiums have increased at a considerably higher rate than rents: since 1983, the growth differential between the two is 17%. Second, in contrast to the cyclicality displayed by single-family homes and condominiums, rent volatility is quite low. Third, because all rental units are subject to rent control, there exists only one regulated rental housing market rather than two—a regulated and an unregulated one—with potentially vastly differing prices. Fourth, because the law ensures minimum quality standards, landlords cannot reduce building maintenance in the hope of increasing returns. On the contrary, major renovations present an opportunity to bring the rent of a controlled unit closer to market level. Finally, because new tenants have the right to challenge the rent level after renovation, speculative rent hikes can largely be prevented.

These advantages, however, come at a price. Rent control induces a distortion in the allocation mechanism of the market by creating a disincentive for households to move. In fact, the most effective strategy for tenants to benefit from rent control is to stay in the same unit as long as possible. This is a strategy that is facilitated by the lawmakers because rent control protects tenants against irregular evictions. As a consequence, rent increases are, to some extent, capped by the reference index and the CPI. In this setting, demand for rent-controlled properties significantly exceeds supply, resulting in an extremely low residential vacancy rate—especially in major urban areas—as illustrated in Figure 6.3, and, as a consequence, in a time-consuming and costly search effort for households forced to relocate.

Because the SHI was only recently approved, we can merely speculate about its long-term effects. To begin with, to the extent that local municipalities will not be able to uncover significant loopholes in the legislation, we expect that the policy will be effective in preventing sprawl in the highly touristic places with shares of second homes already exceeding 20%. However, because demand for second homes

may simply shift spatially in the long term, sprawl may become an increasing problem in municipalities with shares of second homes below but close to 20%. Moreover, the ghost-town phenomenon (outside of tourist seasons) in mountainous municipalities with desirable natural amenities can be expected to become worse. This is because the only way to now add new second homes to the existing stock of such homes is by converting existing primary homes. Because the ban on new second homes has increased the scarcity of such homes in the most desirable tourist places, conversions from primary to second homes may further increase the second home share.

The SHI legislation will likely also affect the prices of primary and second homes. The restriction to create new second homes in places that exceed the 20% threshold can be expected to be immediately capitalized into higher second-home prices—a supply-side effect. Because new second homes in restricted municipalities can only be created by converting primary homes constructed before 2013, the second-home supply can be expected to become progressively inelastic, thus capitalizing future demand increases.

The SHI has two opposing effects on the price of primary homes. The price may decrease as the SHI imposes a negative shock on the local economy thus lowering demand for primary homes. However, by preserving local natural amenities the SHI may increase the price of primary homes, all else equal. The net effect is theoretically ambiguous.

Empirically, using a difference-in-difference approach, Hilber and Schöni (2016) find that the price of primary homes in restricted municipalities decreased significantly, on average, by about 12%, after the implementation of the SHI. They find no statistically significant effect of the SHI on the price of second homes, possibly due to the small number of transacted second homes in our sample. Banning new residential investment thus appears to hurt existing primary homeowners in affected areas but not existing owners of investment properties.

### 6.3.4 Lessons Learned

The mild implementation of rent control in Switzerland has provided undeniable benefits to renters, such as moderate price increases and protection against abusive evictions. These benefits, however, also make households immobile. As a consequence, the increasing demand for dwellings situated in or near major urban areas—arguably fueled by strong immigration inflows—must mainly be satisfied by new construction. Because the Swiss fiscal decentralized system provides incentives to municipalities to attract new residents, local housing supply is elastic, leading to only moderate price and/or rent increases when hit by

significant demand shocks. The situation is different when the geographic features of the territory decrease the elasticity of local housing supply. Geneva, for example, which has an urban area constrained by natural amenities, a national border with France, and strict land-use controls, has very high rents and housing prices compared with other Swiss cities.

All in all, the decentralized system of Switzerland—with its strong local fiscal incentives—appears to be able to solve the housing affordability problem, unlike the centralized system of the UK. However, this solution comes at a cost: the ease with which local administrative units can build new homes has led to urban and (even rural) sprawl. With the approval of the SHI, Swiss citizens have given a clear message that they want to preserve the natural environment of the country by limiting the footprint of second-home investors. However, separating the primary- and second-home market has hurt local owners of primary residences in restricted areas.

## 6.4 Housing Policies in the United States

The analysis of US housing policies perhaps represents one of the richest bodies of the policy evaluation literature (see Olsen and Zabel [2015] for an overview). This richness can be attributed to the variety and the extent of the implemented policies at the federal, state, and local level, and to the increasing quality of data available to researchers. It is not feasible to do justice to the richness of this literature in a single subsection of this paper. We, therefore, limit our analysis to those policies that were intended to preserve a pillar of the American dream: homeownership.

Owning a house represents the achievement of the American dream for most US citizens. With the 2007–2009 global financial crisis, however, this dream has turned into a nightmare for many homeowners. After a peak at the beginning of 2007, house prices fell by about 30% in less than 2 years. Millions of homeowners found themselves possessing negative home equities, thus, being unable to sell their home or not having access to refinancing mortgages in the case of financial need. The bust of the housing boom, coupled with soaring unemployment rates, led many US households to lose their homes, causing a steep decrease of about 5% in the country's homeownership rate. To counter this drop in homeownership attainment, the US government adopted several new housing policies, in addition to the preexisting policies—importantly the mortgage interest deduction (MID). Our aim is to describe the intended and unintended effects of these new and old policies, with a particular focus on the MID.

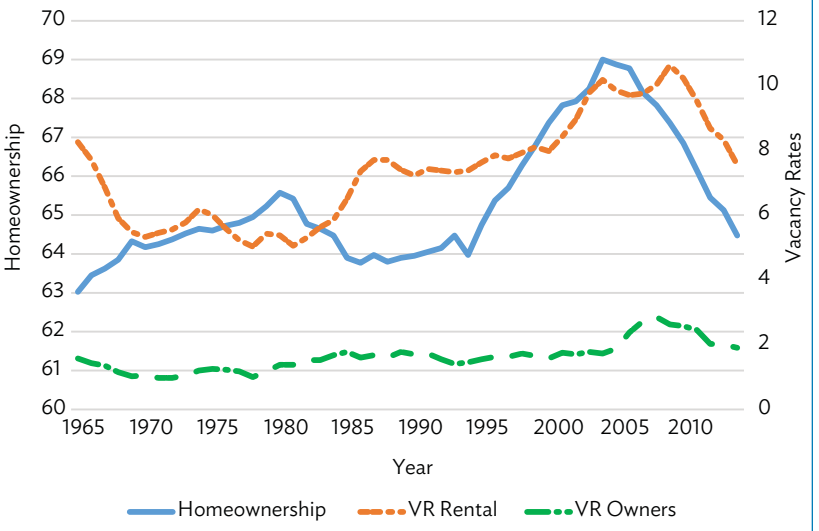
The discussion of the policies presented in this subsection draws heavily from the work of Olsen and Zabel (2015), who offer an exhaustive review of US low-income rental programs and mortgage policies. In

contrast to Olsen and Zabel (2015), our focus is on the description of implications of the MID based on recent evidence provided by Hilber and Turner (2014).

### 6.4.1 Current Status of the Housing Market

The US housing market has recovered from perhaps the worst housing crisis in its history. So it seems, at least, when looking at the trends of housing market fundamentals (Figures 6.6 and 6.7). In this positive economic context, from December 2014 and March 2015 onward, respectively, Fannie Mae and Freddie Mac allowed first-time homebuyers to lower their down payments to 3% instead of the usual 5%. Moreover, the Federal Housing Administration recently reduced its annual mortgage insurance premium by 0.5% to 0.85%. Finally, some of the postcrisis housing programs aiming to boost homeownership are still under way (see next section).

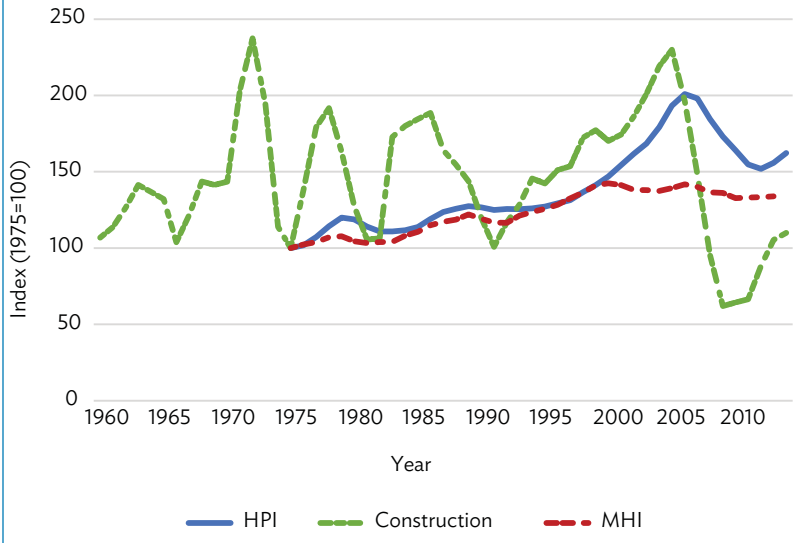
**Figure 6.6: United States Homeownership and Vacancy Rates**




VR = vacancy rate.

Sources: United States Bureau of the Census, obtained via FRED. https://research.stlouisfed.org/fred2/series/RHORUSQ156N, https://research.stlouisfed.org/fred2/series/RRVRUSQ156N, and https://research.stlouisfed.org/fred2/series/RHVRUSQ156N (accessed 12 December 2015).

**Figure 6.7: US House Price Index (real), Construction Index (New Private Housing Units Authorized by Building Permits) and Mean Household Income (real) (1975 = 100)**




HPI = house price index, MHI = mean household income, US = United States.

Sources: Federal Housing Finance Agency, obtained via FRED. https://research.stlouisfed.org/fred2/series/USSTHPI (accessed 12 December 2015); US. Bureau of the Census. https://research.stlouisfed.org/fred2/series/PERMIT and http://www.census.gov/hhes/www/income/data/historical/household/ (accessed 12 December 2015); authors' calculations.

Given the current state of the US housing market, one might expect that the homeownership rate has stopped decreasing or, at least, has stabilized. Yet, this is not the case. Figure 6.6 documents the US homeownership rate between 1965 and 2014. Homeownership started to decline between 2004 and 2005, preceding the global financial crisis (2007–2009) and its corresponding high number of foreclosures. It continued to decline after the end of the crisis. It is currently still on a downward trend, similar to the UK. From the fourth quarter (Q4) of 2004 to Q4 2014 the homeownership rate had fallen from 69.2% to 64%. Figure 6.6 also reports vacancy rates of owner-occupied and rental housing. Consistent with the homeownership statistics that imply an increase in demand for rental housing, vacancy rates for the latter type of housing fell significantly from 10.6% in 2009 to 7.5% in 2014. Interestingly, vacancy rates of owned units increased only slightly during the peak of the crisis. They generally remained fairly low and stable throughout the crisis.

The observed decrease in the rate of homeownership may be explained by three factors. First, the massive increase in the price-to-income ratio in the buildup of the global financial crisis implied that, all else equal, fewer and fewer households were able to afford the monthly mortgage payments (i.e., liquidity constraints tightened). Second, the tightening of credit conditions (including down payment constraints) during the crisis meant that many households that were at the margin of property ownership before the crisis suddenly did not have access to mortgage lending anymore. Third, and related to the former point, bad credit ratings of households that experienced foreclosure during the crisis mean that they could not easily become homeowners again.

Figure 6.7 illustrates the seasonally adjusted Purchase-Only House Price Index (HPI) since 1975 as well as the mean household income for the same time period. Focusing on the last 10 years, while the price-to-income ratio fell significantly during the global financial crisis, the trend has been reversing since about 2011, all else equal, making it increasingly difficult for households to have access to property ownership. At the same time, increasing prices during the last few years appear to have revived the construction sector. Figure 6.7 documents the number of housing starts between 1960 and 2014. Housing construction appears to be highly cyclical in the US. While it fell dramatically during the 2000s, housing construction has been recovering since around 2011.

Local housing markets in the US show remarkable spatial heterogeneity with respect to their price dynamics. Figures 6.8 and 6.9 illustrate the price growth since 1980 for three major inland cities—Akron (Ohio), Columbus (Ohio), and Indianapolis (Indiana)—and three major coastal ones—San Francisco (California), Los Angeles (California), and New York (New York)—respectively. Inland housing markets have rarely been affected by the crisis and display a very low—if not negative—real price growth since 1980. In contrast, the coastal cities (sometimes referred to as "superstar cities"; (Gyourko, Mayer, and Sinai 2013) that possess severe natural as well as regulatory constraints (Saiz 2010; Hilber and Robert-Nicoud 2013), show astonishing long-term price increases—with San Francisco reaching a real price growth of about 300% since 1980—and large price volatility. The price trends depicted in Figures 6.8 and 6.9 are consistent with the proposition that given demand shocks (which may or may not be greater in large coastal cities) translate into greater price swings in places with severe long-term supply constraints, i.e., the superstar cities.[21]

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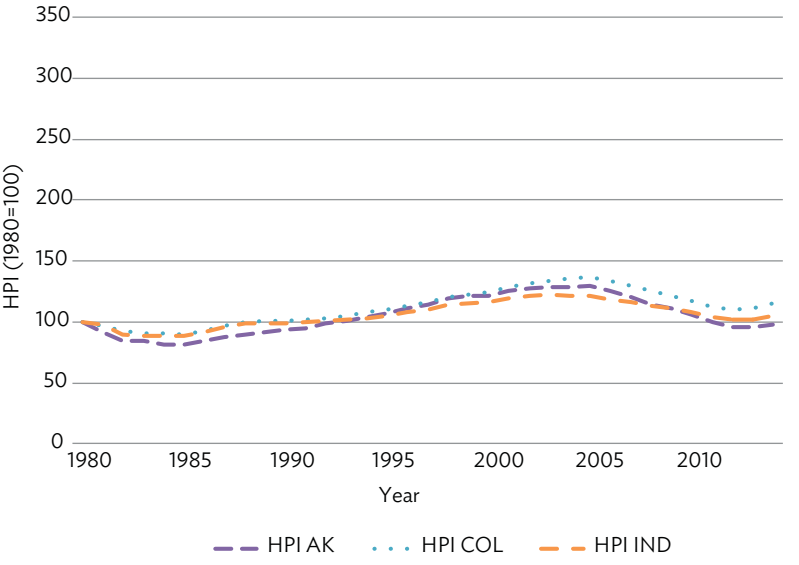
[21] These findings are consistent with the findings of Hilber and Vermeulen (2016) for England. They are also consistent with the theory put forward in Hilber and Robert-Nicoud (2013) that more desirable places (in the US: coastal cities) are more physically developed and, as a consequence of owners of developed land becoming more politically influential, more regulated.

**Figure 6.8: US Inland Metro Areas House Price Index (real) (1980 = 100)**




AK = Akron, COL = Columbus, IND = Indianapolis, HPI = house price index, US = United States.

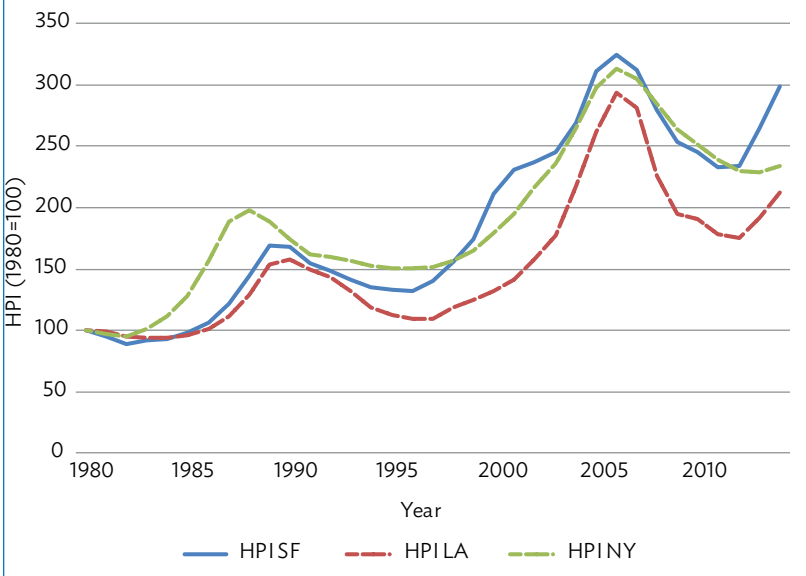
Source: Federal Housing Finance Agency. http://www.fhfa.gov/DataTools/Downloads/Pages/House-Price-Index-Datasets.aspx#qat (accessed 12 December 2015).

## 6.4.2 Key Housing Policies and Their Objectives

The current US tax system is biased in favor of homeownership. Importantly, whereas mortgage interest can be deducted from taxable income, imputed rents associated with property ownership are not taxed.[22]

[22] It is worth noting that the mortgage interest deductibility is a popular policy, implemented in numerous developed countries to promote homeownership. The UK used to have a form of mortgage interest deduction—the Mortgage Interest Relief at Source (MIRAS). The MIRAS was introduced in 1969 but phased out from 1988 until it was completely abolished in 2000. Due to the numerous demerits and unintended consequences of the MID, which are discussed below, the slow phasing out and subsequent termination of the MIRAS can be seen as a highly successful policy decision.

**Figure 6.9: US Coastal Metro Areas House Price Index (real) (1980 = 100)**




HPI = house price index, LA = Los Angeles, NY = New York, SF = San Francisco, US = United States.

Source: Federal Housing Finance Agency. http://www.fhfa.gov/DataTools/Downloads/Pages/House-Price-Index-Datasets.aspx#qat (accessed 12 December 2015).

The broad deductibility of interest *on all loans* in the US dates back to 1894 when the first modern federal income tax was created. It was the Tax Reform Act of 1986 that *confined deductibility to mortgage interest only*. The aim of the reform has been to encourage homeownership. The MID is a costly policy, representing about $100 billion in foregone annual tax revenue for the US government. Despite the already-existing bias toward homeownership, the bust of the housing boom during the global financial crisis has led the US government to adopt yet more fiscal measures in an attempt to halt the decline in homeownership attainment.

In 2008, the Congress passed the Housing Assistance Tax Act (HATA), which provides a tax credit of 10% of the purchase price of a property for first-time homebuyers. The maximal tax credit was capped to $7,500 per household and the requirement was that it had to be repaid

within 15 years. To limit the vacancy of foreclosed properties, while avoiding speculative behavior, in 2009, the American Recovery and Reinvestment Act (ARRA) increased the maximal tax credit to $8,000 and offered the possibility to waive the credit repayment if the property was not sold during the 3 years after its acquisition and was used as the principal residence. At the end of 2009, President Obama signed the Worker, Homeownership, and Business Assistance Act into law, extending the period during which households could claim the ARRA tax credit. According to the General Accounting Office, up to July 2010 approximately 1 million and 16 million first-time homebuyers benefited from the HATA and ARRA tax credits, respectively.

In addition to fiscal incentives, the US government launched several programs to enhance credit conditions.[23] In early 2009, the Treasury started the Making Home Affordable (MHA) program to improve credit conditions. Two centerpieces of the MHA are the Home Affordable Modification Program (HAMP) and the Home Affordable Refinance Program. Both programs end in December 2016. The two programs are not intended to promote homeownership but, rather, to avoid the loss of it by reducing the likelihood of foreclosure. HAMP's aim is to cooperate with mortgage lenders to reduce the monthly mortgage payments of homeowners at risk of foreclosure by decreasing interest rates, lengthen the loan's term up to 40 years, and define a balloon payment at the maturity date. The Home Affordable Refinance Program's goal is to provide credit access to homeowners who possess negative home equities. More specifically, homeowners who had their mortgages owned or guaranteed by Freddie Mac or Fannie Mae and who were current with their payments (in contrast to HAMP) were initially allowed to refinance their debt even if the loan-to-value (LTV) ratio of their properties was between 80% and 125%. In a subsequent modification of the program in 2011, these LTV limits were suppressed for mortgages up to 30 years, thus allowing households with deeply underwater assets to refinance.

In February 2010, President Obama approved the Hardest-Hit-Fund (HHF) program to help households living in states that were particularly affected by the global financial crisis. States displaying unemployment rates greater or equal to the national average and having experienced average housing price decreases greater than 20% were accepted into the program. Many of these states (California, Oregon, Nevada, and Florida, among others) host some of the most expensive

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[23] See the US Department of the Treasury website (http://www.treasury.gov/initiatives/financial-stability/TARP-Programs/housing/Pages/default.aspx) for a more in-depth description of these programs. Due to a lack of participation, we do not consider the HOPE for Homeowner Act in the present subsection of the paper.

cities in the world. In the same spirit of the MHA program, the HHF's aim was to reduce the mortgage burden of households owning negative housing equity.

### 6.4.3 Merits and Demerits of Policies

We first discuss the impact of the MID in some depth, because it offers the most compelling empirical evidence. With the exception of the MID, the policies reviewed in the previous section are recent and many are still current. Therefore, only limited information is available concerning their effects on the US housing market. In this section, we offer an analysis based both on informal evidence and on recent empirical findings.

Due to the staggering cost of the MID, two main questions are of interest. The first is whether the policy produces the effect that justifies its existence, i.e., to increase homeownership. The second is whether unintended consequences follow its implementation. The answers to these questions appear to be negative for the former and affirmative for the latter.

Glaeser and Shapiro (2003) provide evidence supporting the proposition that homeownership is not influenced by the MID. They point out that households on the margin between owning and renting usually do not use the deduction to reduce their taxable income. As a consequence, the MID does not create new homeowners but, rather, increases the housing consumption of well-off households. According to Gervais and Manish (2008), wealthy households may use equity financing if the MID is not available, further providing support for the hypothesis that the homeownership decision of these households is not influenced by the deduction. Even worse, Bourassa and Ming (2008) provide some evidence that the MID lowers the homeownership rate among young households due to price capitalization effects. Hilber and Turner (2014) provide strong evidence on the unintended consequences of the MID. They show that the deduction only promotes homeownership of higher-income households where the housing supply is elastic. This effect on the higher-income group is reversed in housing markets with strong regulatory constraints. Interestingly, they find no significant relationship between homeownership and the MID for low-income households. The net effect of the MID on homeownership is roughly equal to zero.

We now present some informal evidence concerning the HATA/ARRA and HAMP housing programs.[24] Baker (2012) provides a

[24] To the authors' knowledge, no conclusive study is currently available on the effect of the Home Affordable Refinance Program and HHF programs.

descriptive analysis of the effect of the tax credit. He points out how the program's effects were only temporary. The program considerably boosted home sales when it began (June 2009), and a marked decline was observed when it ended (July 2010). In this respect, it seems that the program—rather than supporting the demand in the long term—simply shifted the homeownership decision in time, thus having no effect on the long-term homeownership rate. Interestingly, Baker provides some evidence that the program only influenced the purchase of bottom-tier properties in less-expensive markets. He justifies his claim by arguing that new homebuyers generally buy inexpensive properties, and that the $8,000 tax credit is not likely to have an influence in expensive housing markets like New York or Boston.

An early theoretical study by Mulligan (2010) discusses how the guidelines imposed by HAMP to take part in the program may have negative effects on mortgage renegotiations. In particular, he points out that renegotiations do not lead, in general, to a reduction of the principal mortgage and do not decrease households' uncertainty. Due to these facts, he stresses how the program only avoids some foreclosures in the short term, but basically shifts in time the efforts required to prevent the others.

Using a difference-in-difference identification strategy, Agarwal et al. (2012) empirically demonstrate the inefficiency of the HAMP program. Using second-home investors who are not eligible for the program as the control group, they show that promoted mortgage renegotiations only had limited influence on the rate of foreclosures and virtually no effect on other economic variables such as declining house prices and employment. Additionally, they point out that the lack of responsiveness to the program (only 1.2 million mortgages were renegotiated compared with a target of 3–4 million) can be attributed to the rigid organizational capability of a few large loan lenders, who were not able to renegotiate mortgages. They conclude by stressing that short-term policies aiming to modify the behavior of large mortgage lenders are of limited effect.

Finally, using a simulation approach, Hembre (2014) assesses the impact of HAMP on credit defaults by comparing it with a hypothetical counterfactual housing program in which households were not able to renegotiate their mortgage debt. He finds that the HAMP expects to prevent slightly over 500,000 defaults after 5 years. He shows, however, that the exorbitant program cost of $20.8 billion greatly exceeds the roughly estimated social costs associated with foreclosures, concluding that the program resulted in a net loss of $12.7 billion.

### 6.4.4 Lessons Learned

Several lessons can be learned from the present analysis. Some of them directly result from the above analysis, while others are less straightforward.

To begin with, housing policy makers seem to be obsessed with the desire to modify the demand side of the market (e.g., via mortgage subsidies such as the MID), arguably because it is the easiest way to reach a broad consensus among voters. Capozza, Green, and Hendershott (1996) or Hilber and Turner (2014), for example, show however that modifications of fiscal incentives in housing markets that have an inelastic supply are capitalized into higher housing prices. Additionally, research conducted by Glaeser, Gottlieb, and Gyourko (2010) and Mayer (2011) demonstrates the important role played by the supply elasticity to determine equilibrium prices.

In particular, we point out that future policies should take the spatial heterogeneity of the housing market into account. The US provides a good example of the spatial dependence of supply constraints and of the consequences of neglecting them when making housing policies. Supply constraints are not only due to local regulatory restrictions, but also by the nature of the local geographic area in which the housing market is located (Saiz 2010).

Our analysis suggests that simply pouring subsidies homogenously across the country through ad hoc programs aiming to shift the housing demand without considering the local supply elasticity of housing markets can be counterproductive. The HHF program is an example of such bad practice. The largest allocation share (almost $2 billion) went to California. Given the nature of supply conditions in the large coastal Californian metropolitan areas, it seems reasonable to assume that the only effect of the allocation on the housing markets of San Francisco and Los Angeles was to further increase housing prices and augment the market volatility. Consistent with this, illustrated in Figure 6.9, the two cities experienced a strong price increase after the HHF was implemented.

Other lessons that can be learned are typically intrinsic to some flaws present in the policy implementation itself. Financial incentives and mortgage policies should avoid to simply shifting purchase decisions and foreclosures in time. Otherwise, all these policies will achieve is a short-term disequilibrium of the housing market that will disappear as soon as the program ends.

Finally, a trivial lesson is to take the legal and organizational frameworks into account. If the demand or supply side of the market cannot react to the proposed incentives, the policies will be largely

ineffective. An example of limited supply response is provided by the inability of large mortgage lenders to renegotiate mortgages. On the demand side, it appears that credit score constraints of delinquent borrowers prevent them from benefiting from the policies' incentives.

## 6.5 Synthesis

In this paper, we review the key housing policies implemented in three developed countries that differ markedly in their institutional settings, economic conditions, and geographic features. Our analysis suggests that differences in these factors manifest themselves in diverse supply conditions (i.e., supply price elasticities) and these, in turn, are associated with two distinct housing problems: housing affordability (in the case of inelastic supply) and sprawl (in the case of elastic supply). The housing policies implemented to address these problems typically focus on the demand side, perhaps because they are politically more appealing. These demand-side policies, in turn, often have unintended (distributional and allocative efficiency) consequences via house price capitalization effects that are typically ignored by policy makers.

Our analysis of the UK and Swiss government systems—highly centralized versus decentralized—suggests that fiscal incentives may play a major role in determining the local housing supply elasticity and may thus explain issues of local housing affordability or of sprawl, respectively. The two opposite systems come with their own advantages and drawbacks. A highly centralized government providing few fiscal incentives at the local level for residential development, corresponding urban containment via green belts, height restrictions that prevent horizontal expansion, and other regulatory constraints prevent urban sprawl but generate an acute housing-affordability crisis. In contrast, a system of fiscal competition with strong incentives at the local level to permit residential development implies lower house-price inflation but comes at the cost of urban sprawl.

The US differs enormously across space in its geographic constraints as well as its fiscal and regulatory features. While urban sprawl is a concern in large parts of the midwest and the south of the country, high house prices and corresponding lack of affordability are a major issue in coastal superstar cities such as Los Angeles, San Francisco, and New York. The US, which has implemented numerous housing policies in recent years and provides access to rich data, thus provides a unique laboratory for empirical research.

Policy makers in the US and the UK, faced with housing-affordability problems and concerns about homeownership attainment,

tend to focus on demand-side solutions. Demand-side policies such as the MID or Help-to-Buy may be popular among voters but they tackle symptoms rather than root causes. The key problem with these demand-side policies is that they have unintended and counterproductive consequences in severely supply-constrained places. This is because the demand-induced price increases offset the desired effects of the policy.

More generally, the impact of housing policies ought to be evaluated in a general equilibrium framework rather than in a partial one. For example, a partial equilibrium analysis may focus on the direct incentive effects of demand-side subsidies such as the MID or Help-to-Buy and ignore the fact that such subsidies spur housing demand and thus increase house prices in supply inelastic places. Another example is the Swiss SHI. While the SHI may achieve one objective—to combat sprawl in the most touristic areas—it may create a few new problems (via general equilibrium effects): adverse effects on the local economy in the touristic areas, an increase of the ghost town phenomenon in these areas (outside of tourist seasons), long-term sprawl in semi-touristic areas (just below the initiative's threshold of 20% second homes), and price declines for existing local primary homeowners in touristic areas. Given the particular features of the legislation, the latter effect is arguably more pronounced among the elderly and less-educated, lower-income homeowners since because they are typically less mobile, so the cost of converting their primary home into a second home *and* move away to another region may render their conversion option worthless.

One central conclusion from our analysis is that policy makers ought to be cautious when implementing new housing policies; especially "blanket" demand-side policies in countries that contain areas with severe supply constraints. Instead, policy makers ought to focus on correcting market failures and take supply conditions into account when designing policies.

While large green belts (with intensive agricultural use) surrounding cities, in combination with tight height controls and lack of fiscal incentives at the local level (as is the case in the UK), are a recipe for a housing-affordability crisis, creating and maintaining local public parks (a local public good), preserving areas of outstanding natural beauty (because of their positive externalities and option values), or protecting truly historical buildings or neighborhoods (again because of positive externalities) are all sensible local (planning) policies. They increase social welfare yet will not create a housing affordability problem as long as there are still enough incentives to permit and develop tall buildings in the center and larger single-family houses in the periphery. If the lack of sufficient new housing construction is the perceived problem, then local taxes that provide fiscal incentives to local policy makers to permit

development could be an effective means to create more affordable housing.

In a similar vein, if sprawl is perceived by voters to generate negative externalities, then a new national tax on the consumption of developed residential land (i.e., a property [or, ideally, land-value] tax that has to be paid irrespective of whether a property or a parcel of land is used as the primary or secondary home) could discourage non-intensive use of residential land and could provide the right kind of incentives to prevent sprawl. At the same time, it would not provide additional incentives to local planning boards to permit development. Such a national tax might provide a much more efficient tool to combat sprawl with fewer side effects than banning second homes in touristic areas altogether. Such a reform could be designed revenue neutral. For example, in the case of Switzerland, the federal income tax (and corresponding deadweight losses) could be reduced by the amount of revenue the new tax generates.

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# Part III
# Housing Policies in Emerging Asian Economies

CHAPTER 7

# Housing Policies in India

*Piyush Tiwari and Jyoti Rao*

## 7.1 Introduction

With urbanization and growing economic disparity, the challenges associated with housing availability, housing provisioning, and use have become far more extenuated in India. The prevailing economic, political, and policy environment provides the context within which concerns about affordable housing, homelessness, poor housing quality, and mismatches in demand and supply of housing can be understood. The political and economic vision for development of modern India immediately after independence, which focused on capital goods during the 1950s and the 1960s, shifted toward an agrarian economy, with the deepening of democratic roots in the 1970s and the 1980s. Policy disincentives toward an urban economy through industrial licensing, import restrictions, and other such policies hampered the country's industrial growth. Since the 1990s, with globalization and market liberalization, the economic structure has shifted to services. The policy approach toward housing has followed these ideologies of the time. The role of government transitioned from provider to facilitator. Even though adequate housing has been recognized as a necessity for social welfare, India did not have an explicit national housing policy until 2007. A number of programs associated with housing have been implemented since independence by different governments. One of the challenges of the lack of policy backup (and appropriate constitutional backing) has been that these programs lacked continuity and interconnectedness. Postindependence investment strategies of the government led to the

migration of the population from rural to urban areas as new employment opportunities emerged in cities while the rural economy was stagnating. Whether the growth agenda was complemented with a social agenda that involved providing good-quality housing in cities is a question that is evaluated in this paper.

This paper aims to: (i) review the economic, urban, and housing context for India to assess the housing situation through various indicators; and (ii) assess the trajectory of housing programs in India since independence and the housing policy since 2007, and evaluate them within the context of economic, political, and historical forces that have shaped India's market economy and society.

To analyze housing in India more closely, this paper examines the following policy-related questions:

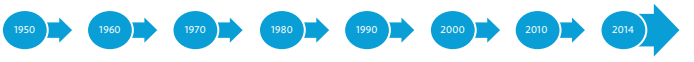
(a) What is the current status of the housing market?
(b) What housing policies and programs have been implemented in India?
(c) What are the income groups that have been targeted by the housing policies?
(d) What is the assessment of housing policies and programs in India?
(e) What are the lessons learned from the implemented housing policies and programs in India?

## 7.2 Economic and Demographic Context

The political, economic, and social environments form the context within which housing policies and programs are formulated. Figure 7.1 presents a snapshot of political, economic, and social (including housing) environments and interlinkages between them on a temporal scale since India's independence in 1947.

During the leadership of Jawaharlal Nehru from 1947 to 1964, India's economic policies focused on self-reliance, import substitution, and development of capital goods industries, and most resources were channeled into these sectors. The economy was centrally planned through 5-year plans. The industrialization that followed led to migration from rural hinterland to cities. Declining agricultural productivity also acted as a strong "push" factor. Migration to cities generated demand for housing, which, to some extent, were provided by public sector industrial employers to their employees and through

## Figure 7.1: Timeline of Economic, Political, and Social Environments of India since Independence (1947)




| | 1964 | 1966 | 1977 | 1980 | 1991 | 1998 | 2004 | 2014 |
|---|---|---|---|---|---|---|---|---|
| POLITICAL | | | | | | | | |
| Jawaharla Nehru '47–'64<br><br>Independence from British Empire in 1947 and simultaneous partition of the country to form two seperate nations, India and Pakistan | L B Shashtri '47–'64<br>Guljari Lal Nanda ('66–'66) | Indira Gandhi (1966–1977) | Morarji Desai ('77–'79) | Indira Gandhi ('80–'84)<br>Rajiv Gandhi ('84–'89)<br>V P Singh ('89–'90)<br>Chandra Shekhar ('90–'91)<br><br>Political unrest | P V Narsimbha Rao ('91–'96)<br>H D Deve Gawda ('96–'97)<br>I K Gujral ('97–'98) | Atal Bihari Vajpayee ('98–'04)<br><br>Political relation between state and center changed | Manmohan Singh ('04–'14) | Narendra Modi (2014 onward) |
| ECONOMIC | | | | | | | | |
| INDUSTRIALIZATION<br>Annual growth rate of 3.6% (1951–1960)<br><br>Nehru–Mahananobis model encouraged heavy investment in industries<br>Government would funnel resources from agriculture to non-agriculture<br>Not labor-intensive model<br>Agricultural lacking | GREEN REVOLUTION<br>Annual growth rate of 3.2% (1961–1970) and 3.4% (1971–1980)<br><br>Politics changed from "command" to "demand":<br>"Eliminate poverty" mantra<br>Incentives for agriculture<br>Heavily regulated economic environment:<br>Permit-license-quota regime<br>Industrial bias was toward "public sector" | | | Annual growth rate** of 5.6% (1980–1990) | LIBERALIZATION<br>Annual growth rate** of 5.7% (1990–2000)<br><br>Development economics were outdated<br>Reforms led by Thatcher (UK) and Reagan (US)<br>Subsidies dented public finances<br>Licensing was dismantled | GLOBALIZATION & PRIVATIZATION<br>Annual growth rate** of 7.3% (2000–2010)<br><br>Private-led, government-incentivized policies for economic growth<br>More city-oriented SEZs, Golden Quadrilateral, industrial corridors, JNNURM, RAY | ANTICORRUPTION<br>HUMAN CAPITAL<br><br>"Make in India"<br>"Smart cities"<br>"National Skills Mission" |
| SOCIAL | | | | | | | | |
| Urbanization rate: 2.37% (1951–1961)<br>83% rural population in 1951<br><br>Huge influx of rural population into cities in search of employment, particularly in the industry sector.<br>Influx of refugee population from Pakistan raised housing demand.<br>Acute shortage of housing, both in the public and private sector.<br>Inadequate social infrastructure. | Urbanization rate: 3.29%(1961–1970)<br>3.87%(1971–1980)<br>3.15%(1981–1990)<br>82% rural population in 1961, 81% in 1971, and 77% in 1981<br><br>Migration to Tier I cities continued and they hosted a major part of the urban population, which was 51% of the total urban population in 1961 and 69% in 2001.<br>Overall urban population growth slowed after 1981.<br>Contribution of migratory population in urban population growth continued to increase.<br>Decline in agriculture in rural areas and increasing industrialization in urban areas are the main reason for migration, among men. | | | | Urbanization rate: 2.77%(1991–2001)<br>2.80%(2001–2011)<br>74% rural population in 1991, 72% in 2001; and 69% in 2011<br><br>This period is marked by growth in the services sector economy which led to continuous urban migration.<br>Quality of life of urban areas was deteriorating due to increasing population load and inadequacy of infrastructure.<br>Unplanned urban expansion in peri-urban areas is an outcome of unconducive planning policies.<br>Acute shortage of housing and basic public services.<br>Private-sector model of housing development is largely "investor led." | | |

JNNURM = Jawaharlal Nehru National Urban Renewal Mission, RAY = Rajiv Awas Yojana, SEZ = special economic zone, UK = United Kingdom, US = United States.

* From R. Nagaraj. 1990. Growth Rate of India's GDP, 1950–1951 to 1987–1988: Examination of Alternative Hypotheses. Economic and Political Weekly 25(26): 1396–1403.

** From R. Jha. 2011. India's Economy Growing Rapidly and Unequally. http://www.eastasiaforum.org/2011/04/28/india-s-economy-growing-rapidly-and-unequally/ (retrieved on 18 Dec 2015).

Source: Authors, based on Tiwari (2016).

various programs, as discussed later, but largely were unaddressed. During the post-Nehru period of 1965–1990, democracy took root beyond Delhi and in rural areas where most voters lived. The economy transitioned from a "command" economy to a "demand" economy and vote-bank politics led to populist policies. The mantra of policies and programs was to remove poverty and provide incentives to the agriculture sector (Tiwari et al. 2015). The economic environment was heavily regulated and there was a bias against private industrialization. Migration to urban areas continued unabated, creating deplorable living

conditions in cities and causing formation of slums. The huge subsidies that were offered to the agriculture sector and the capital investment program that followed to support the rural economy did not yield much economic growth but depleted public finances (Tiwari et al. 2015). The annual economic growth during 1947–1990 averaged at about 4%. There was a general sense globally (e.g., in developed economies such as the United Kingdom and the United States, as well as in developing economies such as Brazil) that the private sector needed to play a greater role in the economy and the industrial licensing regime that had stifled private sector growth needed to be loosened (Tiwari et al. 2015). This led to the decade of liberalization (1991–2004). The economy grew at an average growth rate of 6%. The difficulty, however, was that India had missed the development of the manufacturing sector. Cities continued to grow and the backlog of poor living conditions was huge. After 2004, the economy moved into the globalization and privatization period, which is largely privately led, service sector oriented, and cities-driven. The focus of government policies and programs was on infrastructure development and providing incentives for sectors that could raise India's global competitiveness (Tiwari et al. 2015). Cities were back in focus through programs such as reform-led infrastructure investment programs for cities, the Jawaharlal Nehru National Urban Renewal Mission (JNNURM), and housing programs such as Rajiv Awas Yojana (RAY) and, more recently, Housing for All (Urban) 2015–2022. In 2014, a new government under the leadership of Narendra Modi was elected. The policy focus of this new government is to revive manufacturing in India, develop "smart cities," and build human capital through the National Skill Development Mission.

The demographics and demographic shift form another important context to understand the housing situation. With a total population of around 1.22 billion, India is the second-most populous country in the world (World Bank 2015). India is undergoing various transformations caused by the gradual shift of the population from rural to urban areas. Table 7.1 presents the population trends and the rural-to-urban shift indicated by a change in the rural–urban population composition and also by the increasing numbers of towns and urban agglomerations.

India's urban population is 377 million, living in 7,933 urban centers including 53 cities with populations above 1 million and 3 megacities (Greater Mumbai, Delhi, and Kolkata) (Census 2011). The growth in the urban population, however, has stagnated at around 2.80% since 2001. The growth in the rural population has slowed down to 1.16% in 2011 (Figure 7.2).

The decadal growth rate of the urban population has been less than 3% except during the 3 decades from 1971 onward, which is a consequence of industrialization and the decline in the rural economy.

## Table 7.1: Trend of Urbanization in India, 1951–2011

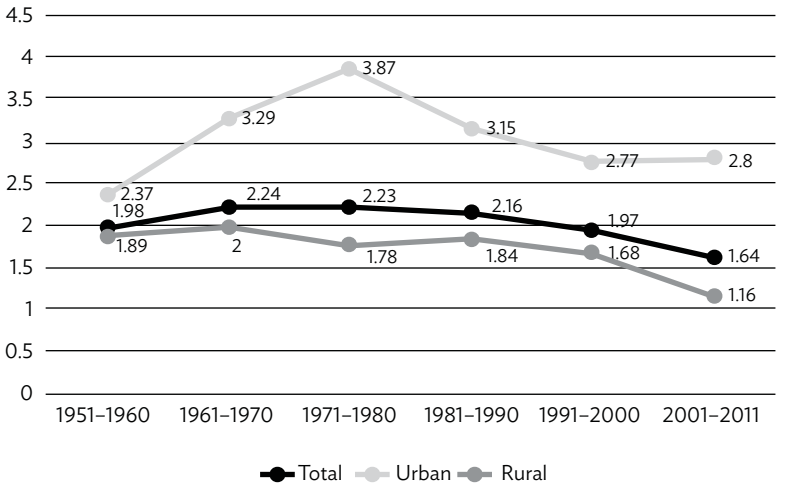
| Year | Total Population (million) | Urban[a] Population (million) | Rural Population (million) | No. of Towns and UAs |
|---|---|---|---|---|
| 1951 | 361 | 62 | 299 | 2,843 |
| 1961 | 439 | 79 | 360 | 2,365 |
| 1971 | 548 | 109 | 439 | 2,590 |
| 1981 | 683 | 159 | 524 | 3,378 |
| 1991 | 846 | 217 | 629 | 3,768 |
| 2001 | 1,029 | 286 | 743 | 5,161 |
| 2011 | 1,211 | 377 | 833 | 7,933 |

UA = urban agglomeration.

[a] The Census 2011 adopted the following definition for an urban area (town and city), following the pattern of the Census 1961:(a) all places with a municipality, corporation or cantonment, or notified town area; and (b) all other places that satisfied the following criteria: (i) a minimum population of 5,000; (ii) at least 75% of the male working population was nonagricultural; and (iii) a density of population of at least 400 per square kilometer.

Source: Authors' calculations based on Tiwari et al. (2015).

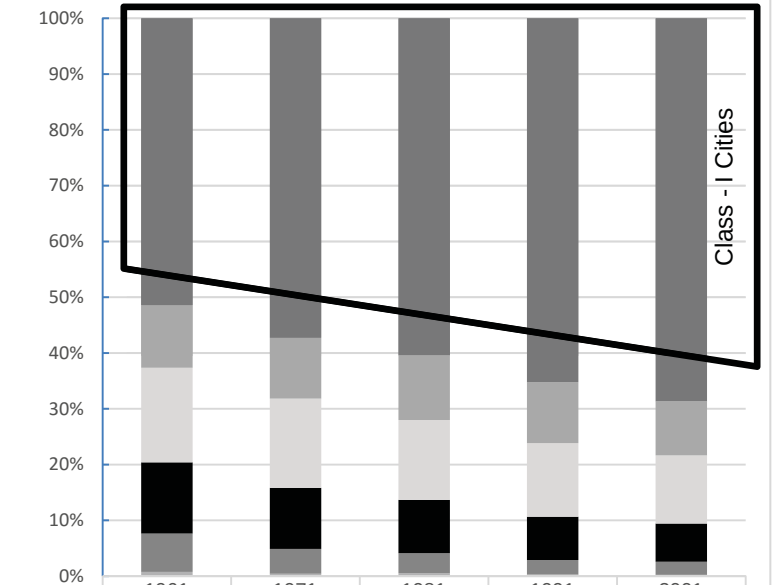
## Figure 7.2: Annual Exponential Growth Rate of Population in India, 1961–2011 (%)




Source: Authors' calculations based on Tiwari et al. (2015).

Class-I cities with populations exceeding 100,000 are witnessing huge growths in their populations, as shown in Figure 7.3, increasing density and congestion. The concentration of the population in these cities has resulted in the formation of monocentric primate cities and a lack of a uniform distribution of economic centers over space. Class-I cities comprise about 70% of the urban population and, interestingly, within the Class-I cities, the million-plus cities dominate the landscape in population terms and, in the 3 decades since 1981, their share of the urban population has gone up from 26% to 42.6%, whereas the share of the urban population in other categories of cities has been consistently declining (Figure 7.3).

**Figure 7.3: Share of Urban Population in Classes I–VI of Cities and Towns in India** *(%)*




| | 1961 | 1971 | 1981 | 1991 | 2001 |
|---|---|---|---|---|---|
| Class I | 51.42% | 57.24% | 60.37% | 65.20% | 68.67% |
| Class II | 11.23% | 10.92% | 11.63% | 10.95% | 9.67% |
| Class III | 16.94% | 16.01% | 14.33% | 13.19% | 12.23% |
| Class IV | 12.77% | 10.94% | 9.54% | 7.77% | 6.84% |
| Class V | 6.87% | 4.45% | 3.58% | 2.60% | 2.36% |
| Class VI | 0.77% | 0.44% | 0.55% | 0.29% | 0.23% |

Note: Class-I cities have at least 100,000 inhabitants, Class-II cities have more than 50,000 inhabitants, Class-III towns have more than 20,000 inhabitants, Class-IV towns have more than 10,000 inhabitants; Class-V towns have more than 5,000 inhabitants, and Class-VI towns have fewer than 5,000 inhabitants.

Source: Tiwari et al. (2015: 30).

The implication of the urbanization trend has been that the Class-I cities have been witnessing serious problems related to housing shortage. The problem of housing shortage that was earlier limited to metropolitan cities has spread to other Class-I cities as well (Tiwari et al. 2015).

## 7.3 State of Housing

### 7.3.1 Scale of the Problem

The housing shortage in India does not appear very big, considering the size of the homeless population in the country in 2011 was only 1.77 million (0.15% of the total population), which is slightly less than what it was in the previous decade, as seen in Table 7.2.

**Table 7.2: Homeless Population in Rural and Urban India in 2001 and 2011** (population in million)

| | | 2001 | 2011 | Decadal Growth Rate (%) |
|---|---|---|---|---|
| **All India** | Total population | 1,028.61 | 1,210.57 | 17.7 |
| | Homeless population | 1.94 | 1.77 | –8.8 |
| **Urban** | Total population | 286.31 | 377.11 | 31.7 |
| | Homeless population | 0.78 | 0.94 | 20.5 |
| **Rural** | Total population | 742.3 | 833.46 | 12.3 |
| | Homeless population | 1.16 | 0.83 | –28.4 |

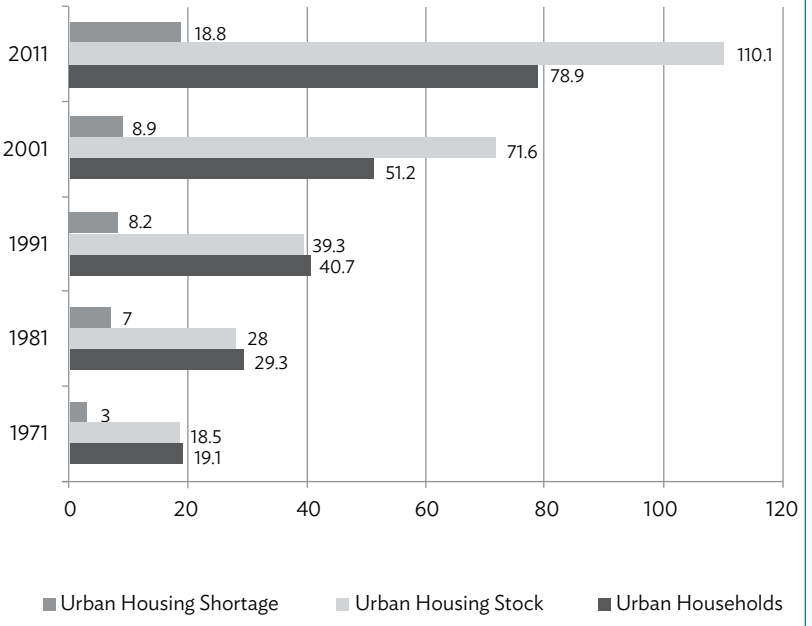
Source: Authors' calculations based on Kumuda (2014).

The homeless population contributes only marginally to the housing shortage. The problem becomes acute when, in addition to homelessness, the replacement needs of houses in bad physical condition (due to age and structural durability), as well as the ones that offer substandard living conditions (due to the level of congestion inside the house), are also considered. The nature of housing shortages in rural and urban areas is different. For example, the condition of the physical structure of the house is a much bigger concern in rural areas than in urban areas where issues of congestion need to be addressed.

Figure 7.4 shows that trends in urban population increases are accompanied by increases in housing shortages. It is disappointing to

note that, despite numerous housing programs implemented every 5–10 years, housing shortages (in absolute terms) have been consistently increasing.

**Figure 7.4: Urban Households, Housing Stock, and Housing Shortages in India, 1971–2011** (million)




Note: Housing shortage = Households living in nonserviceable ***katcha*** (nondurable) + households living in obsolescent houses + households living in congested houses + households that are homeless. Data from National Buildings Organisation (2013).

Sources: Authors' calculations based on Census 2011, Centre for Good Governance (2003), National Buildings Organisation (2012), and Planning Commission of India (2012–2017).

Tiwari and Parikh (2012) estimate that the total housing shortage in India is approximately 51 million units and an additional 113 million houses will be required if semipermanent units are also replaced. This would mean that 21% of households are in urgent need of housing and another 46% are living in inadequate housing conditions and, thus, 67% of India need decent housing. Over and above these, the problem of lack of access of households to basic services (electricity, water, and

sanitation) greatly increases the challenge of providing decent housing. It is surprising that after 70 years of planning and policy designing since independence, a total of 53% of households do not have access to drinking water in their premises, 53% of households do not have toilets, and 33% of households do not have access to electricity (Census 2011).

Although the Planning Commission estimated the housing shortfall in urban areas to be 18.78 million housing units in 2012 (Figure 7.4), Tiwari and Parikh (2012) estimate this shortage to be higher by about 3 million at 21.87 million because of the inclusion of "nondurable" houses in their calculations (Table 7.3). The increase in housing shortages over time is a consequence of the continuous dilapidation of housing stocks from previous decades. Using the values in Table 7.3, we find that 27% of the shortages in urban areas are due to the existence of physically unfit structures (nondurable and obsolete) and that 69% of the housing shortages in urban areas are attributed to congested living conditions. This not only poses questions about the quality of life in India's cities but also about overpriced houses, compelling households to adapt to congestion. The addition of new housing stock in the market has not reduced shortages, implying that the target consumers for the new stock are different from those households who are creating the market demand for housing, and the stock is unaffordable even for the targeted consumer group, which leads to lesser absorption and higher vacancy rates.

**Table 7.3: Housing Need in India in 2011**

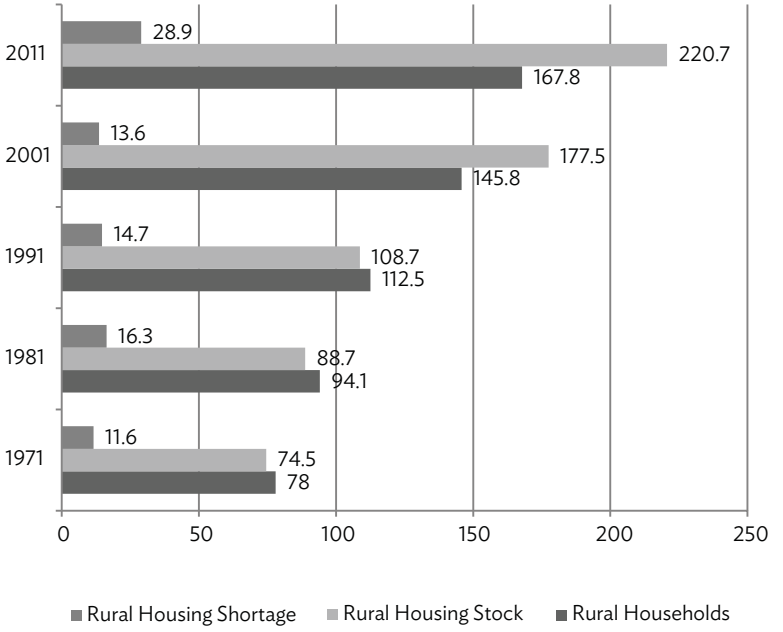
| **Factors Taken for Assessing Housing Shortages** | **Rural Housing Shortage** (million) | **Urban Housing Shortage** (million) |
|---|---|---|
| No. of nondurable houses | 10 | 3 |
| Shortage due to congestion[a] | 10.86 | 15.09 |
| Shortage due to obsolescence[b] | 7.18 | 2.84 |
| Homeless population | 0.83 | 0.94 |
| **Total** | **28.87** | **21.87** |

[a] This is calculated by multiplying the number of households with an appropriate "congestion factor," which is defined as the percentage of houses in which at least one couple does not have a separate room to live in. This includes households in which couples are sharing a room with at least one other member aged 10 years or more. The congestion factor in rural India is 6.5% and in urban India 19.1% (Tiwari and Parikh 2012).

[b] This is calculated by multiplying the number of households with an appropriate "obsolescence factor," which is defined as the percentage of households living in dwelling units aged 40–80 years that are in bad condition plus the percentage of households living in structures aged more than 80 years, irrespective of the condition of structures. The obsolescence factor in rural India is 4.3% and in urban India 3.6% (Tiwari and Parikh 2012).

Source: Authors' calculations based on Tiwari and Parikh (2012).

**Figure 7.5: Rural Households, Housing Stock, and Housing Shortages in India, 1971–2011** (million)




Note: The rural housing shortage in 2011 is estimated to be 28.9 million by Tiwari and Parikh (2012). The shortages reported in the figure for 1971–2001 are National Buildings Organisation (NBO) estimates, which are highly conservative because the methodology adopted by the NBO does not account for replacement of all nondurable houses.

Sources: Authors' calculations based on Census 2011, Centre for Good Governance (2003), NBO (2012), Planning Commission of India (2012–2017), and Tiwari and Parikh (2012).

The problem of housing shortages is more serious in rural areas (in absolute terms) than in the urban centers due to the size of the rural population in India (69% of the total population), of which 17% (28.9 million) are in urgent need of houses, as shown in Figure 7.5.

Housing shortages in rural areas have almost been stagnant (except in 2011), though the number of households has doubled in the past 4 decades. This indicates that, with the availability of land in rural areas, construction of a house is easier, although the quality of construction has been lacking. According to the estimates of Tiwari and Parikh (2012) (see Table 7.3), 59% of the shortages in rural area are due to the bad condition of the physical structures (nondurable and obsolete) and 37% is due to congestion, which is contrary to the pattern in urban areas where congestion is a bigger challenge than the quality of structures.

### 7.3.2 House Area and Congestion

A decent house with adequate privacy is a prerequisite for a healthy built environment. A big household size and less household income compel toleration of a congested living environment, which is further exacerbated by unaffordable housing prices. Usually, one room is shared between 2–3 users (average size of a house is two rooms and average household size[1] is 4.9 persons) (Census 2011), demonstrating congested living. Housing conditions have not changed much but instead have deteriorated further because of shrinkage in house sizes and the increasing numbers of persons sharing rooms. Table 7.4 presents statistics on the number of persons per room across various income groups in rural, urban, and slum areas.

**Table 7.4: Housing Congestion in Various Income Groups in Slums (Urban), Urban (Non-slum), and Rural Areas in India in 2002**

| **MPCE Class** (Rs) | **Slums and Squatter Settlements** (persons per room) | **Urban (non-slum areas)** (persons per room) | **MPCE Class** (Rs) | **Rural** (persons per room) |
|---|---|---|---|---|
| 0–300 | 2.4 | 3.3 | 0–225 | 3.7 |
| 301–350 | 3.7 | 3.5 | 226–255 | 3.4 |
| 351–425 | 3.3 | 3.4 | 256–300 | 3.2 |
| 426–500 | 3.8 | 2.8 | 301–340 | 3.5 |
| 501–575 | 4.1 | 3.4 | 341–380 | 3.1 |
| 576–665 | 3.9 | 2.7 | 381–420 | 2.8 |
| 666–775 | 3.3 | 2.6 | 421–470 | 2.9 |
| 776–915 | 3.3 | 2.3 | 471–525 | 2.6 |
| 916–1,120 | 2.6 | 2 | 526–615 | 2.4 |
| 1,121–1,500 | 2.2 | 1.7 | 616–775 | 2.1 |
| 1,501–1,925 | 1.9 | 1.6 | 776–950 | 1.8 |
| >1,925 | 1.5 | 1.2 | > 950 | 1.4 |
| **All classes** | **3.3** | **2.3** | **All classes** | **2.7** |

MPCE = monthly per capita expenditure.

Source: Authors' calculations based on National Sample Survey Office (2002).

[1] Average size of households = Total population/No. of households (MOSPI 2011: 182).

Lack of privacy is a serious concern in rural areas where 3–4 persons share one room, more so among the lower monthly-per-capita-expenditure (MPCE) classes where it is comparable to the situation in urban slums. As we move above the MPCE class of Rs526–Rs615, the level of congestion decreases to below 2.4 persons sharing one room in rural areas, whereas similar situations are achieved in urban areas for the MPCE class of Rs776–Rs915 or higher and for the MPCE class of Rs1,120–Rs1,500 or higher in urban slums. This indicates that though the overall average number of single-room users in rural areas is 2.7, which is higher in congestion level if compared with the urban average of 2.3 users, the ease of access to decongested housing is better in rural than in urban areas in terms of affordability.

Unlike urban areas, where there have been programs to address housing deprivation for the poor, the rural areas have had few programs, as discussed later. One would expect it to have been relatively easier to improve the condition of low-income households in rural areas because land procurement for housing development would probably be less expensive as compared with that in the urban areas. The challenge, however, lies in the dependency of house construction activity on private builders and developers who do not perceive that rural markets are profitable. The onus to construct or upgrade houses in rural areas, therefore, lies with public agencies that have been reluctant to become producers of housing stock.

Moreover, though the average house area available per person is lowest in urban slums (4.5 square meters [$m^2$]), second-lowest in rural areas (7.5 $m^2$), and highest in cities (8.6 $m^2$), comparing rural and urban conditions across similar MPCE classes reveals that housing is still much more spacious in rural than in urban areas, especially for higher income groups. Though the house area is relatively bigger in rural areas, there are challenges of poor quality of design and construction, obsolescence, and nondurability, contributing severely to housing shortages.

### 7.3.3 House Affordability

Affordable housing refers to any housing that meets some form of affordable criterion, the prime ones being (i) income level, (ii) size of the dwelling unit, and (iii) proportion of expenditure required for the housing (see Table 7.5). In India, the Ministry of Housing and Urban Poverty Alleviation (MHUPA) provides guidelines on the affordability and construction of such housing according to income groups and, according to a recent report by the Deepak Parekh Committee (2008),

constituted by the MHUPA, an affordable housing unit for economically weaker sections (EWS) and lower-income groups (LIGs)[2] should be financeable by home loans with estimated monthly installments not exceeding 30% of the household gross monthly income, and it should be constructed such that the carpet area of the housing unit is between 30 $m^2$ and 60 $m^2$. Similarly, for the middle-income group (MIG), the estimated monthly installments should not exceed 40% of the household gross monthly income and the carpet area of the house should be about 120 $m^2$. The criteria were later revised by Wadhwa (2009) because it was realized that the housing needs of the population from below the poverty line (BPL) should also be taken into consideration. The new definition proposed 5% as the affordable cost for housing for BPLs and reduced the figure from 30% to 20% for EWS, but retained it as 30%–40% for LIGs and MIGs. The Deepak Parekh Committee not only defined the size of the housing units but also specified the standards for a decent house and gave the ambitious definition of "adequate shelter" as something meaning "more than a roof over one's head: It also means adequate privacy; adequate space; physical accessibility; adequate security; adequate lighting, heating, and ventilation; adequate basic infrastructure; —all of which should be available at affordable cost" (Deepak Parekh Committee 2008: 7). Whereas affordable housing guidelines aim at providing decent housing to all, the practical implementation of these guidelines were found to be challenging, thereby missing all three criteria together, especially for LIGs where the gap between household income and house price is extremely high.

The gap is widest for BPLs, which constitute approximately 22% of the population of India and includes 14% of the urban population and 26% of the rural population (Planning Commission of India 2013). With income constrained to the extent that BPL persons cannot even afford to pay for adequate food, it is really challenging to fill the gap for a house, especially when it is as wide as between homelessness (assuming that most of the BPL population are homeless or live in extremely dilapidated housing conditions) and homeownership. Wadhwa (2009) defines affordability as a proportion of income that can be spent on housing and assumes that the BPL class can at best afford to pay up to 5% of their monthly income as rent or estimated monthly installments for housing (Table 7.5). This amounted to merely Rs134 in 2009 when average market rent in tier-I cities[3] was Rs7,148[4] for a house of 28 $m^2$,

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[2] The groups EWS and LIGs are defined by having an annual household income of no more than Rs100,000 and between Rs100,000 and Rs200,000, respectively (MHUPA 2013: 5).

[3] Tier-I cities include Mumbai, National Capital Region of Delhi, Pune, Hyderabad, Bangalore, Chennai, and Kolkata.

[4] The figure is calculated by the author by deriving market rent from the *Economic Times*. Rent is assumed to be 3.5% of house cost.

which is nearly 53 times higher than what BPL households can afford. The situation is only slightly better for the EWS and LIG classes, for which the average market rent of Rs7,148 is 13 times and 7 times, respectively, what they can afford to pay for housing. Even the MIG class is unable to afford a small house of 28 $m^2$ and, thus, housing is observed as affordable only for approximately 16% of the population (Jones Lang LaSalle 2010) belonging to higher middle-income and higher income groups, as shown in Table 7.5.

The discussion above indicates that the formula to achieve "housing for all" is not simple and there is a need to derive different types of housing that offer variations in sizes of houses, structural quality, infrastructure services, and tenure types to meet the requirements of various income groups while also making housing affordable. So far, the approach has been to make homeownership possible and, accordingly, the definition of affordability takes into consideration only house size. For example, affordable houses are defined as "dwelling units with carpet area between 21 $m^2$ and 27 $m^2$ for the EWS category and 28–60 $m^2$ for LIG category (LIG-A: 28–40 $m^2$; and LIG-B: 41–60 $m^2$)" (MHUPA 2013: 4) and the sale prices of these houses are left at the discretion of states and/or union territories. On the basis of the market price, a house between 21 $m^2$ and 27 $m^2$ would cost Rs1.85 million–Rs 2.38 million whereas the affordability of the target segment would be Rs97,000–Rs119,000. Targeting to provide homeownership to the EWS segment, while keeping it affordable for them, would thus mean that almost 95% of the cost of a house would be subsidized by the exchequer. This huge gap between affordability and the actual market price of a house is further widened by the absence of formal financial instruments for lower income classes that also lack accumulated or inherited wealth and, therefore, neither have the capacity to make an initial down payment, nor do they have the capability to pay monthly installments. Thus, the aim of "housing for all" becomes unachievable and it is no surprise that most of the housing policies have failed to provide ownership to the target income class and have rather ended in serving as an alternate investment option for higher income groups.

## 7.4 Housing Policies and Programs

The discussion above indicates that the housing condition is a complex interplay of economic and social dynamics. With regard to housing, policy makers have also faced dilemmas such as (i) whether housing is a productive or nonproductive sector of the economy, and (ii) whether housing is a public or private good. The economic and political ideologies

## Table 7.5: Defining Affordability for Various Income Groups and Housing Shortage in Urban India, 2007–2010

| Income Group | Defined/Desired Affordability | | | | Affordability Status in 2010 | | Number of Housing Units Required (million, 2007) |
|---|---|---|---|---|---|---|---|
| | Monthly Income of Household (Rs, 2010) | House Size (square meter) | Affordability (1): House price (rent/EMI) as percentage of monthly income | Affordability (2): Ratio of house price to annual income of household | House price* (rent/EMI) as percentage of monthly income | Ratio of house price* to annual income of household (in 2010) | |
| Below poverty line BPL | ≤ 2,690 | 21–27 | 5% | 2 | 266% | 76 | 21.78 (which is 99.86% of 21.81 households) |
| Economically weaker section EWS | 539–3,300 | | 20% | 3 | 217% | 62 | |
| Lower-income group LIG | 3,301–7,300 | 28–40 41–60 | 30% | 4 | 98% | 28 | 2.89 (which is 10.48% of 27.57 households) |
| Middle-income group MIG | 7,301–14,500 | 61–112 | 30%–40% | 5 | 49% | 14 | 0.04 (which is 0.24% of 16.92 households) |
| Higher-middle-income group HMIG | 25,829 (avg.) | >112 | 30%–40% | 5 | 28% | 8 | |
| Higher-income group HIG | 85,152 (avg.) | | 30%–40% | 5 | 8% | 2 | |

EMI = estimated monthly installment.

Sources: Authors' calculations based on Wadhwa (2009), Jones Lang LaSalle (2010), and Ministry of Housing and Urban Poverty Alleviation (2013).

and priorities, and demographic trends, as discussed in section 7.2, have played an important role in shaping public policies and programs in India. This section discusses housing policies and programs during the four phases of political and economic growth in India (discussed in section 7.2). These phases were immediately after independence (1947–1964), here termed the Nehru Era; during the Green Revolution (1965–1990), termed the Gandhi Era; during the privatization phase of the economy (1991–2000), termed the Post-Liberalization Era; and, finally, during the economic globalization phase (post-2000).

### 7.4.1 The Nehru Era (1947–1964)

The current housing conditions in India have a legacy from the postindependence (1947) era of housing planning and policies, which, in turn, are interlinked with economic and political drivers. As discussed earlier, the beginning of the economic policy environment in India was characterized by its focus on facilitation of industrial activities and production of capital goods. In contrast to the economic objectives, which were to be delivered with limited available capital, provisioning of housing was seen as a capital-consuming exercise with no assurance of any direct economic return. To some extent, this view was also reflected in the mindset of architects of the constitution of modern India, which did not include housing as a constitutional right. Consequently, housing was neither accorded priority status for policies and programs nor did it become a constitutional obligation for the government.

The postindependence emphasis on public investment in capital goods was the starting point of policy building for democratic India, and this caused a reduction in the involvement of public agencies, both financially and functionally, in the provision of social goods such as housing. Although housing conditions in urban India were precarious due to lack of support from either the rulers of preindependence India or the industrialists who employed migrant workers in their factories, the demand for housing in big cities became acute during World War II (1939–1945). The sudden increase in work opportunities in towns after the emergence of war-related production plants led to huge rural–urban migration. The usual push factors from villages, i.e., uncertainty in crop production, increasing debts, lack of opportunities for employment, and persistent underemployment in agriculture, did not allow the migrants to move back to the villages even when these industries started to decelerate. Housing demand for industrial workers continued to build up and was usually met by the provision of workers' units (traditionally called *chawls,* comprising a single room and kitchen with

shared amenities), either by the industrial estate owners themselves or by other landowners in the form of rental units. Alongside this formal arrangement for housing, there was the development of unauthorized squatter settlements and shanties on private and public land, which became the first home to migrants. The common elements across all formal and informal housing types were the poor quality of construction and the lack of basic infrastructure such as water supply and sanitation. Employers with limited resources were not able to meet the demand for the production of workers' units, and they started taking the stand that "not they but the state has the responsibility for providing houses for the working class and that apart from their other handicaps, they have not sufficient means for investing in house building" (Planning Commission of India 1951–1956).

The partitioning of the country after independence led to a huge influx of refugees from newly formed Pakistan. Refugees mainly arrived landless and were desperately trying to settle in urban areas to get involved in nonprimary activities. The government tried to settle them in towns by providing them with land for housing in newly established "model towns." House prices increased unabated, because, on the one hand, the urban population was increasing and, on the other, the private construction industry, which was the major contributor in the provision of housing, was shrinking because of scarcity and the high prices of building materials. Slowdown in new house construction activity put pressure on the existing housing stock and this led to extraordinary rent increases. As an immediate relief measure, the government expanded the pre-World War II measure of the Rent Control Act in almost all major cities of the country, although it was otherwise levied only in Mumbai since 1918. Rent control further constrained the supply of rental houses in urban India.

Legislative controls on prices (such as the Rent Control Act, which deals with the acquisition of private housing by the government to fulfill the housing needs of government officials at regulated prices) proved to be major hurdles for private developers who were mainly involved in building activities and were not seeing any progress in the development of new housing, or expansion or upkeep of the existing stock. Increases in costs of building materials and labor during and after the World War II further extenuated the problem and made construction of new houses unprofitable. Lack of interest of private builders mandated government intervention, which was felt necessary to overcome acute shortages of housing. Initial steps were taken by the introduction of housing boards.

Urban public bodies and planners working with the government agencies were hesitant to accept the existence of slums and informal settlements in urban areas, and the focus of the policy was forceful

eviction, slum clearance, and strict imposition of development controls so as to allow standard-quality housing only. Though similar policy thinking prevailed in other developing countries with similar problems, the consequences were dire as it hindered any attempt to improve the living conditions of the urban poor.

While accommodation for industrial workers was supported with subsidies, and lower-income government servants were provided with public housing, others in the LIG were left to the fate of the market or to slum living. There was a realization among policy makers that the private sector was not in a position to supply housing for the LIGs, which led to suggestions that the state fill the gap and assist the construction of suitable houses for LIGs and MIGs (both in urban and rural areas). However, there was no serious implementation effort due to the lack of resource allocation and of staff capacity to design and deliver an appropriate program (Sivam and Karuppannan 2002).

The following were important programs introduced to meet the shortage of housing, as realized during the 1950s (Planning Commission of India 1951–1956):

- Housing for industrial workers: The Industrial Housing Scheme, formulated in 1949, provided subsidies to private employers for construction of workers' units under the condition that the rental charged to workers will not exceed 10% of their income. The problem of this scheme was that when public sector employees could not be provided with housing and had to rent in the private market, they were only provided rental assistance equal to 10% of their income. This amount later became insufficient as the market rents soared.
- Housing for lower- and middle-income groups: Though there were no explicit subsidies, encouragement was provided to private developers and cooperative housing societies to meet housing shortage in the market through a number of facilities:

    » "Provision of suitable building sites, where possible, at reasonable cost;

        (a) Empowering the statutory housing boards to guarantee loans which a private builder may obtain from a bank or an insurance company to finance construction of buildings, the buildings in such cases being hypothecated to the housing boards;
        (b) Reorganizing the then existing system of distribution of essential building materials, such as steel, cement,

coal, etc., and taking steps to reduce the high prices of these materials which are all subject to price controls, and, for this purpose, conducting necessary investigations; and

(c) Provision on the lines of Section 39 of the Delhi and Ajmer Rent Control Act XXVIII of 1952, which exempts premises that were constructed between certain periods from the operation of the rent fixation law; and

(d) Discouraging land holding in urban areas, for which purpose the taxation structure on vacant lands should be so designed as to make all land holding unprofitable" (Planning Commission of India 1951–1956).

This led to releasing more land for development purposes.

» Reduce the cost of construction by using modern implements and machinery, and standardization of size, thus encouraging mass production of building elements such as bricks, doors, windows, and so on.

In 1950–1980, the industrial economy had taken root, with the share of manufacturing growing from 11% to 18% of the country's gross domestic product. The housing programs, which were focused on providing housing for industrial workers, were directly contributing to campus-like industrial townships. However, the overall investment in housing, as a percentage of total planned outlay, remained low at between 1.5% and 2%.

During this time, the service sector of the economy was also growing at almost the same pace as manufacturing. On the supply side, housing programs were encouraging the production of new housing stock by overcoming challenges of high material and labor costs, and, on the consumer (or demand) side, there were provisions for subsidies and long-term financing options.

The 1950s and 1960s were a period of major institutional development. In these years, the government introduced state housing boards mandated to construct houses for allotment to public; the Ministry of Works, Housing and Supply (now MHUPA) at the center with responsibility for urban poverty, housing, and employment programs; the Central Public Works Department to carry out all centrally financed civil works; the National Buildings Organisation with a mandate for technology transfer, experimentation, development, and dissemination of housing statistics; and the Town and Country Planning Organisation, a technical wing of the Ministry of Urban Development, with responsibility

for preparing the Master Plan for Delhi and surrounding regions and to advise on the development of steel towns, river valley projects, and so on. With emphasis on reducing the cost of housing supply, the National Buildings Organisation was also tasked to develop low-cost housing designs and suggest ways to reduce costs through appropriate choice of building materials and efficient utilization of labor (Hingorani 2011). The low-cost movement contributed to the development of new designs and materials; however, its contribution in increasing housing supply remained weak, mainly due to lack of acceptance of these designs and materials by developers and homebuyers.

India did not have an explicit national housing policy until 1988. However, a number of scattered attempts were made to pave a path toward formulation of a comprehensive policy in 1988. In 1957, in an attempt to streamline financing for housing, the Minister for Works, Housing and Supply recommended establishing state housing corporations with the role to furnish debt finance for housing projects with the central government providing the required subsidy. This was a major step as the policy stance of the national government shifted from providing grants to individuals to assisting state and local governments who were far more aware of the situation on the ground (Hingorani 2011). The difficulty of such a devolution of responsibility, however, was that while the responsibility for implementation of housing schemes was increasingly devolved to state governments and their housing agencies, they remained dependent on the central government for funding. The period also saw policy moves to target subsidies to low-income households, promote the use of local building materials, and set up housing boards and other institutions to implement housing projects.

However, due to the lack of a coherent housing policy, housing was provided through a fragmented set of programs targeted at different income groups and demographics, lacking direction and continuity and at times overlapping in their scope and target participants. The programs initially focused on higher-, middle-, and lower-income groups and, in later programs, narrowed down their scope to the poor. This was also reflected in the 5-year plans during 1956–1966. The number of LIG households was so large that it became impossible to provide housing to them in a defined period and hence the concept of EWS was introduced in 1966 through the annual plans (1966–1969). Realizing that housing programs in isolation did not work, the recognition came that housing policies need to be contextualized within economic and industrialization policies (Hingorani 2011).

The Nehru era, particularly the 1960s, contributed significantly to the development of the housing institutional structure of the nation. Focus, though interventionist, was on land, materials, construction, and

finance. Policy makers recognized that the availability of sufficient and affordable land was central to the success of all housing schemes, and emphasis was placed on the preparation of master plans and regional plans for different categories of urban areas (Hingorani 2011). Emphasis was also placed on research and development with the objective to develop new and cheaper building techniques and on obtaining housing statistics to better inform programs in their development and evaluation. The creation of state housing boards with a mandate to stimulate construction was also given a push during this time. Recognizing that without adequate finance the level of housing activity by public authorities would be low, as was in the past, financial institutions with a mandate to provide financial assistance to metropolitan authorities, newly established state housing boards, and other urban institutions were set up.

A review of the period indicates that the top–down approach to housing provision, with heavy involvement by the central government in all aspects from land acquisition to construction and allocation, proved to have limited success. The new housing supply fell behind the demand as a result of failure in the implementation of programs, lack of funds, and rising construction costs (Sahu, Zachariah, and Baksi 2009). An assessment of these programs indicates that they did very little to benefit the intended target group. These programs did not involve potential beneficiaries in their design and, consequently, there was a mismatch between what was required and what was supplied. There were also cases of misappropriation of LIG houses by high-income groups (HIGs) (Wadhwa 1988). The location of affordable housing, where land was available at lower cost, which precluded most city locations, made them unattractive to LIGs. These locations were unsuitable for lower-income households as they necessitated long commutes to work, which added to the cost of living of the poor. These houses, however, were attractive to the HIGs as an investment property. The scale of the housing shortage was beyond the scope of any program and the subsidy involved made it very attractive for beneficiaries to get these houses, sell them off in the market at a substantial profit, and move back to the slums. Slum clearance schemes also faced problems and public resistance, and states often found the process of acquiring slum land tedious. Alternative sites to rehabilitate evicted slum dwellers were both expensive and difficult to find near cities. Rental housing was expensive and many slum dwellers found it hard to pay even the subsidized rent (Sivam and Karuppannan 2002).

The two main hurdles for the programs were the difficulty in land procurement and the lack of community involvement. Programs such as the 1954 Low Income Group Housing Scheme had high uptake in areas where affordable sites were available, while the success of programs

where state governments found it difficult to procure and deliver sites was limited (Hingorani 2011). The lack of community involvement in project planning and design, restrictions on international investment, and the emergence of affordable forms of housing provision in slums during this period, also contributed to the failure of the programs (Sivam and Karuppannan 2002).

### 7.4.2 The Gandhi Era and the Green Revolution (1965–1990)

Regulatory restrictions on the economy increased during the Gandhi Era. India's economy experienced slow growth and extreme volatility between 1965 and 1981 (Sibal 2012). The government strongly intervened in market operations and the economic environment was highly regulated by policy and legislature. The major controls included regulation of domestic businesses with the Monopolies and Restrictive Trade Practices Act of 1969, nationalization of banking with the Banking Companies Act of 1969, controlled productivity through the Industrial Licensing Acts of 1970 and 1973, and check on foreign investment with the Foreign Exchange Regulation Act of 1973 (Sibal 2012). Overuse of regulatory powers by the government created tussles between market actors and regulators that resulted in the government imposing emergency rule for 2 years during 1975–1977. The economic policies were largely adversarial for industries. At the same time, a huge proportion of the public budget outlay was earmarked for rural areas through capital expenditure and subsidies (Tiwari et al. 2015). All this together put pressure on government resources, and the private sector found the environment stifling.

During this time, the government changed its approach in dealing with housing. Whereas the majority of the preliberalization housing programs that were instituted prior to this period focused on direct delivery of houses to beneficiaries, two major initiatives characterized the 1970s and the 1980s: the Environmental Improvement of Urban Slums Scheme in 1972 and the Sites and Services Scheme in 1980. These initiatives ushered in a complete change in the way slums were viewed. Given financial constraints and unsustainable levels of subsidies provided under previous programs in the 1970s—and the inefficiency of these programs to deliver—a view began to develop that publicly provided housing would not suffice to solve the slum problem (Mathur 2009). Increasing land and material prices, which worsened the affordability level of the target group, meant that increasingly larger subsidies would be needed to make housing affordable in the future (Hingorani 2011).

Capital investment programs and subsidies focusing on rural areas had strained government finances, and the direct provision of affordable public housing for ownership was proving to be expensive. This shifted the housing development paradigm away from "redevelop existing slums through subsidies" to "in situ upgrading and ameliorating the living conditions of slum dwellers" or "providing land and infrastructure" so that the poor could build their homes on them. In the past, the size of house specified in programs had been too onerous, and, hence, to ease the delivery of housing through slum clearance schemes, norms were lowered to provide smaller-sized houses to beneficiaries (Wadhwa 1988). An incremental approach to provide access to transport, services, and secure tenure was gaining consideration in programs (Wadhwa 1988). A positive outcome of this change toward upgrading slums was that there was an implicit recognition of the investments made by the poor in their tenements, and, as Hingorani (2011) points out, this helped in "avoiding relocation" and "preserved their access to their livelihood and other essential social infrastructure." A new partnership structure for sheltering the poor emerged where the government saw itself responsible for tenure, the location, and basic infrastructure, and the poor took on the construction and upgrading of their units (Wadhwa 1988).

During the pre-1970s period, the government was the only provider of financial support for house building through its various schemes for public housing. The government implemented its schemes through state housing boards that were responsible for allocating serviced land and construction of houses to individuals based on social equity principles (Tiwari 2012). The 1970s laid the foundations for growth in the housing finance sector. Housing finance institutions such as the Housing and Urban Development Corporation (HUDCO), the Housing Development Finance Corporation (HDFC), and the National Housing Bank (NHB) were set up to mobilize savings and other resources for channeling investment in housing. The issue of lack of financing was addressed from the demand as well as the supply side, particularly for middle- and higher-income groups, by providing housing loans for households as well as construction finance for developers. The mandate for the public sector company HUDCO was to assist and promote housing and urban development programs with government agencies, which it fulfilled by providing finance for sites and services and other house construction programs of housing boards. HUDCO's social obligation required them to provide at least 55% of the credit to EWS and LIG households.

HDFC, set up as private sector entity, focused on retail lending based on market principles and targeted mainly middle- and high-income households. The success of HDFC led to the emergence of several

housing finance companies, either as private sector or joint ventures with the government, banks, or insurance company sponsorship. An important event of the 1980s was the setting up of the NHB in 1987 with the objective of channeling formal sector resources into housing finance through the promotion of a sound, healthy, and cost-effective housing finance system.

The devolution of responsibility to provide housing to LIGs and EWS from the central government to the state governments and their housing boards also ushered in changes in the way these houses were financed. Cost recovery became a key feature of the programs, while the subsidies were earmarked for infrastructure or sanitation facilities. Residents were encouraged to invest in their houses (Wadhwa 1988). The reliance on subsidies was increasingly reducing and the programs were designed to meet affordability levels of beneficiaries. HUDCO provided loans to state governments, which supplemented internal funds of these governments in financing their programs. Another innovative mechanism to fund programs was cross-subsidization between HIG, MIG, and LIG housing.

The experience gained from the programs indicated that housing programs in isolation would not deliver, and it is important to link the shelter problems of the urban poor with programs that were aimed at addressing the lack of employment opportunities and access to basic services. Programs introduced during the 1980s gradually began to take a more holistic approach by integrating poverty alleviation programs with shelter programs (Hingorani 2011).

During this period, though the macroeconomic policies continued their bias toward rural, there was a growing recognition that urban poverty was different from rural poverty and that there was a distinction between urban and rural housing issues (Sahu, Zachariah, and Baksi 2009). This was also reflected in the programs. For example, the 1979 Integrated Development of Small and Medium Town Program attempted to decentralize the urban concentration by developing urban infrastructure in small and medium-sized towns. Policy making for the housing sector in India faced challenges as there had been no national policy. One of the most important developments of this period was the formulation of the 1988 National Housing Policy, which changed the course of housing programs in the 1990s by changing the role of government from a direct provider of finished housing, finance, or developed sites to that of a facilitator channeling private sector investment in housing and encouraging private-sector–led construction. The government's role was increasingly viewed as that of an organizer of a legal, regulatory, and financial framework within which housing could be developed and supplied by the private sector (Sahu, Zachariah, and

Baksi 2009). Liberalization of the housing finance sector gained further momentum. To boost the flow of funds for housing, the Reserve Bank of India issued guidelines that allowed the scheduled commercial banks to allocate 1.5% of their incremental deposits to housing. The regulator also required that 30% of these funds were lent directly to individuals and 70% were lent indirectly to agencies for augmenting the supply of serviced land, constructed units, and subscription to guaranteed bonds and debentures of the NHB and HUDCO. The involvement of insurance companies and scheduled commercial banks increased after the setting up in 1988 of the NHB, which floated separate housing finance companies to avail the NHB's refinance facilities and tax concessions (Tiwari 2012). The Life Insurance Corporation of India set up its own housing finance company in 1989 and the General Insurance Corporation in 1990.

The period, however, did not add much to improve housing conditions. Slum clearance programs continued throughout the 1970s and 1980s with affected people being resettled at peripheral locations. The homes that were provided did not meet the requirements of the affected people, which led these homes to eventually filter down to HIG and MIG households. The integrated approach though was promulgated in policy, remained ineffective because programs were fragmented, overlapping in their objectives, and often administered by different ministries or government departments that did not collaborate. Urban poverty alleviation programs remained isolated from other related programs, which reduced their effectiveness (Hingorani 2011). There were also other programs. Program structure and implementation mechanisms went through frequent changes. Community involvement in designing and implementing programs was minimal (Mathur 2009). The biggest contribution of the period was in the housing finance sector as the housing finance market deepened, which had positive benefits particularly for MIG and HIG households (Wadhwa 2009).

### 7.4.3 Postliberalization (1991–2000)

Sluggish progress in addressing deteriorating housing conditions in cities, urbanization trends, worsening affordability, and the growing recognition of the importance of urban centers in the nation's economy brought the policy focus during the 1990s on to cities, and it was acknowledged that urban centers required a different managerial and policy approach than the rural areas (Hingorani 2011). The role of the government in the housing sector as an enabler, away from direct provider of housing or serviced sites, as was proposed by the 1988 National Housing Policy, was further reinforced. Efficient legislative, legal, and

financial frameworks for private sector participation were created. It was also recognized that the market alone would not be able to solve housing problems, particularly for the disadvantaged. The policy focus of the government began to concentrate on BPL households, households headed by women, and scheduled castes and/or tribes (Hingorani 2011). These households would require direct intervention and subsidies.

While the devolution of responsibility regarding housing had begun in earlier decades, the power distribution between the three levels of government (central, state, and local) realigned more broadly with the 74th Constitutional Amendment in 1992. Numerous responsibilities for functions such as urban poverty alleviation, slum upgrading, housing, management of urban services, and the protection of weaker sections were transferred to the urban local bodies (ULBs). The problem, however, was that while responsibilities with regard to services were devolved, the devolution of financial resources had been slow, which restricted the capability of ULBs to deliver on new responsibilities. ULBs lacked the capacity to augment financial resources to design and deliver programs. This became the focus of numerous urban reforms in the following years (Hingorani 2011). The dependency of municipalities on financial resources from higher levels of government did not decrease, which often, due to political misalignments, posed a challenge. Historically, a number of agencies and parastatals were involved in dealing with urban issues including housing, and that multiplicity continued. In slum improvement programs, the range of agencies involved included slum boards, housing boards, development authorities, and municipal bodies, which led to problems in implementation.

During the 1990s and the 2000s, the housing finance market deepened further with liberalization and a number of commercial banks in the private and public sector set up their housing finance arms (Sahu, Zachariah, and Baksi 2009). Lower interest-rate regimes, rising disposable incomes, relatively stable property markets, fiscal incentives offered by the government, and the viability of housing finance as a business, as demonstrated by the HDFC, triggered the entry of banks in the housing finance sector. These fiscal incentives for housing finance included income tax exemption for builders of small-sized units, tax exemption to any housing project that was an integral part of a highway project, tax deductibility of interest paid on housing loans up to a certain limit, exemption from capital gains if a residential property was held for more than 3 years before sale and the capital gains were invested in residential property or other specified asset, tax benefits to housing finance companies, and direct subsidies to BPL households for the purchase of housing units (Tiwari and Parikh 2012). Households became far more aware and comfortable with debt for housing as

sources available for housing finance evolved. Regulatory guidelines required domestic scheduled banks to extend a minimum of 40% and and foreign banks 32%, respectively, of their net bank credit to priority sectors, which included housing. To strengthen the finances of ULBs, these entities have been encouraged to access capital market financing through issuance of bonds or public–private partnerships. Though these were positive developments, due to their weak financial position, most municipalities were unable to access bond markets or raise resources through debt.

There were attempts made to integrate urban poverty alleviation programs with shelter programs (Hingorani 2011). For example, Environmental Improvement of Urban Slums was integrated with an urban basic services scheme, and a new program called Urban Basic Services for the Poor was launched. The new program focused on health and education and also recognized that secure tenure and designing cost-recovery mechanisms for shelters were crucial to the long-term sustainability of the program (Mathur 2009). The year 1997 saw the launch of the National Slum Development Program for upgrading slums and was funded by state and central funds. To address the fragmented nature of earlier programs, the shelter upgrading components of Nehru Rozgar Yojana (the Nehru employment scheme), and the Prime Minister's Integrated Urban Poverty Eradication Programme were incorporated into the National Slum Development Program. The program encouraged the involvement of nongovernment organizations, community-based organizations, and private entities (Mathur 2009).

While there was encouragement for the state government and municipalities to develop programs for addressing urban poverty and shelter issues, the central government was shifting its attention to more focused programs directed toward BPL households. In 2001, a centrally sponsored program, Valmiki Ambedkar Awas Yojana, was launched which entailed the construction and upgrading of houses for BPL households. The program also included the provision of basic amenities through the construction of community toilets. It was implemented through a 50% central government subsidy, with the remaining contribution coming from state or local governments or through a loan from HUDCO. The implementation was the responsibility of the state governments who were required to arrange land and organize debt (Hingorani 2011). The financial share that states could obtain as a loan from agencies like HUDCO was in proportion to the size of their slum population (Mathur 2009).

A number of other programs were launched during this period. The Night Shelter Scheme for Pavement Dwellers, launched in 1990 and implemented by HUDCO in conjunction with municipalities,

provided loans and subsidies for the construction of night shelters and sanitation facilities for pavement dwellers. An ambitious plan, the Two Million Housing Programme, was launched in 1998. This was a loan-based scheme aimed at facilitating the construction of 2 million houses every year using funding from HUDCO and housing finance institutions (Hingorani 2011).

An evaluation of the liberalization period indicates that substantial progress was made in deepening housing finance, which had a positive impact on access to homeownership for MIGs and HIGs. However, little progress was made in the regulatory framework governing land. Formal finance, however, was inaccessible to the urban poor because it required clear title to property, approval of building plans by the local authority, and a regular stream of monthly income (Tiwari and Debata 2008).

### 7.4.4 Economic Globalization (Post 2000)

The post-2000 macroeconomic environment of economic globalization reinforced the centrality of cities. The global focus shifted from competitiveness of nations to competitiveness of cities. Given this background, a major urban-focused capital investment and urban reform program called Jawaharlal Nehru National Urban Renewal Mission (JNNURM) was launched in 2002. JNNURM sought to ameliorate bottlenecks impeding cities by modifying laws that had distorted the functioning of land and housing markets, to formalize the property right system, and to put in place efficient governance structure at the local level. The program also aimed to reform the property tax system, rationalize tariffs for services to augment local government finances, and boost investment in urban infrastructure. JNNURM also mandated to repeal the Urban Land (Ceiling and Regulation) Act, which had locked tracts of land in legal litigation and had hindered the supply of housing.

A major program for slum dwellers and the urban poor, Rajiv Awas Yojana (RAY), was launched in 2011, with the preparatory phase during 2011–2013 and the implementation phase in 2013–2022. The objective of the program is to bring existing slums into the formal system with access to basic amenities and to develop institutional and market mechanisms to tackle shortages in land and housing. The program is a reform-linked slum redevelopment and affordable housing program with the assistance of the central government. The reforms promulgated under RAY are tenure security for slum dwellers, reform to the rental and rent-control laws regarding urban housing, and review and amendment to the legislation, rules, and regulations governing urban planning and development structures and systems to meet the

needs of urbanization. RAY envisages creating social/rental housing, building affordable housing stock in peri-urban areas, and undertaking slum rehabilitation projects jointly with the private sector. Despite its superior architecture, RAY did not get much response from ULBs and cities (Planning Commission of India 2012–2017). In June 2015, RAY was replaced by a new program called Housing for All (Urban) Mission. This mission will provide central assistance to ULBs and other implementing agencies through states and/or union territories for in situ rehabilitation of existing slum dwellers using land as a resource through private participation, interest rate subsidies on loans for housing of EWS and LIG households, financial assistance from the central government for developing affordable housing by states and ULBs in partnership with the private sector, and subsidies for beneficiary-led individual house construction or enhancement for EWS households.

## 7.5 An Evaluation of Housing Policies

The impact of the various programs on the condition of housing in India since independence has been limited. As a share of the total budget outlay, investment in housing has been stagnant at about 2%. The physical assessment of various housing programs is difficult, because the data in terms of output of new housing stock and upgraded units for each program are not available. An overall assessment of the housing stock in the country, in conjunction with budgetary allocations, however, indicates that, while most of these programs were well intended in terms of their objectives, they could not deliver much due to the lack of financial resources. Dependency on the central government for funds encouraged a top–down approach, with the programs being formulated at the national level on the basis of feedback from the states, with marginal inputs from the operational agencies and staff directly working at the grassroots level. At times, ad hoc interventions were made, driven often by political and administrative objectives rather than economic considerations and the on-the-ground situation. This resulted in a multiplicity of programs with varying components directed at the same target group and lack of convergence or proper coordination, sequencing, and linkages among them. The programs also lacked public participation in their planning and implementation. Since the 74th Constitutional Amendment in 1992, attempts have been made to devolve the program formulation and implementation role to municipalities. However, the financial devolution is not yet complete because of the lack of resources for implementation of programs.

In the different periods discussed earlier, total budget outlays for housing programs for the national and state governments were small, emphasizing that housing was considered largely a private activity. Among the government programs, the largest impact on housing stock was made by public sector entities that constructed houses for their employees. In the time since independence until 1970, about 400,000 housing units were added through government schemes in urban areas (Planning Commission of India 1969–1974). A major achievement of this period was in terms of the development of cooperative societies at the state level to develop housing and the establishment of the National Buildings Organisation to undertake research on cheaper building materials. The construction and upgradation programs in rural areas that focused on landless laborers did not make much progress. The bigger challenge was to get land and the appropriate layout not only to meet housing needs but also to address problems such as water and sanitation. The surplus land that was acquired in the rural areas after the abolition of intermediary tenures or enforcement of ceiling laws, or consequent on the consolidation of holdings could not be utilized because a large tract of such land was locked in legal litigation.

The next decade (1970–1980) saw an additional 280,000 housing units added in urban areas, of which the major portion was undertaken by the public sector for its employees and some for EWS and LIG households. The major progress of this decade was in rural housing. The political ideology was also shifting in favor of rural, as discussed earlier, and this was reflected in the programs as well. A total of 7.7 million sites were distributed and about 560,000 houses were constructed under the Rural House Site-cum-House Construction Scheme (Planning Commission of India 1980–1985). The lack of public resources was well understood by policy makers and programs attempted to direct these resources toward the EWS of the community. A major development of this period was the development of the institutional structure for housing finance in the country to promote and encourage self-help housing. The direct role of the government in the provision of housing was shifted to that of provider to facilitator. The focus of governments was to augment resources of public agencies such as HUDCO and state housing boards to enable them to provide infrastructure facilities as a means of encouraging housing in the private sector. The lesson from the burgeoning burden of subsidies in the economy (particularly in the agriculture sector) was that subsidies were avoided in these programs. Instead, efforts were made to secure a reduction in the costs in public housing schemes by reviewing building standards and by using cheap and alternative building materials. Research in building materials was paramount.

During 1980–1985, the share of public sector involvement in housing decreased further. The total number of houses added to the stock through public schemes was about 170,000 in urban areas and about 190,000 in rural areas. Nearly 5.4 million rural housing sites were allocated. The role of the government was more in institutional development to facilitate private activities in housing. The role of financial institutions such as HUDCO and HDFC, as well as cooperative institutions, was further enhanced in providing finance for all income groups. While these institutions were focused in urban areas, the direct role of the government in providing housing in rural areas was still considered necessary. Recognizing the need for mass production of houses, the building codes started evaluating prefabricated technologies for inclusion in Indian codes.

During 1985–1992, total investments in housing for the central and state governments were about 1.3% of the total public outlay (Planning Commission of India 1985–1990). The actual expenditure was far less than the outlay. Given that allocation of land is a state matter, a large part for fulfilling program commitments for housing was bestowed on states. The responsibility to allocate financial resources was also left to states and they struggled. An estimated 1 million housing units were either upgraded or constructed per year under various programs in the public sector during this period. The average amount of assistance per housing unit was a meagre Rs5,000, which implies that most of the assistance was for upgrading. Although the focus of the housing programs was on EWS, the resources deployed were not sufficient to make any significant impact. Consequently, the housing gap continued to widen. The success story of this period was with regard to the strengthening of housing finance institutions. The public sector housing finance institution, HUDCO, financed the construction of about 2 million houses. The Building Materials and Technology Promotion Council, which had the mandate to reduce construction costs through the promotion of low-cost materials and development of innovative building materials and technologies, identified 200 "building centers" around the country, and 70 of these became operational.

During 1992–1997, an estimated 2 million housing units were constructed, of which 1.4 million were for EWS and LIG households (Planning Commission of India 1992–1997). The actual progress was short of the government's planned projections. The main achievement of this period was the establishment of mechanisms to finance housing for various income group households. These mechanisms included a refinance facility from the NHB for agencies involved in EWS and LIG housing. The movement of establishing "building centers" expanded further and 239 centers became functional. The rural housing program Indira Awas Yojana contributed significantly to the rural housing stock.

During 1985–1997, a total of 3.7 million houses were constructed. The Indira Awas Yojana is largely a central government program, and the financial resources are shared between the central and state governments according to a 80:20 ratio.

During the 2000s, LIG housing was provided through Basic Services for Urban Poor and Integrated Housing and Slum Development Programme components (later RAY) of JNNURM. However, only 1.6 million housing units could be sanctioned under this program between 2002 and 2012. The biggest challenge that this program faced was the scarcity of suitable land, which the Planning Commission of India (2012–2017) attributes to the suboptimal land-use patterns, largely induced by the regulatory regime in place, the lack of long-term urban planning, and the lack of a participatory planning process to determine the most efficient use of parcels of land.

The results and reviews of JNNURM have been mixed, and the suitability of some of the measures it adopted has been questioned. The program remained fragmented and project-based with different aspects of the program involving separate ministries at the central level and being implemented in silos at the local level. There was a lack of community participation in the design, planning, or implementation stages of its projects. The lack of community consultation, particularly in the case of resettlement, led to delays in housing delivery and a selection of projects that were not best suited to the needs of beneficiaries (Hingorani 2011). The project approach favored new construction over in situ redevelopment, despite JNNURM priority given to in situ redevelopment. Delays in implementing such programs led to cost escalations, which, in turn, meant housing was not delivered on the required scale and became unaffordable to the target demographic. A key factor in enabling affordability is extending credit facilities that are accessible and suited to the needs of the urban poor. However, microfinancing options have largely been ignored by JNNURM. The land reforms that were aimed to be achieved have been inadequate. The city development plans, which were developed by cities to access JNNURM funds, are divorced from the urban planning process. JNNURM lacked a clear resettlement policy. Projects funded under the Urban Infrastructure and Governance submission required the possible eviction of slum dwellers, in which case clear policies on their rehabilitation were necessary (Hingorani 2011). The bigger problem was that there was a lack of capacity at the central, state, and ULB levels for implementation, and program guidance was a major stumbling block for JNNURM. The expenditure on capacity building has been low; several state governments have complained about funding delays, which mean they rely heavily on externally funded capacity-building projects. JNNURM encourages local governments to borrow in commercial

financial markets, but few have been able to do so. Similarly, few have augmented their finances through user charges, monetization of urban land, and property taxes as envisioned. From a shelter and basic services perspective, the JNNURM program has had limited impact.

The RAY program had a short implementation span before it was replaced by a new program, Housing for All (Urban) Mission, which was launched in 2015. According to the MHUPA summary statement on the RAY, between 2013 and 2015, a total of 117,707 houses were sanctioned and only 3,378 were completed (MHUPA 2015). The Housing for All Mission aims to build on RAY and fully address the housing shortage by 2022. However, the initial budget allocation by the central government for the program for 2015–2016 is Rs40 billion, which is too small to have any major impact (MHUPA 2015).

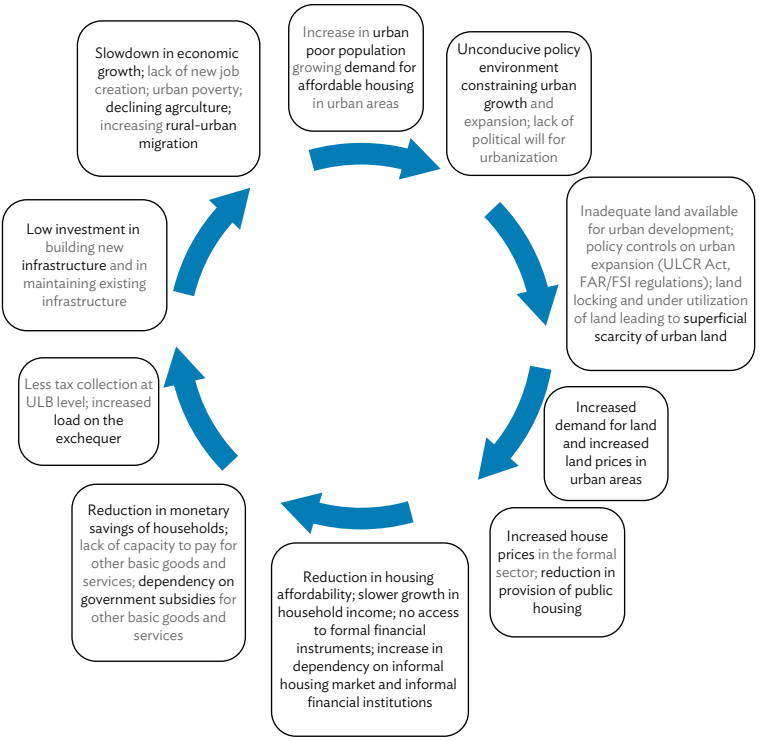
## 7.6 The Lessons

With approximately two-thirds of the country's population living in rural areas, India is urbanizing, albeit with reluctance, as evidenced by policies toward urban areas. Starting as an agrarian economy after independence, the initial conceptualization of urbanization was anti-rural. The lack of emphasis on urbanization at the political and policy levels has resulted in the emergence of unplanned cities that lack the basic infrastructure required for better quality of living and work environments for their inhabitants. Urbanization in India has mainly been an imposition, rather than a desired outcome, of the changing economic scenarios that have been consistently moving away from an agricultural economy. Unplanned cities are not painting a very impressive picture of the urban landscape, and reluctance toward urbanization persists. The lack of development of urban centers, new and existing, is posing a challenge to the secondary and tertiary sector economies, which together constitute 80% of gross domestic product. It is important to understand the vicious cycle of reluctant urbanization and economic decline, because it severely impacts the quality and quantity of basic infrastructure and services, including housing, in urban centers. The situation is explained in Figure 7.6.

Superficial scarcity of land due to reluctance toward urbanization, as shown in Figure 7.6, caused land prices to increase, making land procurement expensive for housing purposes. In a reverse scenario, where urbanization was supported by a responsive policy regime, it led to economic growth and household income growth and, thus, increased the household's capacity to pay for a house and other basic services in proportion to the increases in the prices of these basic goods.

This paper discusses the range of housing policies and programs that have been formulated in India since independence. However, because housing was viewed largely as a private activity, these programs remained underresourced. Consequently, their impact in adding new housing stock was limited. We offer a number of lessons that can help break the vicious cycle that is presented in Figure 7.6:

**Figure 7.6: Vicious Cycle of Economic Slowdown, Slow Urbanization, and Declining Housing Affordability**




FAR = floor area ratio, FSI = floor space index, ULB = urban local body, ULCR Act = Urban Land (Ceiling and Regulation) Act.

Source: Authors.

(i) **Constitutional status for housing:** Though a continuous discussion is happening in India over the issue, the interpretation of housing as an enforceable right is ambiguous. Housing is not included as an obligatory function of the state or the central government under the Constitution of India. There is related mention of "economic and social planning" and "welfare of labor" under the concurrent list of the Constitution of India, but housing is not explicitly included as a basic good (Constitution of India 2006). One of the first and most important housing rights cases to go up to the Supreme Court in India was *Olga Tellis & Ors versus Bombay Municipal Corporation* on 10 July 1985. This case, for the first time, held that the right to livelihood and shelter is an important component of the Fundamental Right to Protection of Life and Personal Liberty. The Supreme Court order laid down that the slum and pavement dwellers could be evicted only after arranging alternative accommodation for them. A spate of cases, vigorously following the Olga Tellis & Ors example, reached the Supreme Court in the 1990s, but they have not yet been able to establish the inclusion of housing as an enforceable right. A study of the most important Indian Supreme Court decisions on housing shows that its reliance on international human rights instruments has not been very extensive or consistent. The unclear constitutional status of housing has led to the formulation of a "weak" housing policy, which did nothing to improve the status of housing in the country because there was no binding obligation for the government to deliver affordable housing.

(ii) **Land titles in India:** One of the constraints for procuring land for affordable housing has been the weak land titling system that is outmoded. India does not use the Torrens title system to record ownership and the present system is marred with opacity-rendering transactions that are challengeable in courts. Recent governments have tried to address this issue. One of the laws with profound implication for the housing market, and where most activity in recent years has happened, is the Guaranteed Land Titling Bill that ensures security of land titles in urban India. While the importance of "guaranteed land titles" cannot be understated for economic development, the bill is being pushed through the states (second tier of government in India) by the central government through an optional reform mandated to access central government finance for urban infrastructure development under JNNURM. This, at most, is a weak push and only a few states have enacted the bill so

far. The incorporation of housing as a right will oblige the appropriate level of government to deliver on that right for LIG households by making available adequate resources. Of course, rights without remedy have little meaning and appropriate mechanisms to deliver on rights need to be developed.

(iii) **Adequate financial resources for affordable housing programs:** One of the major reasons for the poor performance of most programs aimed at slum upgrading and construction of affordable housing has been that these programs were underresourced. The devolution of responsibility to provide housing to EWS and LIGs to municipalities and other ULBs without devolving financial resources further weakened the capacity of these programs to deliver. Housing for EWS and LIGs require government intervention either in the form of public rental housing or public ownership housing. Public housing (largely rental) has largely been nonexistent in India, except for a small proportion of rental housing provided by government agencies to its employees through various programs, as discussed earlier. Given that even the private rental housing is underdeveloped, approaches ranging from construction of public rental housing by the government on their own or through public–private partnerships to direct demand or supply subsidies to incentivize construction of low-income housing would be required. The municipalities and other ULBs would need to be strengthened financially to enable them to deliver on the programs. The Twelfth Five-Year Plan (Planning Commission of India 2012–2017) proposes a three-pronged approach to strengthen municipal finances—create appropriate tax and nontax revenue streams, attract private capital, and monetize land.

(iv) **Land for affordable housing:** Besides the land titling issue discussed earlier, the procurement of land for affordable housing projects is a major constraint that housing programs face. Land in India is largely private and acquisition by public agencies has met with numerous challenges. Until 2013, the use of powers of compulsory purchase, to acquire private land for housing projects, was not possible because housing was not considered a public good. However, with the introduction of the new act of land acquisition in 2014, the opportunity for compulsory acquisition of private land for private development is available, although at a very high cost. The high cost of land, particularly in urban areas, has further constrained the supply for affordable housing. Moreover, there is little available land

within city limits. Where this land is available, it may not be of the size required for a larger development to build affordable units on. Therefore, the majority of land available for affordable housing development tends to be close to industrial corridors or on the outskirts of cities in peri-urban areas. However, these are the locations that are less suited to LIG and MIG residents who would typically rely on public transportation. Though the National Housing and Habitat Policy 2007 requires that 20%–25% of the floor area ratio of housing developments be set aside for lower-income housing, progress has been slow and limited to development projects on the periphery of large cities. ULBs or municipal or regional development authorities should take responsibility for providing land, preferably within city limits. Where this is not available, they should "create" new land by investing in expanding infrastructure corridors and developing basic sites that developers can purchase.

(v) **Construction materials:** The government has promoted research on developing low-cost building materials through the National Buildings Organisation and later through the Building Materials and Technology Promotion Council. A number of "building centers" have been set up across the country, as discussed earlier. Tiwari (2001) demonstrates that the cost reductions by adopting these materials are quite substantial when compared with traditional building costs. However, these technologies cannot reach the stage of mass adoption. The possible reasons for the lack of response to these materials are noninclusion of these materials in India's building codes, nonavailability of labor skilled in using low-cost technologies, and reluctance of developers and households to adopt these materials and technologies. There were neither strong incentives offered by the government for the adoption of low-cost materials nor disincentives for using bricks for construction. Market penetration of these materials has also been poor. As Tiwari (2001) demonstrates, low-cost building materials and technologies can reduce the cost of housing substantially without a reduction in the structural quality of the housing. Further, for resource-constrained programs, these materials and technologies can provide much greater value for money.

(vi) **Devolution of power to local governments:** The capacity of local governments has hampered the delivery of housing programs. If the 74th Constitutional Amendment Act was the game changer for local governments, it is probably time for the

next generation of legislative amendments in local governance. The two areas that the 74th Constitutional Amendment Act did not address are financial devolution and greater clarity on the mechanisms of governance. Unless ULBs are provided with the funds to discharge the functions available to them, local governance will continue to be dictated by state governments. The High Powered Expert Committee (HPEC 2011) recommended financial devolution directly from the central government to the ULBs. This is probably one instrument of governance that can address multiple issues—predictability of funds transfer, better leverage of funds, and easing of the grip of state governments on ULBs. The second area of legislative reform is regional governance. While the 74th Constitutional Amendment Act referred to the need to set up metropolitan or district planning committees, these have remained more a paper exercise. Clarifying the roles of regional entities and providing them with the statutory backing to drive a regional transformation agenda can go a long way in removing the ambiguities around regional development.

**(vii) Market segmentation:** One of the conundrums of housing markets in India is that, on the one hand, there is a huge shortage while, on the other, the 2011 Census reported that 8% of houses are lying vacant. While most megacities have to deal with slums, they also have new housing inventory, either unsold or vacant. The problem arises because the development sector in India has catered either to the upper-middle or high-income households. The use of "black money" to buy real estate is also a prevalent practice in India. Recent government regulations to curb the use of "black money" in real estate will curtail investor-led demand for luxury housing.

**(viii) Institutions for Housing for All:** Although the physical performance of housing programs in India has been dismal, the development of institutions has been substantial. India has created an extensive network of state-level housing boards and metropolitan authorities with capacities to develop housing. The research network of building centers to develop materials and technologies using locally available materials is also extensive. The municipalities and other ULBs are the functioning democratic institutions at the local level. These institutions should be revitalized and reoriented to deliver on affordable housing.

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CHAPTER 8

# Housing Policies in the People's Republic of China and Hong Kong, China

*Jing Li*

## 8.1 Introduction

This paper analyzes the housing markets and housing policies in Hong Kong, China and the People's Republic of China (PRC). It examines how economic and institutional differences influence housing market development, and how housing policies under various institutions and systems work. For both Hong Kong, China and the PRC, this paper reviews the historical developments of the housing market, illustrates housing policies that have been implemented, discusses the impacts of policy instruments on different income groups, evaluates major housing policies, and identifies the risks and challenges regarding housing that are facing policy makers today.

The two markets have some features in common, such as high dependencies on the property sector to maintain economic growth, densely populated urban areas with high proportions of high-rise buildings, deteriorating housing affordability over the last decade, cultural consensus on the relationship between marriage and homeownership, and increasing inequality in household incomes and housing assets.

However, economic and institutional differences between both areas are fundamental. Hong Kong, China has been ranked as the world's freest economy for 20 consecutive years, while the PRC still resorts to measures inherited from the planned economy. Hong Kong, China has been a free harbor for capital, whereas the PRC is only starting toward financial liberalization. Hong Kong, China has entered the post-industrialization stage, but the PRC is still upgrading its manufacturing sector. Finally, Hong Kong, China's social welfare system favors the elderly and the poor (i.e., lower costs of medical services and a higher minimum wage, with higher costs of education and lower tax rates for lower-income bands); the PRC's social policy focuses on the young and the rich (i.e., lower costs of primary education and labor, with higher costs of medical services and higher tax rates for lower-income bands).

Not only are the institutional and historical contexts diverse, but their housing markets are at different stages. Hong Kong, China has experienced a complete property cycle over the last 2 decades, but in the PRC, many buyers believe that housing prices will continue to increase. Hong Kong, China has had a housing shortage due to limited land supply, but, in the PRC, a housing oversupply due to accelerated urbanization is pushing up vacancy rates. Hong Kong, China has a well-established public rental housing (PRH) system to accommodate almost 30% of its total population; in the PRC, the role of the rental housing sector is marginal. Hong Kong, China has abandoned property and inheritance taxes, but the PRC still endeavors to promote both.

Limited land supply underpins housing problems in both Hong Kong, China and the PRC. Despite various measures and schemes to "cool down" housing prices, Hong Kong, China had a medium housing price–medium household income ratio of 11.8 in 2010, which rose to 14.9 in 2013 (Demographia 2015). Because two-thirds of its territory comprises hills, limited land supply is the key obstacle to its housing problems. Based on the railway and property development model, Hong Kong, China's planning strategy is to accommodate most of its residents within walking distance to railway stations, while leaving greenbelts and surrounding islands undeveloped or underdeveloped. Such a practice pushes up housing prices through high land prices and enhanced infrastructure, and is difficult to be reverted.

The PRC faces land shortage problems for other reasons. The PRC, needing to feed its 1.4 billion people, maintains that 1.8 billion mu[1] of agricultural land be reserved for cultivation. Local governments often

[1] This is a unit of land measurement used in the PRC that varies with location but is usually equal to 666.5 square meters.

ignore this policy, however, and the central government has little interest in enforcing it. Because the central government allocates fiscal resources, local officials have to compete for limited resources to support local development. Yet it is difficult to get transfer payments from the central government, so local officials prefer investments, such as selling urban land to property developers and converting rural land for urbanization, to raise funds to enhance local infrastructure. These practices are not under public pressure[2] and involve less legislative processes.

## 8.2 Housing Policies in Hong Kong, China

### 8.2.1 Housing Market

A disastrous 1953 fire in Shek Kip Mei, a shantytown of migrants from the PRC, made over 50,000 people homeless, prompting the government to begin providing public housing. Soon after, in the 1970s, the inadequacy and scarcity of housing also began drawing the government's attention. In 1972, 46% of the total population lived in squatter huts or temporary housing; it was found that nearly 50% of the population living in shared private flats and tenements needed rehousing.

Toward decent living conditions, the government proposed that 180,000 units be built in 1975/76. As a consequence, local developers constructed many private flats in the late 1970s, accompanied by an increase in private housing prices in the mid-1980s (Figure 8.1). Private housing prices reached their first peak in 1997, which was 9.5 times the comparable price in 1984. Between 1969 and 1997, local gross domestic product (GDP) recorded double-digit growth, including 14% growth from 1969 to 1974, 16% growth from 1976 to 1981, and 11% growth from 1986 to 1994.[3] During this period, private domestic homeownership increased from 32% to 52%.

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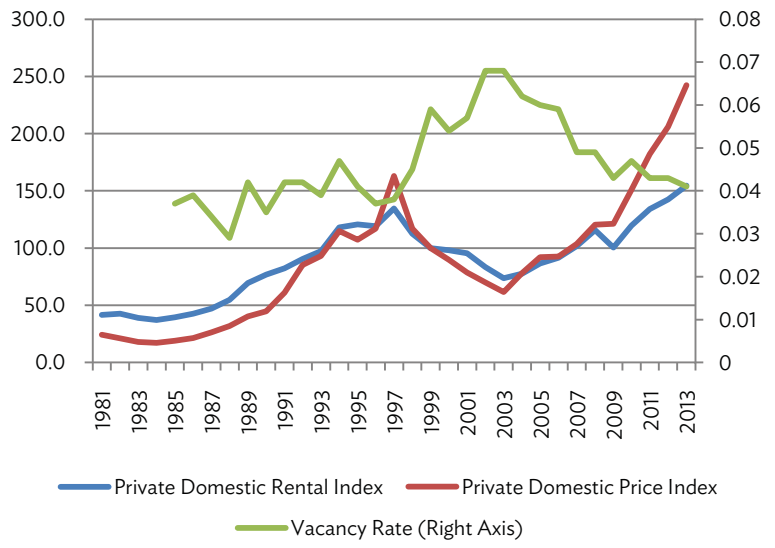
[2] There are reported cases of compulsory land requisitions and uncompensated urban resettlements.

[3] Except for 1975, 1982, and 1984.

**Figure 8.1: Private Domestic Price Indexes**

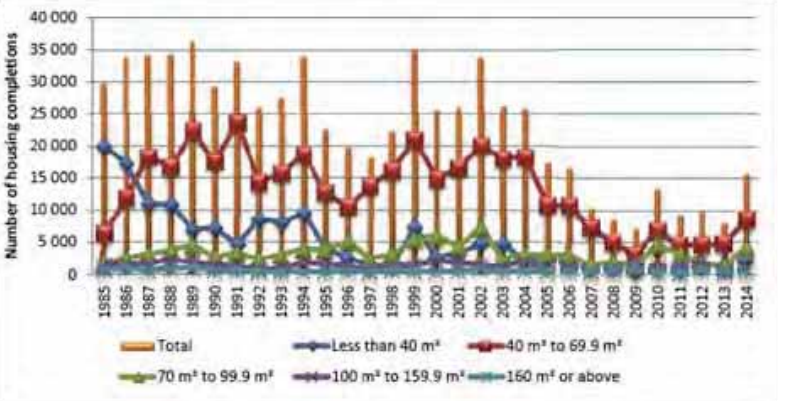



Sources: Rating and Valuation Department. http://www.rvd.gov.hk/en/index.html?popup; and Census and Statistics Department. http://www.censtatd.gov.hk/home/index.jsp

The property boom was followed by a sharp decline of over 60% during 1997–2003 due to the 1997/98 Asian financial crisis and the government's oversupply of residential housing units. Market conditions changed so abruptly that both the government and property developers were slow to respond to the market collapse. Housing projects under construction were not immediately halted, and mortgage loans were not stopped. The oversupply of housing units accelerated the property bust, putting the government under great stress. With the government ceasing its housing supply schemes, the market then began to adjust itself through a salient drop in private housing completion (Figure 8.2).

In 2004, property prices began to stabilize. Admitting that the decline in housing prices and prolonged deflation were roots for fatigued local investment and consumption, the government redefined its role in the property market. The policy focus shifted to urban renewal and maintenance of old buildings from new housing provision. The government began 10 major infrastructure projects to boost economic growth and to increase employment opportunities in the construction and related sectors. In addition, it launched the Capital Investment

**Figure 8.2: Private Domestic Housing Completions**




$m^2$ = square meter.

Source: Rating and Valuation Department, http://www.rvd.gov.hk/en/index.html?popup

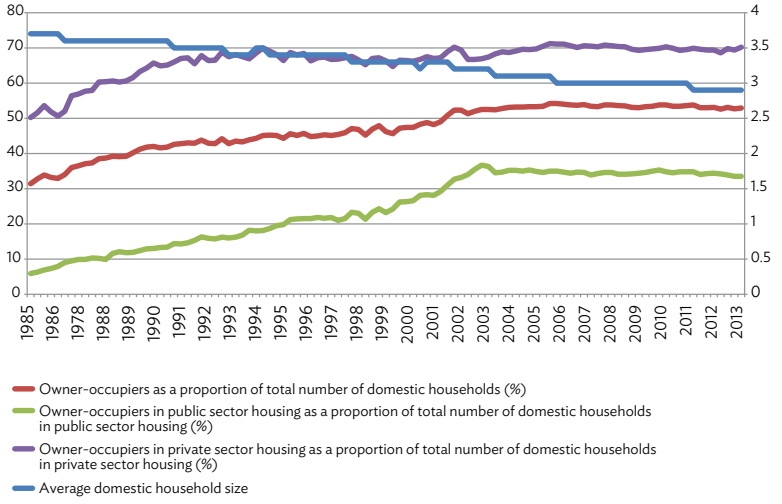
Entrant Scheme, allowing nonlocal buyers to purchase housing in Hong Kong, China for qualifying permanent citizenship.

Revitalization of the local economy and rehabilitation of old buildings partly accounted for the 320% increase in private domestic prices from 2003 to 2013. This was also due to the government's strict control of land supply for new housing provision, which occurred thanks to strong protests for environmental concerns regarding using Greenland; filling in the sea; developing land in the New Territory; or building high-speed railways linking Hong Kong, China to the PRC, which would result in closer economic integration.[4]

By 2014, 68% of the population lived in private permanent housing, with a homeownership rate of 51%. Over 15% of owner-occupied housing was subsidized under different housing schemes, such as the Tenants Purchase Scheme (TPS), Home Ownership Scheme (HOS), Private Sector Participation Scheme, Middle Income Housing Scheme, Buy or Rent Option Scheme, and Mortgage Subsidy Scheme. Together with 30% of residents in PRH, today over 45% of the population lives in various forms of government-supported housing (Figure 8.3).

[4] Opposition parties prefer less connection with the PRC, either in economic or political relationships, to maintain Hong Kong, China's status as a special administrative region.

**Figure 8.3: Types of Housing for Domestic Households**




Sources: Census and Statistics Department, Government of Hong Kong, China. General Household Survey. http://www.censtatd.gov.hk/surveys/ghs/index.jsp (accessed August 2015); Hong Kong Housing Authority, Government of Hong Kong, China. Housing in Figures. https://www.housingauthority.gov.hk/en/common/pdf/about-us/publications-and-statistics/HIF.pdf (accessed August 2015).

Table 8.1 provides detailed housing tenures among different age cohorts. The youngest cohort has a much lower ownership rate compared with other groups. To explain this vast difference, two factors are considered: education level and occupation structure.

Regarding length of education, the younger generations have more higher education, which may delay their search for jobs (Figure 8.4).

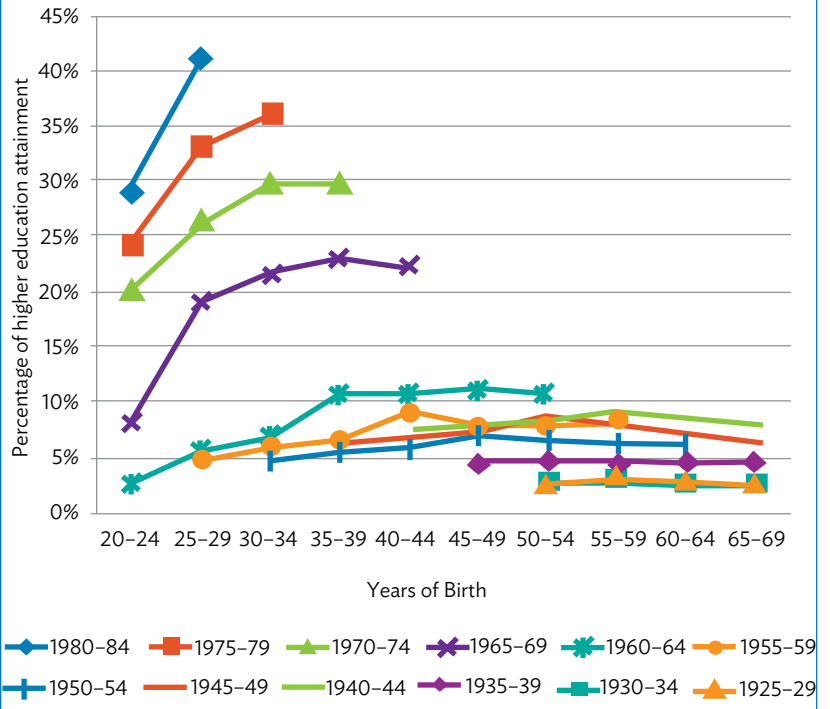
Generally, having higher education indicates better job prospects, as the younger generations have taken the lead in becoming managers, professionals, and associate professionals (Figure 8.5). However, managerial positions may also require more career shifts, thus leading to young people's preference to rent homes (Li 2014a).

## Table 8.1: Percentage of Housing Tenure by Age Cohorts

| Year | Age | Owned | Rented | Age | Owned | Rented | Age | Owned | Rented |
|---|---|---|---|---|---|---|---|---|---|
| 1981 | 15–19 | 21.4 | 78.1 | 20–24 | 21.7 | 77.7 | 25–29 | 24.9 | 74.2 |
| 1986 | 15–19 | 25.1 | 72.3 | 20–24 | 24.1 | 72.0 | 25–29 | 28.7 | 65.6 |
| 1991 | 15–19 | 30.6 | 64.2 | 20–24 | 29.6 | 64.6 | 25–29 | 34.3 | 56.5 |
| 1996 | 15–19 | 27.6 | 61.9 | 20–24 | 28.5 | 62.3 | 25–29 | 32.7 | 56.6 |
| 2001 | 15–19 | 28.5 | 51.9 | 20–24 | 29.1 | 53.3 | 25–29 | 33.8 | 49.2 |
| 2006 | 15–19 | 30.4 | 49.9 | 20–24 | 29.1 | 48.2 | 25–29 | 34.6 | 47.2 |
| 2011 | 15–19 | 15.3 | 76.8 | 20–24 | 13.3 | 78.1 | 25–29 | 13.8 | 77.9 |
| 1981 | 30–34 | 27.2 | 72.0 | 35–39 | 24.5 | 74.9 | 40–44 | 25.0 | 74.5 |
| 1986 | 30–34 | 30.3 | 63.7 | 35–39 | 31.2 | 64.3 | 40–44 | 28.7 | 68.3 |
| 1991 | 30–34 | 35.3 | 53.9 | 35–39 | 35.4 | 55.3 | 40–44 | 36.3 | 56.7 |
| 1996 | 30–34 | 35.2 | 51.2 | 35–39 | 34.8 | 51.8 | 40–44 | 34.0 | 54.2 |
| 2001 | 30–34 | 36.8 | 45.8 | 35–39 | 37.4 | 44.2 | 40–44 | 35.7 | 45.2 |
| 2006 | 30–34 | 38.5 | 45.8 | 35–39 | 38.5 | 45.3 | 40–44 | 39.0 | 43.4 |
| 2011 | 30–34 | 13.0 | 81.8 | 35–39 | 10.1 | 86.2 | 40–44 | 8.8 | 87.9 |
| 1981 | 45–49 | 24.5 | 74.9 | 50–54 | 25.0 | 74.4 | 55–59 | 27.2 | 72.1 |
| 1986 | 45–49 | 29.0 | 68.4 | 50–54 | 28.6 | 68.3 | 55–59 | 28.8 | 67.5 |
| 1991 | 45–49 | 34.3 | 60.4 | 50–54 | 34.6 | 60.3 | 55–59 | 33.4 | 60.8 |
| 1996 | 45–49 | 34.5 | 55.0 | 50–54 | 33.2 | 57.9 | 55–59 | 33.7 | 57.3 |
| 2001 | 45–49 | 35.2 | 47.1 | 50–54 | 35.8 | 47.9 | 55–59 | 33.8 | 50.8 |
| 2006 | 45–49 | 37.5 | 42.6 | 50–54 | 36.5 | 43.7 | 55–59 | 37.5 | 43.6 |
| 2011 | 45–49 | 7.9 | 89.0 | 50–54 | 7.1 | 89.8 | 55–59 | 8.1 | 88.6 |
| 1981 | 60–64 | 28.0 | 71.3 | 65–69 | 28.9 | 70.6 | 70–74 | 29.3 | 70.2 |
| 1986 | 60–64 | 30.4 | 66.1 | 65–69 | 31.4 | 65.0 | 70–74 | 31.8 | 65.3 |
| 1991 | 60–64 | 32.7 | 60.9 | 65–69 | 33.8 | 60.2 | 70–74 | 34.8 | 59.4 |
| 1996 | 60–64 | 33.2 | 57.7 | 65–69 | 31.7 | 59.0 | 70–74 | 32.8 | 58.6 |
| 2001 | 60–64 | 33.8 | 51.1 | 65–69 | 32.7 | 52.1 | 70–74 | 32.4 | 53.3 |
| 2006 | 60–64 | 34.7 | 47.0 | 65–69 | 34.4 | 48.2 | 70–74 | 34.5 | 48.7 |
| 2011 | 60–64 | 10.0 | 86.0 | 65–69 | 10.5 | 84.9 | 70–74 | 13.1 | 81.6 |

Source: Author's analysis of census microdata.

**Figure 8.4: Cohort Trajectory of Higher Education**



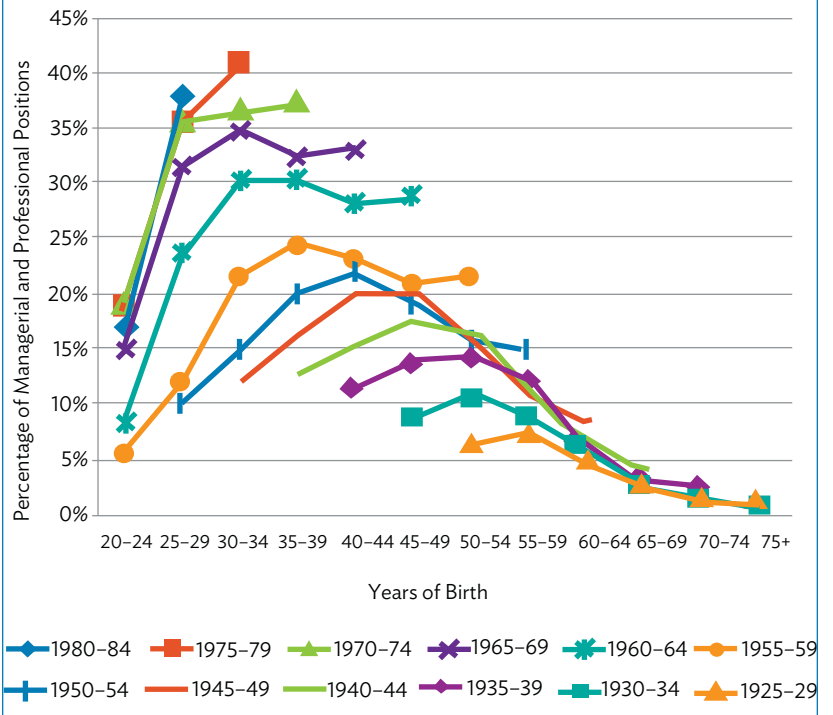

Source: Author's reanalysis of census microdata, reproduced from Li (2014a).

## 8.2.2 Major Housing Policies

The government is the sole land supplier and largest developer for both public and private sectors. Under the railway and property development model, the Hong Kong Housing Authority coordinates housing projects with property developers and the Mass Transit Railway Company. Due to the constraints[5] on the amount of land available for sale prior to Hong Kong, China's return of sovereignty, the model successfully turns scarce developable land into hotels, offices, parks, shopping malls, convention halls, and apartments. The success of the model also has roots in

[5] The PRC had an agreement with the United Kingdom before Hong Kong, China's return of sovereignty in 1984 on the amount of land available for sale.

**Figure 8.5: Cohort Trajectories of Managers, Professionals, and Associate Professionals**




Source: Author's reanalysis of census microdata, reproduced from Li (2014a).

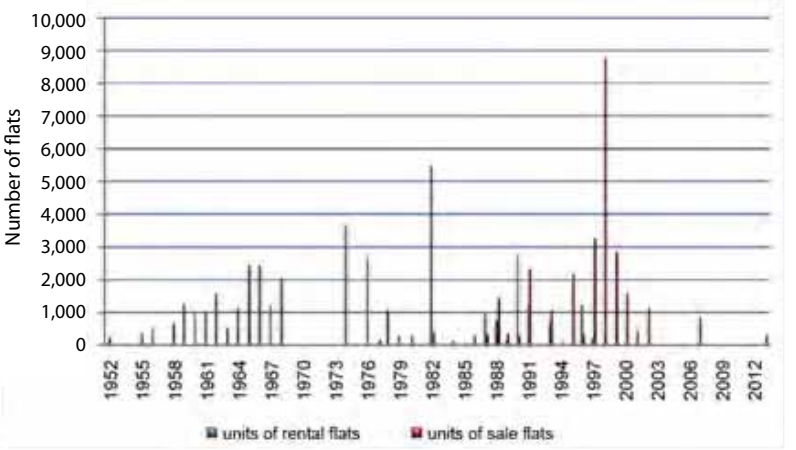
encouraging and integrating the participation of, rather than crowding out, the private sector. It was remarkably successful for property market development until recently.[6]

The Hong Kong Housing Society, a nongovernment organization that serves the housing needs of the population, also plays an essential role in providing public rental and private ownership flats. From 1952 to 2013, it provided 39,697 rental flats and 28,373 for-sale flats to the market (Figure 8.6). Most rental flats were built during 1952–1982 as PRH units, while most for-sale flats were built along railway stations according to the railway and property development model in the 1990s. Other than

[6] Ten megaprojects, starting in 2007/08, stimulated much debate. The recent umbrella movement reflects public questioning on the relationship between property developers and the government.

housing supply, the Hong Kong Housing Society provides housing subsidies to tenants in PRH to increase homeownership demand.

**Figure 8.6: Number of Flats Provided by the Hong Kong Housing Society**




Source: Hong Kong Housing Society, http://www.hkhs.com/eng/info/index.asp (accessed August 2015).

The government has released a series of policy documents on housing, among which the Long Term Housing Strategy was the most comprehensive. The first strategy was released in 1987, marking the prelude of the government's systematic intervention in the housing market. It established a target of 960,000 new housing units to be built to satisfy all demand by 2001.

The strategy aimed at tackling major housing problems through a systematic and gradual approach, such as (i) the severely imbalanced supply and demand for public and private housing, (ii) increased wages that cannot catch up with the rise in housing prices, (iii) deteriorating housing affordability, (iv) young people who find it increasingly difficult to become homeowners, and (v) lack of suitable land in the medium to long term.

However, before 1999/2000, the highest number of actual construction completion was only 53,256 for 1989/1990 (Table 8.2). A series of subsidized housing schemes were further proposed in the next strategy in 1998 to increase housing supply for middle- and low-income families.

**Table 8.2: Hong Kong Housing Authority Housing Production**

| Year | Public Rental Housing | Interim Housing | Home Ownership Scheme or Private Sector Participation Scheme | Total |
|---|---|---|---|---|
| **1980/81** | 26,769 | | 10,178 | 36,947 |
| **1981/82** | 31,346 | | 4,399 | 35,745 |
| **1982/83** | 27,879 | | 8,268 | 36,147 |
| **1983/84** | 28,564 | | 10,117 | 38,681 |
| **1984/85** | 26,354 | | 11,576 | 37,930 |
| **1985/86** | 29,386 | | 18,590 | 47,976 |
| **1986/87** | 27,073 | | 13,178 | 40,251 |
| **1987/88** | 19,991 | | 5,380 | 25,371 |
| **1988/89** | 39,518 | | 10,946 | 50,464 |
| **1989/90** | 33,910 | | 19,346 | 53,256 |
| **1990/91** | 32,619 | | 15,612 | 48,231 |
| **1991/92** | 21,190 | | 13,698 | 34,888 |
| **1992/93** | 22,148 | | 15,322 | 37,470 |
| **1993/94** | 19,848 | | 24,743 | 44,591 |
| **1994/95** | 24,440 | | 4,004 | 28,444 |
| **1995/96** | 14,559 | | 19,328 | 33,887 |
| **1996/97** | 14,946 | | 16,878 | 31,824 |
| **1997/98** | 17,917 | 144 | 12,040 | 30,101 |
| **1998/99** | 9,759 | 720 | 18,020 | 28,499 |
| **1999/00** | 31,806 | 120 | 16,558 | 48,484 |

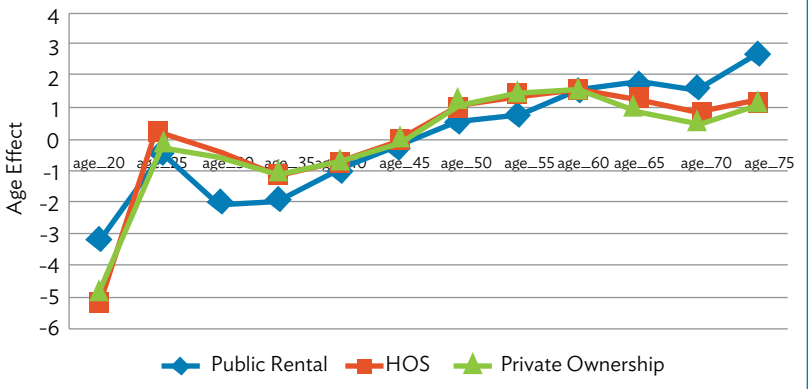
Source: Hong Kong Housing Authority, https://www.housingauthority.gov.hk/en/index.html (accessed August 2015).

An age-period-cohort model, a model widely used in demographic studies (Yang and Land 2008), is applied to evaluate the impacts of the Long Term Housing Strategy on the population's housing career

ladder.[7] In this paper, the model is introduced for risk analysis of households in mortgage financing through its cohort effect, and Long Term Housing Strategy objectives are examined through age and period effects. A major methodological challenge with this model, however, is the collinear regressors generated from the linear dependency among age, period, and cohort (Yang, Fu, Land 2004). An intrinsic estimator model (Yang and Land 2008) is adopted to solve this problem.

Figure 8.7 presents the age effects on the accessibility to the three types of housing tenures, PRH, HOS, and private ownership. A common upward trend is observed for all three types of housing. The age group of 25–29 years has a higher rate of housing attainment compared with other age groups between 20 and 45 years, indicating that buying property is probably an issue of now-or-never for young people. Since most of the population does not have sufficient savings for down payments in their 20s, only those with wealthy parents can get on the housing ladder at this stage (Li 2014b).

**Figure 8.7: Age Effects on Housing Tenure Choices**



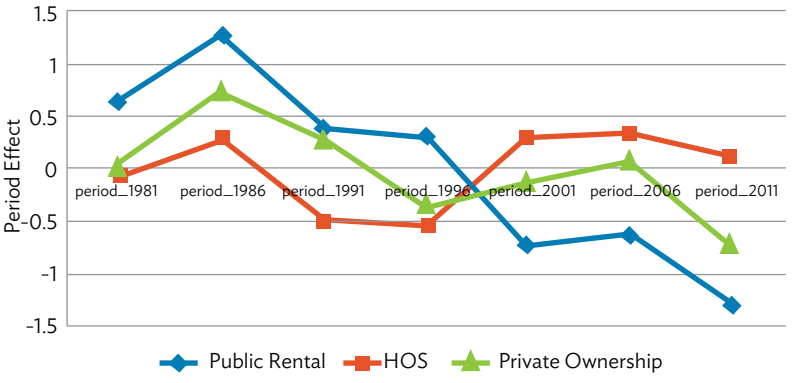

HOS = Home Ownership Scheme.

Source: Author's estimation of census microdata.

[7] The housing ladder in Hong Kong, China used to occur in three steps: PRH, private subsidized housing, and private homeownership. Recently, co-residence with parents has been on the rise among young people aged 18–35 years (Li 2014b).

Compared with the age effect, the period effect plays a more salient role. In the 1987 strategy, an average of 70,000 units were proposed to be built yearly. In the 1998 strategy, the number increased to 85,000 units. In 1987, the private domestic price index was 47.0; in 1998, it was 112.6. Figure 8.8 shows that it was easiest to attain homeownership and to access public housing during 1986–1990, more difficult during 1996–2000, and increasingly difficult afterward.

**Figure 8.8: Period Effects on Housing Tenure Choices**



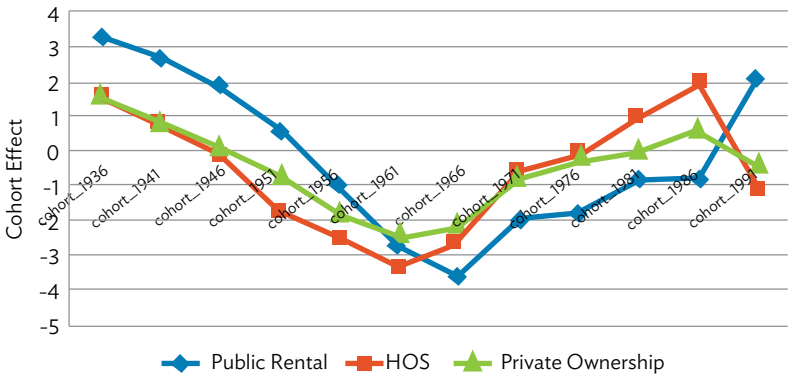

HOS = Home Ownership Scheme.

Source: Author's estimation of census microdata.

The Long Term Housing Strategy did not solve the supply–demand gap. It not only lagged behind the cyclical pattern of the property market but actually amplified market volatility. The 70,000-unit plan in 1987 may have been created too early, because housing prices had just started increasing. Moreover, the 85,000-unit plan in 1998 may have been created too late, as housing prices had already began to fall. The transmission of policy effects in the housing market may have been longer than the government anticipated.

In summary, those born in 1961–1965 had the lowest exposure to financing difficulties or bankruptcy risks (Figure 8.9). This cohort was aged 25–29 years during 1980–1984, when property prices were lowest over the previous 3 decades. In contrast, it was most difficult for those born after 1980 to get on the housing ladder, and the Long Term Housing Strategy never properly addressed this problem.

**Figure 8.9: Cohort Effects on Housing Tenure Choices**




HOS = Home Ownership Scheme.

Source: Author's estimation of census microdata.

### 8.2.2.1 Public Rental Housing

Among different forms of housing subsidies, PRH contributed the largest proportion of sheltering less-wealthy families in Hong Kong, China. Based on a quota-and-points system for applicants on the waiting list, PRH was assigned to nonelderly applicants aged 18–57 years. The starting point was three for applicants aged 19 years, then one accrued three points for each year thereafter. Applicants with higher points had priority. The current eligible criterion is less than HK$20,710 monthly income in total for a four-person household, with less than HK$436,000 for a deposit.

Underpinning PRH was a conversion of the housing authority's HK$5 billion in outstanding debts from government contributions, and interest-free land for a repayment period of 40 years after 1980. By the end of 2013, over 2.1 million people lived in PRH; however, it is difficult to monitor the better-off, so many ineligible families are still living in PRH. To tackle this problem, priority-purchase HOS flats and full-market rents have begun for these persons.

### 8.2.2.2 Home Ownership Scheme

Initiated in 1977, 42,000 HOS flats for sale were to be built by 1985/86, with an average size between 37 and 56 square meters. A parcel of 15-

year installments with 7.5%–9.0% interest rates and a minimum 10% down payment was supported by leading banks for an HOS purchase. The initial income cap for eligible HOS households was HK$3,500 per month. Before the HOS ceased in 2003, 220,000 flats were built and sold to low-income families. One merit of the HOS was to shorten the average waiting time of new PRH applicants by allowing PRH tenants to attain homeownership with 30%–40% discounts on the market value of a flat. One demerit of the HOS was its relatively low housing quality.

There were two forms for HOS application: a green form for public sector tenants, and a white form for private sector tenants. For both forms, applicants had to be aged 21 years or above, with at least two related persons in the family. For the white-form applicants, their household incomes could not exceed HK$10,000 per month for a single-person household, and no family member could own any domestic property. For the green-form applicants, there was no limit on income levels if they chose to surrender their existing tenancies.

With its restart in 2012, an extension of the HOS secondary market was made available to white-form buyers, with a quota of 5,000 allocations. Subsidiary schemes to the HOS include the Private Sector Participation Scheme and the Flat-for-Sale Scheme, which are aimed at shortening the waiting list for the HOS, but the number of provisions is limited.

#### 8.2.2.3 85,000 Plan

Upon his inauguration in 1997, Chief Executive Tung Chee-hwa pledged an increase of the homeownership rate from 52% to 70% in the next decade, and a decrease in average waiting time for PRH from 6.5 years to 3.0 years. The ambitious targets prompted the building of public and private flats starting from 1999/2000, known as the 85,000 Plan. The plan referred to the total number of 85,000 units of public rental and private ownership flats to be built yearly by the government and developers to fulfill the Chief Executive's goal.

Only in 2000/01 did the actual completion of new housing units reach the level of 85,000 (Table 8.3). The major issue with the plan was its timing, as many criticized proposing this plan in the aftermath of the Asian financial crisis, which accelerated the burst of housing bubbles and trapped many mortgage buyers into negative equity.[8] The plan had advantages, however, because the average waiting time for PRH applicants for housing declined from 6 to 3 years.

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[8] The unintended effects largely caused Tung's early retirement in 2005.

**Table 8.3: Key Performance Indicators for the 85,000 Plan**

| Key Performance Indicators | Target 1999/00 | Target 2000/01 | Target 2001/02 | Target 2002/03 | Target 2003/04 | Target 2004/05 | Target 2005/06 | Target 2006/07 |
|---|---|---|---|---|---|---|---|---|
| Number of new housing units | 58,000 (48,500) | 90,000 (89,000) | 40,000 (25,100) | 36,100 (29,032) | 23,800 (7,860) | 21,000 (22,000) | 20,000 (11,400) | 7,200 |
| Average waiting time for public rental housing | 6 years for all, 3.5 years for elderly | 5 years for all, 3 years for elderly | 4 years for all, 3 years for the elderly | 3.5 years for all, 2 years for elderly | 3 years for all, 2 years for elderly | 3 years for all, 2 years for elderly | 3 years for all, 2 years for elderly | 3 years for all, 2 years for elderly |
| Number of flats offered for sale | 52,500 | 58,100 | 35,000 | | | | | |

Source: Hong Kong Housing Authority, https://www.housingauthority.gov.hk/en/index.html (accessed August 2015).

### 8.2.2.4 Tenants Purchase Scheme

The TPS was started in 1998 and ended in 2006. It aimed to assist tenants in PRH to buy the flats in which they resided. Selected estates were proportionally offered to tenants for purchase.[9] Authorized occupants aged over 18 years in PRH were eligible, with no restriction on the purchaser's household size, income, or ownership. The TPS allows buyers to purchase their flats with 30%–45% discounts (Table 8.4). The discount rate was determined by the quality and location of the TPS buildings.

The scheme has assisted 150,000 PRH tenants in buying their flats, despite the limited supply and short implementation period.

**Table 8.4: Tenants' Purchase Scheme Flats**

| | Phase 1 | Phase 2 | Phase 3 | Phase 4 | Phase 5 | Phase 6A/6B |
|---|---|---|---|---|---|---|
| Discount rate | 70% | 55% | 60% | 55% | 55% | 60%/55% |
| No. of flats | 26,900 | 27,100 | 27,500 | 26,414 | 25,728 | 25,766/ 23,290 |

Source: Hong Kong Housing Authority, https://www.housingauthority.gov.hk/en/index.html (accessed August 2015).

### 8.2.2.5 Home Purchase Loan Scheme

The Home Purchase Loan Scheme was intended to resettle current tenants in PRH who had higher incomes than the waiting-list limit. An

[9] Except for housing for the elderly and small household blocks, flats for social welfare purposes, and flats with common entrances and communal facilities.

option to rent or buy in the same estate was proposed to PRH applicants when their turn for allocation came up. For those choosing to buy, a 45% discount on the open market value was offered, with an interest-free loan of HK$800,000 repayable over 13 years or HK$600,000 repayable over 20 years. The average cost of buying the flat was 2.7 times the rental payment for the PRH tenants, and the monthly cost of purchase was 30% of median household income. Buildings for sale were within 30 years of age.

Many tenants found this scheme unattractive, because the cost of purchase was 3.5 times the rent paid without improvement in their housing conditions. The purchase of flats also meant extra costs of repair and maintenance for buyers compared with being tenants. In addition, the difficulty existed regarding agreements of sale for tenants living in the same flat. The scheme was, however, the cheapest for buyers compared with other forms of housing subsidies.

#### 8.2.2.6 Sandwich Class Housing Scheme

This scheme aimed at helping middle-income households whose income levels (HK$30,001–HK$60,000 per month) made them ineligible for PRH or the HOS. Up to 25% of a property price or a total loan of HK$550,000 was available for successful applicants, with mortgage interest rates equal to prime rates plus 1% or 2% for the first mortgage loan. Half of the land price and all construction costs were paid by the Hong Kong Housing Society. For a second mortgage loan, the Hong Kong Housing Authority initiated a 3-year interest subsidy scheme and a 5-year interest-free repayment holiday. These measures lowered the effective interest rate for repayment to prime rates of less than 2.12%.

Due to fiscal constraints of the Hong Kong Housing Authority, the scheme was transferred to the Hong Kong Mortgage Corporation in 2002. Over 5,700 families benefited from an average loan of HK$475,000, but it was difficult to obtain mortgage financing after the Asian financial crisis.

#### 8.2.2.7 Home Starter Loan Scheme

The Home Starter Loan Scheme was designed for first-time homebuyers to purchase flats in the private sector. This scheme provided a low-interest loan (2.0%–3.5%) to qualified buyers (i.e., with incomes below HK$70,000 per month) who had no property ownership in Hong Kong, China, and had not owned within last 5 years. Up to 30% of the property price or a total loan of HK$600,000 (whichever was lower) was offered to first-time buyers who lacked the financial capability for a down payment. More than HK$14.8 billion in loans were granted to

over 33,000 families and single persons. Yet there was possible abuse of the loans to buy high-end housing, because only 20% of successful applicants actually used the loans to buy flats.

### 8.2.2.8 Reverse Mortgage Programme

In 2011, the Hong Kong Mortgage Corporation launched the Reverse Mortgage Programme to encourage banks to offer reverse mortgages to people aged 55 years and above. Table 8.5 details the conditions for different age groups on various payment terms.

**Table 8.5: Scale of Monthly Payout Amount**
(per HK$1 million of property value)

| Entry Age | 55 Years | | 60 Years | | 70 Years | |
|---|---|---|---|---|---|---|
| Payment Terms | One Borrower | Two Borrowers | One Borrower | Two Borrowers | One Borrower | Two Borrowers |
| 10-year | HK$3,200 | HK$2,800 | HK$3,700 | HK$3,300 | HK$5,100 | HK$4,600 |
| 15-year | HK$2,400 | HK$2,150 | HK$2,800 | HK$2,500 | HK$3,800 | HK$3,500 |
| 20-year | HK$2,050 | HK$1,800 | HK$2,400 | HK$2,100 | HK$3,300 | HK$3,000 |
| Life | HK$1,650 | HK$1,450 | HK$2,000 | HK$1,800 | HK$3,100 | HK$2,800 |

Source: Hong Kong Mortgage Corporation, http://www.hkmc.com.hk/eng/ (accessed August 2015).

By 2014, the program only received 624 applications. Likely causes for the low participation rate include lack of awareness and knowledge for the scheme, and expectation that property prices would go up.

### 8.2.2.9 Spicy Measures

The so-called "spicy measures" were a series of restrictive measures that were jointly taken by the Legislative Council and the Hong Kong Monetary Authority to "cool down" the overheated property market in late 2010 (Table 8.6). Spicy measures had short-term impacts on decreasing transaction volumes, but were ineffective in cooling down property prices.

**Table 8.6: Details of Spicy Measures**

| Measure | SSD | Enhanced SSD | BSD | Double AVD |
|---|---|---|---|---|
| Full name | Special Stamp Duty | Enhanced Special Stamp Duty | Buyer Stamp Duty | Double Ad Valorem Stamp Duty |
| Start date | November 2010 | October 2012 | October 2012 | February 2013 |
| Details | Charge 15% for reselling a property within 6 months, 10% for 6–12 months, 5% for 12–24 months | Charge 20% for reselling a property within 6 months, 15% for 6–12 months, 10% for 12–24 months | For buyers other than permanent residents, charge a flat rate of 15% for all residential properties | Double the rates of charge for all types of transactions, applicable to both residential and nonresidential properties |
| Immediate effect | Limited effect on reducing housing transactions | Purchases by companies and nonlocal individuals as a share of total transaction sharply dropped from 17% to 4% within 3 months of implementation | | Limited effect on moderating housing prices |

AVD = ad valorem stamp duty, BSD = buyer stamp duty, SSD = special stamp duty.

Source: Authors.

### 8.2.3 Summary of Policy Instruments

Table 8.7 provides a summary of the major housing policies that have been implemented in Hong Kong, China since the 1970s.

## Table 8.7: Matrix of Housing Policies in Hong Kong, China

| Name | Reverse Mortgage Programme | Home Ownership Scheme | Tenants Purchase Scheme | Home Purchase Loan Scheme | Home Starter Loan Scheme | Sandwich Class Housing Scheme | Public Rental Housing | 85,000 Plan | Spicy Measures |
|---|---|---|---|---|---|---|---|---|---|
| Period | Since 2011 | 1977–2003, 2012–today | 1998–2006 | 1988–2002 | 1998–2002 | Since 1993 | Since 1953 | 1997–2003 | Since 2010 |
| Policy objective | Help elderly homeowners improve their retirement lives | Remove better-off families in PRH to make room for those with more urgent housing needs, and provide families ownership opportunities other than from the private sector | Assist PRH tenants to buy the flats in which they reside at affordable prices | Encourage purchase of private sector flats, release and redevelop rental estates for more needy families | Assist first-time buyers with low and middle incomes to buy their own properties | Help middle-income buyers, who are ineligible for PRH or the HOS, to own homes in the private sector | Enable employed but low-income families to reside in decent housing | Increase homeownership rate from 52% to 70% in the next decade, and reduce PRH waiting time from 6.5 years to 3.0 years | Cool down the overheated property market |
| Policy target | Residents with homeownership aged 55 years or above, usually upper-class elderly | Low-income households in PRH, nuclear families with low incomes and deposits in the private sector | PRH households first entering homeownership, the first step on the housing ladder | PRH tenants with incomes below HK$30,000 per month | First-time homebuyers with incomes below HK$70,000 per month | Middle-income households (i.e., HK$30,001–HK$60,000 per month) | Low-income households | All households | Speculators, nonlocal buyers, high-income families |
| Instrument and policy contents | Reverse mortgage loans by Hong Kong Mortgage Corporation, fees charged from and risks insured by participating banks | Eligible tenants can buy an HOS flat with discount between 30%–40% below the estimated market value | Discounted prices covered by HKHA, 55%–70% of assessed market values | Operated by the HKHA, interest-free loan repayable for up to 20 years or nonrepayable monthly subsidy for 48 months | Administered by the HKHS as the government's agent, 2.0% interest for family incomes below HK$30,000, 3.5% for family incomes HK$30,000–HK$70,000, about 6,000 loans per year | Initially administered by the HKHS, transferred to the Hong Kong Mortgage Corporation, half land price and all construction costs paid, flats sold at concessionary price below market prevailing price | A quota-and-point system to evaluate the edibility of PRH applicants, based on their ages and waiting times | A set of key performance indicators to measure and monitor the progress (e.g., number of new flats to be provided, average waiting time for PRH, number of ownership flats for sale, number of housing loans provided) | Implementation of special stamp duty and its enhanced buyers stamp duty, and ad valorem stamp duty; cancellation of Capital Investment Entrant Scheme |

*continued on next page*

Table 8.7: *continued*

| Name | Reverse Mortgage Programme | Home Ownership Scheme | Tenants Purchase Scheme | Home Purchase Loan Scheme | Home Starter Loan Scheme | Sandwich Class Housing Scheme | Public Rental Housing | 85,000 Plan | Spicy Measures |
|---|---|---|---|---|---|---|---|---|---|
| Merits | Flexible payment and redeem terms, no repayment during lifetime, unlock home equity into regular and consistent cash flows for elders | Completion of over 220,000 units of HOS flats between 1980–2004 | Completion of over 150,000 flats, discounting 30%–45% for buyers | Cheapest way to access home ownership for households of moderate income | Over 33,000 families and individuals get an average of HK$450,000 in loans | Over 5,700 families granted an average of HK$475,000 in loans | By the end of 2013, over 2.1 million people lived in PRH | Average waiting time for PRH declined to 3 years for all and 2 years for the elderly | Short-term effects on bringing down property prices, prevention of nonlocal buyers and speculators |
| Demerits | Not applicable to low-income and nonhomeowners, participation rate surprisingly low, increased income polarization if more people joined the program | Exclusion for the income band immediately above its purchasing limit, shortage of high-class housing | Limited supply and relatively short implementation period, due to the fiscal difficulty of housing authority | Lack of motivation for PRH tenants, unaffordable to most prospective buyers, high threshold for agreement of sale | Possible abuse of loan to buy high-end housing, only 20% actually used the loan to buy flats, criticized for accelerating the property bust | Sharp drop in property prices since 1997 made it difficult to obtain mortgage financing for buyers | Difficult to monitor better-off and thus ineligible families still living in PRH, goals set under LTHS inflexible to market adjustment | Good intention, bad timing, coinciding with the Asian financial crisis, blamed for causing the collapse of the already vulnerable property market | Only have short-term impact on transaction volume, little effect on reducing escalating property prices |

HKHA = Hong Kong Housing Authority, HKHS = Hong Kong Housing Society, HOS = Home Ownership Scheme, LTHS = Long Term Housing Strategy, PRH = public rental housing.

Source: Authors.

## 8.3 Housing Policies in the People's Republic of China

### 8.3.1 Housing Market

Before the 1990s, the PRC maintained a welfare housing system to provide public housing for employees of state-owned enterprises (SOEs). Under this system, the average living space in urban areas increased from 4.5 square meters per person in 1949 to 6.7 square meters per person in 1978 (Gao 2010). This system, however, imposed heavy burdens on SOEs and, thus, lowered the efficiency of housing provision.

To cope with insufficient and inadequate housing, in the mid-1980s, the government initiated experimental housing sales in selected cities to gradually reform the welfare housing system. The market thus went through a transition from a welfare housing provision system to a dual-track system comprising welfare housing and subsidiary housing (1986–1995), followed by transition to a commodity housing system (1995–1998). Started in 1986, experimental housing sales in four pilot cities divided housing costs into three categories: the state, local enterprises, and individual tenants. After 15 years of trial and error, a commodity housing market was eventually established in 1998. Since then, the property market has developed rapidly, and the urbanization process has accelerated. By 2013, over 53% of the total population lived in urban areas, and the average living space in urban areas has increased to 30.1 square meters per person.[10] Homeownership rates have also increased to 88% for urban and 96% for rural residents, and total vacancy rates have reached 23%.[11]

Although the urbanization process has quickened, a number of economic and social problems have arisen. One is the lack of employment opportunities for new university graduates. Master and doctoral graduates find it even more difficult to find a job, due to the lack of high-end opportunities. Longer university stays usually indicate a lack of educated labor for second- or third-tier cities, but not for first-tier cities such as Beijing, Guangzhou, and Shanghai. The logic is that first-tier cities host a majority of top universities, thus a well-educated labor supply is in excess. For second- or third-tier cities, it is the opposite because these cities are less attractive in terms of wage and urban diversity to well-educated labor.

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[10] National Bureau of Statistics of China, http://www.stats.gov.cn/english/statisticaldata

[11] Southwestern University of Finance and Economics. China Household Finance Survey. http://www.chfsdata.org/

Another problem is vacant housing. Due to the One-Child Policy, most young people born in the 1980s and 1990s from urban areas do not have siblings. However, in rural areas, this policy was less seriously observed. The difference leads to imbalanced urban–rural growth and a distorted rental market. Since 2000, the post-1980s generation born under the One-Child Policy has entered into marriageable age. As intergenerational family wealth is passed down in terms of housing, urban couples may face a situation in which they will have more than one housing unit, thus leading to substantial vacant housing. However, for people born in rural areas who choose to work in urban areas, these existing housing stocks are unaffordable to purchase. Most of them choose to rent, as the price–rent ratio is higher than the price–income ratio.

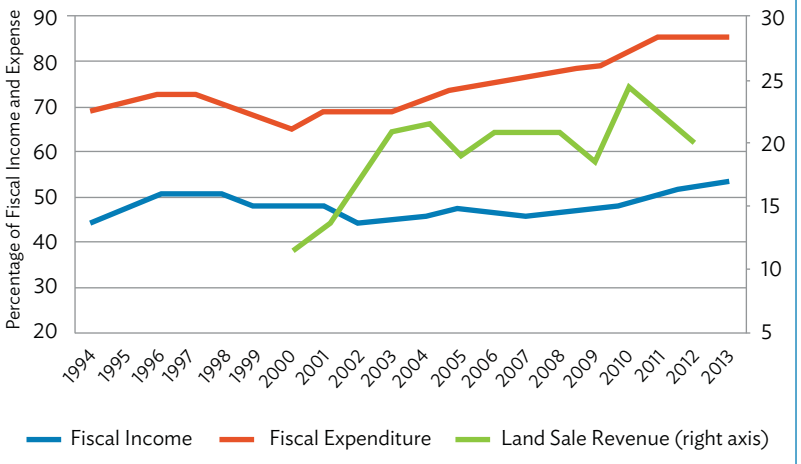
Collectively owned by the people, in practice, land-use rights and their transfer revenues were determined and collected by local governments. The separation of ownership and lease rights stimulated local governments to temporarily borrow more land from their people for more urgent use, such as enhancing local infrastructure and attracting foreign direct investment through low or zero land prices. Because higher economic growth enhanced their chances of political promotion (Li and Zhou 2005), local officials' best strategy was to collect more land-lease revenue for supporting GDP growth. Moreover, because the normal period of tenure of local officials was 5 years, the costs of current government decision makers were usually repaid by their successors. Thus, the more they borrowed, the less likely they were to repay the loans by themselves. It is not surprising that land sales and property prices increased saliently over the last decade (Figure 8.10).

In 1994, the PRC embarked upon tax and fiscal reform to replace the previous discretionary fiscal contract system. Under the new fiscal allocation system, three-quarters of the variable product tax from the manufacturing sector was redistributed to the central government (Figure 8.11). To support economic growth, local governments had to seek extra sources of income. Land-lease revenue, hence, became an important channel to fill the gap between local fiscal income and expenditure. More recently, the fiscal stimulus package in 2009 strengthened the linkage between the property market and real economy, making local officials more reliant on land leases to support economic development (Deng et al. 2011).

**Figure 8.10: Land Sale Prices and Property Prices**
(CNY per square meter)


Source: National Bureau of Statistics of China, http://data.stats.gov.cn/

**Figure 8.11: Percentage of Fiscal Income and Expense of Local Governments**




Source: National Bureau of Statistics of China, http://data.stats.gov.cn/

### 8.3.2 Major Housing Policies

Initially, 80% of the population was to live in Economic and Comfortable Housing (ECH), 15% in Cheap Rental Housing (CRH), and the rest in private homes. However, the deflation pressure since 1998/99 had forced the government to give up this goal and to take supportive measures to foster commodity housing development (Table 8.8).

**Table 8.8: Supportive Measures to Foster Housing Market Development**

| Start Date | Issuing Authority | Main Contents |
|---|---|---|
| July 1998 | The State Council | Announce establishment of the commodity housing market |
| February 1999 | People's Bank of China | Lower 1-year individual housing loan rate to 5.58% |
| September 1999 | People's Bank of China | Lower 5-year Housing Provident Fund loan rate to 4.14% |
| October 1999 | People's Bank of China | Extend payback period for individual housing loans to 30 years |
| October 1999 | State Administration of Taxation | Exempt taxes charged on the Housing Provident Fund |
| September 2000 | State Administration of Taxation | Reduce rent income tax to 3% |

Source: Li and Chiang (2012).

In 2003, the State Council formally abandoned the plan of ECH as the main housing supply, and the market entered a period of rapid expansion. Average national housing prices increased by 147% from 2003 to 2012. Many regulative and restrictive policies were implemented during this period (Table 8.9), but most were unable to cool down the market due to principal–agent problems between the central and local governments (Gao 2010; Li, Chiang, and Choy, 2011).

Apart from economic and financial policies, a number of housing schemes and measures were implemented over the last 2 decades.

#### 8.3.2.1 Economic and Comfortable Housing

ECH, known as Jingji Shiyong Fang, was introduced by the government through the Decision on the Deepening of Urban Housing System Reform in 1994, to middle- and low-income families at the full-cost or standard price, which was equal to the full-cost price plus a maximum

**Table 8.9: Regulative and Restrictive Measures to Mediate Housing Prices**

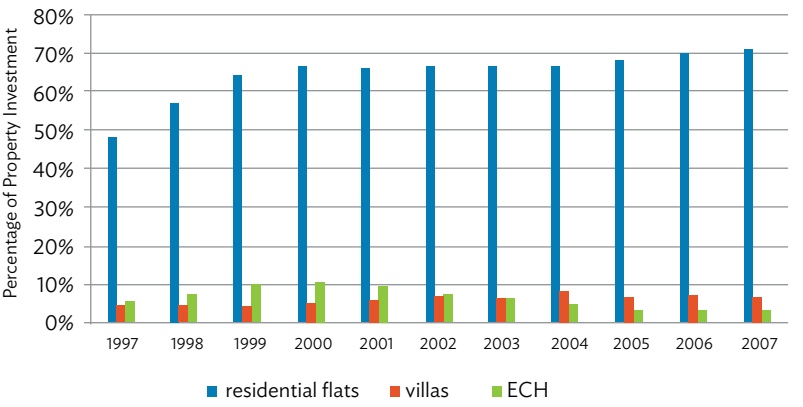
| Start Date | Issuing Authority | Main Contents |
|---|---|---|
| June 2003 | People's Bank of China | Increase minimum down payment ratio for homebuyers to 20% |
| March 2005 | People's Bank of China | Increase minimum down payment ratio for homebuyers to 30% |
| May 2006 | State Administration of Taxation | Charge business tax on secondary housing market transactions |
| July 2006 | State Administration of Taxation | Charge valued-added tax on secondary housing market transactions |
| September 2006 | State Administration of Foreign Exchange<br>Ministry of Housing and Urban-Rural Development | Forbid foreign buyers from purchasing domestic commodity housing |
| March 2007–August 2008 | People's Bank of China<br>Ministry of Housing and Urban-Rural Development | Increase residential loan rates 6 times, deposit reserve ratio 13 times, Housing Provident Fund loan rates 6 times in a row |
| April 2010 | The State Council | Restrict purchases, and restrict loans |

Source: Li and Chiang (2012).

of 3% profit margin (Li 2012). Local governments at provincial levels and below were given the ultimate autonomy to plan for ECH, identify low-income families qualified, and reserve land for ECH development. Local governments were required to cover the subsidiary costs and provide land resources. The price discount was not covered by the central government.

Concerning revenues, both local governments and property developers were not motivated to build ECH under this arrangement. ECH did not contribute to the fiscal incomes of local governments, and the profit margin of 3% was not attractive to property developers. ECH comprised 11% of total real estate investment in 2000, and declined to only 3% in 2007 (Figure 8.12). Most ECH were built under compromised contracts between local governments and property developers; once developers intended to bargain for some land, they were usually asked by local authorities to build ECH on the land.

**Figure 8.12: Proportion of Property Investment**




ECH = Economic and Comfortable Housing.

Source: Li (2012).

Local officials had other incentives to provide ECH. In Beijing, during 2006–2010, the municipal government built over 15 million square meters of ECH for local residents to accommodate those who were resettled for the 2008 Olympics (Li 2012).

Developers also considered ECH projects profitable if their networks with local officials were strong. In Nanjing, among 76 affordable housing projects carried out by 34 property developers from 2002 to 2010, 65 were undertaken by developers who had close relationships with local governments (You, Wu, Han 2011); 46 were projects by 18 government subsidiary property development companies; 14 projects were by 9 property development companies reformed from government departments; and 5 projects were by 4 property development companies affiliated with SOEs.

Because it was not a great success, ECH gradually disappeared from official documents after 2008.

#### 8.3.2.2 Housing Provident Fund

There are generally two types of housing finance systems: a market-based institution integrated into the broader financial system, or a self-funded circuit institution separated from the rest of the financial

system (Chen and Deng 2014). The Housing Provident Fund (HPF) belonged to the latter system, which was a compulsory savings scheme to provide self-funded housing credit for housing finance. As a bottom-up institutional innovation, the HPF was revised from the example of the Central Provident Fund in Singapore.

Employers and employees of the public sector and SOEs both contribute 5% of employees' monthly incomes to individual HPF accounts. Managed by an HPF center, the savings are kept for financing employees' future housing purchases.

Previous studies have documented a number of merits of the HPF, such as a steady stream of deposits (Zhang 2000) and a clear definition of roles and obligations for the government and developers (Yeung and Howes 2006). The transaction costs of maintaining personal relationships for favorable housing allocation were indeed lowered.

By 2012, there were over 100 million contributors to the HPF (Chen and Deng 2014). The latest HPF rate is 4.7% for loans of at least 5 years and 4.2% for loans less than 5 years. The maximum HPF loan period is 30 years, and the total loans amount to CNY1.04 million. However, self- and informally employed workers and those employed in the private sector are not covered by the system; thus, only about one-quarter of all urban workers have access to the HPF (Wei, et al. 2014).

#### 8.3.2.3 Cheap Rental Housing

After a decade of reforms, CRH regained policy attention in the 11th Five-Year Plan. Over 11 million units of public housing were built during 2006–2010, and 36 million were scheduled for 2011–2015. The new eligibility criteria for CRH applicants were that monthly income be below CNY570, and the average living space be less than 7 square meters.

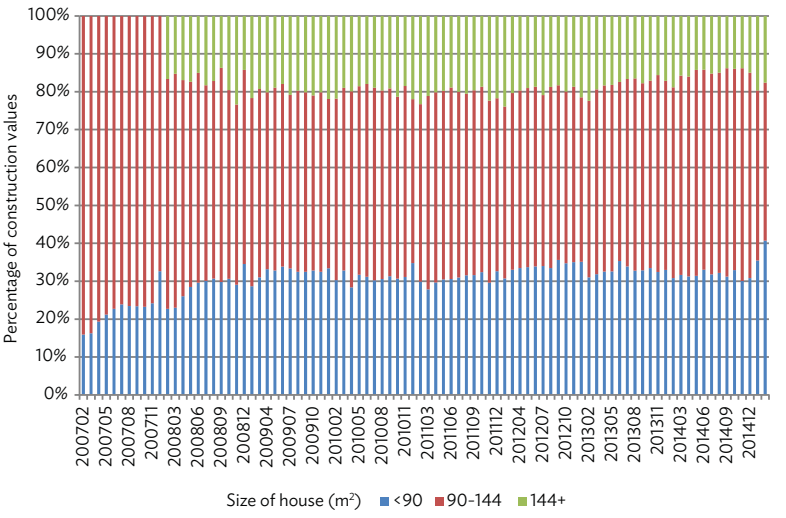
Because the income requirement is too low for most residents to qualify, the CRH has not been well developed. Besides, only urban citizens who have residence permits are eligible; new city residents are excluded from coverage. Lack of enforcement by the central government also contributed to reducing its effects (Wei, et al. 2014). The policy may have also facilitated governments to reuse old vacant housing and renovate shanty housing. In 2014, CRH was combined with other forms of low-rent housing into PRH.

#### 8.3.2.4 70–90 Policy

The 70–90 Policy, or the Adequate Housing Development Scheme, refers to the policy regulation that at least 70% of newly built flats since 2006 must be under 90 square meters. It aims to reduce the average living

space to lower increasing housing prices, but has failed almost from the beginning. The proportion of newly built flats under 90 square meters was below 35% of total value since its implementation: it was merely 22% for 2007, and did not surpass 33% for the following years (Figure 8.13).

**Figure 8.13: Proportions of Newly Built Flats by Total Value**




m² = square meter.

Source: National Bureau of Statistics of China, http://data.stats.gov.cn/

Regarding this policy, property developers devised new forms of housing construction to meet the requirements of building flats under 90 square meters but selling flats above 90 square meters. One was to add partitioned walls between two smaller flats, each satisfying the 70–90 Policy, but both units were then sold to one buyer only. Then, the owner either pulled down the wall or constructed a new door on the wall to combine the two flats. Another way was selling two flats—one upstairs and one downstairs—to one buyer, who then built stairs to link the two flats together.[12]

[12] Thus, buyers also acted as construction workers and that may explain why 90% of newly built flats in the PRC today are still sold without any decoration (known as *maopifang*).

#### 8.3.2.5 Restrictive Purchases and Restrictive Loans

On 30 April 2010, the State Council issued the *xiangou* (restrictive purchase) policy to cool down the overheated property market. Restrictive purchases set purchase limits on the number of flats saleable to buyers. In 40 major cities, residents with local *hukou* (i.e., household registration) or special experts can buy up to two flats, nonlocal residents or foreigners can only buy one flat, and the interval for buying a second flat must be at least 2 years.

One intention of the restrictive purchase policy, similar to other housing policy initiatives in the PRC, was a statement beginning with "To prevent housing prices from increasing too fast..." Such focus conveyed two meanings: (i) it would be intolerable if the current speed of housing price increases continued, and (ii) it would be inappropriate if housing prices decreased from their current price levels. Indeed, the government was willing to see housing prices continue their upward trend, because the real estate sector was more important to the economy than reflected by its share of value added to total value added (Zhang, Han, Chan 2014).

A right-tailed augmented Dickey-Fuller test is adopted to explore the policy impacts of restrictive purchases. The test is arranged in a forward-recursive manner to identify the origin and collapse dates of a bubble (Phillips, Wu, and Yu 2011). The model is based on the assumption that the housing price–rent ratio has a similar bubble pattern to the price–earnings ratio of stock markets, consistent with the irrational bubble definition by Case and Shiller (2003).

Figure 8.14 detects housing bubbles in eastern coastal cities. At the 99% confidence level, 6 out of 15 cities detected signs of bubbles in 2006/07, but was only so for Shenzhen in 2007/08, and, again, six cities in both 2008/09 and 2009/10. After the PRC implemented the restrictive purchase policy, none of the 15 cities had any signs of housing bubbles in 2010/11. However, eight cities had bubbles detected in 2011/12. Most cities have shown signs of bubbles since 2012.

Figure 8.15 summarizes bubble detections in central inland cities. At the 99% confidence level, most cities, except Hohhot, did not have signs of property bubbles in 2009/10. Yet restrictive purchases were implemented in all major cities. This led to unprecedented bubbles in most of the central inland cities since 2011/12.

Similarly, most western inland cities did not have bubbles before 2010, yet restrictive purchases have depressed rigid housing demand and caused deterred bubbles since 2012 (Figure 8.16).

The proposal of restrictive purchase seems timely. Before 2010, house prices in 35 major cities were not significantly higher than would be justified by underlying fundamentals, although there were some signs

## Figure 8.14: Housing Bubbles in Eastern Coastal Cities

| | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | 2013/14 |
|---|---|---|---|---|---|---|---|---|
| Beijing | X | X | X | O | X | X | O | X |
| Tianjin | X | X | X | O | X | X | O | X |
| Dalian | X | X | O | X | X | X | X | O |
| Shenyang | O | X | X | X | X | X | O | O |
| Jinan | X | X | X | X | X | O | O | O |
| Qingdao | X | X | O | X | X | O | O | O |
| Nanjing | O | X | X | O | X | O | O | O |
| Shanghai | X | X | X | O | X | O | O | O |
| Hangzhou | O | X | O | X | X | O | O | O |
| Ningbo | O | X | O | X | X | O | O | O |
| Fuzhou | O | X | X | X | X | X | O | O |
| Xiamen | X | X | X | X | X | O | O | O |
| Guangzhou | X | X | O | X | X | O | O | X |
| Shenzhen | O | O | O | O | X | X | O | X |
| Haikou | X | X | X | O | X | X | O | O |

Note: O indicates the existence of a bubble for 3 months or longer, X indicates other situations.

Source: Authors.

## Figure 8.15: Housing Bubbles in Central Inland Cities

| | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | 2013/14 |
|---|---|---|---|---|---|---|---|---|
| Harbin | X | X | X | X | X | O | O | O |
| Changchun | X | X | X | X | X | X | X | X |
| Shijiazhuang | O | X | O | X | X | O | O | O |
| Taiyuan | X | X | X | X | X | X | O | O |
| Zhengzhou | X | X | O | X | X | X | O | O |
| Hefei | X | X | O | X | X | O | O | X |
| Wuhan | X | X | X | X | X | O | X | O |
| Nanchang | X | X | X | X | X | O | O | O |
| Changsha | X | X | X | X | X | O | O | X |
| Hohhot | O | X | X | O | O | X | O | X |

Note: O indicates the existence of a bubble for 3 months or longer, X indicates other situations.

Source: Authors.

**Figure 8.16: Housing Bubbles in Western Inland Cities**

| | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | 2013/14 |
|---|---|---|---|---|---|---|---|---|
| Xi'an | X | X | X | X | X | O | O | O |
| Lanzhou | X | X | X | X | X | O | O | X |
| Yinchuan | X | X | O | O | X | X | O | X |
| Xining | X | X | X | X | X | X | X | X |
| Urumqi | O | X | X | O | O | X | O | X |
| Chengdu | X | X | X | X | X | O | O | O |
| Chongqing | X | O | X | O | X | O | O | O |
| Kunming | X | X | X | X | X | X | X | O |
| Guiyang | X | X | O | X | X | X | O | X |
| Nanning | O | X | X | X | X | X | X | O |

Note: O indicates the existence of a bubble for 3 months or longer, X indicates other situations.

Source: Authors.

of overvaluation in the mass markets in Shanghai and Shenzhen and luxury segments in Beijing and Nanjing (Ahuja et al. 2010). There were deteriorating affordability problems after 2009, because the price–rent ratios in Beijing, Hangzhou, Shanghai, and Shenzhen had surpassed 40 (Wu, Gyourko, and Deng 2012).

In line with the restrictive purchase policy, the People's Bank of China implemented the restrictive loan (*xiandai*) policy on the same date. For buying a first house under 90 square meters, the lowest down payment ratio is 20%. For buying a second house, the lowest down payment ratio is 50%. For buying a third house, banks can refuse to issue mortgage loans. Under other circumstances, the lowest down payment ratio is 30%.

Although the initial goal of restrictive purchase was to prevent housing prices from increasing too fast, it seems that restrictive purchases were unable to suppress rigid housing demand. Rebound of property prices in 70 major cities and bubble detections of most of the 35 cities since 2013 are probable side effects of this policy. However, it was more effective than the restrictive loan policy in cooling down the overheated property market (Li and Xu 2015).

#### 8.3.2.6 Property Tax Experiment

Shanghai and Chongqing had continuous bubble detection since 2011, perhaps why a property tax experiment was initiated in both cities

in January 2011. This experiment was aimed at changing the nation's homeownership-biased housing policy, reflected by the poor use of the HPF for low-income households. Property tax income was to be used to construct more CRH, and the property tax itself was intended for directing individual homeowners to sell more vacant housing to be circulated into the CRH sector. The annual charge was set to be equal to the house value × (1 – exemption rate) × 1.2%, or house rent × 12%. For Shanghai, it was mainly charged for newly bought housing. For Chongqing, it was mainly charged for luxurious housing.

The experiment ended in December 2014. There was no timetable for the establishment of the property tax system. It is surprising that the property tax experiment seemed not to be welcomed by local officials, although it did increase local fiscal income. One possibility is that local governments were cautious about the distribution of the property tax collected. There is no blueprint, and the 1994 fiscal and tax reform was a lesson for local governments intending to maximize their fiscal revenue. Another possibility is that, for second- and third-tier cities, there were no urgent needs for taxing the stock of housing, because the local governments still had land to sell. Perhaps above all, however, local officials were disinterested in setting up a national system for tracking real-estate ownership and sales transactions.

### 8.3.3 Summary of Policy Instruments

Table 8.10 provides a summary of the major housing policies and programs that have been implemented in the PRC over the last 2 decades.

## Table 8.10: Matrix of Housing Policies in the People's Republic of China

| Name | Housing Provident Fund | Economic and Comfortable Housing | Cheap Rental Housing | 70–90 Policy | Restrictive Purchase | Property Tax Experiment |
|---|---|---|---|---|---|---|
| Period | Since 1991 | Since 1995 | 1999–2014 | Since 2006 | Since 2010 | Since 2011 |
| Policy objective | Gather collective savings for funding housing finance shortage | Provide affordable and decent housing for middle- and low-income households | Help lowest low-income groups with a decent living | Build 70% of newly built flats below 90 square meters | Curb speculations and limit owners with more than two properties, to bring down vacancy rates, strengthen monitoring of housing bubbles, tackle the problems of 70–90 Policy | Curb speculation for luxurious housing, limit new home buyers, and speed up establishing a national system for real estate ownership and sales transactions |
| Policy target | Employees of public sector and SOEs | Moderate- and low-income families | Lowest low-income families | Middle-income households | Middle- and high-income households | Middle- and high-income households |
| Instrument contents | Employees and employers both contribute 5% of employees' monthly income to the fund account, accumulated for home purchase financing | Full-cost price or standard price, which was a full-cost price plus a maximum of 3% profit margin | Monthly income below CNY570 and average living space below 7 square meters | Require property developers to build 70% of new flats under 90 square meters; local land and construction bureau play the monitoring roles | Restricted purchases in 47 cities, nonlocal residents or foreigners can only buy one house, interval for buying a second house must be at least 2 years | With experiments in Shanghai and Chongqing, annual charge equals house value × (1 –exemption rate) × 1.2%, or house rent × 12%, mainly for newly bought housing and luxurious housing |

*continued on next page*

Table 8.10: *continued*

| Name | Housing Provident Fund | Economic and Comfortable Housing | Cheap Rental Housing | 70–90 Policy | Restrictive Purchase | Property Tax Experiment |
|---|---|---|---|---|---|---|
| Merits | Housing subsidy in cash form, steady deposit, clear definition of obligation between governments and developers | Stabilized housing prices in the transition from the welfare housing system to commodity housing system | Facilitated government reuse of old vacant housing and renovation of shanty housing | Proportion of newly built flats under 90 square meters by value increased | Positive effect in preventing housing prices from increasing too fast (the effect lasts for 2 years), facilitate monitoring ineligible affluent families from buying ECH | A convention of learning from trials and errors |
| Demerits | Self- and informally-employed workers and small private firms employees not covered | Heavy fiscal burden for local governments, eligibility of applicants often questioned | Only urban citizens who have residence are eligible, migrants excluded, lack of enforcement measures | Subdivided units and partitioned walls invalidate the effectiveness of policy, producing larger flats for buyers | Distort market mechanism, local governments reluctant to follow, may be too harsh to depress rigid demand | Local governments' strong disincentives reflected by a delayed establishment of national housing information system |

ECH = Economic and Comfortable Housing, SOE = state-owned enterprise.

Source: Authors.

## 8.4 Conclusion

The PRC and Hong Kong, China function under different economic systems. The PRC is fundamentally socialist with more planned economy features, while Hong Kong, China is generally capitalist with more free-market features. Such "one nation, two systems" distinction tends to be obscured in their housing policies, as there are more social welfare elements in Hong Kong, China and more market-competitive elements in the PRC.

A comparison of the major housing policies implemented in the PRC and Hong Kong, China indicates that policies encouraging private and high-income housing (e.g., mortgage interest rate reduction) tend to be more effective than policies favoring public or low-income housing (e.g., housing subsidies) in meeting housing provision targets. Policies influencing market demand (e.g., restriction of purchase) tend to be more effective than policies influencing market supply (e.g., downgrading of living standards) in stabilizing housing prices.

The main policies in the PRC are mortgage interest rate reduction (e.g., the HPF), downgrading of the living standard (e.g., the 70–90 Policy), loan-to-value and debt-to-income regulations (i.e., restrictions on real estate loans), restrictions of new purchases in the owner-occupied market, as well as rent control in the rental market. The main policies in Hong Kong, China include housing subsidies, mortgage interest rate deduction, and property tax on housing purchases (i.e., "spicy measures") in the owner-occupied market, as well as public housing in the rental market.

The review of housing policies shows that some have deviated from their expected outcomes. Empirical tests further reveal that certain policies may, in fact, enlarge property market fluctuations due to poor timing of implementation. Some lessons can be gleaned from reviewing these policies.

One lesson from Hong Kong, China relates to the 85,000 Plan, a plan with good intentions but bad timing. One suggestion for the government to respond more efficiently to market changes is to retain the land transaction application system, which was initiated in 1999 but cancelled in 2013. The land transaction application system required listing the pieces of land to be developed publicly before they were sold by the government. Major developers applied for the land in which they were interested at negotiated prices with the government in advance. The measure stabilized the supply and demand of housing through decisions made by the market instead of the government. However, a major criticism was that it also encouraged collusion between the government and developers.

Another lesson from Hong Kong, China, which may shed light on the PRC's restrictive policies on buyers, was the ineffectiveness of the "spicy measures" on lowering housing prices. This was due to the asymmetric effects of increasing and decreasing transaction costs on economic efficiency, as raising transaction costs seemed less effective to cool down property prices than lowering transaction costs to boost property prices. Hence, it may be less effective for the PRC's restrictive purchase policies to correct the increasing trend of housing prices in the long term. Yet if the government merely intended to prevent housing prices from increasing too fast for a short term, restrictive purchase seems to have achieved this goal. Indeed, restrictive housing policies seem to be more effective under a system that is more traditionally planned than market-oriented.

While most housing programs in Hong Kong, China aim at assisting public housing tenants to become private homeowners, this goal is far from being achieved, mainly because these policies provide different forms of housing subsidies—a less effective method to stimulate owner-occupied housing (Yoshino, Helble, and Aizawa 2015). Similarly, the ECH scheme has failed to increase the homeownership rates of low-income households in the PRC. On the contrary, the success of the HPF in providing mortgage interest rate reduction—a more effective measure to encourage homeownership attainment (Yoshino, Helble, Aizawa 2015)—mainly accounts for the high homeownership rate in the PRC.

There are no easy solutions to other housing problems in the PRC, such as the inequity of housing wealth and increasing housing unaffordability. Although valuable suggestions were proposed on property tax reform (Gao 2010), the delayed establishment of a national property tax system indicates the complex relationship between the central and local governments, which makes housing inequality more difficult to tackle. One suggestion is to increase the land supply through relocating rural residents to buildings on the urban–rural fringe. Rural residents still find it difficult to access education and medical resources, the former being more relevant to the younger generation and the latter critical to the elderly. Through a lump-sum compensation for rural people, local governments acquire collectively owned land in rural areas. This is different from the government's current strategy of urbanization, which focuses on resettling rural–urban migrants who are mainly middle-aged and work in a city. The long-term target is to enhance the education levels of young people from rural areas, and to provide better medical services for the elderly. Compensation, personal development, and health care expenses can be funded from various channels, such as the central government's transfer payments; repayments of fellowships and donations from graduates; a voluntary investment fund for urban

development, like the hometown investment trust fund proposed for Japan (Yoshino and Taghizadeh-Hesary 2014); and a mandatory scheme for pension funds and health insurance such as the Mandatory Provident Fund in Hong Kong, China.

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* The Asian Development Bank refers to China by the name People's Republic of China.

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## The Housing Challenge in Emerging Asia

*Options and Solutions*

The book provides new insights and ideas to design and implement policies that can best improve access to affordable and adequate housing. It offers an innovative theoretical framework for conceptualizing and analyzing housing policies. It also critically reviews and presents lessons from housing policies of several countries, including advanced economies within and outside Asia, such as Japan, the Republic of Korea, Singapore, Switzerland, the United Kingdom, and the United States, as well as emerging countries within Asia, such as India and the People's Republic of China.

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