Residential Mobility, Housing Choice, and Price Determinants in Transitional Vietnam: The Case of Ho Chi Minh City

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Abstract

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Vietnam is a transitional country in Asia that has demonstrated remarkable economic growth since the Doi Moi policy was enacted in 1986. As a result of its economic achievements during the last few decades, rapid population increase and urbanization of metropolitan cities have provoked a housing shortage and the degradation of housing conditions. The main purpose of this study is to understand residential mobility, housing choice, and the determinants of housing prices in Ho Chi Minh City, with the aim of establishing recommendations for sustainable housing development in Vietnam. For the empirical part of this study, citizen questionnaire surveys and in-depth interviews were conducted in Ho Chi Minh City, property information was collected, and extensive analyses were carried out using independent tests and hedonic regression modeling. This study mainly constitutes three parts; the study's results and findings are summarized below.

The first part of the study is an analysis of housing choice and the determinants of voluntary movement within a market-driven framework. For an empirical study, a citizen questionnaire survey and in-depth interviews were conducted in Ho Chi Minh City, and analyses were carried out. The results indicate that row houses of single-family housing were strongly preferred, but the preference for apartments is also increasing with residential mobility. The popularity of row houses is closely associated with environmental adaptability and spatial flexibility of these mixed-use buildings, which demonstrates Vietnam's innate housing context. However, road conditions and commuting environments resulting from narrow inner roads in the predominantly self-built districts of Ho Chi Minh City were major drawbacks leading to limited accessibility by car and public transportation, and an increase in the crime vulnerability of these neighborhoods. Apartments with multi-family housing attract residents with their accessibility to main roads, spacious parking and open spaces, and community facilities. The row house choice was closely associated

with life cycle, while behavioral approaches and apartment choice were influenced by environmental and institutional factors.

As a further extension, in the second part of the study, the price determinants of apartments were investigated to ascertain whether the reasons for residential mobility were reflected in the price determinants of housing. This study was conducted in an affordability framework of the apartment market of Ho Chi Minh City using the hedonic price model. The results identified common factors for both affordable and unaffordable apartments, such as vertical shared access and proximity to the center of the city. For affordable apartments, housing and location attributes, which are more interrelated with the effects of urbanization, were observed to affect the price, whereas prices of unaffordable apartments were affected by community facilities and quality of life environmental aspects such as swimming pools, mixed-use development, lower-density neighborhoods, and proximity to rivers and international schools. This study also demonstrates that the reasons for moving voluntarily were based on the price determinants of housing in Ho Chi Minh City.

The third part of the study is an investigation into residential mobility and housing choice from involuntary movement, specifically observing state-driven urban renewal projects. A rapid increase in the population of metropolitan cities provoked a housing shortage and the degradation of housing conditions, and so slums have become widespread in Ho Chi Minh City. Although the city announced slum renewal plans along with resident resettlement, particularly for the slums alongside the rivers, a slum deficiency survey and subsequent analysis are imperative to achieve sustainable slum redevelopment and successful resettlement of the residents. Through site observations and door-to-door interviews within District 8 (Ward 14), one of the worst slums in Ho Chi Minh City where many people have settled since the Doi Moi, I noticed that the conditions of riverfront slums were inferior to inner block areas in terms of housing quality, infrastructure, and property ownership. In particular, the lack of property ownership was a critical factor in resettlement choice; most residents who did not own property preferred in-situ slum upgrading or “site-and-service” relocation, which includes better housing quality and legal tenure. Other dwellers who obtained property ownership preferred cash compensation with self-relocation. Furthermore, the preferable housing type in resettlement was a row house that enabled property ownership and microbusiness operation. Institutional and behavioral influences of residential mobility can be observed here.

In conclusion, residential mobility and housing choice diverge with the varying contexts of a transitional country as Vietnam urbanizes and economic growth develops from a transition economy utilizing market mechanisms. The transition to property privatization significantly affects residential mobility, and there are

implications for this study. As the ownership of land and housing is an exemplary right of a capitalist society representing a domain of wealth and power, Vietnam requires a stable balance of transition economics and institutional environments for property rights. Although the current flexible institutional framework can generate efficient productivity in the early stages of the transition period, it cannot be a model for sustainable socio-economic and urban growth. Flexibility can weaken the government's management and monitoring system of individual property rights and can cause inequitable socio-spatial distribution with polarization of housing status. This transition does not symbolize flexibility; rather, it can be understood as development in progress.

Keywords: Residential mobility, Housing choice, Hedonic price model, Row house, Apartment, Slum, Property right, Ho Chi Minh City, Vietnam
Student Number: 2015-30278

Publication Notice

This doctoral dissertation includes two published papers (Chapters 4 and 5) and one submitted paper under review (Chapter 6) in academic journals (SSCI) that were completed during my doctoral course at Seoul National University:

Chapter 4.

Voluntary Residential Mobility and Housing Choice in HCMC

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Seo, D., & Kwon, Y. (2017). In-Migration and Housing Choice in Ho Chi Minh City: Toward Sustainable Housing Development in Vietnam. Sustainability, 9(10), 1738.

Chapter 5.

Price Determinants of Apartment in HCMC

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Seo, D., Chung, Y. S., & Kwon, Y. (2018). Price Determinants of Affordable Apartments in Vietnam: Toward the Public–Private Partnerships for Sustainable Housing Development. Sustainability, 10(1), 197.

Chapter 6.

Involuntary Residential Mobility and Resettlement in HCMC

Submitted on May 31, 2018 and under review in the journal 'Habitat International', titled *'Resettlement Choice on Slum Redevelopment in Vietnam: A Case of Slum of District 8 in Ho Chi Minh City'.*

Some parts of each published chapter are included in Chapter 1 (Introduction), Chapter 2 (Theoretical Review), Chapter 3 (Urbanization and Housing Development in Vietnam), and Chapter 7 (Conclusions); combined with further studies, they complete this doctoral dissertation.

Table of Contents

List of Tables

List of Figures

Chapter 1
Introduction

1.1. Background of Study

Vietnam has registered dynamic national growth following the introduction of economic reform, the Doi Moi (Đổi Mới: open door) policy, in 1986. It has moved away from the government-led economic structure by opening up the local market. The policy goal was to create a socialist-oriented market economy and to accelerate the economic transition to industrial manufacturing, creating employment opportunities and economic output (Beresford, 2008). This led to a remarkable growth in foreign direct investment (FDI) and spurred industrial manufacturing development in Vietnam. The reforms have achieved a steady annual GDP growth of 5–10% for the last several decades, enabling Vietnam to leap forward as one of the fastest-growing countries in Asia, with falling poverty rates and improved quality of life (UN Habitat, 2014).

Accordingly, since the initiation of the Doi Moi economic reforms, Vietnam's urbanization rate has rapidly increased with a great influx of immigrants from rural areas. As the registration system of residence was relaxed, and people's lives became independent from government subsidies and assistance, spontaneous interprovincial and interurban rural-to-urban migrations accelerated (Dang, Goldstein, & McNally, 1997; Dang, Tacoli, & Hoang, 2003; Nguyen & McPeak, 2010). Thus, nationally, the urban proportion of the population increased from 20.5% in 1990 to 34.7% in 2017 (UN Habitat, 2014).

The phenomenon was especially observed in Ho Chi Minh City (HCMC), which includes 9.2% of Vietnam's total population as the city served as the largest economic center and financial hub in the country (McGee, 2009). However, this rapid urbanization has led to a rise in the demand for affordable housing for the

influx of migrants into the city. The land and housing supply systems were not well organized in Vietnam, and thus predominately self-built housing and informal settlements have become widespread (Gough & Tran, 2009; Waibel, Eckert, Bose, & Volker, 2007). The temporary or dilapidated housing constituted two-thirds of Vietnam's urban housing in the 1990s (Vinh & Leaf, 1996). The rate of permanent housing, which has durable foundations and permanent construction materials, was only about 25% in both 2002 and 2012 in HCMC, and the rest was temporary and semi-permanent housing (UN Habitat, 2014). The housing shortage and organic growth patterns of self-built housing developments (Figure 1) have generated dense neighborhood environments, a lack of road infrastructure, traffic congestion, air pollution, and widespread slum formation threatening public safety and security (Gough & Tran, 2009; Ho & Clappier, 2011; UN Habitat, 2014; Waibel et al., 2007; Zhu, 2012). In this regard, the problems in the housing sector were exacerbated in both qualitative and quantitative terms with urbanization in HCMC.

Figure 1. Typical Cityscape of Self-built District in HCMC

To increase housing supply and enhance housing affordability, the Vietnamese government not only revised the land laws and housing policies to encourage active involvement of private housing developers and investors, but also launched a subsidized mortgage program as per the regulations of the central banks in June 2013 called "VND 30 Trillion Home Loan Package".[1] Since the subsidized program was

[1] This is a preferential home loan program for low- and middle-income people who wish to purchase an apartment. The Vietnam government issued Decree 61/NQ-CP to execute the loan packages to increase housing affordability and encourage housing supply from the private sector. The conditions

launched, around 80% of apartment buyers in HCMC have taken advantage of the package (JLL, 2016; World Bank, 2015), which underlines the fact that more apartment projects can deliver sustainable housing solutions to meet the rising demand for housing. Furthermore, the government announced a comprehensive urban improvement policy, the National Urban Upgrading Program (NUUP) [2], for the 2009–2020 period to enhance the urban environment, which included massive clearances of slum areas and relocation plans for the original dwellers (Vietnam, 2009).

In these contexts, while most researchers have investigated residential mobility on a regional scale, for example, interprovincial rural-to-urban migration in Vietnam (Dang et al., 1997; Dang et al., 2003; Nguyen & McPeak, 2010), few studies of urban-scale residential mobility exist for the transitional cities of the country. While voluntary residential mobility in the housing market is common in the cities of developed countries, Vietnam's housing development is challenged by both voluntary and involuntary mobility, and city authorities have strived to build more public-private partnerships that are capable of covering the various construction projects, such as slum upgrading, urban district redevelopment, and new town projects, that are necessary for this development. Therefore, this study will investigate the determinants of residential mobility and housing choice on an urban scale, with significant policy implications for sustainable housing development in the public and private sectors of Vietnam.

1.2. Purpose of Study

The purpose of this study is to review the transitional phenomenon of rapid urbanization in Vietnam since the 1986 Doi Moi policy and investigate the determinants of residential mobility, housing choice, and property prices in HCMC. This has significant implications for both sustainable urban development and housing development in Vietnam. The specific goals are:

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were a maximum 15-year loan tenure and a 5% fixed annual interest rate. Available apartments must meet the requirements of unit scale and price: less than 70 m^2 apartment unit size and less than VND 15 million (USD 714) per m^2 unit price.

[2] In 2008, Vietnam established the NUUP program, which was financially supported by the Cities Alliance and the World Bank. The program aims to develop economic and social sustainability by improving the basic infrastructure and urban environment of slum-like areas in 96 cities across Vietnam. Phase 1 will focus on the overall demand assessments and cost estimates for urban upgrading in slum-like areas of target cities. The planning and execution of the urban upgrading programs were carried out by local authorities and urban communities.

- To review the residential mobility of Vietnam as voluntary and involuntary mobility and examine the key study areas in the context of urbanization.
- To analyze housing type choices for voluntary residential mobility, driven by the housing market, and examine the implications of sustainable housing development by the private and public sectors.
- To investigate the price determinants of the HCMC apartment market, which recently demonstrated a steep increase in demand within the Vietnamese real estate market, and understand how these are interconnected with the reasons for residential mobility and housing choices.
- To analyze the determinants of involuntary relocation from slums, driven by the state, and to discover the implications of sustainable slum redevelopment; and
- To discover the implications of sustainable housing development in transitional Vietnam.

1.3. Scope of Study

1.3.1. Field of Study

This study began with an interest in how households demonstrate residential mobility and housing adjustment and what influences residential mobility and housing choices and values in HCMC, Vietnam. Two types of residential mobility can be observed in the city: voluntary and involuntary mobility (Figure 2). Involuntary mobility is a state-driven process, such as a slum redevelopment accompanied by the eviction of existing settlers and the renewal of the slum area. Voluntary mobility is a market-driven process of repeated residential mobility in real estate markets. Both segments of residential mobility were investigated to discover the determinants of housing choices. Furthermore, the price determinants of multi-family housing (apartment type), recently highlighted for housing supply and demand in Vietnam's housing market, were investigated to determine whether determinants of housing choice reflected the price determinants of housing.

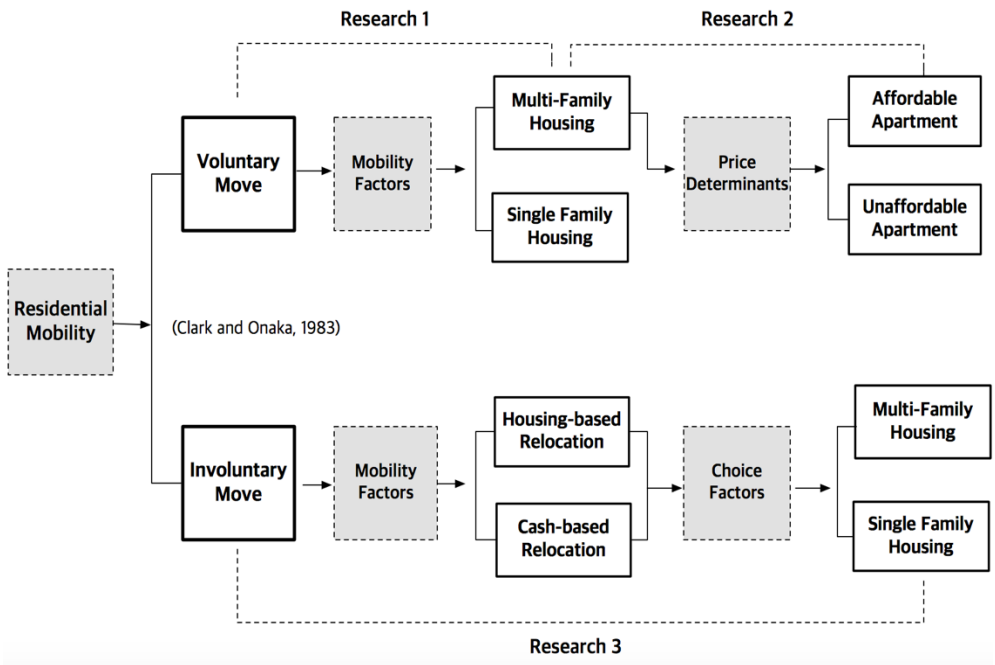

Figure 2. Field of Study and Structure

1.3.2. Study Area

HCMC, as the largest city with the highest population in Vietnam, was the study area selected for the investigation of residential mobility and housing choice in Vietnam. This city is one of the best places to conduct this research for the following reasons.

First, HCMC has a significant role model of other cities in Vietnam. Vietnam's cities are categorized into 6 classes based on the level of economic development, physical development, population and its density, and infrastructure provision. HCMC was classified as one of the two national "special" cities, a top ranking, due to its significant economic and political contributions to the country (Cira, 2011). As most cities want to climb the city class ladder to receive better recognition and financial support from the central government, they are pursuing growth patterns similar to those of HCMC. Therefore, HCMC is considered a significant reference as a development model in Vietnam.

Second, dynamic residential mobility with active housing development has been observed in HCMC. This city comprises 9.2% of Vietnam's total population and is responsible for 20.8% of its GDP (2016). As 155 times more FDI has flowed into HCMC than other provinces of the Northwest area, its remarkable economic growth has caused dynamic residential mobility on both interprovincial and

interurban scales (Nguyen & McPeak, 2010). Thus, HCMC has experienced the highest levels of urbanization and industrialization, population growth, and housing development, which crucially influence residential mobility and housing choices.

Third, HCMC needs sustainable housing development strategies, as it has been confronted with a serious housing shortage and unmanaged urban growth. While Hanoi, the capital city with the second largest population, consists of 91.8% permanent housing, HCMC has only 27.5%, and the remainder of the housing is semi-permanent and temporary (Vietnam GSO, 2016). This means that HCMC has more complicated housing development and urban management issues for both voluntary and involuntary mobility and thus the city requires viable strategic plans for sustainable growth.

Figure 3. HCMC on the Map of Vietnam
Source: http://asiapacific.anu.edu.au/ mapsonline/base-maps/vietnam

Figure 4. Study Area of HCMC: Urban and Semi-urban Districts
Source: Google maps

Table 1. Overview of HCMC 2017

Category	Details
Area	2,096 km²
Population	8,611,100
Density	4,100/km²
Total GDP	USD 161.49 billion
GDP per capita	USD 19,167/capita
Division	13 Urban / 6 Semi-urban / 5 Rural Districts
Status	One of Two Special-class Cities in Vietnam

Data: General Statistics Office of Vietnam

1.3.3. Time Period

This study focused on the period since the Doi Moi (open door) economic reform (1986), after which the urbanization rate of HCMC increased remarkably with a great influx of immigrants from rural areas as a result of the reform policy. The policy goal was to create a socialist-oriented market economy and to accelerate the economic transition to industrial manufacturing, creating employment

opportunities and economic output (Beresford, 2008). The land and housing laws were also revised to allow private property ownership, which caused a housing market boom and residential mobility (Figure 5). Since the policy, the in-migration trend has continued to escalate and caused a large acceleration of urbanization and housing development in HCMC. Housing developments, residential adjustment, and choice of household therefore represented a critical social-economic phenomenon in HCMC after the Doi Moi.

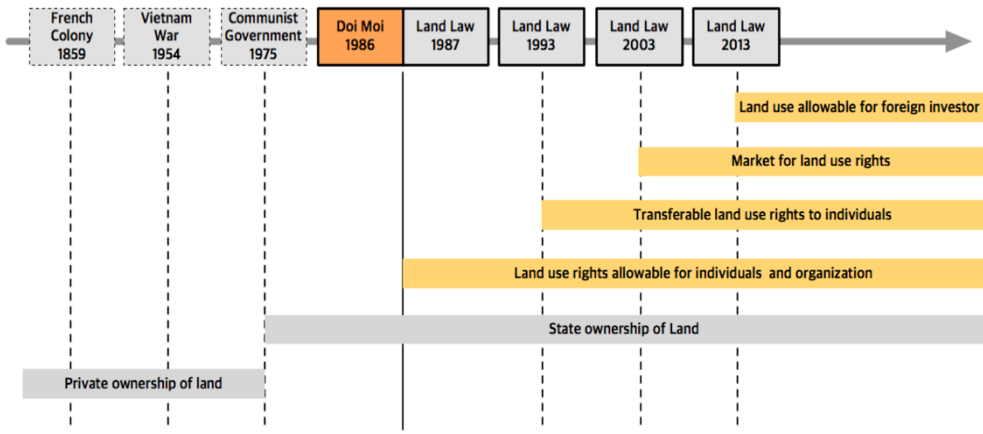

Figure 5. Emergence and Development of Land and Housing Markets in Vietnam

1.4. Research Questions

This study constitutes three principal parts of empirical investigation of residential mobility and housing choices. The first section examines residential mobility and housing choices in a sector of voluntary mobility in HCMC. The cityscapes of HCMC are dominated by single-family housing, particularly row houses and citizens are still likely to demonstrate a strong preference for these as their housing choice. As the urban density of HCMC is rapidly increasing with the influx of population and urbanization, a number of multi-family housing projects are gradually being spotlighted in housing markets. In this context, the research questions are the following:

- *What are the main types of housing currently and what have been the main types in the past? What types of housing do citizens prefer for future settlements?*
- *What factors affect residential mobility patterns?*
- *Are residential mobility patterns related to effects of the urbanization of the city? What factors have influenced the reasons for moving and housing choices?*

The second section of the study extends from the first study, specifically to the apartment type, which has been recently highlighted by the urbanization of HCMC. In this section, I investigate the price determinants of apartments and compare these with the reasons for residential mobility. In particular, affordable apartment segments have recently come to the fore with a remarkable surge of middle-income households in HCMC. This research therefore attempted a new approach to finding answers to the following additional research questions.

- *Are the reasons for residential mobility reflected in the price determinants of housing in HCMC?*
- *How do price determinants of affordable apartments differ from the unaffordable sector and which are more associated with the transitional context of HCMC?*
- *What are the implications of this study for sustainable housing development and how does this challenge the public and private sectors?*

The last section of this study is related to involuntary mobility associated with residential mobility for resettlement of slum areas. This is a distinctive product of urbanization encompassing widespread informal slum areas in HCMC. As the city officially announced slum removal plans in the last decade, relocation of the original settlers and compensation negotiations have become critical issues. The related research questions are the following.

- *When did many slum areas form alongside the rivers of HCMC?*
- *What kind of compensation and relocation housing type do slum-dwellers prefer?*
- *Are there different relocation preferences for the geographical location of slum housing, such as riverbank or non-riverbank, and how?*

1.5. Research Framework

This research constitutes seven parts that investigate the determinants of residential mobility, housing choices, and price determinants in HCMC. Chapter 1 introduces the study, describing the research background, purpose, scope, research questions, and research frameworks. Chapter 2 refers to the theoretical background and includes a literature review of residential mobility and price determinants. Chapter 3 focuses on an in-depth review of Vietnamese urbanization and housing development in transitional contexts after the Doi Moi (1986). Political economic and socio-economic factors, significantly those that influenced urban growth, are analyzed, and then varying issues of housing development are illuminated in the

light of housing typologies. Chapter 4 refers to residential mobility and housing type choices of voluntary mobility in HCMC. It includes an empirical research method, analyses, and findings, with a variety of discussions of the local context. Chapter 5 examines the price determinants of apartments in a frame of affordability. It includes the hedonic price model, noting its analyses and findings, along with various discussions of the local context. Chapter 6 refers to involuntary residential mobility from slum areas in HCMC. It contains empirical research methods and describes the analyses and findings. Chapter 7 refers to the overall conclusions of this study, including a summary of the study, implications, and further research issues.

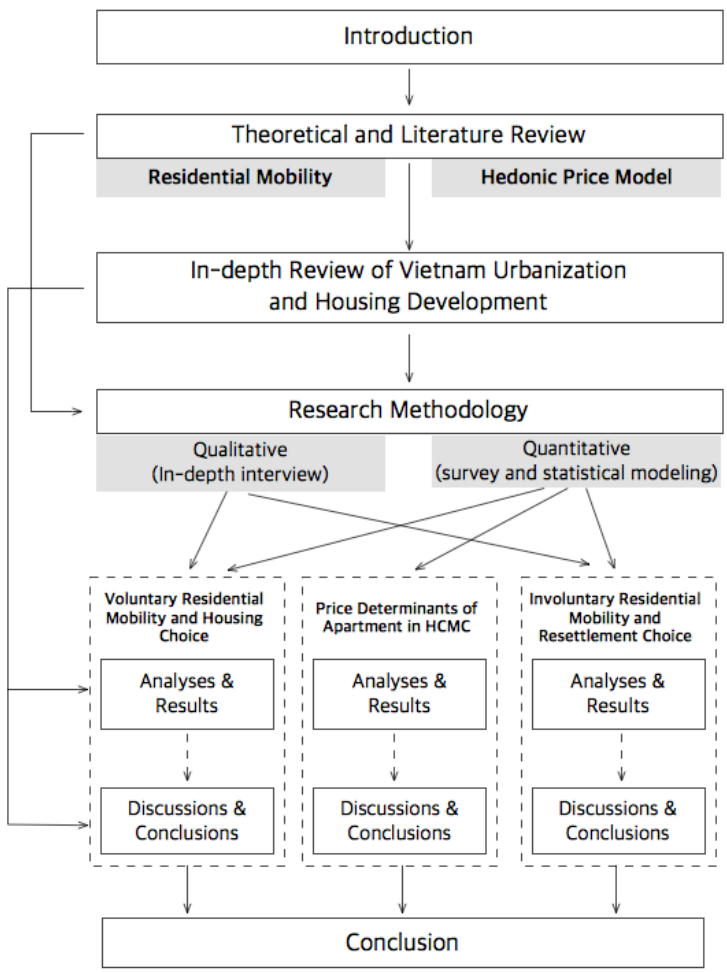

Figure 6. Research Framework and Flow Chart

Chapter 2

Theoretical Review

2.1. Residential Mobility

2.1.1. Theoretical Development of Residential Mobility

Research on residential mobility and migration has been extensively conducted by geographers, economists, sociologists, and demographers. For example, labor mobility has been highlighted by economists, while spatial movement of migrants has been underlined by geographers. Demographers attempt to comprehend population shift rates, and they have tried to understand migration in the context of human settlements. The general structure of migration studies has been categorized into international, interregional, and interurban migration (Figure 7), and the division is primarily based on the distance of the mobility and the physical spatial boundaries (Clark, 1982).

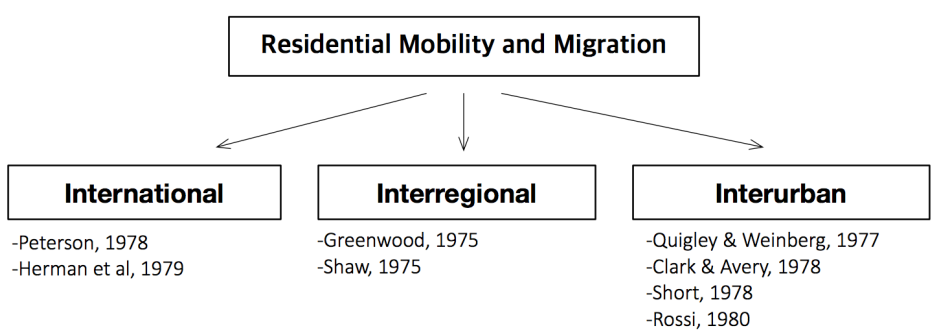

Figure 7. Structure of Migration Research and Main Literature Reviews
Source: Clark, 1982

Roseman (1971) divided residential mobility and migration into total displacement and partial displacement. Total displacement is the complete relocation of an entire family leading to completely different daily and weekly moving patterns of the household, whereas partial displacement effects only a partial change in the movement patterns (Roseman, 1971). While international migration is likely to be total displacement, interurban and interregional mobility are dependent on the reasons and circumstances of mobility to be defined as total or partial displacement. Figure 8 illustrates how this tripartite division has been understood, using the reasons that drive mobility. With interurban areas connected by short distances, the main reasons for residential relocation have been adjustments to housing and neighborhoods or changes to life cycles or income levels, whereas interregional or international mobility involving relocation over a longer distance has largely been induced by employment opportunities and economic circumstances (Cordey-Hayes, 1975).

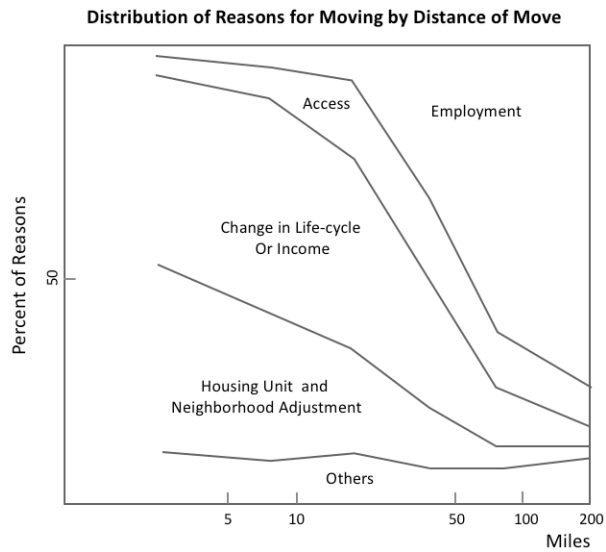

Figure 8. Reason for Moving by Distance
Source: Cordey-Hayes, 1975

The seminal work of this study is Rossi's paper, "Why families move: a study in the social psychology of urban residential mobility" (1955), which is cited in many other works. He notes that residential mobility is a broad concept that can generally be considered a change in residence from one place to another under normal circumstances. It can include international migration; however, in terms of geography, residential mobility circumscribes shorter migration boundaries such as internal, interurban, and interregional moving (Rossi, 1955). Rossi's focus is on

migration that occurs in the search for a better dwelling at the level of the household, and his understanding of these processes is associated with housing studies.

The next influential study of residential mobility is an article by Brown and Moore (1970), "The intra-urban migration process: a perspective," in which they highlight the two phases of the mobility process. In the first phase, residents recognize unpleasant feelings related to their current settlement conditions. The discomfort arises from their negative residential environment, and this causes residents to move to the second phase. The second phase is the process of searching for housing vacancies that could improve their residential environment. Residents must then decide whether to stay or move (Brown & Moore, 1970). At the household level, these studies still have a strong impact on household studies. However, it is not easy to clearly define the patterns and theories of residential mobility, and its complexity has been a theme of academic debate (Strassmann, 2001). Since 1950, mobility has been regarded as a pathological theme, and a number of scholars have tried to investigate it from different perspectives.

Residential mobility motivation is often derived from negative aspects of living conditions. In other words, migration can be characterized as "unsettled" or "unstable" movements (Brednikova & Tkach, 2010). For instance, moving is closely intertwined with unpleasant social issues such as divorce from a partner (De Jong & Graefe, 2008; Feijten & Van Ham, 2008, 2010), family division (Feijten, 2005), unstable housing markets (Ferreira, Gyourko, & Tracy, 2010; Kull, Coley, & Lynch, 2016), dissatisfaction with personal living conditions (Nowok, Van Ham, Findlay, & Gayle, 2013), non-medical use of drugs (Stabler, Gurka, & Lander, 2015), and delinquency among adolescents (Porter & Vogel, 2014). Therefore, migration normally improves life conditions by adjusting housing quality or neighborhood environments (Clark & Onaka, 1983; Clark, Van Ham, & Coulter, 2014). There are extensive studies demonstrating a correlation between residential mobility and household attributes such as family life course, education, and career that require decision-making on whether to stay or move to another house or neighborhood (Clark & Dieleman, 1996; Coulter, Van Ham, & Findlay, 2016; Mulder, 1996; Strassmann, 2001).

Furthermore, the literature on residential mobility has extended to include macro approaches that analyze moving behaviors using socio-economic contexts, including the fluctuation of housing markets and investments, income, physical environment changes, climate issues, public policies of urban redevelopment, and financial support such as mortgages (Cadwallader, 1992; Kemp & Keoghan, 2001; Robinson, 1996). As our society is becoming more complicated and interconnected through a variety of technological developments and social issues, the complexity and variability of residential mobility are also hard to define by a specific pattern.

Figure 9 indicates that contemporary lifestyles have become more complicated over the last few decades, and this has significant implications for residential mobility. While traditional models demonstrate a relatively simpler life and housing trajectory, contemporary life cycles and their influences have changed in ways that are more complex. For example, higher rates of divorce and an increase in special care services for the post-retirement period create costs that are more substantial. Changes in housing are determined through housing market conditions, but they are closely intertwined with a household's family progression, demographic changes, and economic situation (Beer & Faulkner, 2007).

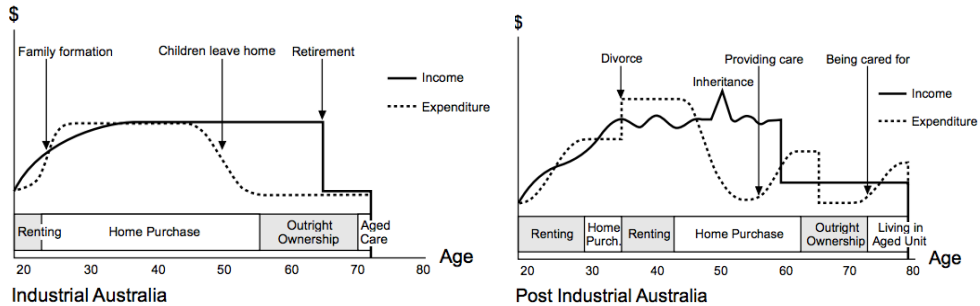

Figure 9. Changing Life Histories and Changing Housing Careers in Australia
Source: Beer & Faulkner, 2007; Williams, 2003

Clark and Onaka (1983) categorized residential mobility into two groups: voluntary mobility and involuntary mobility (Table 2).

Table 2. Voluntary and Involuntary Mobility in Household Relocation

Type of Mobility		Reasons for Mobility
Voluntary Mobility	Adjustment Moves	Housing: Space, Quality, Design, Cost, Tenure change
		Neighborhood: Quality, Physical environment, Social composition, Public services
		Accessibility: Workplace, Shopping, School, Family and friend
	Induced Moves	Employment: Job change, retirement
		Life cycle: Household formation, Dissolution, Marital status, Household size change
Involuntary Mobility	Forced Moves	Housing: Eviction, Accidents, and Disasters
		Neighborhood: Urban regeneration projects, Major infrastructure development, Environmental hazards and disasters

Source: Clark & Onaka, 1983

Voluntary mobility can be classified further, into adjustment moves and induced moves, based on the reasons for the move. The former indicates a household move that enhances the residential environment, neighborhood, and location of settlement. The latter is a move to enhance careers or life cycle changes. Involuntary mobility, on the other hand, is a forced move that indicates household movement that is not controlled by the household, for example, eviction because of an urban renewal plan or public sector infrastructure development (Clark & Onaka, 1983).

2.1.2. Approaches to Residential Mobility

The literature on residential mobility can largely be categorized into four sectors: Life course approach, Behavioral approach, Environmental approach, and Intuitional approach (Figure 10).

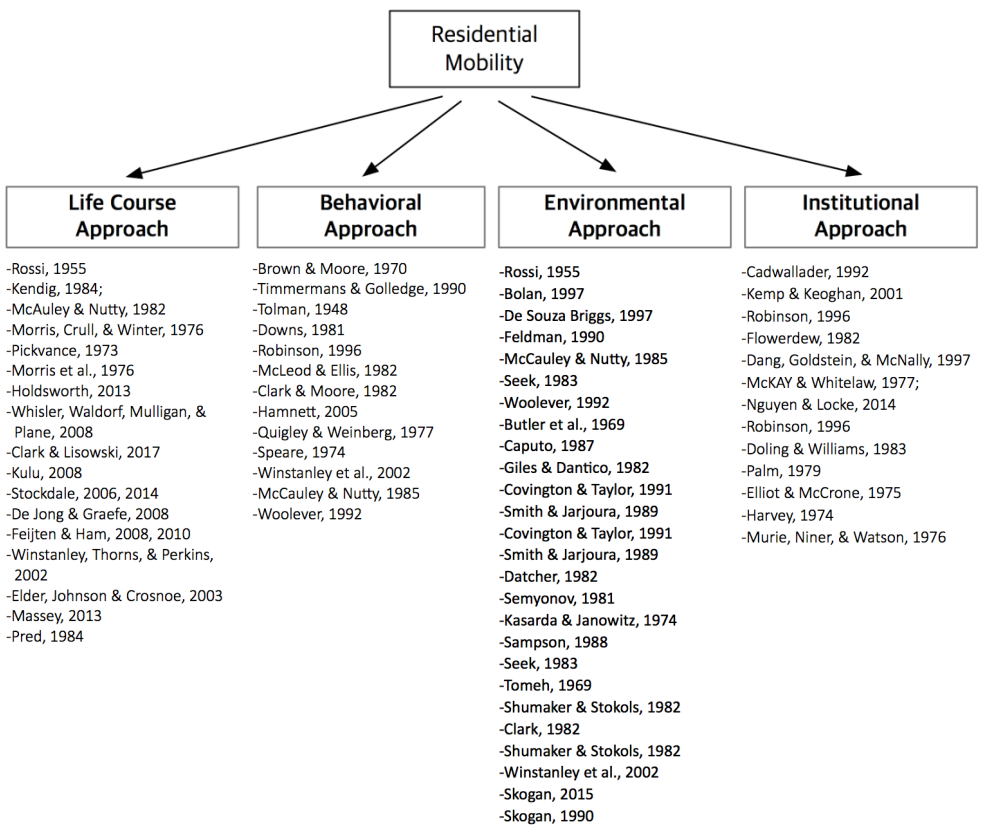

Figure 10. Literature Map of Residential Mobility Studies

2.1.2.1. The Life Course Approach

The life course approach to residential mobility began with Rossi's pioneering work, "Why families move" (1955), and is based on the developmental patterns and cultural phenomena of traditional nuclear families. This life course perspective is related to the human development stages of marriage, birth of children, independence of children, change of workplace and economic situation, and retirement. The search for a suitable living space for each phase (Kendig, 1984; McAuley & Nutty, 1982; Morris, Crull, & Winter, 1976; Pickvance, 1973) can trigger residential mobility. Rossi assumed that residential mobility would be seriously considered if the size of the family changed or dissatisfaction and a need for a change in residential space arose. These issues are deeply related to cultural contexts such as housing adjustment and housing ownership to secure appropriate spaces for stability and comfort for family life (Morris et al., 1976). For example, a young adult may desire independence from his or her parents and become determined to move out of their family home (Holdsworth, 2013; Whisler, Waldorf, Mulligan, & Plane, 2008). A married couple might seek a new house in a more family-friendly environment and so move to a new neighborhood (Clark & Lisowski, 2017; Kulu, 2008). In retirement, people consider residential mobility to move to a more environmentally friendly neighborhood with a natural environment (Stockdale, 2006, 2014). There are, however, also negative aspects of life changes that can motivate residential mobility such as divorce from a partner (De Jong & Graefe, 2008; Feijten & Van Ham, 2008, 2010). When a spouse dies, or children leave home, a reduction in the space required for residence can also induce mobility.

As our society changes, more complex life events influence residential mobility and housing issues, including escalating rates of divorce, remarriage, and dual-career parenting, as well as higher costs of tertiary education (Winstanley, Thorns, & Perkins, 2002). Furthermore, the life course approach requires a multidisciplinary perspective, since a connected life is illuminated through the household and also through kinship and social networks (Elder, Johnson, & Crosnoe, 2003). For instance, Urry argued that "place" should be redefined, not according to a fixed physical notion but with networks and connectivity over time and space (Urry, 2012). With the development of technology and social ties, places are regarded as "processes" of life events (Massey, 2013; Pred, 1984) rather than stationary paradigms. From this perspective, residential mobility in the life course approach is intertwined with transactional practices and experiences of the environment as a part of the "micro-geographies of everyday life" (Cresswell, 2011).

2.1.2.2. The Behavioral Approach

The majority of mobility decision-making derived from behaviorism is determined by examining perceptions and actions of individuals based on a cognitive understanding of the environment (Brown & Moore, 1970; Rossi, 1955). People pursue satisfactory economic outcomes and profit maximization attained by using perfect information. However, in reality, it is impossible to access complete information, and so people are sometimes satisfied with lower than optimal profits due to insufficient knowledge and uncertainty. To address this reality, Kirk (1963) proposed a distinctive separation in individual perception between the phenomenal environment and the behavioral environment. While the phenomenal environment is the objective existence of the physical environment itself, the behavioral environment is a subjectively perceived environment where decision behavior occurs. The latter can be influenced by the psychological circumstances of observers, and it can be translated through the quantity and quality of information the observers obtain. In this context, the behavioral approach to decision-making processes is based on an understanding of the behavioral environment rather than a recognition of the phenomenal environment (Timmermans & Golledge, 1990). Therefore, the behavioral approach significantly considers the socio-psychological context of information collection and mobility choices (Roseman, 1983).

Behaviorism often underlines the cognitive processes that influence the decision-making of individuals. Tolman (1948) initially coined the term "cognitive map" to determine human behavior, and the map represented the objective reality of an individual's experience (Tolman, 1948). Downs, however, argued that cognitive mapping is a process to create, accumulate, recall, and manipulate the information of the spatial environment for residential mobility (Downs, 1981). In general, with migration studies, cognitive maps include information regarding the location of places, as well as value judgments, and they can be a fundamental reference for locational preference and move decision-making (Robinson, 1996).

A concept of behaviorally orientated residential mobility is frequently based on an economic rationality to gain financial profits from move decision-making processes (McLeod & Ellis, 1982). For instance, people research the right time to move and the right place to buy a new house so as to generate capital gains as an investment; they believe that residential mobility results in capitalization from the property modification. Thus, a household could decide to move if the financial profits from changing homes were more than the relocation costs (Clark & Moore, 1982; Hamnett, 2005; Quigley & Weinberg, 1977).

However, there are critiques of the behavioral decision-making procedure for moving. A perfect rational determination is not possible due to an incomplete

provision of knowledge and information about the time and location of the move. Normally, households obtain data from various intermediaries including real estate agencies, housing market portal websites, advertisements in newspapers or magazines, and oral information from relatives and friends. These always consist of partial information, and so incomplete resources usually result in an imperfect determination of residential mobility that migrants believe is the right decision (Speare, 1974). In addition, another critique is that this model considerably relies on a single decision-maker in the household who has the power to determine residential mobility. A number of empirical studies of this approach do not reflect the collaborative decision-making processes that occur from discussions among families or household members on the residential mobility issue (Winstanley et al., 2002). As residential mobility is not an issue of an individual power-holder or a single informant, this research could investigate holistic perspectives of family members for an in-depth understanding of the decision-making processes of moving (McCauley & Nutty, 1985; Woolever, 1992).

2.1.2.3. The Environmental Approach

Unlike the behavioral approach, which focuses on the economic rationality of moving, the environmental approach emphasizes environmental factors such as neighborhood location and conditions for migration that determine moving (Bolan, 1997; De Souza Briggs, 1997; Feldman, 1990; McCauley & Nutty, 1985; Seek, 1983; Woolever, 1992). Rossi's (1955) seminal work on the life cycle theory also noted that families thinking about residential mobility consider the location of residency and its link to prestige (Rossi, 1955). An interesting hypothetical trade-off survey between neighborhood and housing quality was conducted. Participants in this national survey were asked to select one of two residential "packages" of equal price. The first residence was a high-quality house in a less desirable neighborhood, while the second residence was in an excellent neighborhood, but the housing was of low quality. Among the participants, 69% preferred the latter to the former, while 27% preferred the former. This therefore demonstrates the significance of community environment for residential mobility (Butler et al., 1969). There are other empirical studies that highlight the influence of neighborhood quality and community features on residential satisfaction including political participation (Caputo, 1987; Giles & Dantico, 1982), fear of crime and victimization risk (Covington & Taylor, 1991; Smith & Jarjoura, 1989), labor market advantages (Maume Jr, 1984), and socio-economic achievements such as better education and income (Datcher, 1982; Semyonov, 1981).

Additionally, there are "pull" and "push" effects of residential mobility. The "push" effect involves long-term residents hesitating to relocate because of greater familiarity, sentiment, and involvement in their current community. They have become emotionally and cognitively attached to a place and its familiar environment, their communal lives have developed in that area, and they have become accustomed to the shops, parks, schools, and streets of the neighborhood (Kasarda & Janowitz, 1974; Sampson, 1988; Seek, 1983; Tomeh, 1969). As Stokols and Shumaker (1982) argue, when community environments and public amenities satisfy the preferable needs of households, they will have a higher level of attachment to their neighborhood. Residents who move for a particular reason will have a higher level of expectation for attachment to the new environment (Shumaker & Stokols, 1982).

The "pull" effect has both positive and negative features that influence moving. On the positive side, Clark (1982) underlined a trend toward moving in search of "quality of life" including moving for climate and public amenities, rather than job opportunities and financial benefits (Clark, 1982; Shumaker & Stokols, 1982). This trend was interpreted as confirming that residential mobility is not "production-oriented" but "consumption-oriented" (Winstanley et al., 2002). On the negative side, the deteriorating quality of a neighborhood environment can often make residents move out of the community. Skogan argues that both physical and social disorders, which undermine community stability, significantly influence the "quality of life" of the residence. The former are visible factors such as misdemeanors, abandoned parks and properties, unmanaged streets, and traffic congestion. The latter are the frequency of incidents and activities implicated in crime rates, such as increasing homelessness, street harassment, youth in gang-related apparel, recreational violence in bars or parks, and nuisance neighbors (Skogan, 2015; Skogan, 1990).

2.1.2.4. The Institutional Approach

The institutional approach highlights the influence of institutions such as government organizations, financial sector institutions, and the real estate industry on residential mobility (Flowerdew, 1982). Large government and private intuitions play a significant role in interurban mobility and interregional migration flows (Cadwallader, 1992; Dang et al., 1997; McKAY & Whitelaw, 1977; Nguyen & Locke, 2014). For instance, the national economic reform and its open door policy in China and Vietnam created a large migration toward cities, leading to a boom in housing development from this residential mobility (Nguyen & Locke, 2014; Seo & Kwon, 2017). Mortgages offered by national banks provided financial support to the lower middle-income classes and motivated the development of affordable housing within the private sector. In Vietnam, this meant that more residents had practical

opportunities to move into affordable apartments (Seo, Chung, & Kwon, 2018; World Bank, 2015).

Knox (1987) highlighted the five principle actors that drive the dynamics of the urban housing market and residential mobility of the institutional approach: financial capital, industrial capital, commercial capital, landed capital, and the public sector (Robinson, 1996). Financial capital includes diverse financial organizations such as banks and mortgage companies that play a significant role in determining the cash flow frequency and intensity of the housing market (Doling & Williams, 1983). Industrial capital mainly involves developers and builders, who affect the housing market through development activities that create the housing supply of various building types. Commercial capital refers to real estate agents who professionally manage the selling, renting, and marketing of properties. As distributors of housing who negotiate profit for buyers and sellers, they often encourage residential mobility through the provision of objective factors and the subjective interpretation of the choice of housing and neighborhood (Palm, 1979). Landed capital indicates landowners and property owners. A property owner is the owner of properties such as a house, condominium, or land that is rented or leased to a tenant. The large rental housing market also influences residential mobility, and it tends to be determined by the personal actions of property owners and their "gatekeeping activities" (Elliot & McCrone, 1975). Lastly, the public sector mainly refers to government policies and regulations that control and operate the housing market. By regulating a stable housing market, the central government strives to boost national economic growth by encouraging construction industries, to ensure that housing supply meets increasing demand and to maintain economic stability (Harvey, 1974). While these policies are enacted at the national level, they are implemented at regional or city levels, and this creates practical variations in their application in local contexts (Murie, Niner, & Watson, 1976).

2.1.3. Housing Choice and Residential Mobility

Residential mobility studies are likely to be associated with the determination of whether to move or stay. They often do not include whether the outcome of the housing choice, which is the destination resulting from the decision to move, has been achieved. If migrants decide to move, then the next stage should be housing market research of residential properties and prices that create the final residential selection (Onaka & Clark, 1983).

The concept of housing choice, which is widely used in housing research, is different from housing preference. While the latter refers to the relative

attractiveness of housing, the former refers to actual behavior. Even if preference strongly influences housing choice, the buyers consider more than just their preferences. Priemus (Priemus, 1984) highlights the fact that various factors restrain housing choices for potential customers, such as official regulations, market and price, household finance, geographic location, and so forth. More factors can be added that affect the customers' behavior, such as perception, family, neighborhood, schedule, and lifestyle (Gibler & Nelson, 2003). Hooimeijer underlines two motivating powers for the choices. The first is the local real estate market and housing supply, and the second is individual lifestyle change with the progressing life-cycle (Hooimeijer, 1994).

The dynamic of housing choice has been reviewed in several theoretical publications and has led to several models: the Life-cycle, Planned Behavior, and Decision-Making models (Jansen, Coolen, & Goetgeluk, 2011). All of them are closely related to social, economic, and cultural aspects of Vietnamese housing development.

From the perspective of the life-cycle model, housing choice and movement rely on family events such as "formation", "expansion", "contraction", and "dissolution" (Rossi, 1955). Each phase motivates households to choose a form of housing of suitable size and number of rooms. The phases are also intertwined with education levels, available employment, housing careers, local markets, etc. (Clark, Deurloo, & Dieleman, 2003; Goetgeluk, Hooimeijer, & Dieleman, 1992; Mulder, 1993; Mulder & Hooimeijer, 1995).

The planned behavior model has been developed from the expectancy-value theory (Mulder, 1993), which is based on behavior being the result of the entirety of the expected values of the characteristics (Figure 11). De Jong and Fawcett (De Jong & Fawcett, 1981) introduced this model for migration decision-making in housing research. The expectancy level is rated via importance evaluation of a set of values, followed by the generation of an attraction score for a specific place and form of housing as a determinant of moving (De Jong et al., 1983). In addition, they note that personal and structural backgrounds directly impact migration. The most important intention factors in deciding whether to move or stay are marital status and financial capability (De Jong, Root, Gardner, Fawcett, & Abad, 1985).

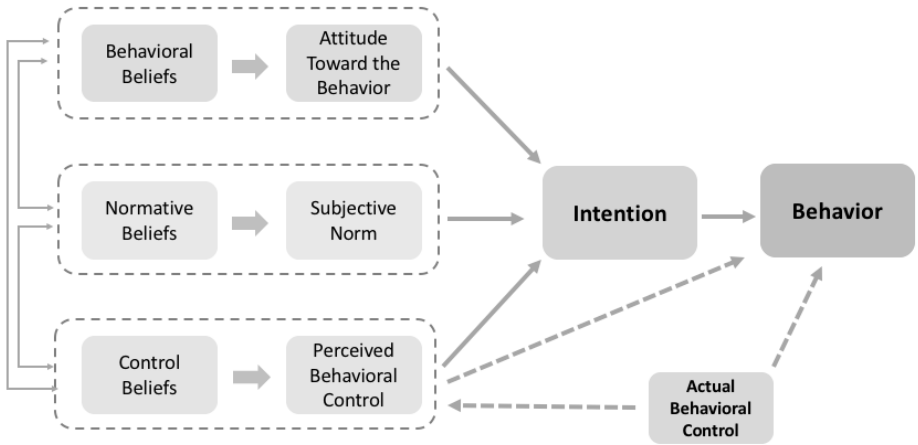

Figure 11. Theory of Planned Behavior
Source: Ajzen, 1991

Another approach to housing choice is viewing the process of decision-making as a series of dynamic problem-solving techniques (Holland, 1989; Newell & Simon, 1972; Rossi, 1955; Simon et al., 1987) In other words, looking for a new residence is the process of resolving a complicated and ill-structured situation into a relatively satisfying situation. In this context, goal-oriented behavior is highlighted in housing choice rather than just preferences. Customers can derive their goals from economic, social, and environmental issues that repeat and backtrack in their lives. Thus, the housing choice is an optimal behavior to pursue a certain desired quality of life such as happiness, freedom, safety, and security, or, in other words, minimizing the experience of negative emotions (Bettman, Luce, & Payne, 1998).

2.1.4. Residential Mobility in Developing Countries

As many developing countries have experienced rapid urbanization and a dynamic mobile population seeking economic opportunities in growing cities (Simmons, 1977; Simmons, 1981), the residential mobility of rural-to-urban and interurban levels has been extensively reviewed.

2.1.4.1. Theoretical Models

Turner (1968) developed the ecological model of interurban mobility based on rural-urban migration and the growth of the slum environment. He investigated migrants in Lima, Peru, in Latin America and grouped them into three successive classes based on settlement period and gainful employment conditions: “bridge

headers," "consolidators," and "status seekers." He determined that residential moves from urban slums to suburbs strongly influences upward social mobility, as residents gained secure housing tenure and quality, and enhanced infrastructure services in the suburbs (Portes, 1972; Turner, 1968). As suburban settlements allowed self-built or self-improved houses, he labeled this "Progressive Development" or a resident-driven, bottom-up approach. This was in contrast to the "Instant Development" of the government-driven, top-down approach (Turner, 1968). Turner's ecological model of residential mobility has influenced the socio-spatial mobility studies of developing countries.

Hirse (1984) investigated residential mobility of a secondary city, Jos, Nigeria, in West Africa and tested Turner's model. He demonstrated that, compared with Latin America, most West African countries had different patterns of rural-urban migration; in West Africa, urban migrants remained in their temporary settlements and cheap rental houses without attempting to achieve secure tenure and self-improved housing, as they retained permanent residence and kinship relationships in their rural hometown. Hirse argued that the residential mobility of the permanent-temporary dichotomy in developing countries relies on various perceptions of urban life, housing demand, and the potential of each city (Hirse, 1984).

Using a decision-making analysis of the different income expectations between rural and urban areas, Harris and Todaro (1970) developed a migration model of the rural-urban population shift in developing countries (Harris & Todaro, 1968; Harris & Todaro, 1970). They highlighted rational behavioral approaches to the pursuit of "expected earnings" to explain continuous rural-urban migrations regardless of an unstable labor market and employment fluctuations in cities. As long as migrants continued to believe that urban life generated more income, even though it involved temporary jobs and informal residence as opposed to agricultural work in rural areas, then the pattern of rural-urban migration continued, forcing low-income migrants to strive to adapt to informal residential conditions like slums in the cities (Perry et al., 2007; Porta & Shleifer, 2008). In this context, as Turner argued, they sought "progressive development" (Turner, 1968) for upward social mobility and faced the urban issues of the informal business sector, overcrowding and housing shortages, and temporary housing formations of the major growing cities of developing countries.

2.1.4.2. Residential Mobility in China

Until the 1970s, under the "hukou" system of the socialist regime of China, the state strictly controlled the movement of citizens to other cities and regions.[3] However, as China moved toward market-oriented economic reform in the 1980s, rural-to-urban migrations increased and market-driven development and economic growth centered on major cities like Guandong, Zhejiang, Shanghai, Beijing, and Tianjin (Cai, 1999; Chan, 2013; Fan, 2005). The trend in migration patterns contributed to the growth of labor markets in the main cities and also created regional and urban disparities of expected income and living conditions (Fan, 2007, 2011). However, an incomplete hukou system for the large rural-urban migration generated many temporary rural migrants[4] who did not gain legal residence permits (local hukou) in their host cities (Chan, 2013). Subsequently, the migrants had serious difficulty securing jobs and housing tenure, and many of them were excluded from the marginal urban areas (Wong, Fu, Li, & Song, 2007). After 30 years of economic reforms, it is now easier to gain local residence permits than before, but there are still obstacles to obtaining these permits and integrating into urban communities (Chan, 2008).

At the city level, housing issues from residential mobility can be understood in the context of the last few decades of Chinese pro-market reforms. Many researchers have highlighted that the 1978 economic reform significantly affected urban transformation in the cities. With the open door policy, major urban districts were reshaped by the cooperation between public authorities and the real estate sector (Han, 2000; Ma, 2002; Zhou & Ma, 2000), and households determined their housing choice and residential area based on their income levels. While the upper middle-income class was able to enter the housing market and resettle in urban districts, many urban workers of the low-income class were unable to purchase a house and were marginalized in undesirable neighborhoods. This created a transition of social and economic restructuring resulting in an unfair redistribution of income and welfare to different classes of people and areas (He & Wu, 2007; Shin, 2009; Zhang & Fang, 2004). This trend in the socio-spatial differentiation of mobility and settlements is mainly demonstrated in major cities like Beijing and Shanghai.

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[3] The hukou system was a registration system of households in China. Family records, including names, ages, parents, spouses, dates of birth, marriages, deaths, and mobility, efficiently managed the population and identified the mobility of family members. The hukou system of the Mao era (1949–1978) largely categorized people as having city and urban status and then further divided people by birthplace.

[4] According to China's 2010 National Census, about 200 million migrants did not gain the local residence permit (local hukou) of their destination cities (Zou, 2011).

For further studies on Beijing, Gu et al. (2005) have identified the spatial restructuring and residential mobility patterns in transitional Beijing since 1998. The principal factor determining socio-spatial distribution by residential mobility was socio-economic status such as income level, and family structure was not significant. They also determined that the complex urban mosaic of Beijing was underpinned by these key factors: "land use intensity", "neighborhood dynamics", "socioeconomic status", and "ethnicity". These superimposed four factors affected residential mobility in the city (Gu, Wang, & Liu, 2005). Feng et al. (2008) analyzed population census data and discovered a trend toward suburbanization and urban mobility in Beijing since 1990. Suburban growth and expansion were not driven by the state but by market-oriented development. More condominiums and affordable housing, alongside rising personal car ownership, attracted households to move out of urban centers. Developments of mega-shopping malls and retail parks in the suburbs also spurred suburbanization and residential mobility (Feng, Zhou, & Wu, 2008). Feng (2004) also examined the population shift to outer suburbs and demonstrated that this resulted mainly from housing privatization and resettlement projects in Beijing. Securing housing tenure was a main factor that determined residential mobility (Feng, 2004). A commuting issue was also highlighted by the relocation of migrant workers to outer areas. As long-distance trips created a heavy burden on both city and low-income commuters who moved to affordable housing in the suburbs, both affordability of housing and job accessibility became significant factors for residential mobility (Cervero & Day, 2008; Zhang, 2007).

In the case of Shanghai, He and Wu (2007) investigated interurban residential mobility in the post-reform era in neighborhoods of Shanghai where there have been large transformations from property development with increasing involvement of the private sector and state-driven urban renewal projects. Many old neighborhoods of the inner city have been extensively redeveloped, and this has led to the clearance and replacement of dilapidated residential districts with high-rise, mixed-use towers and apartments. The boom of the real estate market has created population redistribution and voluntary and involuntary residential mobility in the city. The researchers identified different mobility patterns during the redevelopment procedures among three different groups of residents with different socio-economic backgrounds (Figure 12). Better off and middle-income households moved to standard resettlements or commodity housing and secured private housing ownership. Some of the low-income households received sufficient compensation and were able to move to standard housing, whereas the remainder were forced to move out to undesirable parts of the city (He & Wu, 2007). Other cities such as Beijing and Yunnan also demonstrated similar patterns of residential mobility (Shin, 2009).

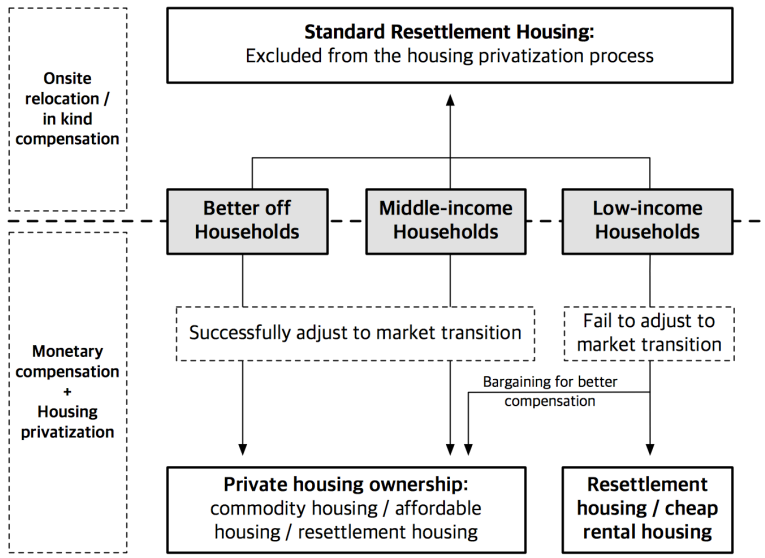

Figure 12. Residential Mobility Patterns after Redevelopment in China
Source: Wu, 2007

Wu (2006) examined intra-urban residential mobility of Beijing and Shanghai with housing surveys and in-depth interviews with migrants. He analyzed the determinants of mobility behavior, as well as rate, tenure, and spatial moving patterns, and the main sources of information and support for mobility. The results showed that age and education were critical demographic factors that influenced mobility decision-making and that tenants in public rental housing were less likely to move. The mobility rate was also less likely to interrelate with the need to gain stable housing tenure and secure amenities due to institutional barriers of local residence permits. Many of the migrants, who were not allowed access to the official housing market, relied mainly on informal social networks in their own communities (Wu, 2006).

2.1.4.3. Residential Mobility in Vietnam

Like China, which experienced economic reforms based on a socialist regime, Vietnam has similar transitional patterns to other socialist countries that moved toward market economies (Nguyen & Locke, 2014). Since the Doi Moi policy in 1986, which moved away from a government-led economic structure based on market socialism, there has been an acceleration of the economic transition to industrial manufacturing, creating employment opportunities and economic output

(Beresford, 2008). Since then, as in China, the registration system of residence has been relaxed, and citizens have become more independent of government subsidies and assistance. Subsequently, spontaneous interprovincial and interurban rural-to-urban migration has accelerated (Dang et al., 1997; Dang et al., 2003; Nguyen & McPeak, 2010). As Foreign Direct Investment (FDI) for industrial development and construction flowed into the cities, particularly into HCMC, Hanoi, Binh Duong, Dong Nai, and Da Nang, they became magnets for mobile residents from rural areas (GSOV, 2010).

In an early study, Guest (1998) demonstrated that rural-urban migration was more likely to be seasonal or temporary than rural-rural migration, which was characterized as permanent. More educated, young, and single people moved to the cities. He also highlighted HCMC's popularity due to its having the highest employment rate in Vietnam; widespread social connections facilitated finding jobs there for many Vietnamese people (Guest, 1998).

Hoang and McPeak (2010) investigated migration flows and patterns using national datasets collected from 26,000 households of each province and city. They established that the significant determinants of intercity residential mobility were closely associated with distance as a proxy for relocation costs, the large population sizes of urbanized provinces, the disparity of expected incomes, the urban unemployment rate, and the quality of infrastructure and public services (Nguyen & McPeak, 2010).

On an urban scale, unlike the rich literature of Chinese urban studies, there are several involuntary residential mobility studies concerning forced relocation of slum residents. Coit (1998) has studied the slum regeneration project[5] in the 14 areas of District 4, which is one of the largest slum districts in HCMC. Through site observation and in-depth interviews of the settlers, he analyzed the project procedures and success/failure factors. The slum renewal project, which covered about 7,200 m2 of land, was funded by the Technical Unit Asia from the EU as a project to improve the residential environment for 900 people in 150 households. It is the first slum regeneration project to use a bottom-up approach in that the residents were encouraged to voluntarily participate in improve their own temporary or semi-permanent houses, community facilities, and pubic open spaces, based on financial support and the self-help housing principle. The satisfaction level of the residents was significantly high and no residents moved; the residents evaluated the project as

[5] The slum renewal project of about 7,200 m2 land, was funded by the Technical Unit Asia of EU as a project to improve the residential environment of the 150 households of 900 persons. It is the first project of bottom-up approach in slum regeneration projects in that the residents were encouraged to voluntarily participate in improve their own temporary or semi-permanent houses, community facilities, and pubic open spaces, based on financial supports and self-help housing principle.

a success. However, Coit found that government officials regarded it as a failure as they believed that site clearance and eviction were necessary to attract foreign real estate investment. They imagined high-end developments with modern high-rise, commercial, or luxury apartments, such as in Hong Kong and Singapore, which gain the most tax revenue for the city. This study clearly identified the gap between the local community and the government regarding slum redevelopment (Coit, 1998).

Garschagen (2010) studied the project which focused on the redevelopment of slums near the river in the largest city of Con Tho City in the Mekong delta region of Vietnam. In particular, he investigated how many original residents relocated to the new settlement that the project provided. As slum redevelopment was an NUUP project with national support and interest, the river's environment and quality have remarkably improved due to the removal of informal residences along the river. However, it was found that the resident's resettlement rate was surprisingly low since they were not able to meet the financial requirements to relocate to new social apartments, and a large number of outsiders with political connections have settled down in the relocation apartments (Garschagen, 2015). This is a clear example of the loopholes that exist in the slum redevelopment policies in Vietnam.

Research from the HCMC government and the World Bank for Tan Hoa-Lo Gom (THLG) project[6] also reveals significant implications from riverside slums in Vietnam. The study analyzed the project procedures and also investigated each relocation option and resident's satisfaction since the relocation. The THLG project is the largest pilot program out of the NUUP projects in HCMC, and it aimed to not only improve water treatment and solid waste management but also to redevelop slums with relocation strategies along the 7.5 km of the THLG canal that passes Districts 6, 11, Tan Phu, and Tan Binh. Through the first (1988-2006) and second (2002-2006) phases, the project successfully achieved both its environmental and residential relocation goals (VBN, 2015).

This study evaluated several relocation proposals presented to the original residents: 1) slum upgrading focusing on housing renovation and infrastructure improvement; 2) relocation to resettlement apartments within the site; and 3) relocation to a remote site (8 km away) known as "site and services" where they are provided land and infrastructure, such as an access road, electricity, water supply, and sanitation, for self-built housing. However, a group of the original community refused all three proposals and strongly requested a different option: cash

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compensation with self-relocation. This option was initially excluded due to expected difficulties in the valuation of uncertain tenure of housing and land for the slum residents; additionally, it could result in property valuation disputes and thus delay the project. According to a post-assessment of the THLG project, it was identified that 381 households received support for residential relocation and environmental improvement. Out of this total, 53% of residents received assistance for their own housing and community upgrading (slum upgrading), and 19% relocated to new resettlement apartments located within the same site. Furthermore, 14% of residents relocated to remote sites for "site and services" with self-built housing. Only 14% agreed to the cash option and self-relocated to other districts. Interestingly, in a survey on the satisfaction of relocated residents, it was observed that households who moved to new settlements such as the apartments and self-built housing with "site and service" were highly satisfied with their choices, but self-relocated residents who opted for cash compensation had a low level of satisfaction (Figure 13) (Tran & Vo, 2006).

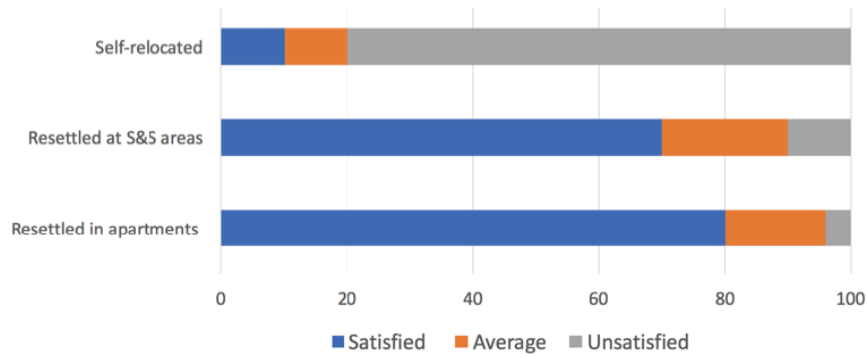

Figure 13. Survey results of satisfaction of relocated THLG residents
Source: Tran & Vo, 2006

In light of the precedent studies discussed, dwellers' relocation and compensation are critical aspects to ensure feasibility, practicality, and sustainability of the project. Securing new settlements for relocation heightens resident satisfaction with resettlement and prevents additional slum formation caused by the forced eviction of residents. The case of cash compensation is evaluated as a high risk that lowers the efficiency of project finances and causes serious delays in the project schedule. Although voluntarily selected, the cash option does not complement the slum upgrading goals of enhancing the urban and residential environment and amenities. In this regard, conditions in this study of involuntary move are significantly similar to THLG's in terms of adjacency to rivers, proximity to downtown, slum renewal plan by city, and relocation expected. Therefore, it has

crucial implications in understanding the differences in slum environments and in the investigation of how the specific factors of the slum residence influence decisions regarding involuntary residential mobility. The study will aid in the creation of viable strategies for relocation and negotiation and ultimately assist in the execution of successful slum redevelopment projects in Vietnam.

2.2. Price Determinants

Residential mobility studies are associated with the determination to move or stay and do not include the outcomes from housing choices, the destination of the mobility decision. If migrants decide to move, then the next stage of the research process should be housing market research to discover residential properties and prices that determine the selection of the final residence (Onaka & Clark, 1983). The study of price determinants is a reference source that can demonstrate the dynamic mechanisms of housing price determination in real estate markets.

2.2.1. Theoretical Basis of Price Determinants

Court (1939) was an early pioneer in using the term 'hedonic' to investigate demand and prices for individual sources of pleasure (Court, 1939). He believed heterogeneous commodities contained multiple attributes to meet individual preferences for usefulness and desirability. This significant application of multivariate statistical methods had major implications for housing price studies. Lancaster (1966) then developed the argument further with the theory of consumer demand (Lancaster, 1966). He demonstrated that composite goods contain a variety of attributes; thus, customers make a decision to purchase when the composite attributes meet their specific desires. Rosen (1974) then took the discussion to a new level by applying hedonic theory to a pricing model. He argued that the total price of an item means the sum of the prices of the individual attributes of the item, and that each characteristic can be a unique implicit price in the market (Rosen, 1974). He explained that the theoretical foundation is based on a bid price (φ), which is the maximum willingness to pay for a good by a customer who wants to enjoy a certain level of satisfaction or utility.

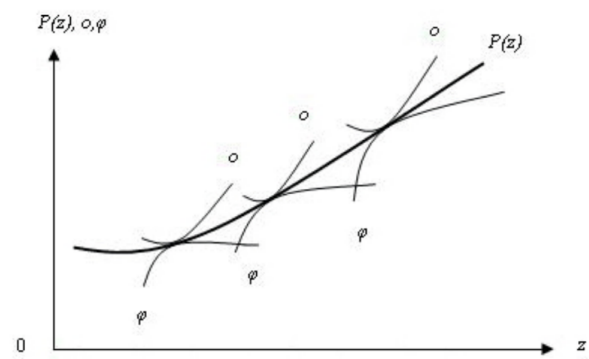

Figure 14. Hedonic Price Function
Source: Hidano, 2003

As Figure 14 illustrates, Rosen highlighted the interrelations among market price, bid price, and offer roles. The tangent of the price curve indicates the identical value under equilibrium status, which the customers and suppliers desire for their own profits. The meeting points on the price curve between the customer's bid price (φ) and the producer's offer price (o) is an acceptable market price that satisfies both parties (Hidano, 2003).

This provided critical implications for advanced price regression models, a way to find which unique attributes influence total composite prices (Xiao & Webster, 2017). Once Rosen's theory of a hedonic pricing model was generally accepted, regression analysis methods began to be broadly used for housing market analysis and urban studies. The basic hypothesis of the hedonic price model for housing studies is that the total price of a property represents the combined individual attributes of the property and what customers are willing to pay for the package of attributes.

2.2.2. Hedonic Function Specifications

To understand the hedonic price model, it is necessary to understand an assumption of the model. The hedonic price model assumes that the value of heterogeneous goods is determined by a variety of the attributes contained in the goods (Rosen, 1974). In this context, the characteristics of goods can be regarded as the components of goods that provide utility to human beings. Buying a heterogeneous good is like buying a bundle of characteristics in a given good. This means the price is determined by the quantity and quality of the attributes in the goods (Triplett, 1987) and thus the price of the attributes are called the hedonic price or the implicit price due to the invisible value of the explicit price. As customers do not purchase each attribute individually but purchase the bundle of the package, the implicit price of each value in the goods cannot be visible.

A regression model can estimate the hedonic price of the goods and the function can be described as follows (Xiao, 2017).

$$P=h(S, N, L)$$

In this equation, P is the price of goods, and each attribute is described by S, N, and L. The h( ) is a hedonic function in the form of a regression equation. When individual attributes are regressed to the price of the good, the coefficient of each characteristic is estimated, which is the characteristic price.

In general, the hedonic function is a linear, semi-log, or dual log function. The linear function assumes that the independent variable and the dependent variable have the linear relationship, as with the following expression. In this case, there is an advantage, as the interpretation of the estimation result is relatively simple and easy. However, when the quantity of the property increases, it may not be realistic to view the price of the property changing at the same magnification.

$$p = \beta_0 + \sum_{k=1}^{K} \beta_k x_k + \varepsilon$$

where

p	denotes the property value;
ε	is a vector of random error term;
β_k (k = 1, …, K)	indicates the marginal change of the unit price of the kth characteristic x_k of the good

The semi-log function is a natural logarithm of the dependent variable. This function appears to be a linear function, but it is actually a non-linear function similar to the second function below. In this case, the interpretation of the estimated results is simple and convenient because it demonstrates an approximate percentage change of the sales price. Malpezzi (2003) suggested five advantages of semi-log functions (Malpezzi, 2003). Triplett (1987) also reveals that semi-log functions are mostly used in hedonic price studies. However, they cannot be realistic because the sales price fluctuates geometrically when the quantity of each property fluctuates by the one-unit change. Halvorsen and Palmquist (1980) proposed a more accurate rate of change in the price. In their semi-logistic model, the exact rate of change is e-1.

$$Lnp = Ln\beta_0 + \sum_{k=1}^{K} \beta_k x_k + \varepsilon$$

where

p	denotes the property value;
ε	is a vector of random error term;
β_k (k = 1, …, K)	indicates the rate at which the price increases at a certain level, given the characteristics x

The dual log function uses the logarithms of both the dependent and independent variables. DiPasquale and Wheaton (1996) argued that the dual log function is more realistic than the linear function as the dual log function can reflect

the rule of diminishing returns of utility between property attributes and the sales price (DiPasquale, 1996). With the dual logarithmic function, the estimated coefficient indicates the elasticity of the price with the characteristic variable. However, it is difficult to deal with dummy variables with this function as they can only be 0 or 1 and log 0 cannot be defined. Other options include using 1 and 2 as dummy variable inputs or using no logarithm for the dummy variables.

$$Lnp = Ln\beta_0 + \sum_{k=1}^{K} \beta_k Lnx_k + \varepsilon$$

where

p	denotes the property value;
ε	is a vector of random error term;
β_k (k = 1, …, K)	indicates how many percent the price p increases at a certain level, if the kth characteristic x_k changes by 1 %

There is also a more flexible form of the function, the transcendental algebraic function (Capozza, Green, & Hendershott, 1996).

$$\log Y = \alpha + \sum_m \beta_m \log X_m + \frac{1}{2} \sum_m \sum_n \gamma_{mn} \log X_m \log X_n + \epsilon$$

The Box-Cox function is also used in hedonic price studies (Halvorsen & Pollakowski, 1981). The model first determines the transformation from the data itself, and then a specific form of the regression model is used for the results. For instance, in this equation, if θ and λ_k are equal to 1, it will be a basic linear function. If θ and λ_k are equal to 0, it will be a log-linear function. If θ is equal to 0 and λ_k to 1, it will be a semi-log function. However, Cassel and Mendelsohn (1985) argued that this model has an inconsistent mechanism for the transformation, because of 1) the lower accuracy of each coefficient from the numerous coefficients generated from the model, 2) the inappropriate estimation when negative numbers are included, 3) the invalid prediction possibilities because of the unequal feature of the means of untransformed dependent variables and the estimated samples, and 4) the complicated calculation of slopes and elasticities for the non-linear transformation (Cassel & Mendelsohn, 1985).

$$p(\theta) = \beta_0 + \sum_{k=1}^{K} \beta_k x_k^{(\lambda_k)} + \varepsilon$$

where

$$p^{(\theta)} = \frac{p^{(\theta)} - 1}{\theta}, \quad \theta \neq 0$$
$$= Lnp, \quad \theta = 0$$
$$x^{(\lambda_k)} = \frac{x^{(\lambda_k)}}{\lambda_k}, \quad \lambda_k \neq 0$$
$$= Lnx_k, \quad \lambda_k = 0$$

These kinds of hedonic price modeling functions can be applied by finding the best performance with the dataset and its conditions. There are no strict rules for selecting the forms, and it is recommended to try more than one form to get the best results. Normally, in hedonic studies, the semi-log form is most widely used since the proportionate change of property price can be easily differentiated from the change of individual attributes of the property with its coefficient. In addition, the semi-log function can easily handle dummy variables (0 or 1), which are a predicament of the log-log form.

2.2.3. Attributes of Properties

There are numerous empirical studies proving that the hypothesis and the attributes can be categorized into three groups: housing structure, community, and locational attributes.

Housing structure describes the physical characteristics and conditions of housing and land. Specific attributes are lot size, unit size, building age, garage, swimming pool, fireplaces, air conditioning, and number of bedrooms and bathrooms (Kain & Quigley, 1970; Sirmans, MacDonald, Macpherson, & Zietz, 2006). The importance of structural attributes can change over time and vary among countries in accordance with culture, tradition, and local climate but the attributes of room number and housing unit size are relatively critical in most nations (Kohlhase, 1991).

Community attributes indicate the quality of socioeconomic and environmental characteristics in the neighborhoods. Education is the most influential factor in housing choice decisions. Kilpatrick and Hefner (1998) found an association between school quality and housing price (Kilpatrick & Hefner, 1998). In particular, Gibbons and Machin (2003) highlighted the influence of primary school quality on prices (Gibbons & Machin, 2003). The socioeconomic characteristics of the community population are also significant, such as high-income neighborhoods and the presence of western (as opposed to non-western) residents, as these lead to a

presumption of better community quality and amenities (Visser, Van Dam, & Hooimeijer, 2008). Baumont and Legros (2009) investigated the metropolitan districts of Paris and housing prices and found that neighborhood renewal plans and policies can influence housing prices (Baumont & Legros, 2009). In addition, the environmental externalities of neighborhoods can be critical for housing choice and price (Anderson Jr & Crocker, 1971; Murdoch & Thayer, 1988; Wilman & Krutilla, 1981). Aircraft and transportation noise were negative determinants for housing prices (Bateman, Day, Lake, & Lovett, 2001; Day, Bateman, & Lake, 2007; Nelson, 1982; Schipper, Nijkamp, & Rietveld, 1998) while air and water quality were similarly influential (Graves, Murdoch, Thayer, & Waldman, 1988; Michael, Boyle, & Bouchard, 1996; Smith & Huang, 1995; Steinnes, 1992). On the other hand, public open spaces and urban parks increased the value of community environments with more fresh air, recreational facilities, and aesthetic enhancement (Anderson & West, 2006; Lutzenhiser & Netusil, 2001; Nowak & McPherson, 1993; Tyrväinen, 1997).

Locational attributes consist of accessibility and proximity to major public facilities and places, such as downtown areas, shopping malls, transportation stations, main roads, highways, and schools (Hanushek & Yilmaz, 2010; Heikkila et al., 1989; Henneberry, 1998; Landau, Prashker, & Hirsh, 1981). The distance to central business districts (CBDs) has been critical for housing choice and prices with the "access/space trade-off" model (Evans, 1985; Hanushek & Yilmaz, 2007) depicting a trade-off between the reduced land cost of suburban areas and the increasing commuting cost of travel and transportation to CBDs. Hwang and Thill (2011) found an association between job accessibility and housing price by measurement of travel-time-based job accessibility in Seattle (Hwang & Thill, 2009). There have been, however, contradictory debates regarding the model due to the assumption limitation, such as monocentric urban structures, the isotropic condition of terrain, and perfect competition markets (Boarnet, 1994; Heikkila et al., 1989; McMillen, 2003). For other attributes, Bowes and Ihlanfeldt (2001) found proximity to railway stations significant for housing prices due to lower costs and better convenience for commuting (Bowes & Ihlanfeldt, 2001), while Debrezion et al. (2011) further developed the impact of the railway network on house prices (Debrezion, Pels, & Rietveld, 2011). Munoz-Raskin (2010) examined the positive significance of proximity to bus rapid transit (BRT) networks for property values (Munoz-Raskin, 2010). There is also a study that shows the significance of spatial accessibility to retail and commercial centers for housing values (Song & Sohn, 2007). As previously noted for community attributes, proximity to urban parks, public open spaces, and education facilities is also critical for increasing prices.

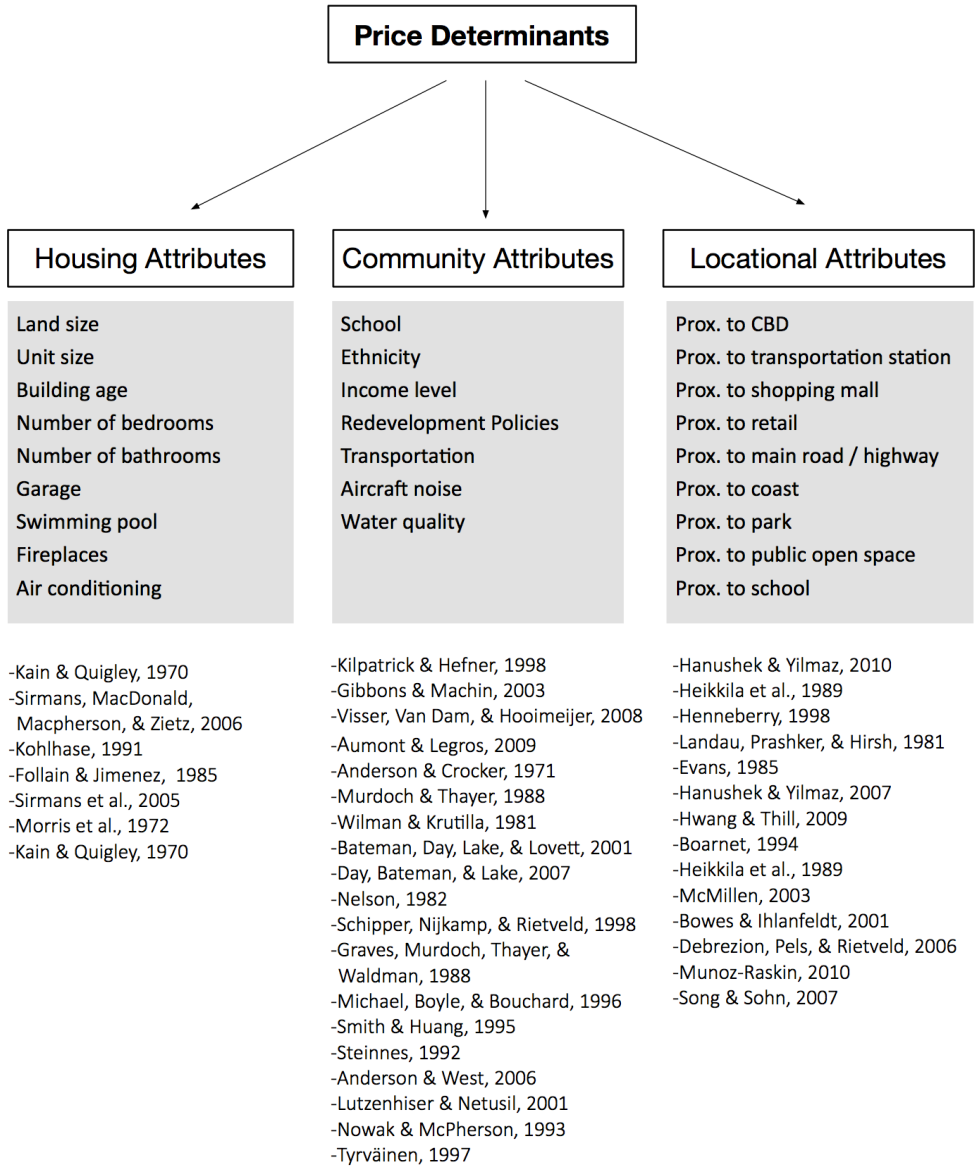

Figure 15. Map of Price Determinants and References

2.2.4. Literature Review of Developing Countries

2.2.4.1. Price Determinants of Housing in Southeast Asia and China

Previous studies on the price determinants of apartments in Southeast Asian countries and China have delivered significant implications for the study of Vietnamese housing. There are several developing countries with similar climate conditions, ongoing rapid urbanization, and dynamic housing development. Chinese cases are also similar to those in Vietnam in terms of transitional economic reform in the context of a socialistic regime.

An et al. (2014) studied the price determinants of 171 high-end apartments in Kuala Lumpur, Malaysia. The positive pricing factors were a parking allowance for two cars, being a free holder of land, and location in the downtown district. Locational attributes were also highlighted, such as proximity to a subway station and international schools. The variables of high-rise towers, population density, a swimming pool, or proximity to shopping malls had no influence on price (An, Kim, Choi, & Shin, 2015).

Lee and Chung (2010) investigated the sales prices and attributes of nine high-end apartments in the Philippines using the hedonic price model. Most positive pricing factors observed were for housing attributes, such as unit area, housing brand, total floors, building age, and penthouse. However, high-rise tower, view, adjacency to main roads, total units, and open spaces had no influence on price (Lee & Chung, 2011).

In China, Xiao et al. (2017) examined the price determinants of 6,959 housing properties within the five ring roads of Beijing, where most urban functions are included with housing. They grouped the attributes based on structural, locational, and environmental characteristics and analyzed them using the hedonic price model with eigenvector spatial filtering. Housing attributes that were positive pricing factors were unit size, bedrooms, living room, orientation for natural light, and building age. The locational attributes sector included proximity to local centers and location in inner city districts, which minimize travel time. Proximity to public amenities (convenient stores, metro station, parking lots, primary schools, shopping malls, and gyms) were also interrelated with price determinants. In the environmental section, air quality was significantly critical for price (Xiao et al., 2017)

Wen et al. (2005) analyzed 2,473 housing samples of 290 housing communities in Hangzhou City in China. Housing attributes that were factors in pricing were related to floor area, number of storeys, garage, attic, and interior design. They also found environmental quality and community management to be important in the

community sector. In the locational sector, the analysis showed the important factors were proximity to the university, entertainment facilities, CBD, and West Lake, as well as traffic conditions indicated by the total number of the bus routes within walking distance (500m) (Wen, Jia, & Guo, 2005).

2.2.4.2. Price Determinants of Housing in Vietnam

While housing price determinants in other countries have been intensively studied and analyzed, a few studies of housing price determinants in Vietnam are available.

Chung et al. (2014) analyzed 640 samples of 197 HCMC apartment projects using the hedonic regression model and found pricing factors for three groups: whole city, downtown, and the new town district (Phu My Hung city). The result was that positive pricing factors for the whole city were land price, foreign developer's project, swimming pools, and proximity to international schools, parks, new town, and downtown. The negatively significant factors were the age of the buildings and distance to downtown. In the case of downtown apartments, the positive factors were the total number of apartment units in a project, unit area, swimming pools, and unit access structure (vertical shared access), and the negatively significant factors were ward population density and land prices. For the new town apartments, positive factors were land prices, ward population density, and the proximity of parks and international schools. This study found similarities and differences between apartment price determinants among downtown, the new town, and the rest of the city. (Chung, Kim, & Cho, 2014)

Huynh's study (2015) analyzed the determinants of the apartment prices of the new town, Phu My Hung city and its surrounding areas, in HCMC. Twenty apartment projects with 263 units in the new town and 16 apartment projects with 172 units outside were analyzed by the hedonic regression model. It was found that the positive factors were apartment project land size, housing unit size, and apartment grade. The negatively significant determinants were building age, floor area ratio (FAR), and distance to downtown (Huynh, 2015).

Jung et al. (2013) analyzed the development patterns of foreign and local developers' apartment projects through the factor analysis and logistic regression model. An investigation of 139 foreign and local projects in HCMC found that numerous foreign apartment projects were developed in suburban areas because land prices were relatively cheaper and legal licensing for housing development was easier than in downtown areas. The influential independent variables for the foreign developments were accessibility to downtown, higher sale prices, various public community amenities and their proximity to housing, potential population growth

with job opportunities, larger apartment units, and proximity to rivers (Jung, Huynh, & Rowe, 2013).

Kato and Nguyen analyzed 1,542 housing properties from 10 districts and 394 streets in Hanoi using the hedonic model. The results highlighted that adjacency to streets was a significant pricing factor in locational attributes. Proximity to parks, schools, and hospitals was not significant since they considered quality of services rather than distance to the services. In the community sector, sufficient road area and water supply were significant for price, while the variables of safety, food, and air quality did not impact price (Kato & Nguyen, 2010).

Therefore, according to the literature, the price determinants of housing in Vietnam can be summarized and compared with other countries as follows: housing attributes, community attributes, and locational attributes (Table 3). Each category includes some unconventional determinants reflecting the transitional contexts of Vietnam. As foreign investment inflows into Vietnamese housing development with more professional designs and construction management skills, "Foreign development" in the housing category affects the housing prices of the local market. "Water supply," "Adjacency to main road," and "Road area" can be understood together with the inferior infrastructure conditions that are the negative externalities of urbanization in Vietnam. "Proximity to new town" indicates an interrelation with the local suburban township developments.

Table 3. Price Determinants of Housing

Categories	Studies for Cities Worldwide	Studies for Cities in Vietnam
Housing Attributes	Land size / Unit size / Building age / Number of bedroom and bathroom / Garage / Swimming pool / Fireplace / Air conditioning / Parking facility / Housing brand / Total floors / Penthouse / Orientation to natural light / Interior design	Project land size / Unit size / Apartment grade / Building age / Foreign development / Unit access structure / Natural ventilation / Building density / Water supply / Total floors
Community Attributes	Ethnicity / Income level / Redevelopment policy / Transportation and aircraft noise / Water quality / Pool / Community management	Swimming pool / Neighborhood population density / Road area / Mixed-use development / Land price / Community density
Locational Attributes	Proximity to downtown, local center, transportation station, shopping mall, main road and highway, coast, public open space, school, convenient store,	Adjacency to main road / Proximity to downtown, new town, shopping mall, river, work place, international school

Notes: The source of the "Studies for Cities Worldwide" section of this table is the literature review of "Chapter 2.2.3. Attributes of Housing," and "Chapter 2.2.4.1. Determinants of Housing in Southeast Asia and China." The source of the "Studies for Cities in Vietnam" section is the literature review of "Chapter 2.2.4.2. Price Determinants of Housing in Vietnam."

Chapter 3

Urbanization and Housing Development in Vietnam

3.1. Socio-Economic Change

3.1.1. Doi Moi Economic Reform

Vietnam has registered dynamic national growth following the introduction of the Doi Moi (Đổi Mới: open door) economic reform policy of 1986. This was launched at the Sixth Party Congress following fierce debate among the politicians of the Party. From the Vietnam War (1955–1975) until 1986, the ruling socialist regime had adopted a traditional socialist economic model. The government-led economic system was enforced with strict regulations to control industries and markets of labor, housing, land, and other areas. It did not allow private sector development in the country. However, the socialist model led to considerably inefficient industrial productivity and outcomes, and the economic situation worsened in that period. Annual inflation rates were more than 700%, and the value of exports was lower than imports. Large amounts of the national budget went into military expenditures and loss-making state enterprises. There was very little foreign investment or foreigners in the market, and few diplomats and aid workers in the country (Van Arkadie & Mallon, 2004).

In this context, the Doi Moi economic reform process began in Vietnam and moved away from the government-led economic structure by opening up the local markets. The economic renovation attracted foreign investment and promoted overseas businesses to promote economic growth. The policy goal was to create a socialist-oriented market economy and to accelerate the economic transition to industrial manufacturing, creating employment opportunities and economic output (Beresford, 2008). The key principles of the policy can be summarized by the

following: 1) the establishment of a decentralized economic system encouraging business autonomy, 2) the development of a market-oriented monetary system, 3) the development of an agricultural system allowing both individual and group production and economic activities in the market, and 4) the expansion of trade and foreign investment relations. With these objectives, Vietnam has achieved the reduction of macroeconomic instabilities and the acceleration of economic growth.

3.1.2. Economic Growth

After the Doi Moi economic reform, there was a transition from a centrally planned economy based on a socialist model to a market-oriented economy based on a liberal model. The shift had a significant impact as a result of the emergence of liberal market mechanisms with the opening up of FDI (Nguyen, Samsura, van der Krabben, & Le, 2016). With the inception of Doi Moi, an increase in international trade and a large FDI inflow was possible due to Vietnam's geographic advantages as an export platform to the EU and USA markets, a stable economic and political environment, an abundance of well-educated young workers, richness of natural resources, a growing domestic market, and government commitment to economic reform (Nguyen & Nguyen, 2007). Despite its short FDI history, Vietnam is now ranked as having the third-largest FDI inflow in the Association of Southeast Asian Nations (ASEAN). Registered capital and licensed projects rapidly increased, peaking in 2007. FDI contributed 25% of total investment and 20.1% of GDP in 2015.

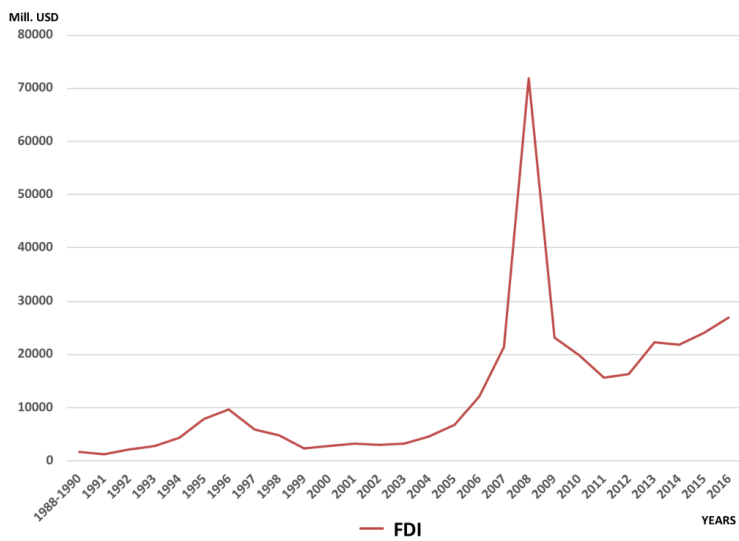

Figure 16. FDI Growth in Vietnam
Data: General Statistics Office of Vietnam

Accordingly, the gross domestic product (GDP) of Vietnam has increased remarkably, and the annual growth rate of GDP has remained at 6–8% (Figure 17). In 2005, it peaked at 8.4%, which was the second highest growth rate in Asia, just behind China.

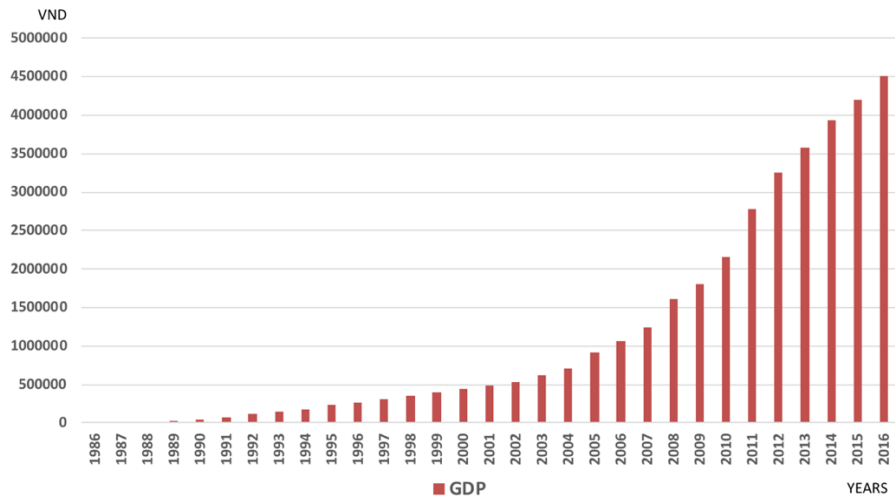

Figure 17. GDP Growth in Vietnam
Data: General Statistics Office of Vietnam

3.1.3. Rapid Urbanization and Housing Shortages

There has been a dynamic movement of households in Vietnam, preceded by economic growth during the last several decades. The population was approximately 68 million in 1990 and reached 95 million in 2017. The urban population as a percentage of the national population also increased from 20.5% to 34.7% as a result of an influx of migrants (UN Habitat, 2014).

Table 4. Population Change in Vietnam

Year	1995	2000	2005	2010	2016
Vietnam	71,996	77,631	82,392 (1.17%)	86,947 (1.07%)	92,695 (1.07%)
Ha Noi	2,431	2,768	3,133 (2.02%)	6,634 (2.05%)	7,328 (1.74%)
Ho Chi Minh City	4,640	5,275	6,231 (3.71%)	7,347 (2.09%)	8,298 (2.09%)

Notes: Population growth rates of the year in parenthesis. / Population number unit: thousand
Data: General Statistics Office of Vietnam

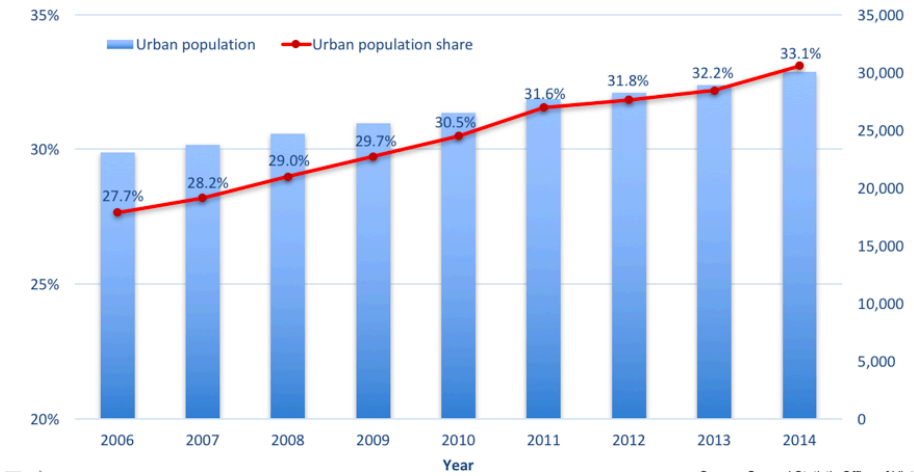

Figure 18. Urban Population in Vietnam
Data: General Statistics Office of Vietnam

FDI has been a central driver of export-oriented industrialization, particularly for manufacturing and processing industries in Vietnam (Figure 19), with 57.7% of FDI capital invested in fields requiring significant numbers of manufacturing workers. Thus, the labor market has dramatically surged around the emerging industrial zones in HCMC and Hanoi, which served as large magnets that induced people to migrate from rural areas. For instance, HCMC's population increased from 3.92 million in 1988 to 6.25 million in 2005 and approximately 1.9 million of these were migrants to the city. District 12, Thu Duc, and Binh Tan in HCMC, in particular, registered the highest rates of population growth (respectively, +77%, +64%, and +58%) from 1999 to 2005 (GSOV, 2010; Waibel et al., 2007). Over 70% of the migrants of Hanoi and HCMC were between the ages of 15 and 30 (Figure 20).

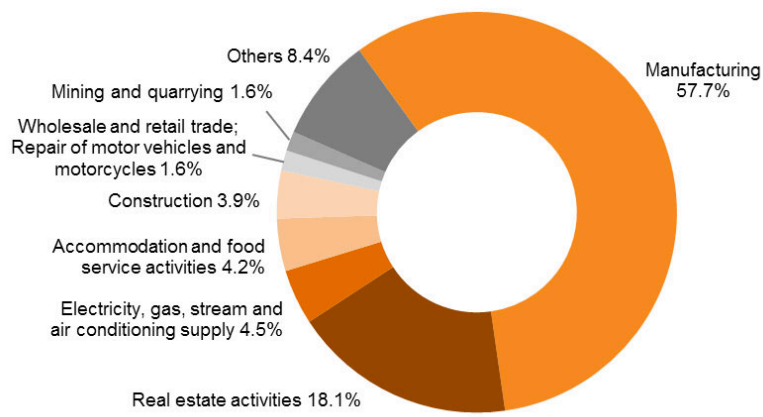

Figure 19. Accumulated FDI Inflows by Sectors 2016 in Vietnam
Data: General Statistics Office of Vietnam

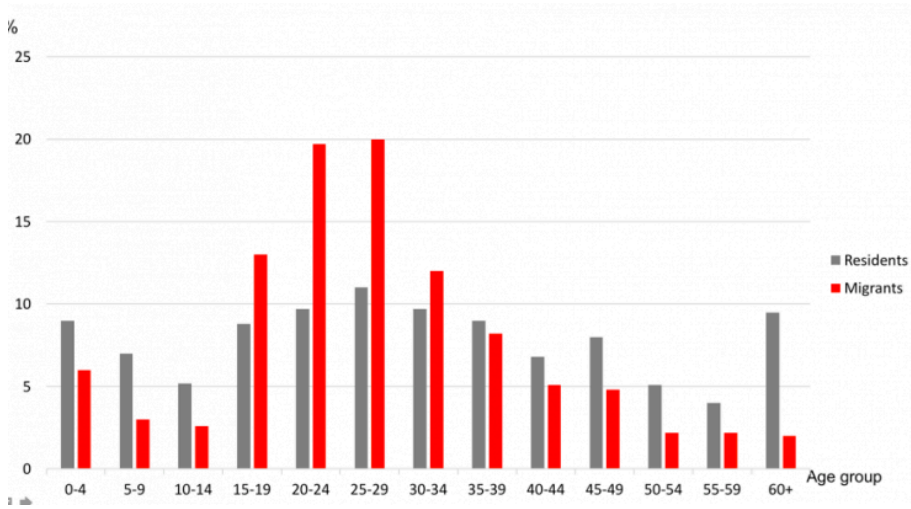

Figure 20. Rural-urban Migration in Hanoi and HCMC
Data: General Statistics Office of Vietnam

However, the great influx of in-migrants into the cities led to serious housing shortages and widespread temporary settlements. The housing ownership rate of the migrants was only 8.7% in 2010, and more than 90% of the migrants remained in rented housing and temporary shelters along canals or on agricultural land with relatives (World Bank, 2015). Urban settlement areas expanded horizontally to include the suburban districts on the periphery, which more than doubled over the last 20 years. Most of the development was uncontrolled urban sprawl, and the districts were filled with temporary housing for temporary residents and workers. Table 5 illustrates the major cities that are experiencing ongoing urbanization with huge in-migrations, and this indicates low rates of permanent housing and much higher portions of semi-permanent and temporary housing. 72.5% of HCMC housing and 85.3% of Binh Duong are not permanent housing constructed on durable foundations or with permanent materials such as concrete or brick. This data substantially reflects the housing shortages of the urbanized cities.

Table 5. Official Categories by Housing Type in Vietnam 2016

Major Cities	Permanent house (%)	Semi-Permanent house (%)	Temporary House (%)	Total (%)
Vietnam	52.3	42.5	5.2	100
Ha Noi	91.8	8.1	0.1	100
HCMC	27.5	71.8	0.7	100
Danang	43.7	56.1	0.2	100
Binh Duong	14.7	84.9	0.4	100

Data: General Statistics Office of Vietnam

3.1.4. Institutional Changes in Land and Housing Policies

Since the Vietnamese economic reform of 1986, the political economy has significantly influenced land legislation and housing policy, which were the platforms for real estate development by the private sector. The period of post-Doi Moi can be divided into three phases. The first phase (1986–1994) was the period of the "entrepreneurial policy-maker" (Vuong, 2014). In 1987, the government initiated the Foreign Investment Law enabling the inflow of FDI into Vietnam, and by 1994 it constituted 10% of the GDP (Cira, 2011). The Land Law was also initiated to allow farmers to secure land use rights (LUR) for agricultural utilization on their allocated land. In 1993, the Land Law was revised to enable the right to transfer, lease, inherit, and mortgage land (Thu & Perera, 2011). In 1990, the Private Enterprise Law and the Corporate Law were established to develop a platform for the dynamic growth of the private sector. By 1994, more than 17,400 private companies had launched in Vietnam (Vuong, 2014).

The second phase (1995–1999) was a period of economic integration of the market economy.[7] The annual GDP growth rate of Vietnam peaked at 9.5% and 9.3% in 1995 and 1996, respectively. In 1995, to deepen the foundation of the market economy, the Civil Code was enacted to legally protect industrial properties and activities. In addition, more policies and laws were established to consolidate the market economy such as the Foreign Investment Law (1996), the Credit Institutions Law (1997), the Value Added Tax Law (1997), and the Corporate Income Tax (1997) (Vuong, 2014).

The third phase (2000–present) has been a period of economic prosperity and globalization.[8] During this period, the average GDP growth rate was 7.5%, and the country was labeled the economic "little tiger" of Southeast Asia; in 2006, it ranked

[7] With the normalization of political and trade relations with the United States (the US-Vietnam bilateral trading agreement) during this period, Vietnam could promote political and economic stability by integrating with the global developed market and multi-lateral donors. In 1996, over USD 10 billion of FDI flowed into the country alongside billions of Official Development Assistance (ODA) from the World Bank and the ADB. (Vuong, 2014).

[8] The government continued to spur national economic growth within the global market under the support of the US-Vietnam BTA that enabled Vietnam to enter the World Trade Organization (WTO) in 2006. This attracted more global investors who considered the country a safe destination for FDI. The financial markets and GDP quickly expanded with low inflation, a faster pace of privatization of SOEs, and the emergence of the stock market (2000). However, the economic boom of the last two decades was not sustained in the late 2000s due to unstable macroeconomics producing higher rates of inflation, budget deficiencies, mismanagement of financial policies, and inefficiencies and corruption within the state-run conglomerates. Unstable situations led to the collapse of the stock, money, and real estate markets after the critical impact of the global financial crisis in 2008. However, the government strived to prevent the sharp economic downturn by implementing monetary policies such as a stimulus package of USD 6 billion to subsidize loan interest payments, to ease the financial difficulties of companies, and to create more jobs and domestic consumption. Despite the tough experiences of this market mechanism, the Vietnamese economy has further opened to the world (Vuong, 2014)

58th in the world economy. In this context, the Land Law Act was revised in 2003, and this became a major instrument for the growth of the real estate market. The revisions to this law introduced land use right certificates (LURCs) for the transfer, leasing, inheritance, and mortgaging of land and allocated land for housing development by local and foreign developers. When the government revised the Land Law in 2013, and the Housing Law and Real Estate Business Law in 2015, the real estate market was in the spotlight again, as foreign organizations and individuals could secure property ownership via sales, transfers, leases, inheritance, and mortgages (Thu & Perera, 2011). In particular, the two largest cities, Hanoi and HCMC, have been the focus of the property market due to their rapid economic growth, ongoing infrastructure development, supportive government policies, and low entry costs in recent years. Table 6 illustrates the details of the institutional reforms in land and housing policies.

Table 6. Institutional Changes in Land and Housing Policies

Year	Reform Measures
1975–1986	**[Socialist Regime]** State-run, collective, and subsidized economy / Strict regulation of pricing and interest rates / Housing market frozen by the government / New housing delivered by public authorities / Isolated from the global economy
1986	**[Doi Moi Reform]** Shifted to market-oriented economy / Multi-sector and reformed economy / Price deregulation / Increased external economic relations
1987	**[Land Law 1987]** Owned by the people, managed by the state / Land Use Right Certificates (LURCs) transferred only through public systems / Transactions between individuals prohibited
1993	**[Land Law 1993]** The state determines the value of land privately owned / LURCs for transfer, leasing, inheritance, and mortgaging of land / Public land allocation only for state-owned enterprises (SOEs) / Land titling program for agricultural land / Land allocated > 3ha, PM decides on leased land for foreign enterprises (FEs) * Removal of housing subsidies; lease price and housing support in wages established / State-owned houses sold to existing tenants / Ban on land transactions affects trading of houses on state-owned land plots
1994	**1994 Decree 60** Building ownership and land use right certificates (BOLURCs) system established, providing combined legal title

2003	**Land Law 2003** Land owned by people represented by the State / LURCs: transformation, transfer, lease, inheritance and mortgage rights, main instrument of real estate market / Land allocated for domestic enterprises (DEs) and leased for FEs decided by the Provincial Governments / DEs, and FEs allowed with residential projects
2005–2015	**2005 Housing Law** Provided a legal framework for housing development, commercial houses, self-built houses, public service houses, and social houses * **2009 –** Mechanisms to promote student and worker housing / **2010 –** Guidelines for housing development projects (condos and social housing) / **2013 –** Migrant housing development investments in urban areas and resettlement housing, social housing / Provisions for inclusionary zoning of social housing in commercial projects **2015 Housing Law** Provisions for social housing, foreign ownership, housing transactions, housing data and information systems

Source: Thu & Perera, 2011; World Bank, 2015

3.2. Housing Development in Vietnam

The Vietnamese urban population has rapidly increased to 35 million, and the expected population in 2020 is 44 million. The urbanization rate is still low (38%) but the growth rate is escalating remarkably, and it is predicted to be 44% in 2020. As the number of households in a residence has decreased, and the average residential area per capita has increased, the demand for housing and residential land has steeply increased. Table 7 illustrates the urbanization factors and residential issues of Vietnam. With the acceleration of urbanization alongside increasing nuclear family formation, the demand for housing and land for residential development is escalating.

Table 7. Vietnam City and Housing Index (2009–2020)

Index	Unit	Year		
		2009	2015	2020
Urban population	Million	25.43	35	44
Urbanization rate	%	29.63	38	45
Average number of households		3.7	3.4	3.2
Average dwelling area	$m2$ / per capita	19.2	26	29
Housing demand	Million	6.76	10.2	13.5
Residential land demand	Million $m2$	476	905	1260

Data: General Statistics Office of Vietnam / Source: UN Habitat, 2014

3.2.1. Classification of Housing Typology

3.2.1.1. Official Categories from the Vietnamese Housing Census

As Vietnam's main cities have been experiencing the critical issue of housing shortages, a variety of housing types have emerged and evolved both in formal and informal ways. The government officially categorizes these types into permanent, semi-permanent, and temporary (simple) housing based on construction quality. Permanent housing has a durable foundation and a structure made of permanent materials such as concrete or brick. Semi-permanent housing uses durable construction materials for the foundation and has a permanent structure, but the finishing materials on walls and roofs consist of unsubstantial and temporary attachments. Temporary houses are built from scavenged and impermanent materials such as corrugated iron, wood, and pieces of cardboard, and they are based on unstable foundations and structures (GSOV, 2010).

3.2.1.2. Housing Typology by Other Sectors

The World Bank survey characterizes the housing types in detail by architectural form, structure, and location within the permanent, semi-permanent, and temporary groups (Table 8).

Table 8. World Bank Categories for Vietnam Housing (2016)

Vietnam Official Classification	Permanent House	Semi-Permanent House	Temporary House
World Bank Classification	Tube house Alley house Apartment Villa	Alley house Small single-story	Rural old house Squatter house

Source: World Bank, 2015

Permanent housing consists of tube houses, alley houses, apartments, and villas. Table 9 illustrates the characteristics of the different types of permanent housing.

Table 9. Permanent Housing in Vietnam

Types	Characteristics of the Permanent Housing Type
Tube house (Figure 21)	Narrow and long plots / typical plot size is 4 x 25 meters / 100% plot coverage / normally 3–5 floors / typically a commercial ground floor
Alley house (Figure 21)	Tube house typology / smaller and located in small alleys / 100% plot coverage / more than 50% of the total permanent construction
Apartment (Figure 22)	Type 1: Older social or collective housing built between the 1960s and the mid-1980s with funding from the Soviet Union / Mostly in the North and in poor condition / ground floor, plus 7 stories (G+7) Type 2: New high-quality blocks built by developers / Average G+18 Type 3: New resettlement housing and social housing / Typically G+5 to G+12
Villa (Figure 23)	Type 1: Older colonial style villas built during the French era / Typically contain gardens or grounds / Refurbished for rental Type 2: New luxury villas / built by individuals and large housing projects built by developers

Source: World Bank, 2015

Figure 21. Tube House(left) and Alley House(right)

Figure 22. Apartment Type 1(left) and Type 2(right)

Figure 23. Villa Type 1(left) and Type 2(right)

Semi-permanent housing mainly consists of alley houses and small single-story houses. While both are similar in architectural form, they are differentiated by scale and location (Table 10).

Table 10. Semi-permanent Housing in Vietnam

Types	Characteristics of the Semi-Permanent Housing Type
Alley house (Figure 24)	A precursor to the permanent alley house constructions / Located within deeper alleys / Average plot size of 3 x 20m / Poor construction quality / Typically G+1/ old and in need of an upgrade
Small single-story (Figure 24)	Average size of 3 x 20m / New informal buildings with single rooms / Typically for rent and located in urban fringe areas

Source: World Bank, 2015

Figure 24. Alley House(left) and Small Single-story(right)

Temporary housing is made up of two types: old rural houses and squatter houses. They are mainly categorized by their location, as the former are normally situated around urban fringe areas, while the latter are normally situated on urban canal banks or in industrial districts and referred to as squatter housing (Table 11).

Table 11. Temporary Housing in Vietnam

Types	Characteristics of the Temporary Housing Type
Rural old house (Figure 25)	Older rural houses located in urbanized villages in urban fringe areas
Squatter house (Figure 25)	Precarious squatter housing located on undesirable and non-residential areas, such as canals, roadsides, unused industrial areas, or open-air market spaces

Source: World Bank, 2015

Figure 25. Rural Old House(left) and Squatter House(right)

Another World Bank publication provided five categories of housing typology: temporary shelters, old townhouses, new townhouses, apartments, and villas (Cira, 2011). UN Habitat also categorizes Vietnamese urban housing as shophouses, apartments, villas, alley houses, and precarious squatter housing by a functional classification (UN Habitat, 2014).

3.2.1.3. Housing Typology in This Study

In this study, housing types were categorized into squatters, row houses, villas, and apartments for survey and analysis (Table 12). The official Census of Vietnam categorizes the typology into permanent, semi-permanent, and temporary housing based on ho using quality and materials (GSOV, 2010). However, this imposes limitations on the understanding of the diverse urban housing situation necessary to investigate residential mobility and housing choices for this study.

In the World Bank and UN Habitat housing categories, there is no misconception of the terms “apartment” and “villa,” and they can be clearly categorized. Temporary houses are also labeled as squatter houses. However, shop houses, alley houses, townhouses, and tube houses are structurally comparable, as they all have similar narrow and long plot sizes, nearly 100% plot coverage, and an average of two to four floors. These properties also typically belong in the single-family ownership category. This study combined these types into the row house category (commonly called “nhà ống” in Vietnamese). Therefore, in the survey, residential housing was classified into four types: squatter housing, row houses, villas, and apartments.

Table 12. Classification of Housing Types for This Study

This Study	Squatter	Row house	Apartment	Villa
World Bank 1	Rural old house Squatter house	Alley house Tube house Small single story	Apartment	Old villa New villa
World Bank 2	Temporary shelters	Old townhouse New townhouse	Apartment	Villa
UN Habitat	Precarious squatter	Shop house Alley house	Apartment	Villa

Source: Cira, 2011; UN Habitat, 2014; World Bank, 2015

3.2.2. Slum Upgrading Programs

The UN Habitat estimates that approximately 9 million population, which is almost 10% of total population, are living in slum areas of Vietnam[9] (Vietnam News, 2009). The Vietnamese government has recently attempted to improve the residential environment in the slums. In June 2009, the government announced the first comprehensive urban improvement policy called The National Urban Upgrading Program (NUUP) for the Period of 2009-2020 to enhance the urban environment (Vietnam News, 2009). This policy is a step forward for infrastructure improvement projects such as water quality improvement, the installation of sanitation networking, and waste treatment facilities that have been prioritized in the slums. In addition, the policy supports the relocation of temporary and dilapidated houses into new social apartments or to new lands of "site and services" to improve the residential environment. The mortgage programs are also arranged to provide financial support for the relocation of residents. The first pilot projects were launched in Hanoi, Hi-Pong, Ho Chi Minh City, and Can Tho City. Out of the World-Bank's budget of $418 million, 80% of the budget focused on water quality enhancement in the canals, installation of a water supply system, and the development of a flood management system; in addition, 15% was allocated to the construction of relocation apartments and related infrastructure, the upgrading of semi-permanent houses, and financial mortgage programs to help resettle the low-income residents of the slums (World Bank, 2016).

[9] The UN Habitat evaluates a slum according to the following standards: 1) access to sufficient improved water for family use and drinking at an affordable price, 2) access to improved sanitation such as a private or reasonable public toilet for community sharing, 3) sufficient living space for a maximum of 3 persons per room (minimum area of 10m2), 4) structural durability of housing to protect dwellers from climate conditions and non-hazardous location, 5) security of tenure of housing and land, which is a right to prevent forced evictions (Moreno & Warah, 2006)

.

Vietnam has forcibly proceeded most slum redevelopment, focusing on the overall renewal of the sites, without consideration of slum resident's living conditions, relocation willingness and preferences. The top-down implementation of the government's policies caused frequent delay of the projects and even casualties during execution of the site clearance due to severe conflicts with the settlers (VBN, 2010). Evicted residents have moved to create another slum or relocated into other slums and these migration patterns have redundantly cycled with degrading urban environment (Waibel et al., 2007).

3.2.3. Self-Built Housing

Vietnam can be called a country of self-built housing. As commercial housing development was not legally permitted before, both households and informal micro-developers have produced most of the housing. This was the most common way to supply housing in the country. Since 1975, the government produced only 5% of total formal housing stocks until 1994 and the other 95% was self-built housing. Then, the state stepped away from housing development when LUR and commercial land markets emerged after the initiation of the Doi Moi economic reform. However, self-built housing has always dominated the housing sector and even today the majority of houses are still self-built (World Bank, 2015) (Table 13).

Table 13. Self-built Housing Production over Time in Vietnam

Year	State-Driven	Commercial	Self-Built
1994	5.00%	-	95.00%
1998	-	10.19%	89.81%
2008	-	19.57%	80.43%
2014	9.79%	15.15%	75.07%

Source: World Bank, 2015

Since the Doi Moi reforms, housing sectors have experienced tremendous growth, particularly in the high-end sectors, in terms of both supply and demand. Eighteen percent of FDI has been invested in real estate development, with the majority flowing to luxury housing developments (GSOV, 2010). As private sectors have led the market-based housing supply system, there were hardly any housing solutions accessible to the low- and middle-income classes. An affordable housing supply was especially critical given the rapid population influx and housing shortages in HCMC and Hanoi. In this period, the government tried to minimize public investment and reduced subsidized housing programs. Not only was the increasing demand for affordable housing far higher than the authorities' housing supply capacity, but the authorities had also shifted their development priority from

public housing to industrial development. Instead, they initiated policies to support self-built housing production. The revision of land laws and housing policies served to privatize residential land and encourage its use for self-built row housing (Ha & Wong, 1999). Decree No. 64/2012/ND-CP, indicating exemptions for small-scale building construction permits, shows the government's willingness to support the self-building sectors. As this aspect of the market had rapidly grown, to the extent that entire cities seemed to have been created by micro builders and small-scale developers, it was regarded as the most affordable and accessible housing for low- and middle-income segments (Figure 26).

Figure 26. Cityscape with Numerous Self-built Housing in HCMC

3.2.4. Apartment Development

The popularity of apartments is associated with urbanization trends and traffic issues in Vietnam. The apartments are the preferred choice of middle-income purchasers, with commuting conditions and transportation being the key factors (Seo & Kwon, 2017). As the economy booms, so does vehicle ownership (Truitt, 2008). Car ownership has increased at over 10% per annum (320% in the period 2005–2014) while there are now more motorbikes (8.5 million) than people (8.2 million) in HCMC (Thanh Nien News, 2016). This overburdening of the city's road capacity has led to massive traffic congestion and declining air quality for commuters. Apartments, therefore, are seen as at least a partial adaptation to this problem. While other forms of housing (e.g., row houses) suffer from urban densification and poor vehicular accessibility, high-rise apartments built with local and foreign investments offer spacious units, open spaces, parking lots for cars and motorbikes, and excellent access to main roads (Chung et al., 2014).

In the context of urbanization and dynamic population growth, there has been an enormous demand for apartments particularly in the urban employment hubs of Hanoi and HCMC. In recent years, the apartment market continued to grow and performed well in both cities; approximately 70,000 units were supplied each year, and the growth rate of the market is predicted to increase further (CBRE, 2018). Vertical urbanism is transforming residential culture, and the landscapes of the cities and new towns are now filled with numerous apartments and commercial clusters, such as Vinhhomes Time City in Hanoi and Phu My Hung in HCMC. These will become more populated in the future (Figure 27)

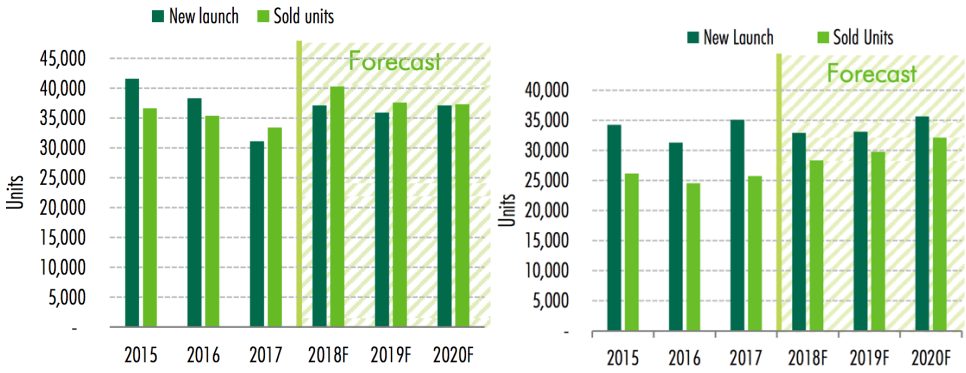

Figure 27. Apartment Supply in HCMC(left) and Hanoi(right)
Source: CBRE, 2018

Compared to other cities of Southeast Asian developing countries, Vietnamese apartments are less expensive in all segments apart from luxury apartments in HCMC (Figure 28).

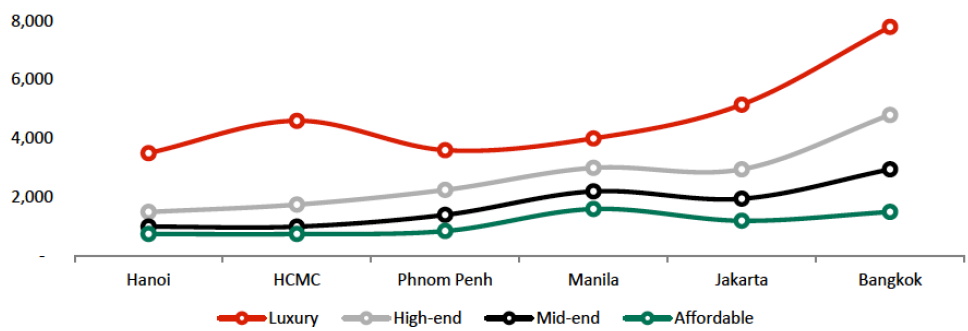

Figure 28. Apartment Prices in Southeast Asian Cities
Source: VinaCapital, 2015

3.3. Urban Growth of Ho Chi Minh City

3.3.1. The Epicenter of Urban Development

According to Vietnam's regional and urban administration hierarchy system, Vietnam's cities are categorized into 6 classes based on the level of economic development, physical development, population and its density, and infrastructure provision. HCMC was classified as one of the two national "special" cities, a top ranking, due to its significant economic and political contributions to the country (Cira, 2011).

Table 14 illustrates the competitiveness of economic development in HCMC. This city comprises 9.2% of Vietnam's total population and is responsible for 20.8% of its GDP. As 155 times more FDI has flowed into this city than other provinces of the Northwest area, this remarkable economic growth has created a large amount of residential mobility of rural residents looking for better job opportunities (Nguyen & McPeak, 2010).

Table 14. Economic Landscape of HCMC (2015)

Index	Descriptions
Population	8.22 million
Average annual income/person	USD 5,500
GDP Growth	9.85% (YoY)
CPI	0.23% (YoY)
Industrial zones	18 zones
International airport capacity	25 million people/year
Registered FDI	USD 3.64 billion
Total transaction value in stock market (HOSE)	USD 21.6 billion

Source: EZLand, 2016

In this context, HCMC has experienced the highest levels of urbanization and industrialization, population growth, and housing development. This trend is also found in other cities. As most cities want to climb the city class ladder to receive better recognition and financial support from the central government, they are pursuing growth patterns similar to those of HCMC. As a result, the city is considered a significant reference as a development model in Vietnam.

The acceleration of HCMC's urbanization created physical expansion of the built environment (Figure 29) or "peri-urbanism," a form of urbanization characterized by a fragmented and quick urban sprawl to peripheral areas. A study revealed that from 1990 to 2012, 660.2 km^2 of agricultural land in the HCMC area was converted to urban land use while 3.5 million people migrated into the area. A

third of all urban development and 50% of population expansion was concentrated in the inner boundary, 40 km from downtown HCMC (Kontgis et al., 2014).

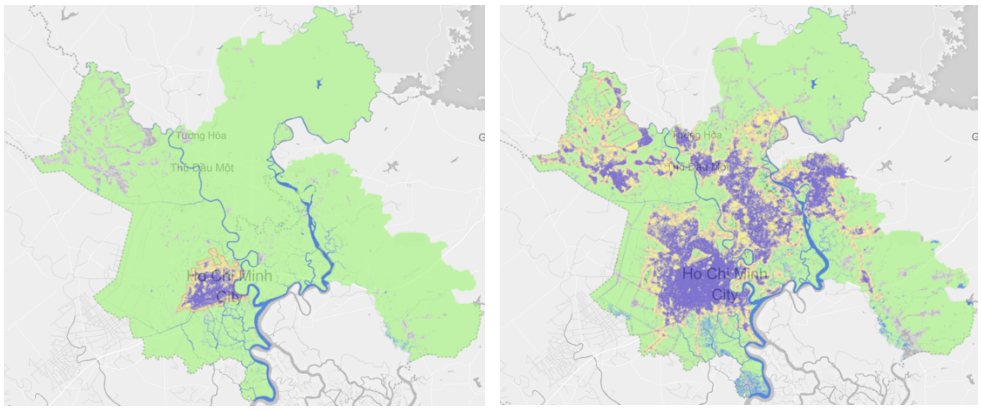

Figure 29. Expansion of Built-up Area in HCMC; 1989(left) and 2015(right)
Source: AUE, 2018

This peri-urban expansion has led to several distinctive patterns of housing development in HCMC. The first is the formation of widespread slum settlements in the city. The second is the predominant production of self-built row houses. The third is corporate-driven housing developments of multiple residential types such as apartments, row houses, and villas (Figure 30).

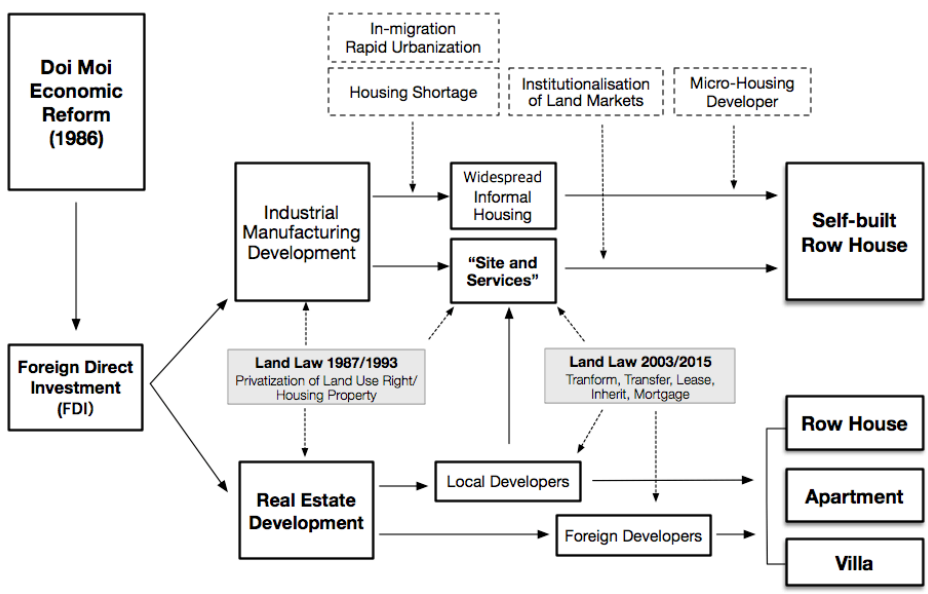

Figure 30. Housing Development in Transitional Vietnam

3.3.2. Population Growth and Housing Shortages

HCMC is the most attractive city in Vietnam for in-migrants seeking higher expected incomes with better job opportunities, and the city has become the largest economic center and financial hub in the country (Table 15). Subsequently, in-migration rates are the highest in Vietnam, whereas the rapid population shift has caused serious housing shortages in the city.

Table 15. Population Change in Vietnam

	1995	2000	2005	2010	2016
Vietnam Population	71,996	77,631	82,392 (1.17%)	86,947 (1.07%)	92,695 (1.07%)
HCMC Population	4,640	5,275	6,231 (3.71%)	7,347 (2.09%)	8,298 (2.09%)
In-migration Rate of HCMC	N/A	N/A	19.1%	26.2%	10.7%

Note: The population growth rate of the year in parenthesis. / Population number unit: thousand

Temporary or dilapidated housing constituted two-thirds of Vietnam's urban housing in the 1990s (Vinh & Leaf, 1996). Figure 31 indicates that the rate of permanent housing, which has durable foundations and permanent construction materials, was only about 25% in both 2002 and 2012 in HCMC, the rest being temporary and semi-permanent housing characterized by impermanent structures and temporary finishing materials on walls and roofs. The average housing area per person was only 5 m2 and more than 300,000 citizens lived in 2–3 m2/person during the period. The problems in the housing sectors were exacerbated in both qualitative and quantitative terms. Infrastructure was also inadequate and run down and thus threatened public health, especially in the squatter settlements which were pervasive in the city (UN Habitat, 2014).

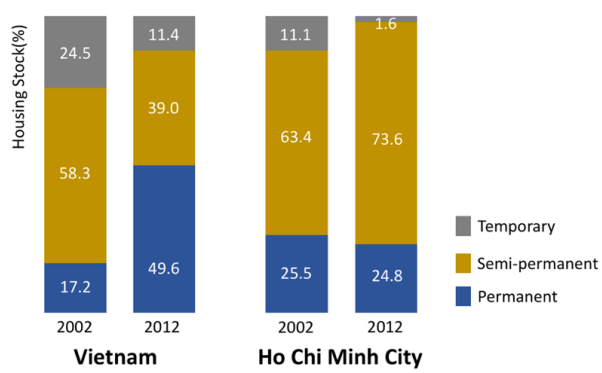

Figure 31. Housing Stock by Building Quality in Vietnam and HCMC
Source: GSOV, 2012

Figure 32. Temporary Housing(left), Semi-permanent Housing(middle), Permanent Housing(right)

3.3.3. Widespread Slum Settlements

In HCMC, it is estimated that around 25% of the total population is immigrants who have moved from rural areas, and most are living in informal houses that lack structural durability (Waibel et al., 2007). Additionally, more than 2 million of the immigrants are living in boarding houses, which are temporarily constructed with a semi-permanent structure. To save money, many immigrant families are living together as tenants in boarding houses with an average of six people staying in a single room of 8-10m2. Thus, this poor living environment is becoming a critical issue. The 15-30 age group constitutes more than 70% of immigrants, yet only 8.7% own a home; more than 90% have unstable tenure, as they have built temporary, illegal housing in abandoned spaces along the rivers, canals, and farmlands in peripheral areas (UN Habitat, 2014).

Varying slum settlement patterns are observed in HCMC in accordance with the urbanization rate of the districts. In urban districts (Districts 4, 6, 8, Binh Thanh, and Go Vap), linear slum communities with high densities are found along waterways, particularly the Kinh Te, Rach Ben, Nghe, and Kinh Doi Canals (Figure 33). Semi-urban districts (Districts 7 and 12) also follow a linear pattern along the waterways, but many of them are not completely linear and are discontinuous; they are fragmented and irregular-shaped clusters with some streets and laneways (Figure 34). In rural districts (Cu Chi, Bình Chánh, Hóc Môn, Nhà Bè, and Cân Gio), the settlements display different patterns than in urban and semi-urban districts: they are more decentralized and fragmented with a number of single detached houses (Figure 34) (UN Habitat, 2008).

Figure 33. Slum Settlement Patterns: Urban District
Source: Google Maps

Figure 34. Slum Settlement Patterns: Semi-urban(left), Rural(right)
Source: Google Maps

In the urban districts of HCMC, slums containing temporary and dilapidated houses have emerged along the Saigon river banks and its branches, encroaching on the water. Since most houses were built from corrugated iron, wood, and pieces of cardboard based on unstable foundations, they are vulnerable to hazardous climate conditions (Figure 35). The slums are frequently flooded in the summer rainy season and the canal water often destroys the banks. Thus, the properties have been damaged and some have even collapsed, causing causalities. As the water rises and falls by the tides and rains, human waste and contaminants in the water gather along the banks of the slums and cause a terrible odor for the dwellers. The situation also threatens public health by leaving layers of mud that breed disease on the canal banks. In addition, the slum districts do not have a secure water supply or sanitation networks from the city since a formal infrastructure system was not established in

the slum areas, making it difficult to have a proper connection to the city's water supply and sewage. The tenure of housing property in the slums is also a critical issue. In cases where informal housing was built on agricultural land in the peripheral area, only 25% of them had acquired land use right (LUR) through the official land use conversion procedure; the rest of did not secure legal titles for their land and housing for proper residential purposes due to a lack of information and financial difficulties (Vinh & Leaf, 1996). Without legal approval documents for the properties, the households were not able to participate in mortgage programs for low-income residents; thus, they were easily targeted for forced eviction and were provided limited compensation during the government-led urban renewal process for the slums (Garschagen, 2015).

Figure 35. Temporary and Dilapidated Houses in HCMC
Source: UN Habitat, 2008

The sprawling slum of HCMC presents a huge challenge to the public health. In particular, sewage and toilet waste from slum districts where were built along rivers were poured into the canals without filtration and it caused serious water pollution and filthy conditions. Furthermore, the slum areas near the carnal were recurrently flooded in the rainy season and the informal houses, built with temporary materials, were damaged or even collapsed and the dwellers experienced the loss of life and property (UN Habitat, 2008). HCMC recently announced that it has identified that at least 17,000 households reside in slums and the city has decided the urban renewal procedure for all of the slums within the next five years. In the first phase, the city planned to relocate 11,600 households and improve the water environment along the canals where were most seriously polluted. However, the execution has delayed due to economic difficulties in securing funds since the cost is estimated to be $ 569 million (Thanh Nien News, 2015c).

3.3.4. Predominant Self-Built Row House Development

HCMC has experienced particularly rapid horizontal urbanization in the peripheral areas by the conversion of farmland into residential land (Ha & Wong, 1999). However, a lack of property rights management capacity in the local authorities led to chaotic situations. Of the self-built housing units constructed in the peripheral area, 75.4% were built without any complete sets of legal documentation (Vinh & Leaf, 1996). To facilitate the provision of residential land and thereby housing by the provision of legal titles, a new land law was enacted in 1993, creating a legal platform as a foundation for a real estate market where assets could be transacted, rented, transferred, inherited, and mortgaged. Local authorities required those who had been involved in various illegal transactions to submit to a notarization process and issued Land Use Rights Certificates (LURCs) to certify land and Building Ownership and Land Use Rights Certificates (BOLURCS) to certify both the building and the land (Kim, 2004). Thus, the process of creating legal titles resulted in a more transparent land and housing market with huge potential. From the time the land law was enacted, new residential developments gradually tended to appear in the form of projects, particularly in HCMC.

The most common housing projects were "site and services" and land sub-division types. These provided only sub-divided plots of land with basic infrastructure for sale and thus the landowners began to create self-built row housing through their own investment based on the government's legal support (Phe, 2002). There were, for instance, 488 residential projects providing 183,410 units and covering an area of 1282.6 ha of the land sub-division type from 1996 to 2000 in HCMC (Vinh & Leaf, 1996). The row houses were largely built from 1999 to 2009 and were estimated to account for about 60% of the total urban housing stock production in that period. High-rise apartment projects by private real estate developers accounted for another 33% (UN Habitat, 2014). This trend continued in the 2000s and the informal "popular row housing" still dominated urban settlement in HCMC (Figure 36). Further laws were enacted, such as the 2005 Investment Law, the 2005 Enterprise Law, the 2006 Real Estate Law, and the 2009 Urban Planning Law. These laws supplied a legal platform to improve the housing market mechanisms. In 2011, the government approved social housing policies to increase the rate of home ownership for the low-income class (UN Habitat, 2014). A recently revised 2015 Housing Law and Real Estate Business Law allowed foreign investors access to the housing market (Savills, 2015a). As a result of all these measures, the Vietnamese housing market has been growing and housing stocks have dramatically increased. According to the Vietnam General Statistics Office, the Census of Population and Housing 2009 indicates that the number of housing units in 1999 was

4.03 million and had increased to 6.76 million in 2009. While rural housing units increased by only 22%, urban units increased by 68%.

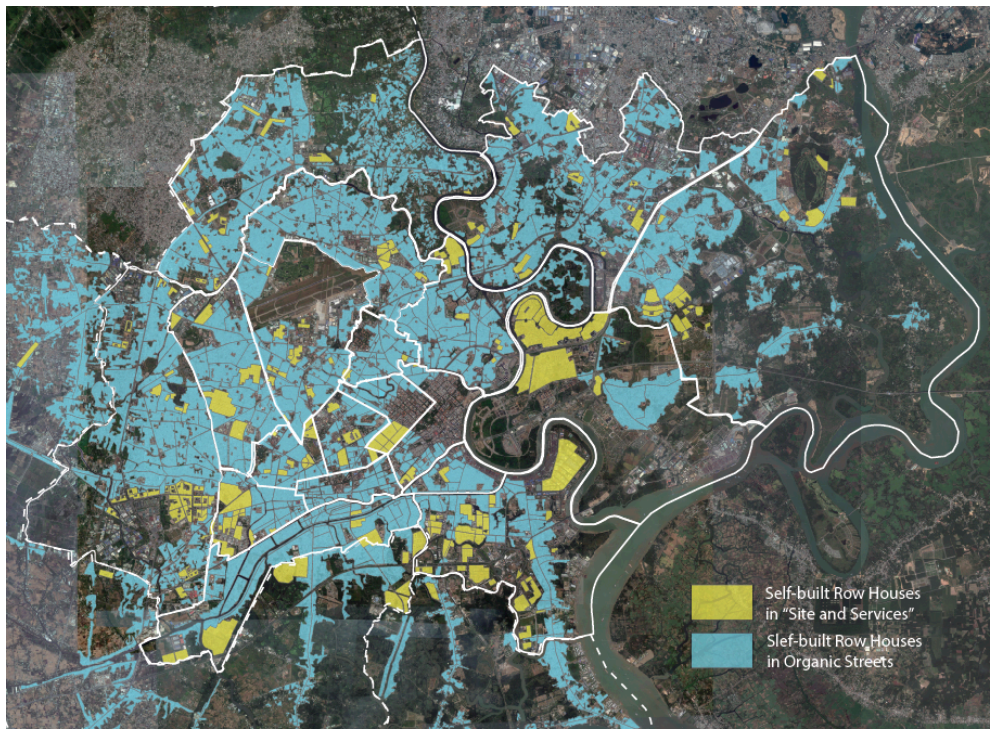

Figure 36. Self-built Housing Distribution in HCMC

Figure 37. Construction of Self-built Housing in HCMC

Figure 38. Pervasive Self-built Housing (Row Houses) Areas in HCMC

The self-building trend had a positive side in the sense of providing affordable and accessible housing for low- and middle-income segments but it resulted in uncontrolled urban sprawl which has been pervasive in the suburban districts of peripheral areas (Figure 38). More than 90% of these self-constructed housing units were built in the 1990s without obeying building guidelines and regulations (McGee, 2009). Large amounts of self-built housing were organically created to maximize their own private spaces and the fast pace of development resulted in serious urban densification and pressure on infrastructure and transportation planning in HCMC. The urban road capacity is not sufficient and inner community roads are too narrow to allow residents to access their housing. Since many districts have grown with the influx of immigrants and informal self-built housing production since the late 1980s, the middle- and low-income communities have struggled as a result of the relatively small area devoted to roads and the disorganized road networks. According to the UN Habitat's report, approximately 16% of the developable land in the cities was planned for road infrastructure in Vietnam. This is a much smaller fraction compared to the international average of 20–25%. In the case of HCMC, only 6.2% of the developable land was for roads and in its peripheral area, surprisingly, only 0.4%. Access roads to residential areas are usually 3–5 m wide, internal roads or pathways less than 3 m, and informal roads in self-built housing districts less than 1.5 m (UN Habitat, 2014). This makes it impossible for private cars and public transportation, indeed anything other than two-wheeled vehicles, to access homes.

3.3.5. Apartment Development Boom

The dynamic increase in high-rise apartment development is evident in HCMC and Hanoi, which represent 85% of Vietnam's total housing market. With annual GDP growth at or exceeding 10% over the last 10 years and annual urban growth rates in HCMC of 3%, the city's ever-increasing population has placed severe pressure on the housing market, which has also experienced remarkable growth.

HCMC has been a leading city in private sector development of apartments. Since 2001, with increasing FDI inflows into real estate development and institutional changes in land laws and housing policies, local and foreign investors and developers have moved into the apartment market (Figure 39). HCMC has been a leading platform city for this dynamic.

Figure 39. Average Apartment Price Growth in Vietnam
Source: Savills, 2015b

The apartment market consists of four apartment types by price range: Luxury (3000–5000 USD/m2), High-end (3000–2000 USD/m2), Med-end (2000–1000 USD/m2), and Affordable apartments (under 1000 USD/m2). Each type has gradually grown alongside the impact of macro and micro economic policies and market conditions in HCMC, and the apartment market is expected to grow continuously in the future (Figure 40) (CBRE, 2017).

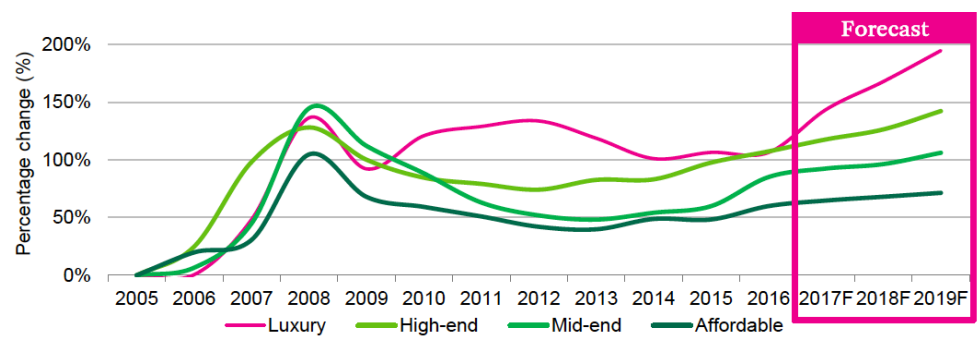

Figure 40. HCMC Apartment Primary Price Forecast
Source: CBRE, 2017

According to the statistics for 2010–2015, 58% of the total housing supply in HCMC was affordable high-rise housing: 153 apartment projects, containing 79,967 units, were supplied to the middle-income bracket. In 2015, 77 affordable apartment projects with 40,008 units were developed, while growth in the high-end housing market was also strong (EZLand, 2016). Future projections for affordable apartment

demand are remarkable: according to the EZLand study (2016), only 12,128 units were produced in 2013 to meet a demand for 23,838 units. By 2020, demand is expected to reach 130,962 units while the supply will be only 31,042 units (Figure 41), leading to an even more critical housing shortage in HCMC.

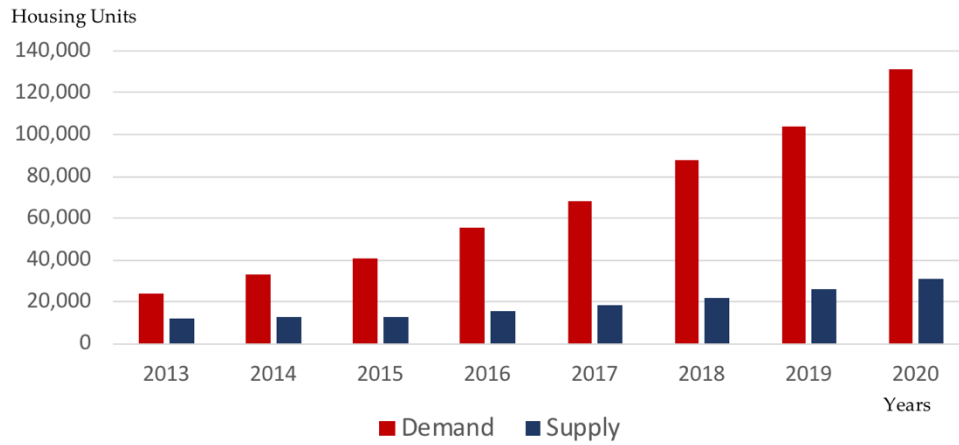

Figure 41. Affordable Apartment Demand and Supply
Source: EZLand, 2016

Chapter 4

Voluntary Residential Mobility and Housing Choice in HCMC

4.1. Introduction

Vietnam's rate of urbanization has rapidly increased with a great influx of immigrants from rural areas since the initiation of the Doi Moi (Đổi Mới: open door) economic reforms in 1986. The policy goal was to create a socialist-oriented market economy and to accelerate economic transition to industrial manufacturing, leading to employment and economic output (Beresford, 2008). It resulted in a remarkable increase in foreign direct investment (FDI) into Vietnam and became a significant factor for economic growth in industrial manufacturing development. The phenomenon was especially observed in Ho Chi Minh City (HCMC), Hanoi, and their peri-urban areas with enormous inflows from rural areas (McGee, 2009). Nationally, the urban proportion of the population increased from 20.5% in 1990 to 34.7% in 2017 (UN Habitat, 2014).

Real estate has been a significant sector of FDI in the last decades, ranking second (18%) behind manufacturing and processing industries (58%) in Vietnam. The foreign investment has focused on luxury housing developments in particular and has increased remarkably since the revision of the housing laws in 2015 to allow foreigners to own property. Real estate experts believe that the housing market will continue to be a focus of FDI and the dynamics of movement and housing choice in Vietnam will increase (CBRE, 2018).

The goal of this study is to investigate moving and housing choice patterns in HCMC and to try to find implications for future sustainable urbanization and housing development. Housing choice and migration in HCMC seem to be a mixture of the life-cycle, planned behavior, and decision-making models, with the last having

a particularly strong impact on housing choice in the context of Vietnamese urbanization. The following objectives were set for the research: (1) to investigate housing type choices for the migration; (2) to examine factors influencing movement determination; (3) to understand housing preferences and expected movement patterns; and (4) to find implications for public policies to foster sustainable housing development in Vietnam.

4.2. Research Methods

4.2.1. Sampling Area

Figure 42. Survey Districts in HCMC: Urban and Semi-Urban Districts
Source: Google Maps

This research decided to empirically investigate and analyze housing choice and movement patterns in HCMC using a citizen questionnaire survey. The city officially consists of 24 districts divided into three groups: 13 urban districts, 6 semi-urban districts, and 5 rural districts (UN Habitat, 2014). As the rural districts with low population density were relatively unaffected by HCMC's urbanization, they were excluded from this survey. The other districts, however, experienced remarkable changes in their residential environment (Cira, 2011). The questionnaire

survey therefore targeted the 13 urban districts[10] and 6 semi-urban districts[11] (Figure 42).

4.2.2. Preliminary Interviews

To increase accuracy and reflect local realities, a preliminary survey was carried during 11–20 June 2016. I selected two urban districts (District 1 and Phu Nhuan) and two semi-urban districts (District 7 and Go Vap) in terms of diversity of density, income, housing typology, and history. District 1 is a downtown and business district mainly crowded with high-end apartments. Phu Nhuan is a low-rise residential area for the upper-middle-income class while Go Vap is a self-built district for the lower-middle-income class. District 7 includes both old and new towns (Phu My Hung) with a good mixture of various housing types. I interviewed about 20 households (row houses and apartments) from the four districts to get a specific understanding of local citizens' housing issues and preferences. Various reasons for moving as well as issues relating to the residential environment were identified by the questionnaire. Many row-households noted such as a story of Mrs. OOO (55).

> *"My family lived in the countryside of the Mekong Delta region and moved to Ho Chi Minh to set up a small business twenty years ago. I lived in temporary housing when we settled down in District 12, a suburban district, and moved to a row house to work and live. My family operated a rice noodle shop on the ground floor and lived on the second floor. The row house was optimal for combining business with living for our family. I will choose a row house again for my business even if I move again."*

However, an apartment householder, Mr. OOO (45) who is a government official, had a different story.

> *"I have been working as a civic official for 15 years. I had lived in social housing in a middle-rise apartment. Then I moved to my present high-rise apartment five years ago. Commuting to work was a very important factor when choosing this apartment. I commuted by bicycle for a decade but now do so by motorcycle. The motorcycle trip of over an hour is extremely tiring due to serious air pollution and noise on the road. There is very little public transportation and the number of cars and motorcycles has increased too much every year. I am satisfied with the current*

[10] District 1, 3, 4, 5, 6, 8, 10, 11, Phu Nhuan, Binh Thanh, Go Vap, Tan Binh, and Tanh Phu (UN Habitat, 2008)
[11] District 2, 7, 9, 12, Binh Tan, and Thu Duc (UN Habitat, 2008)

apartment because of proximity to my office, a spacious parking lot with a security guard, and public facilities like a community park and swimming pool."

The questionnaire was updated based on these feedback from the preliminary interview.

4.2.3. Questionnaire Design and Survey

The questionnaire mainly consists of four parts. The first is about the interviewee's background and general understanding of urban issues in HCMC. The second indicates housing and neighborhood conditions in their former housing. The third is about current housing and neighborhood. In the last part, respondents were asked about housing type preferences in the future if they could afford any housing type (Table 16). By investigating past, present, and future housing in the survey, I expected to find movement patterns and the reasons for them.

Table 16. Questionnaire Contents

Category		Details
Background		Age / Gender / Occupation / Income
Urban Issues		Major Urban Problems / Environmental Issues / Transportation
Former Residence	Housing	Location / Ownership / Housing Price Housing Type / Number of Bedrooms / Toilet / Kitchen / Water Supply / Sewerage / Housing Satisfaction and Reasons
	Neighborhood	Neighborhood Satisfaction and Reasons
Current Residence	Housing	Location / Ownership / Housing Price Housing Type / Duration of Residence / Number of Bedrooms / Toilet / Kitchen / Water Supply / Sewerage / Housing Satisfaction and Reasons / Reason for Moving to Current House
	Neighborhood	Neighborhood Satisfaction and Reasons
Future Housing		Preference for Housing Type / Number of Bedrooms

Housing types in this survey were categorized into squatter, row house, villa, and apartment. The official Census of Vietnam categorizes the typology into permanent, semi-permanent, and temporary housing based on housing quality and materials (GSOV, 2010). However, this imposes limitations in understanding diverse urban housing stocks. The UN Habitat categorizes Vietnamese urban housing as shop house, apartment, villa, alley house, and precarious squatter housing in accordance with a functional classification (UN Habitat, 2014). However, the shop house and alley house are structurally similar in terms of narrow and long plot

size, nearly 100% plot coverage, and an average of three or four floors. Both properties also typically belong to the single-family ownership category. The only main difference is whether the ground floor is used for commercial or residential purposes. World Bank research gives five categories of housing typology: temporary shelters, old townhouse, new townhouse, apartment, and villa (Cira, 2011). The old and new townhouses can be recognized as being the same as the shop house and alley house of the UN Habitat's categories in terms of architectural form. Thus, this study combined those types into the row house (also commonly called "nhà ống" in Vietnamese or "tube house" in English) category. Therefore, in this survey, residential housing was classified into four types: squatter, row house, villa, and apartment.

The questionnaire survey was performed from 1 September to 30 November 30 2016 in HCMC. The interviewees were selected in popular public places such as streets, squares, parks, and commercial locations in the target 19 districts (13 urban and 6 semi-urban districts). Then personal interviews were conducted. A total of 200 responses were collected evenly across the districts but, following a review of data quality and missing response elements, 194 samples were finally selected. Table 17 shows the detailed information about the survey data collection.

Table 17. Data Collection Information

Survey Target Districts in HCMC		Data Collection Places	Samples
Urban Districts	District 1	Nguyen Hue Street and Plaza	11
	District 3	Le Van Tam Park	11
	District 4	Nguyen Tat Thanh Street	10
	District 5	CGV Parkson Mall	10
	District 6	Chợ Bình Tây (Traditional Market)	10
	District 8	Pham The Hien Street	10
	District 10	Ba Thang Hai Street	10
	District 11	Dam Sen Park	10
	Phu Nhuan	Centre Point Building (Mixed-use)	11
	Binh Thanh	Co.opmart Shopping Market	10
	Go Vap	Lotte Mart	10
	Tan Binh	Tan Binh Market	10
	Tanh Phu	Aeon Shopping Mall	10
Semi-Urban Districts	District 2	Vincom Mega Mall	11
	District 7	Vivo City Plaza	10
	District 9	Do Xuan Hop Street	10
	District 12	Ha Huy Giap Street	10
	Binh Tan	Aeon Shopping Mall	10
	Thu Duc	Co.opmart Shopping Market	10

Notes: Six local assistants supported this survey. They are students from the Ho Chi Minh City University of Architecture.

4.2.4. In-depth Interviews

The questionnaire survey approach for residential mobility has been criticized because of the drawbacks of oversimplifying feedback from respondents (Robinson, 1996). The decision-making processes of moving and housing choices are not simple and require information on a wide range of housing attributes, and diverse members of the household are involved in the decision. The 38 households who were already involved in the questionnaire surveys were reselected, and an in-depth interview was conducted with them to provide more detail and to understand their housing choices. From the single-family housing and multi-family housing groups, 19 households[12] joined the in-depth interviews and provided further detailed information, revealing their reasons for moving.

4.3. Results and Findings

4.3.1. Predominant Single-family Housing

The majority (82%) of interviewees were 20–49 years old and a large percentage (71.5%) had jobs in the private sector, such as owning their own business, the service industry, and technical fields. The largest single income group (37.8%) earned 10–20 million Dong per month (USD 475–952) and a large percentage (60.8%) of respondents had lived in their current housing for less than 10 years, 12.9% for 10–20 years, and 7.7% for 20–30 years. The survey clearly indicates that residents moved to current housing that is well equipped with utilities and infrastructure. It also shows that overall housing satisfaction improved from 38% to 73% after moving to their current dwellings and neighborhood satisfaction levels also improved from 42% to 58%. The average number of rooms per unit changed from 2.31 in the past to 2.94 in the present and 3.64 for future homes. Respondents considered HCMC's most serious urban problems to be transportation and road problems (31%), air pollution (26%), water pollution (22%), infrastructure shortages (12%), and housing shortages (8%). They also selected the best solutions for the transportation problems as improvement of public transportation (47%), improvement of road conditions (32%), strengthening regulations to control increases in the numbers of registered vehicles (6%), and decentralizing through building satellite cities (14%).

[12] Each participant was selected from different 19 districts. Please see the appendix for detail information of the interviewees.

In the housing choice section, the predominant housing type is a row house, showing as 68% and 69% of the past and present residential types, respectively. This shows an association with housing development history in Vietnam. In the case of villas, these are a very strong preference for the future, though the percentages formerly and currently occupying villas are very low. Single family housing, such as row houses and villas, would account for 79% in the future based on respondents' expressed ideal preferences. In the case of apartments, while the low-rise apartment share has declined (with 26%, 13%, and 1% of the past, the present, and future preferences, respectively), that of high-rise apartments has increased (5%, 13%, and 19%, respectively) (Table 18).

Table 18. Housing Choice Change among Survey Respondents.

Housing Typology		Past Residence	Present Residence	Future Preference
Single-Family Housing (SFH)	Squatter	2%	0%	0%
	Row House	68%	69%	44%
	Villa	1%	5%	35%
Multi-Family Housing (MFH)	Low-rise Apartment	26%	13%	1%
	High-rise Apartment	5%	13%	19%

Notes: The apartment category was divided into low-rise (seven floors or fewer) and high-rise (more than seven floors) blocks for a more detailed understanding. A number of low-rise apartments had been built from the 1960s to the 1980s for social housing. A number of the high-rise apartments have been developed as a result of the FDI inflow into the real estate market (UN Habitat, 2014).

4.3.2. Significant Factors of Current Housing

As the questionnaire survey mostly includes nominal and categorical variables, the chi-square test of independence was mainly performed to find significant associations between current housing type and other factors pertaining to residents. The expected frequency count for each cell in the table should be at least five, and a maximum of 20% should be below this on the cross tables for the test to be valid. As the current categorization of housing into four types (squatter/row house/villa/apartment) was not able to meet the condition, the housing types were simply grouped using two different methods for statistical validity. The first divided them into single-family housing (SFH: squatter/row house/villa) and multi-family housing (MFH: apartment) in that an individual residence environment is highly preferred in Vietnam. The second divided them into only row houses and other types since the former has dominated housing development history and this tendency is still observed today in Vietnam.

Table 19 shows several factors indicating statistically significant associations with current housing types of the two groups (SFH-MFH and Row House-Others): monthly income, ownership, former housing types, preferred future housing types, inconveniences associated with current housing, and reasons for moving.

Table 19. Selected Significant Factors Relating to Current Housing Types (I)

		Current Residence		X^2 /*p*-value
		SFH (*N* = 142)	MFH (*N* = 52)	
Monthly Income[13]	Low	38/27%	26/51%	10.228 /0.006 ***
	Middle	57/40.4%	16/31.4%	
	High	46/32.6%	9/17.6%	
	Total	141/100%	51/100%	
Ownership	Owned	112/78.8%	23/45.1%	20.363 /0.000 ***
	Rent	30/21.1%	28/54.9%	
	Total	142/100%	51/100%	
Former Housing Type	SFH	114/80.3%	32/62.7%	6.264 /0.021 **
	MFH	28/19.7%	19/37.3%	
	Total	142/100%	51/100%	
Future Preferred Housing Type	SFH	118/84.3%	34/68%	6.107 /0.022 **
	MFH	22/15.7%	16/32%	
	Total	140/100%	50/100%	
Inconveniences Associated with Current Housing	Transportation	67/47.2%	18/35.3%	6.760 /0.080 *
	Infrastructure	21/14.8%	10/19.6%	
	Safety/Security	39/27.5%	11/21.6%	
	Affordability	15/10.6%	12/23.5%	
	Total	142/100%	51/100%	
Reason for Moving[14]	Housing Structure	49/37.1%	8/17%	12.217 /0.007 **
	Commuting	52/39.4%	25/53.2%	
	Safety/Security	7/5.3%	8/17%	
	Affordability	24/18.2%	6/12.8%	
	Total	132/100%	46/100%	

Notes: Chi-square Test was performed. The cells of each factor with a frequency count below five are fewer than 20%. Statistically significant at level is *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.10$. SFH stands for Single-Family Housing and MFH for Multi-Family Housing.

The results show that the higher income group is more likely to choose the SFH than the lower income group, X2 (2, N = 192) = 10.228, p < 0.01. Housing owners are closely associated with single-family housing ownership while the tenant group are associated with apartments, X2 (1, N = 193) = 20.363, p < 0.01. Other factors show the interrelationship between housing choice and movement. Those formerly living

[13] Low-income class salaries are under 10 million (VND), middle income from 10 to 30 million (VND), and high income over 30 million (VND).

[14] On the Reason for Moving section on the above table, the reason factors were regrouped into four to increase the statistical validity of the chi-square test. Housing Structure includes housing typological attributes. Commuting means locational features mainly consisting of public transportation availability, main road accessibility, and workplace proximity. Safety and Security means neighborhood environment mainly indicating crime and accident vulnerability of districts, which is a critical social issue in HCMC. Affordability means economic and financial issues for housing choice.

in SFHs are more likely to move to the same housing type as opposed to the MFH residents, X2 (1, N = 193) = 6.264, p < 0.05, and this pattern also shows in future preferences X2 (1, N = 190) = 6.107, p < 0.05.

In the case of the row house type, the pattern also appears more significantly in preferred migration from present to future, X2 (1, N = 191) = 5.348, p < 0.05, rather than past to present, X2 (1, N = 193) = 3.552, p < 0.10. This demonstrates that the SFH offering multi-story floors and single-family occupancy is still dominantly preferred in housing choice rather than the MFH of apartments (Table 20).

Table 20. Selected Significant Factors Relating to Current Housing Types (II)

		Current Residence		X^2 /*p*-value
		Row House (*N* = 133)	**Others (*N* = 61)**	
Monthly Income	Low	35/26.5%	30/49.2%	9.852 /0.007 ***
	Middle	54/40.9%	19/31.1%	
	High	43/32.6%	12/19.7%	
	Total	132/100%	61/100%	
Ownership	Owned	109/82%	26/42.6%	30.569 /0.000 ***
	Rent	24/18%	35/57.4%	
	Total	133/100%	61/100%	
Former Housing Type	SFH	106/79.7%	41/67.2%	3.552 /0.072 *
	MFH	27/20.3%	20/32.8%	
	Total	133/100%	61/100%	
Future Preferred Housing Type	SFH	111/84.1%	41/69.5%	5.348 /0.032 **
	MFH	21/15.9%	18/30.5%	
	Total	132/100%	59/100%	
Inconveniences Associated with Current Housing	Transportation	65/48.9%	21/34.4%	9.456 /0.024 **
	Infrastructure	18/13.5%	13/21.3%	
	Safety/Security	37/27.8%	13/21.3%	
	Affordability	13/9.8%	14/23%	
	Total	133/100%	61/100%	
Reason for Moving	Housing Structure	48/39%	9/15.8%	13.041 /0.005 ***
	Commuting	47/38.2%	30/52.6%	
	Safety/Security	7/5.7%	9/15.8%	
	Affordability	21/17.1%	9/15.8%	
	Total	123/100%	57/100%	

Notes: Chi-square Test was performed. The cells of each factor with a frequency count below five are fewer than 20%. Statistically significant at level is *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.10$. SFH stands for Single-Family Housing and MFH for Multi-Family Housing.

4.3.3. Housing Choices and Movement Patterns

The questionnaire and interviews revealed a relationship between reasons for moving and current housing choice. According to the Fisher's Exact Test of Table 21, a close association between current housing types and reasons for moving to the

current houses was observed, X2 (9, N = 179) = 20.972, p < 0.01. The movement from former SFHs to current MFHs is closely associated with the commuting conditions, meaning organized road networks and transportation accessibility to workplaces. Interestingly, Table 21 also supports that, indicating the association between current housing type and inconveniences associated with the housing, X2 (6, N = 189) = 14.491, p < 0.05. The main difficulties for row housing residents are associated with transportation issues, such as overly narrow roads, an inadequate road environment, and poor accessibility to main roads. The housing structure, meaning typological attributes, is a main reason for the movement from former SFHs to current SFHs. This housing type can normally offer multi-story spaces with mixed use and independent property ownership with land-use right in Vietnam. The safety and security issues are associated with the movement within MFHs. In general, apartments can provide better security systems and safer inner road environments with parking spaces than SFHs. The affordability is mainly observed in the movement from former SFHs to current SFHs. The main affordable housing is the self-built row houses which predominate in HCMC's housing stock (World Bank, 2015).

Table 21. Housing Choice Reasons and Movement Patterns

Reasons for Moving to Current Housing	**Former Housing to Current Housing**				**X^2 /p-value**
	SFH to SFH	**SFH to MFH**	**MFH to SFH**	**MFH to MFH**	
Housing Structure	42 (40.4%)	5 (17.9%)	7 (25%)	3 (15.8%)	20.972 /0.008 ***
Commuting	39 (37.5%)	17 (60.7%)	13 (46.4%)	8 (42.1%)	
Safety/Security	3 (2.9%)	3 (10.7%)	4 (14.3%)	5 (26.3%)	
Affordability	20 (19.2%)	3 (10.7%)	4 (14.3%)	3 (16.8%)	
Total	104 (100%)	28 (100%)	28 (100%)	19 (100%)	179

Notes: Fisher's Exact Test was performed since six cells (37.5%) have expected count less than 5. Statistical significance at the level is *** $p < 0.01$. SFH stands for Single Family Housing and MFH stands for Multi-Family Housing.

Current housing tenure was also closely associated with the choice of current housing, X2 (6, N = 193) = 20.494, p < 0.01 (Table 22). While the majority of people who moved to SFHs were house owners, the tenant groups selected from current MFHs had moved from SFHs and MFHs. This result is likely to be related to the results illustrated in Table 22. As SFHs, particularly row houses, have diverse positive housing attributes and generate economic profit in Vietnam, housing owners have an advantage. Tenants are likely to be more interested in residences with better

neighborhood conditions such as commuting and community security, which are serious social issues in HCMC. Therefore, apartments are considered to meet the desires of tenants if they address these social issues; Table 22 also illustrates the reasons why people moved to apartments.

Table 22. Housing Tenure and Movement Patterns

Tenure	Former Housing to Current Housing				X^2 /*p*-value
	SFH to SFH	SFH to MFH	MFH to SFH	MFH to MFH	
Owner	90(78.9%)	15(46.9%)	22(78.6%)	8(42.1%)	20.494 /0.000***
Tenant	24(21.1%)	17(53.1%)	6(21.4%)	11(57.9%)	
Total	114(100%)	32(100%)	28(100%)	19(100%)	193

Notes: Chi-square Test was performed. Statistical significance at the level is *** $p < 0.01$. SFH stands for Single Family Housing and MFH stands for Multi-Family Housing.

Table 23. Monthly Income and Future Housing Choice

Monthly Income	Current Housing to Future Housing Preference				X^2 /*p*-value
	SFH to SFH	SFH to MFH	MFH to SFH	MFH to MFH	
Low	29 (24.6%)	8 (38.1%)	18 (52.9%)	7 (43.8%)	14.491 /0.025 **
Middle	46 (39%)	10 (47.6%)	10 (29.4%)	6 (37.5%)	
High	43 (36.4%)	3 (14.3%)	6 (17.6%)	3 (18.8%)	
Total	118 (100%)	21 (100%)	34 (100%)	16 (100%)	189

Notes: Chi-square Test was performed. One cell (8.3%) had an expected count less than 5. Statistically significant at level is ** $p < 0.05$. Low-income class salary is under 10 million (VND) per month, middle income from 10 million (VND) to 30 million (VND), and high income over 30 million (VND). SFH stands for Single-Family Housing, MFH for Multi-Family Housing.

Table 23 illustrates the association between future housing choices and movement patterns. Different income groups preferred different movement patterns; high-income groups preferred moving from SFHs to SFHs, middle-income groups from SFHs to MFHs, and low-income groups from MFHs to SFHs. As the SFHs are seen as having economic benefits because of the multi-functional and mixed-use traits of the housing, high-income residents of the SFHs preferred the same type of housing for the future. In addition, low-income households were also more likely to prefer SFHs because they desired the economic benefits of SFHs. MFHs were preferred for the middle-income group, as most people in this group had a salary-based job requiring daily commuting, and so commuting determined their optimal

choice of apartment. It is also significant that the government home loan packages[15] supported apartment purchases of the middle-income group.

4.3.4. In-depth Interviews for Housing Choices

4.3.4.1. Row House Choice

To avoid oversimplification of the questionnaire survey results and to clearly understand the housing choices and residential mobility intentions of respondents, the 38 households already included in the previous survey were reselected from different districts and involved in the in-depth interviews.[16]

The in-depth interviews demonstrated the advantages of housing attributes of row houses, including spatial flexibility, functional diversity, legal property ownership, environmental adaptability, and human-scaled buildings with traditional forms. With detailed descriptions, the residents of row houses highlighted housing attributes as their reason for moving. Attributes included spatial flexibility allowing family cycle change and business leases, functional diversity enabling mixed-use with business leasing of the ground floor and residential leasing of other floors, and property ownership including ownership of LUR (Figure 43).

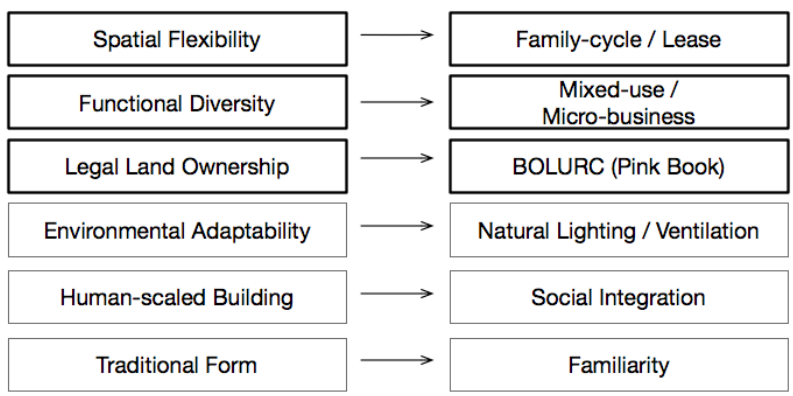

Figure 43. Advantages of Row House Residences[17]
Source: Results of the In-depth Interview

[15] This is a preferential home loan program of the national banks for low and middle-income people who want to purchase an apartment. Vietnam government issued Decree 61/NQ-CP to execute the loan package to increase housing affordability and encourage more housing supply from private sectors. The conditions are maximum 15 year of loan tenure and 5% of annual fixed interest rate. The available apartments should meet the requirements of a unit scale and price; less than 70 m^2 of an apartment unit and less than VND 15 million (USD 714) per m^2 of the unit price.

[16] See the appendix for detail information of the interviewees.

[17] The contents of the bold-outlined box indicate the frequent keywords mentioned in more than 50%

The structural attributes of row houses that created socio-economic benefits were emphasized. In an in-depth interview, Ms. OOO (58) highlighted spatial flexibility that enabled adaptations to the family cycle changes.

> *"I moved to my current row house in a four-story building 10 years ago. I still love my house because of the flexibility of each floor and the vertical separation. The top floor (4F) is our residence, and my son and his wife live with their child on the third floor. Our son stayed with us on the top floor before the marriage, and a few tenants used to live on the third floor. I want to stay together with my son's family in a building, and there is no need to find another house for them."*

The financial gain from a row house of mixed-use function was highlighted by Mr. OOO (65)'s interview with a detailed description of the income generated from the house.

> *"I think most of HCMC's residents really enjoy taking advantage of the mixed-use building form for economic profit. I have two row houses in HCMC. One is only for a business lease, as there is high demand for room rentals by students and single workers. I rented out the ground floor to a coffee shop, and the tenant pays about 20,000,000 VND monthly. Each of the six rooms on the upper two floors was also rented out with a payment of 4,000,000 VND per room per month. The total monthly revenue from my row house is about 44,000,000 VND. With my other row house, I have my own retail shop on the ground floor, and my family lives on the upper floors."*

This economic assessment is extended to the ownership of LUR. The respondents emphasized that purchasing a row house includes obtaining a package of land and a house, whereas an apartment does not include LUR. The enthusiasm to secure property rights from row house ownership was also highlighted in Mr. OOO (47)'s interview.

> *"Land is one of the most significant factors in selecting a row house. A building is not permanent, and it will be demolished one day. However, land never disappears, and its value and price have been increasing every year in HCMC. When I got a Pink Book[18] after owning a row house, I felt that a permanent residence in life was like insurance. Because an apartment does not include land, its Pink Book is not sufficient for guaranteeing a stable future."*

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the in-depth interviews.

[18] The Pink Book is a legal title and certificate of BOLURCs, which combine land and housing. Since Housing Decree 60, it has represented housing and land property rights. In addition, the Red Book is a legal title specifically for LURC.

Additionally, the spatial composition of row houses enabled eco-efficient features with natural lighting and ventilation, and the human-scaled façade and its close integration with the street were discussed as positive and active measures for community connections and social interactions. The interviewees were asked about the drawbacks of row house residences, as the previous survey highlighted this factor. Most complained about the environmental inferiority of their neighborhoods, including narrow inner roads and poor access to main roads, the difficulty of commuting and the high reliance on motorcycles, and the concerns of safety and security arising from burglary and fire vulnerabilities of dense individual houses (Figure 44).

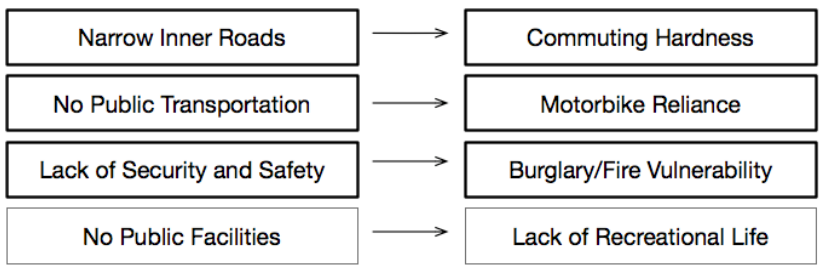

Figure 44. Drawbacks of Row House Residence
Source: Results of the In-depth Interview

A detailed description of the inferior commuting conditions in the row house neighborhood was given in Ms. OOO (38)'s in-depth interview.

> *"I used to live in a row house as a tenant but moved to an apartment because affordable row houses are mostly located far from downtown and the main roads. To get to my downtown workplace, I needed to drive my motorbike through narrow inner roads to access the main streets. I struggled against traffic on both the inner and main roads every day. I also feared returning home, particularly late at night. Public transportation or car ownership was far beyond my reality, considering the narrow inner streets. There was no way to get through without the motorbike. However, my apartment, which is adjacent to a main road, provides better accessibility in the morning and at night, and I feel quite comfortable, even though the monthly rental fee is a bit more expensive than before."*

The vulnerability to crime is described in Mr. OOO (55)'s interview, demonstrating the anxiety and experiences associated with the row house neighborhood.

> *"My main anxiety in my row house is the vulnerability to burglary, particularly around the Tet Holiday (Lunar New Year). Most HCMC residents prepare to return to their hometown with money or expensive gifts, so burglaries in the weeks before*

the Tet Holiday occur frequently. During the two-week traditional holiday, the empty houses are exposed to residential burglaries. Row houses are a main target for criminals due to the tight, individual building arrangement allowing easy access to the houses that are hidden from public view. Burglars have a variety of techniques to dismantle security measures. They entered my home twice during my 13-year residence in a row house and took cash, gold, my laptops, motorbikes, and so forth. It was really awful."

4.3.4.2. Apartment Choice

Apartment residents were asked about their housing choice and reasons for moving. Interestingly, they highlighted the advantages of the integrated systems and more open spaces of high-density buildings. Many apartment residents have jobs in the city center or sub-centers and were satisfied with the commuting convenience created by the apartments' accessibility to main roads and public transportation. The enhanced safety and security systems that protect their properties were also highlighted. Community facilities and spaces such as diverse courtyards and swimming pools were also attractions. In addition, residents who had moved since 2013 selected their apartment because of the home loan packages available from national banks, and they highlighted the popularity of financial aid in their apartment choice (Figure 45).

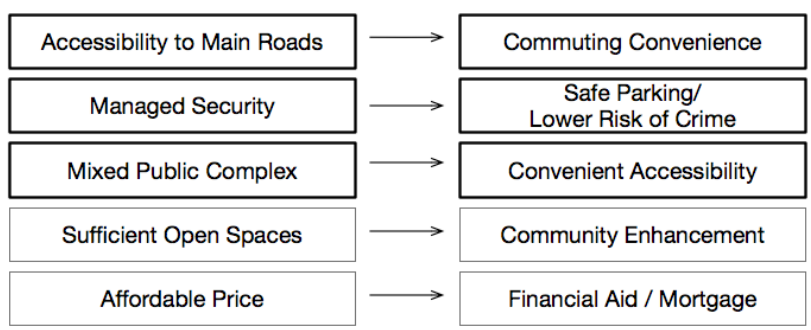

Figure 45. Advantages of Apartment Residence
Source: Results of the In-depth Interview

The environmental advantages of the apartments are well noted in the interviews with Ms. OOO (40) and Mr. OOO (45).

"Since I moved to this apartment from the row house in which I lived with my parents, my 7-year-old son and 5-year-old daughter get a lot of pleasure from playing badminton or futsal in the yards and enjoy a year-round swimming pool. It is all free for residents. They easily build friendships with the neighborhood kids and play

together. Compared with our previous individualized lifestyle in the row house, our current lifestyle has much more of a community feeling, with secure amenities. In addition, there is no more concern about motorcycle parking and security. I just pay 60,000 VND (3 USD) to use the parking garage. Wherever you go in HCMC, motorcycle security is so critical, as many of us have experienced our motorcycles being stolen. I am happy the security guards protect our vehicles in this apartment building.

The in-depth interview with Mr. OOO (39) highlights the availability of financial aid programs to apartment buyers that enhance housing affordability.

"My family moved to this apartment in 2014 (65 m2) thanks to a loan package program from the Vietcombank. The sale price was about 955,500,000 VND (45,000 USD), but the bank paid 70% of the apartment price—668,850,000 VND (31,850 USD)—with the conditions of a fixed annual interest rate of 5.5% and a loan tenure of 15 years. We only paid 286,650,000 VND (13,650 USD), and my life's dream of owning a house finally came true. I am working at a trade company as a manager, and my salary covers the housing loan."

4.4. Discussions

4.4.1. Advantages of Row Houses

The survey results clearly indicate that Vietnam has a high demand for single-family housing, particularly row houses, which predominate in HCMC's housing stock. The typology of row house has traditionally been dominant in the urban fabric in Vietnam. While it has evolved with urban growth in terms of plot size, façade, spatial structure, and building materials, it was highlighted for its spatial, environmental, and social advantages. The spatial composition enabled eco-sufficient features with natural lighting and ventilation serving as energy-saving factors. It also supported expandable spatial features for the residents' needs. The spatial flexibility enabled not only residential space expansion for family size change, but also a mixed use for living and working. In addition, the human-scaled façade and its close integration with streets created active community connection and social interaction (Kien, 2008).

The trend toward row house choice was also clearly observed in the structural features of the housing that emerged in this survey. The archetypal modern row house is extremely efficient for a mixture of residential and commercial services (Figure 46). In spite of very limited street frontage, with a typical plot of 4 m by 20 m, the building fully covers the plot in many cases, and the ground floor is a flexible

frontage for homeowners' micro-businesses, such as a shop, small restaurant, café, or retail unit. Some owners even use or lease the second floor for mixed use and earn extra income (Kien, 2008; Park & Cho, 2013; Won, Cho, & Kim, 2015). In addition, the typology features spatial flexibility and environmental adaptability in that most rooms can be adjusted or expanded for various purposes and the buffer space between indoors and outdoors can function as protection from direct sunlight and high precipitation (Park & Cho, 2013). For these reasons, the ground-bound housing type is commonly found in entire cities, from downtown to low-income areas, and along narrow and minor streets. This residential structure is the most attractive for Vietnamese people and has the highest demand in movement and housing choices (Vinh & Leaf, 1996; Won et al., 2015).

Figure 46. Mixed-use Row Houses in HCMC

4.4.2. Drawbacks of Row Houses

On the other hand, different responses for the row houses were observed in the survey. Road and commuting environments were critical drawbacks of the row house residences. The survey respondents largely highlighted uncomfortable transportation and road conditions and the commuting environment as the main reasons that current apartment residents who had previously lived in a row house had moved.

As a number of neighborhoods in HCMC have organically developed with self-built housing, inner roads within these communities were spontaneously generated with an average width of 1.5 m (Figure 47; 49). In the period from 2001 to 2005, for example, the amount of self-built row housing units accounted for 84.8% of total

housing constructed in HCMC, while industrialized housing production accounted for only 15.2% (Zhu, 2012). Only two-wheeled vehicles can reach the inner houses of these districts (Figure 49) since the builders tried to maximize land utilization by illegally expanding the floor area (Hansen, 2016; Yip & Tran, 2008). This requires pedestrians and two-wheeled vehicles to share the roads, leaving adults and especially children vulnerable to traffic accidents (UN Habitat, 2014). That condition shows that the current Vietnamese urbanization and housing environment would not be sustainable.

Figure 47. Conventional Row House District in HCMC (District 4)
Source: Google Maps

Figure 48. Conventional Row House District in HCMC (District 4)

Figure 49. Conventional Inner Roads in a Row House District (District 8)

Another issue is that row houses and their neighborhoods are highly vulnerable to residential crimes such as burglaries. Numerous households of row houses installed individual security measures such as CCTV, deadbolt locks, burglar proof windows, and main gate covers (OSAC, 2017). However, the households were concerned about the dense neighborhood environment, the consequential security vulnerabilities, and the limitations of personal security measures (Figure 50).

Figure 50. Burglar Poof Windows on Row Houses in HCMC

4.4.3. Increasing Popularity of Apartments

With rising family incomes and socioeconomic mobility, the increasing number of vehicles is worsening the commuting environment every year (Truitt, 2008). The total count of motorbikes at 8.5 million thus exceeds the official population of Ho Chi Minh City of 8.2 million (Thanh Nien News, 2016) and motorbikes account for approximately 90% of trips in the city (Van, Schmoecker, & Fujii, 2009) and commuters using motorbikes battle daily against heavy traffic jams and declining air quality (Figure 51). In addition, car ownership has increased by 320% between 2005 and 2014 at an annual growth rate of 10% (OICA, 2014). This creates a higher risk of heavy traffic congestion and overburdening the city's road capacity.

Figure 51. Peak Hour Commuting in HCMC
Source: Thanh Nien News, 2015b

In this context, apartments are highly regarded as an adaptation to such changes while predominantly self-built districts of row houses have suffered from severe urban densification and poor accessibility for four-wheeled vehicles. A number of high-rise apartments built with foreign investment offer not only more spacious housing units and open spaces, but also managed parking lots for two-wheeled and four-wheeled vehicles and excellent accessibility to main roads (Figure 52) (Chung et al., 2014). For instance, the Phu My Hung new town construction in District 7 has

led a boom in apartment development in HCMC since 1998. With the construction of the 10-lane Nguyen Van Linh Parkway, the town has produced a series of apartment complexes. They are highly valued real estate today and still attracting the attention of customers as a more comfortable living environment. The key elements for apartment selection are the low-density living environment, better accessibility to downtown, and mixed public facilities, including spacious parking, which are not found in the self-built districts of row houses (Chung et al., 2014; Huynh, 2015; Jung et al., 2013). The results of this survey also clearly show a significant association between environmental advantages and housing choices of current apartments, particularly among those previously resident in row houses. Overall survey data also indicate the popularity of high-rise apartments as can be seen in the increase of this type of housing from 5% of past residences to 13% of present and the expressed preference of 19% of interviewees for the future.

Figure 52. Conventional Environment of Apartments

The other interesting point is the movement pattern of the current middle-income class. Those of this group currently living in row houses show a strong preference to move to apartments in the future in this survey. Vietnam is one of the countries experiencing a rapid increase in its middle class, with the fastest growth rate in Asia. One report indicates that almost two million people join the middle class every year (Bang, 2016). The popularity of affordable housing for the middle class can be found in market analysis reports. They note that demand of affordable apartments is forecasted to increase by a factor of 5.5, from 23,838 units per annum in 2013 to 130,962 units per annum in 2020. (CBRE, 2016). It underlines the fact that more apartment projects can deliver sustainable urban development with housing solutions to meet the skyrocketing demand for decent affordable housing in HCMC in terms of quality and quantity.

Furthermore, more apartment developments are expected in consideration of the Metro Rapid Transit (MRT) project in HCMC. In order to combat surging traffic issues, the city government is proceeding a public metro project as an alternative

form of transportation (Figure 53). Metro line 1 is under construction and scheduled to complete in 2021. The MRT should be also a significant factor to influence moving patterns and apartment choice in the future (Arrington & Cervero, 2008; Musil & Simon, 2015). The metro project is already spurring the real estate development boom in that more high-rise apartment projects have been proposed around expected train stations in the last several years and many of them are already under construction. Land prices around the stations are also surging higher than elsewhere (Thanh Nien News, 2015a). These phenomena demonstrate that the public transportation will considerably influence moving to apartments in the future.

Figure 53. Construction of Apartments and Elevated Metro Railway in HCMC

4.5. Conclusion

Housing choice and movement issues in HCMC have become intertwined with HCMC's rapid urbanization and housing market growth. Since the economic reforms, social and economic changes have led to huge in-migration levels and exacerbated housing shortages, leading to the system for the supply of housing being taken over by the private sector. The government has revised the land use laws, not only for the purpose of privatizing residential land but also to encourage self-built housing through investment by individual households. This development pattern has predominated for the last few decades in HCMC. The self-built row houses have

largely covered the city, with organic district expansion and urban densification. This empirical study shows the popularity of the row houses due to the environmental adaptability and spatial flexibility of the mixed-use building, which shows its cultural and social sustainability in Vietnam's innate housing context. However, road conditions and commuting environments in the predominantly self-built districts of HCMC were major drawbacks due to narrow inner roads and limited accessibility by cars and public transportation. Too densified environment also increases crime vulnerability such as a burglary. On the other hand, FDI inflows have produced numerous launches of new apartment projects with a surge in the upper middle-income class. This housing type attracts residents because of great accessibility to main roads, spacious parking spaces, and decent housing quality. It is also considered for economically sustainable housing supply policies aimed at delivering numerous affordable housing units accessible to the lower middle-income class in the dense and compact environment of HCMC.

This housing study has implications for public policies aiming at sustainable housing development in Vietnam. As the new 2015 Housing Law provides the framework to support affordable housing segments (with a focus on the housing shortage and the necessity of creating affordable decent housing for the lower-middle class), support for self-built housing, and encouragement of private sector involvement. The government can consolidate their efforts in the affordable housing sector in the following ways.

First, the government can establish national affordable housing initiatives to effectively manage and control incremental informal self-built housing development. Although the row house is regarded as a sustainable housing model for Vietnam from an environmental and socio-economic point of view (Kien, 2008; Kim, 2007; Park & Cho, 2013; Won et al., 2015), the predominant informal self-building trend has had a negative impact on the urban environment with unsustainable densification patterns. Therefore, this development can be well managed and regulated, given that this type of house is a popular choice and in high demand by many Vietnamese. The initiatives can strengthen regulation of row house development and precisely target areas and groups of lower-income households for special assistance who are unable to undertake self-provided solutions. The initiatives can also develop viable strategies for basic infrastructure provision to secure public health and transportation accessibility. In addition, they should enhance accessibility to microfinance and technical assistance for poor households from a formal construction start to incremental self-built housing improvement for their homes. Then, the self-built housing environment can become sustainable in well-serviced and connected neighborhoods.

Second, the government can strategically expand "site and services" projects to meet the increasing demand for row houses by the use of public–private partnerships (PPPs). These develop new serviced lands in suitable locations in cities and provide them in sub-divided plots at lower market rates for affordable housing. Based on the delivery of infrastructure and roads, the landowners can create self-built housing through their own investment with the government's legal support. This means that the uncontrolled informal formation of self-built districts and its negative externalities such as public health and traffic issues due to lack of infrastructure and inner roads can be avoided. In addition, it can create a framework of public participation since the "site and services" approach can also be used for various purposes such as neighborhood redevelopment with resettlement, land sharing, and in-situ expansion. In this case, the government and stakeholders can support inclusive planning enabling open discussion and participatory neighborhood design with the people who will finally settle in the area. Furthermore, "site and services" projects can be combined with affordable apartment development within PPPs, thereby making the national housing supply more economically and socially sustainable.

Third, Vietnamese housing development can be integrated with urban development strategies, particularly land use planning, and accompanied by major infrastructure and public transportation development. As this study shows a meaningful association between housing choice and commuting environments, the government should ensure that appropriate land for formal and affordable housing developments is allocated to secure connectivity to basic infrastructure and accessibility to public transportation and urban roads. In the case of in-situ resettlement housing development, which avoids evicting low-income residents to the outskirts, the development should also be prioritized to combine with road-widening plans and transport development. This will minimize negative externalities, such as traffic congestion, pollution, and social segregation. Furthermore, the networked-compact city along with the multi-nuclear model would be necessary to prevent urban sprawl in the sustainable housing development process. It will provide better directions for the style and location of new housing developments as well as site upgrading. These kinds of housing development approaches will help make urban growth in Vietnam more socially, economically, and environmentally sustainable. Therefore, understanding and approaching housing development as part of an inclusive framework is vital for sustainable growth in Vietnam.

Chapter 5

Price Determinants of Apartments in HCMC

5.1. Introduction

The housing market in Vietnam has been steadily growing over the last two decades. From 1999 to 2009, 275,000 housing units were supplied in Vietnam and an additional 325,000 are expected between 2009 and 2019 (UN Habitat, 2014). Housing demand has increased by about 10% every year, and reports suggest an additional 394,000 housing units need to be built annually until 2049, considering Vietnam's current urban population growth rate (3%). This is equivalent to 1079 homes per day or 45 homes per hour (UN Habitat, 2014). In particular, with a recent surge in the middle-income class, the popularity of affordable apartment segments for the middle class can be observed in various market analysis reports. The rapid and continuing increase in Vietnam's middle class (the fastest in Asia) means demand for affordable apartments is predicted to increase fivefold between 2013 and 2020, a demand that can only be sustainably met by apartment projects in urban areas to provide the quantity and quality of housing needed (Bang, 2016; CBRE, 2016).

Housing affordability generally indicates a ratio approach between household disposable income and housing prices. In other words, the affordability estimates if the household's purchasing power is sufficient to secure a residential property in the housing market. Affordable housing in developing countries is defined with the following criteria: housing-related spending should be no more than 30 to 40% of household income, adequate living space and amenities should be available, and 80% of middle-income residents should be able to afford the housing based on the

Housing Affordability Index (Woetzel, Ram, Mischke, Garemo, & Sankhe, 2014). According to the World Bank, household purchasing power has been estimated for each income quantile with regard to payment capacity and access to housing finance in Vietnam. The monthly income of a median quantile household was USD 460 and that of the highest income class USD 1340. In this income structure, it was difficult for the middle-income households to obtain access to housing. To enhance housing affordability for the middle-income class, the Vietnamese government launched a subsidized mortgage program as per the regulations of the central banks in June 2013 called 'VND 30 Trillion Home Loan Package,' which was available at a maximum fixed annual interest rate of 6%, a maximum loan tenure of 15 years, and a loan to the value of 70 to 80% of the purchase price for first purchasers of social housing or apartments. Since the subsidized program was launched, around 80% of apartment buyers in HCMC have taken advantage of the package (JLL, 2016; World Bank, 2015).

While most previous studies have analyzed housing price determinants based on locational classifications like downtown, new town, and peripheral areas in cities, this study started by examining the question of the housing affordability framework of the real estate market in HCMC, which is experiencing rapid economic growth. While high-end apartment development has prevailed in Vietnam since the emergence of a privatized housing market, the affordable apartment segment has recently come to the fore with a remarkable surge of middle-income households in HCMC. Since apartments in the Vietnamese housing market are classified as affordable, mid-end, high-end, and luxury apartment segments (Figure 54; 55), this study separates the affordable segment from the mid-end, high-end, and luxury apartments ('unaffordable' segment).

Figure 54. Luxury(left) and High-end Apartments(right) in HCMC

Figure 55. Mid-end(left) and Affordable(right) Apartments in HCMC

This research therefore attempted a different approach to find an answer to the research question of identifying the similarities and differences in price determinants between affordable and unaffordable apartments. By dividing the apartment projects into affordable and unaffordable segments, the housing attributes that affect the market price of each segment will be investigated and compared, and the reasons for the similarities and differences discussed in the urban context of HCMC. This provides valuable references for housing developers and investors to understand the pricing determinants in the Vietnamese housing market, helping them to make

decisions for successful investment and development by utilizing appropriate development strategies for various classes of people. This can also help central and local authorities understand improve the quality of a diverse range of developments with public–private partnerships.

5.2. Research Methods

5.2.1. Data Collection

This study used a data set covering 714 unit prototypes in 211 apartment projects in HCMC that have been sold since 2000, which covers most apartment projects in the period. We collected the data set in three steps. First, the bulk of raw data on apartments was provided by the National Housing Organization (NHO), which is an affordable housing development institute in Vietnam, and the NIBC Investment and Consulting company (Ho Chi Minh City, Vietnam), which conducts professional housing market surveys and feasibility studies for housing development in Vietnam. The series of data sets included apartment unit prices, multiple apartment unit sizes and drawings, project land size, and lists of public facilities. They were restructured for the purpose of this study. Second, additional data on more apartment projects were collected through popular Vietnamese real estate websites (http://khudothimoi.com/ and https://batdongsan.com.vn/)). Third, the information on proximity to urban public facilities was measured based on Google Maps. This data includes distances to urban parks, schools, shopping malls, rivers, main roads, the downtown area, and so forth. When we got the data from the collection procedure, we double-checked the data set with local real estate consultants.

5.2.2. Identification of Affordable Housing

As mentioned earlier, it is the ratio between housing prices and a household's disposable income that determines housing affordability, a measurement of whether or not a given household has sufficient purchasing power to secure a residential property. Since the government of Vietnam launched subsidized mortgage programs, such as mortgage finance, the VND 30 Trillion Home Loan Package, and housing microfinance, to enhance housing affordability, the Vietnamese consumer's power has increased remarkably and this has significantly impacted on the housing market (JLL, 2016; World Bank, 2015) (Table 24).

In this context, according to the 2016 JLL data for the HCMC real estate market, affordable housing was categorized as having an average price of USD 740 per

square meter, with mid-end housing at USD 1343 per square meter in secondary prices (JLL, 2016). A maximum value for affordable housing can be estimated at $ 1041 per square meter, which is the mean of the two average prices. Therefore, we considered the price range of affordable housing as under $1041 per square meter in this study.

Table 24. Effective Demand of Housing by Household Income in HCMC 2014

Financial Scenario	Income Quintile	Monthly Income	Payment Capacity		Term	Rate	Loan Amount	Down-Payment		Housing Demand
Market-based (CA)	Q5	41,306	40%	16,522	20	10%	1,321,786	30%	566,480	1,888,266
	Q4	15,639	30%	4,692	20	10%	375,335	20%	93,834	469,169
	Q3	11,760	25%	2,940	15	10%	211,681	20%	52,920	264,601
30 T package (CA)	Q5	41,306	40%	16,522	20	5%	1,699,439	30%	728,331	2,427,770
	Q4	15,639	30%	4,692	20	5%	482,574	20%	120,643	603,217
	Q3	11,760	25%	2,940	15	5%	302,401	20%	75,600	378,001

Notes: CA stands for Constant Amortization. Source: World Bank, 2015

5.2.3. Variables for Hedonic Regression Model

In this study, the apartment unit price per square meter is set as the dependent variable. It is a standardized value regardless of the size of the apartment, so it is possible to objectively investigate the factors that affected the apartment price. The independent variables were based on the factors considered from earlier studies on apartments in HCMC. The hedonic regression model uses the following formula:

$$Lnp = \beta 0 + \sum_{k=1}^{K} \beta_k x_k + \varepsilon$$

where

p denotes the per-unit sales price of property;
ε is a random error term vector;
β_k $(k = 1, \ldots, K)$ indicates the coefficient matrix of independent variables x and shows the rate of price change with the characteristics x.

The dependent variable, Lnp, is the log of sales price (USD/m2) of housing. Using a logarithmic scale for the price makes interpretation easier than other methods (Malpezzi, 2003). The β shows the coefficient matrix of independent variables. The independent variables were selected based on previous hedonic model studies of Vietnamese housing and various discussions with local experts on housing development. Most variables were categorized under general headings, while some

were removed due to correlation. In the case of land prices, we considered a special land pricing system for Vietnam as the process here does not follow that normally observed in capitalist systems. The socialist system does not allow private land ownership but provides land use rights in the form of a lease. Thus, the official land price, which the Vietnamese government sets, is not for a permanent property value but a transferrable value. The price estimation is based on the street value evaluation method and we found that the land price of our data set was not closely correlated with other factors. Thus, the independent variables were categorized into three groups: housing unit values, residential community features, and locational proximity to urban public facilities. Table 25 shows the contents and details of each.

The formula was structured in a semi-logarithmic form as this is widely used in hedonic regression models for proportional understanding of the interaction between a property's price and its housing characteristics. When sales prices are expressed as logarithms, the coefficients can be interpreted as the percentage change in price.

Table 25. Variable Descriptions for Hedonic Price Modeling

Categories	Variables	Code	Unit	Descriptions
Housing Attributes	Unit size	Area	m^2	Unit area
	Building age	Year	year	Building age
	Natural ventilation	Ventil	dummy	Two sides of windows
	Unit access structure	UnitAccess	dummy	Access types to each unit
	Total floors	AllFloors	floor	Number of building floors
	Foreign development	ForeignDev	dummy	Foreign developer
Community Attributes	Ward population density	WardDen	person/ha	Ward of apartment location
	Total units of apartment	AllUnits	unit	Total number of units
	Swimming pool	Pool	dummy	Existence in the project
	Mixed-use apartment	Mixeduse	dummy	Commercial and residential
	Land price	LandPrice	USD/m^2	Street value evaluation
Locational Attributes	Location to new town	Newtown	dummy	Phu My Hung new town
	Adjacency to main road	Road	dummy	Over 4 lane road
	Dist. to downtown	Cbd	m	To the Presidential Palace
	Dist. to park	Park	m	Formal urban parks
	Dist. to river	River	m	Formal urban rivers
	Dist. to international school	School	m	Primary to secondary schools
	Dist. to shopping mall	ShopMall	m	Corporate shopping malls
Dependent Variable	Apartment price	AptPrice	USD/m^2	Sales price per square meter

Source: Chung et al., 2014; Huynh, 2015; Jung et al., 2013; Kato & Nguyen, 2010

Based on the literature review for the price determinants of Vietnam housing (Chung et al., 2014; Huynh, 2015; Jung et al., 2013; Kato & Nguyen, 2010) on the

chapter 2, the independent variables can be categorized into attributes of housing, community, and location (Table 25).

5.3. Results and Findings

5.3.1. Descriptive Statistics

Table 26 shows the descriptive statistics for 714 apartment prototype units in 211 HCMC projects that have been built since 2000; this includes most apartment projects in the period.

Table 26. Descriptive Statistics

Variables		Total		Affordable		Unaffordable	
		n = 714		*n* = 427		*n* = 287	
		Mean	S.D.	Mean	S.D.	Mean	S.D.
Apartment price	AptPrice	1060	588	718	151	1570	627
Unit size	UnitArea	94.7	43.4	83.9	39.7	111	43.8
Years since construction	Year	4.06	3.13	3.63	3.12	4.71	3.05
Total floors	AllFloors	18.3	6.85	17.2	6.43	19.8	7.17
Ward population density	WardDen	178	237	158	218	209	260
Total apartment units	AllUnits	562	1014	682	1241	384	466
Swimming pool	Pool	0.52	0.50	0.40	0.49	0.68	0.47
Mixed-use apartment	MixedUse	0.18	0.38	0.13	0.34	0.25	0.43
Foreign development	ForeignDev	0.21	0.41	0.08	0.26	0.42	0.49
Natural ventilation	Ventil	0.42	0.49	0.45	0.50	0.37	0.48
Unit access structure	UnitAccess	0.14	0.34	0.18	0.39	0.07	0.25
Land price	LandPrice	500	414	307	229	789	459
Location to new town	Newtown	0.19	0.40	0.10	0.30	0.33	0.47
Adjacency to main road	Road	0.42	0.49	0.31	0.46	0.59	0.49
Dist. to downtown	Cbd	6298	3069	7687	2829	4230	2096
Dist. to park	Park	2441	2959	3348	3469	1094	919
Dist. to river	River	1102	1767	1319	2039	780	1192
Dist. to international school	School	2439	2811	3454	3197	929	804
Dist. to shopping mall	ShopMall	1436	1728	1847	2055	825	725

In the housing unit category, the average price of the apartments is 1060 dollars per square meter, 718 dollars for affordable housing, and 1570 dollars for an unaffordable apartment. The average unit size of unaffordable housing is 24 percent higher than that of affordable housing. In the residence community category, the average land price of the unaffordable group is 61 percent higher than that of the

affordable one. The average apartment unit number in the latter is 44 percent higher than that of the former, indicating a far higher building density for the affordable housing project. It was also observed that the unaffordable group has more mixed-use development and foreign development projects and is more closely located to international schools, parks, and riversides. In addition, the affordable group shows more heterogeneous data patterns in the variable of total apartment units and the unaffordable group in foreign development within the community attributes. In the locational sectors, the affordable group is more heterogeneous, particularly for distances to parks, rivers, international schools, and shopping malls (Table 26).

5.3.2. Regression Results

The hedonic model produced regression results as shown in Table 27. The stepwise method was applied to the regression model for accurate factor finding.

Table 27. Regression Results

Independent Variables	Total Apts.	Affordable Apts.	Unaffordable Apts.
UnitArea	0.052 (2.503) *	−0.035 (−0.896)	0.137 (3.89) **
Year	−0.149 (−6.607) **	−0.066 (−1.444)	−0.214 (−5.458) **
AllFloors	0.041 (1.728)	0.166 (4.575) **	0.041 (0.977)
WardDen	−0.061 (−2.717) **	0.062 (1.53)	−0.322 (−7.086) **
AllUnits	−0.033 (−1.729)	−0.03 (−0.817)	−0.007 (−0.194)
Pool	0.084 (3.645) **	−0.072 (−1.568)	0.304 (7.044) **
MixedUse	0.103 (5.234) **	0.048 (1.065)	0.072 (2.047) *
ForeignDev	0.272 (11.26) **	0.226 (6.171) **	0.058 (0.861)
Ventil	0.002 (0.077)	0.013 (0.296)	−0.101 (−2.622) **
UnitAccess	−0.003 (−0.146)	0.111 (2.826) **	0.192 (5.462) **
LandPrice	0.429 (16.367) **	0.034 (0.716)	0.507 (10.324) **
Newtown	0.081 (3.391) **	0.046 (1.161)	0.061 (1.342)
Road	0.031 (1.533)	0.098 (2.574) **	−0.02 (−0.568)
Cbd	−0.411 (−14.419) **	−0.563 (−14.867) **	−0.387 (−6.311) **
Park	0.033 (1.374)	0.066 (1.478)	0.05 (1.336)
River	0.013 (0.673)	0.069 (1.895)	−0.078 (−2.238) *
School	0.025 (0.928)	−0.004 (−0.082)	−0.16 (−4.426) **
ShopMall	−0.065 (−3.178) **	−0.137 (−3.595) **	−0.057 (−1.579)
n	**714**	**427**	**287**
Adjusted R^2	**0.761**	**0.452**	**0.710**

Notes: T-stats in parentheses. ** denotes 1% significance level; * denotes 5% significance level. The Chow test was conducted to verify whether the coefficients in two regressions on the data sets are equal. The test statics is 33.68 and this is bigger than the critical value for F (18,678). Therefore, there was no problem with this structure.

In the results, two determinants, unit access structure and distance to downtown, are shown for both the affordable and unaffordable groups. The rest of the significant variables are, however, different for each group. It also indicates that the housing characteristics and environmental factors affect the price structure of housing property in the affordable housing segment, whereas unaffordable segment shows all categories of the attributes of housing, community and locational attributes (Table 28). Comparing to the affordable segments, the price of unaffordable apartments is more influenced by the factors of quality of life such as swimming pool, lower residential quality, mixed-use composition, proximity to better educational and amenity facilities.

Table 28. Price Determinants by Attributes

Categories	Affordable Apts.	Unaffordable Apts.
Housing Attributes	(+)Unit access structure ** (+)Total floors ** (+)Foreign development **	(+)Unit access structure ** (+)Swimming pool ** (+)Unit Area ** (-)Building age ** (-)Natural Ventilation **
Community Attributes		(-)Ward population density ** (+)Mixed-use development * (+)Land price **
Locational Attributes	(-)Distance to downtown** (-)Distance to shopping malls ** (+)Adjacency to main roads **	(-)Distance to downtown ** (-)Distance to international school ** (-)Distance to river *

Notes: ** denotes 1% significance level; * denotes 5% significance level.

5.4. Discussions

5.4.1. Common Price Determinants

Both affordable and unaffordable apartment segments display locational influences to downtown. The prices increase as the housing is more closely located to the downtown area, location of District 1 (the central business district). This is related to heavy traffic congestion on roads and poor commuting conditions for citizens, regardless of affordable or unaffordable apartments. Since a high proportion of workplaces in HCMC are concentrated in the downtown districts, accessibility and proximity are critical for housing choice. With insufficient road capacity and increasing numbers of vehicles every year, peak-hour traffic congestion has become appalling (Thanh Nien News, 2015b). Commuters using motorbikes battle daily

against not only heavy traffic jams but also contaminated air quality. A report from the Ministry of Natural Resources and Environment in Vietnam showed that 70% of pollution gases were generated from motorized vehicles in cities (Hansen, 2016). Motorbikes are the main polluters and the drivers are, consequently, exposed to the contaminants every day (Lan, Liem, & Binh, 2013). In addition, 70% of urban areas will be vulnerable to seasonal urban flooding, further worsening traffic conditions (Eckert & Schinkel, 2009) (Figure 56). In this regard, proximity and accessibility to downtown can be a critical factor for apartment selection.

Figure 56. Peak Hour Commuting(left) and Urban Flooding in HCMC(right)

The structural attributes of housing also affect housing prices. Apartment developments generally consist of two types of home access: vertical shared access and horizontal corridor access (Figure 57). The former, which allows access to homes organized around a vertical core of elevators or stairs, is a determinant for higher apartment prices in both segments. It shows a greater level of residence individuality than the other and enables more intimate social interaction with neighbors, limiting the number of homes around the core to a manageable number. It can also allow more fresh air and light in communal spaces. However, although the horizontal corridor access carries the benefit of efficient circulation by hallways for more units on each floor, its higher density is a negative factor due to lack of privacy, exposure to noise, and increased feelings of anxiety, stemming from perceptions of insecurity and increased vulnerability to house invasion or robbery which occur frequently in Vietnam.

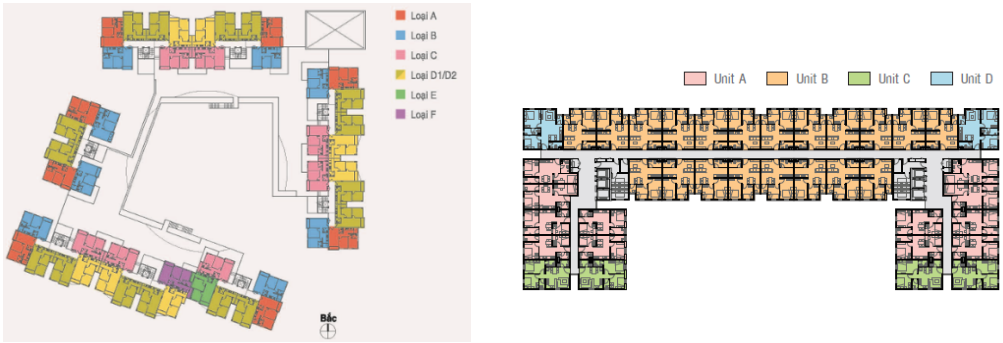

Figure 57. Vertical Shared Access(left) and Horizontal Corridor Access(right)
Source: National Housing Organization

5.4.2. Unique Price Determinants of Affordable Apartments

First, one of the determinants that only applies to affordable housing is foreign development. This means that the prices of apartments built by foreign developers are more expensive than those of local developers. A large portion of affordable housing has been built by the land owners and local builders, who are not professional designers or constructors. The housing unit spaces are not well arranged and the quality of community facilities and open spaces is substandard. However, foreign developers normally supply better-quality affordable housing with superior amenities, and this positively affects their price. The unaffordable apartment segment, on the other hand, is not influenced by whether they have been built by local or foreign developers. Most international developers are focused on the unaffordable segments of the market and there are also professional local developers such as the Vinh Group and Novaland, which have already completed dozens of luxury apartment projects in Vietnam. They are highly appreciated for the excellent quality of their housing developments, which are popular with both foreign and local customers. Therefore, the factor of foreign development only affects the sales price of affordable apartments.

Second, proximity to main roads is a critical price factor for this segment. Affordable housing is located farther from CBDs than unaffordable, at respective average distances of 7.6 km and 4.2 km (Table 26). While the downtown districts of HCMC were systemically planned in the French colonial period with a main road network, other districts enclosing the historic downtown districts have grown organically with massive self-built housing developments leading to urban densification and the formation of an unmanaged road infrastructure. Indeed, roads are so narrow (less than 1.5 m in self-built housing districts) that entire areas are inaccessible to either cars or public transport. Thus, since affordable apartments have

normally developed in the self-built dense districts far away from CBDs, proximity to main roads is critical for vehicle accessibility and it affects price determination.

Third, high-rise residential towers with more floors also influence prices in the affordable segment of the market. In Vietnam, due to lower land costs, a large proportion of affordable high-rise apartments (with an average of 17 floors; Table 26) were developed within semi-urban districts comprising widespread low-rise townhouses of 2–4 floors. In the physical context, higher affordable apartments located in the low-rise blocks can see their prices increase because of their association with what are seen as conspicuous landmarks in the districts (Figure 58). However, mid- and high-end apartments are normally located relatively close to downtown comprising numerous high-rise buildings, and thus the attribute of apartment development height is not critical for price determinants in this segment.

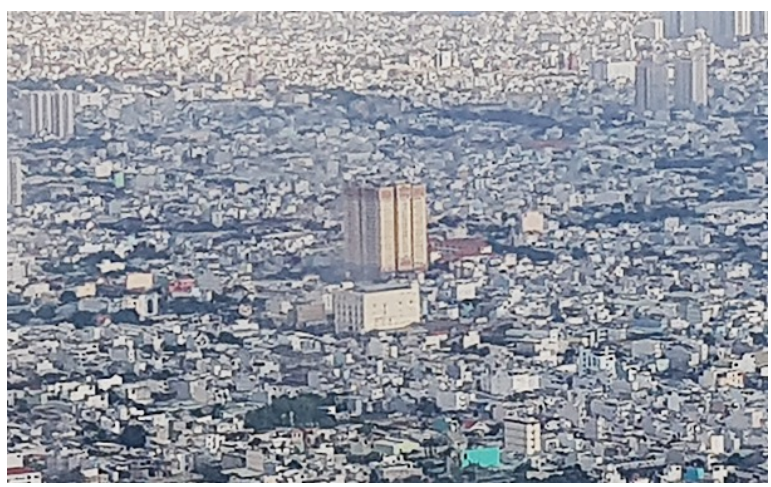

Figure 58. Affordable Apartments in District 12

Fourth, closer proximity to shopping malls is also a price determinant. This trend more clearly appears in the affordable segment as its coefficient (−0.137) in regression modeling is more than twice as high as that (−0.065) of total apartments (Table 26). As the unaffordable housing is relatively closer to the commercial malls (an average of 0.8 km) than the affordable (1.8 km), this determinant is not critical in that segment. In HCMC, considering the lack of community facilities and a tropical climate with dry and wet seasons, with an average temperature of 28 degrees Celsius, proximity to a shopping mall can be an influential factor for housing choice, particularly for the lower-middle class. Since HCMC is modernizing with an ever-growing boom in supermarkets and shopping malls in recent decades (such as Coopmart, Big C, Aeon Mall, and the Vincom Center), they are positioning themselves not only as commercial centers but also as cultural epicenters for

communities of families and friends to enjoy the air conditioning and a variety of entertaining events and performances with free access for the lower-middle class.

5.4.3. Unique Price Determinants of Unaffordable Apartments

In the unaffordable housing segment, it was found that the older the apartment, the lower the apartment price. Overall operation and maintenance of apartments in Vietnam is not well managed with a variety of disputes between apartment residents and developers. According to official reports, there is misuse of public areas in the communities, cost disputes over the operation and maintenance of facilities, and issues pertaining to fire prevention and safety, construction quality, unqualified maintenance teams, public security, and inconsistent sales contracts (Tuoitrenews, 2015). These are leading to a rapid aging of apartments and a depreciation of property prices. As affordable apartments have been developed relatively recently (average building age 3.6 years; see Table 26), the building depreciation rate is a less sensitive issue for them.

Apartments containing a swimming pool are more expensive in the unaffordable segment. In the tropical climate of HCMC, this is one of the most popular public facilities in the residential sectors. While this is an optional service for the affordable segment, high-end and luxury apartments invariably provide swimming pools as part of a public amenity package, even competing in this area with more advanced outdoor locations and higher quality such as eye-catching rooftop pools. This factor positively influences housing prices.

Weather conditions also had a negative significance on the determinant of natural ventilation in the unaffordable apartments. This is not preferred due to both the tropical climate and security issues. To avoid hot weather (an annual average temperature of 28 degrees Celsius with the highest peak of 39 degrees Celsius around noon in HCMC), the residents of unaffordable apartments always opt for air-conditioning at home; natural air flow is not a requirement for them. In addition, natural ventilation requires additional windows facing public alleys or corridors in many apartments in Vietnam. This is considered a threat to home security as burglars in Vietnam often break into luxury apartments through windows.

It is also found that the larger the unit size of an unaffordable apartment, the more positive its impact on housing price, in that its coefficient (0.137) is twice that of apartments in general (0.052) (Table 27). However, the affordable segment does not show the significance of unit size itself since customers in this segment tend to base their choice of housing units not on unit size but apartment layout, for instance, composed of one room with two toilets or two rooms with two toilets, based on the market price. This means that unit layout conditions are more important than the unit

size. According to developers of affordable housing, the bottom line for housing prices is almost fixed for the affordable market at around 50,000 USD and what is most critical in development is more efficient unit layouts enabling more rooms, toilets, and a living room. In sales and marketing brochures, developers frequently use statements such as "An apartment of two bedrooms and two toilets for only USD 40,000," while in the case of high-priced apartments, brochures usually advertise them with comments like "$2500 per square meter in premium New Town".

Mixed-use development integrating residential units, commercial units, or offices is becoming a popular trend for property developers in Vietnam since it is considered as a sustainable trend in the compact city concept, minimizing commuters' need to travel and reducing the demand on the urban infrastructure network. While mixed-use structures significantly influence higher housing prices in the unaffordable segment, normally leading to well-managed leasing businesses with secure tenants, the popularity of the trend is not observed in affordable projects due to insufficient mixed-use cases or unsuccessful leasing status with empty retail units or offices, and thus it does not affect housing prices.

Proximity to international schools and rivers are also critical determinants in this segment. There are numerous previous studies showing a positive significance of better education facilities and natural conditions, such as parks and rivers, for housing prices. However, in the case of HCMC's affordable housing, an international school with expensive tuition fees is not realistically an influential factor in their lives. Rivers and urban canals near affordable housing in peripheral districts are mostly contaminated and not well managed, so proximity to the environment is not critical for the price of the affordable housing segment.

5.5. Conclusions

Apartment development in HCMC has been driven by both the housing shortage caused by the rapid population influx and the boom in real estate investment. Since the opening of the Vietnamese housing market, high-end apartment development has dominated, but the affordable apartment market has also grown gradually in recent decades with the growth of a middle-income class. As demand for this market continues to rise significantly every year, housing developers and policy makers need to understand the market's dynamics and how price determination is affected.

According to the hedonic regression model, significant common price determinants were found for both affordable and unaffordable housing segments. Structurally, vertical shared access in apartments creates an upward trend in housing

prices because it secures both dwelling individuality and social intimacy with a manageable scale of neighbors, in contrast to horizontal corridor access. In addition, proximity to downtown is also a critical factor in the higher price of apartments in HCMC in terms of proximity to workplaces, given the lack of public transportation, serious traffic congestion caused by enormous numbers of private vehicles, and frequent flooding on roads.

Unique price determinants in each segment of housing are related to geographical conditions and their physical environment. Higher multistoried apartments raise the price of affordable housing since they attract premium values as landmarks in low-rise residential districts. Since these districts have developed organically, with urban densification and narrow streets, an apartment's proximity to main roads enabling efficient vehicular access is critical to boosting housing prices. Foreign developments are associated with higher expectations for improved quality of design and construction. However, in the case of the unaffordable housing segment, better housing quality and enhanced amenities in neighborhoods boosted housing prices, as did more recently developed and bigger housing units. Further advanced community facilities and environmental aspects, such as swimming pools, mixtures of residential and commercial development, lower-density neighborhoods, and proximity to rivers and international schools, significantly influence housing values.

These results indicate that prices of unaffordable apartments are sensitive to attributes in all three categories, whereas prices in the affordable segment are sensitive only to the attributes of housing and location. Community attributes, like low-density neighborhoods, mixed-use arrangements, and swimming pools, are likely to heighten the quality of life in high-end apartments. Furthermore, as the transitional HCMC creates multiple social and environmental issues with urbanization, such as serious traffic congestion, air pollution, high crime rates, and widespread slums (Gough & Tran, 2009; Ho & Clappier, 2011; UN Habitat, 2014; Waibel et al., 2007; Zhu, 2012), the location of apartments critically impacts price in both segments. In particular, the affordable segment has significant associations with locational traits in the context of urbanization, such as commuting difficulty because of traffic jams, absence of public spaces, and self-built districts that are too dense, so that adjacency to main roads and proximity to downtown are critical for price. These factors are related to the mobility to apartments highlighted in Chapter 4 (Voluntary Residential Mobility and Housing Choice in HCMC). Between the studies, the proximity of public facilities and commuting-related factors were the reasons for residential mobility to apartments (Figure 59).

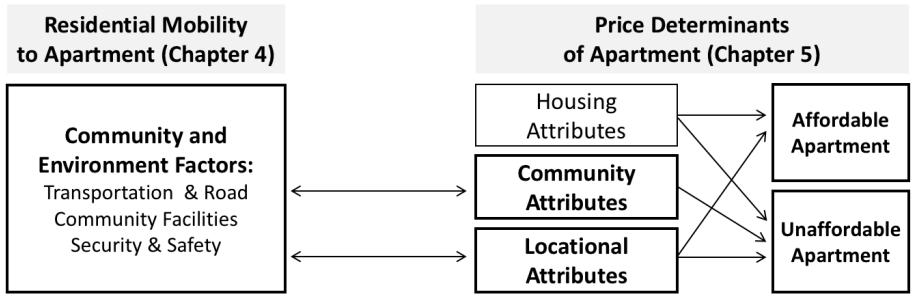

Figure 59. Residential Mobility and Price Determinants

The results of this study imply the valuable references for future investors and developers to set up successful housing development strategies and directions in Vietnam, enabling them to understand the different approaches and determinants for multiple classes of residents, and thereby making the national housing supply more economically and socially sustainable. Having largely focused until now on the provision of apartments for the upper-middle classes as a popular and cost-efficient response to housing demand, the government should now strengthen the public–private partnerships to achieve the same result for the lower-middle classes through promoting affordable apartment development. The government and local authorities, who have led regulatory reforms to incentivize further private developer participation and played active roles to encourage an affordable housing supply, should pay close attention to and take account of this study's findings.

The regulatory reforms with the revised housing policies and financial aid programs have had a variety of advantageous effects on the housing market in HCMC. They have helped to reorient private housing developers toward the affordable housing market where there are real home ownership needs (World Bank, 2015). They have also reduced vulnerability to investment due to increased household purchasing power and enhanced the variability of the housing market. In particular, since the revised Housing Law of 2015 structured the government's interventions in social housing development, the public and private sectors have been encouraged to work in partnership and this has led to a specific plan for social housing including land selection, housing design, construction, and housing provision. As this study shows key price determinants of locational attributes for affordable housing with proximity to main roads and shopping malls, these partnerships should select available land for social housing construction, securing road connectivity and accessibility to community facilities. As customers prefer affordable housing built by foreign developers because of the more professional quality of design and construction, the partnership should strictly monitor quality management during the course of the development. Therefore, both the private and

public sectors need to understand the housing market dynamics associated with customers' preferential interests and urbanization issues in HCMC. This study is, therefore, important in understanding how to pursue housing development in Vietnam on an economically and socially sustainable basis.

Chapter 6

Involuntary Residential Mobility and Resettlement in HCMC

6.1. Introduction

Urbanization and massive population shifts into HCMC resulted in a severe housing shortage and a surge in reckless informal slums around the peripheral areas. Although FDI flowed into residential real estate development, most developers focused on high-end housing developments that were not affordable for lower middle-income residents (Seo et al., 2018). Thus, a serious imbalance in the housing market between the income groups became evident. A number of illegal informal housing arrangements emerged, with slum communities developing in agricultural fields and river banks along urban canals (Du, Tran, Ha, Nhan, & Ry, 2002; Hien, Thanh, Van, Du, & Tran, 2002; Nguyen, 2009; Waibel et al., 2007; Yip & Tran, 2008). Although the economic growth strongly influenced a reduction in the poverty rate by 3%, permanent housing only accounts for about 25% in HCMC and the remaining 75% includes semi-permanent and temporary housing (GSOV, 2012).

The sprawling slums became a critical social issue presenting a public health challenge in HCMC. Sewage and toilet waste from slum districts along rivers poured into the canals without filtration, causing serious water pollution and filthy conditions. Furthermore, the slum areas were recurrently flooded during the rainy season; the informal houses built with temporary materials were heavily damaged, some even collapsing, and the dwellers experienced the loss of life and property (UN Habitat, 2008). HCMC recently announced that at least 17,000 households reside in slums, and the city has decided to execute urban renewal procedures for all of the slums within the next five years. In the first phase, the city plans to relocate 11,600

households and improve the water environment along the most seriously polluted canals. However, the execution has been delayed due to difficulties in securing funds since the cost is estimated to be $569 million (Thanh Nien News, 2015c).

Vietnam has forcibly proceeded with most slum redevelopment without consideration for residents' living conditions, relocation willingness, and preferences. The top-down implementation of the government's policies causes frequent project delays and even casualties while clearing sites due to severe conflicts with the settlers (VBN, 2010). Evicted residents have either created a new slum or relocated into others, and these migration patterns have redundantly cycled with the degrading urban environment (Waibel et al., 2007).

In light of the precedent studies[19] discussed, dwellers' relocation and compensation are critical aspects to ensure feasibility, practicality, and sustainability of the project. Securing new settlements for relocation heightens resident satisfaction with resettlement and prevents additional slum formation caused by the forced eviction of residents. The case of cash compensation is evaluated as a high risk that lowers the efficiency of project finances and causes serious delays in the project schedule. Although voluntarily selected, the cash option does not complement the slum upgrading goals of enhancing the urban and residential environment and amenities. In this regard, conditions in our study are significantly similar to THLG's in terms of adjacency to rivers, proximity to downtown, slum renewal plan by city, and relocation expected. Therefore, it has crucial implications in understanding the differences in slum environments and in the investigation of how the specific factors of the slum residence influence decisions regarding relocation and compensation.

Therefore, this study will aid in the creation of viable strategies for relocation and negotiation and ultimately assist in the execution of successful slum redevelopment projects in Vietnam. The study empirically examines the slum environment, including demographics, building conditions, infrastructure and accessibility, and the legal property ownership status of the housing structures and land; in particular, slums located near rivers in HCMC are discussed, as the houses are more shanty and thus become the primary target of urban renewal projects by HCMC authorities. Furthermore, I analyze the collected data to understand the dwellers' relocation and compensation preferences in the slum district. Finally, this study explores significant implications for minimizing social conflicts and establishing sustainable strategies for slum redevelopment.

The following questions were raised during the activities and have driven this research: 1) When did many slum areas form alongside the rivers of HCMC? 2) What kind of compensation and relocation housing type do slum-dwellers prefer? 3)

[19] See the sub-chapter 2.1.4.3. Residential Mobility in Vietnam.

Are there different relocation preferences for the geographical location of slum housing, such as riverbank or non-riverbank, and how? 4)What are the implications for sustainable slum redevelopment in Vietnam?

6.2. Research Methods

6.2.1. Site Selection

The survey site in District 8 was chosen from representative waterside slums in HCMC, which is enclosed by urban water canals and the Doi River (Figure 60). The population of this area is 431,547 and living conditions are poor in terms of housing and sanitation as well as natural disaster vulnerability compared to other districts in HCMC (UN Habitat, 2008; Vietnam News, 2016).

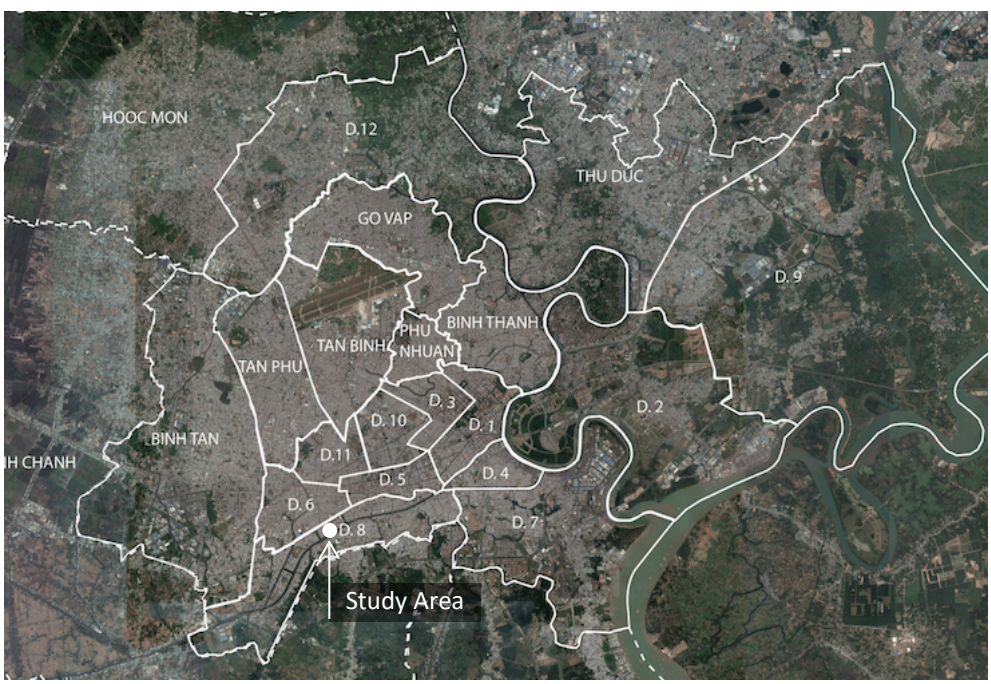

Figure 60. Location of the Study Area in HCMC
Source: Google Maps

The site has become widely accepted as one of the typical waterfront slums in HCMC since most of the houses in this area are temporary and its neighborhood infrastructure such as access roads, alleys, and sanitation facilities are fragile. It was observed that the houses alongside the river have outstandingly poor conditions in comparison to the inner area of the block in our site visits. In view of the current

situation in adjacent waterfront slums where the redevelopment project had been initiated, it is expected that the target site of this study, especially the waterfront area, will be redeveloped in the near future (Figure 61).

Figure 61. Study Area(top) and Dividing IBA and WFA(bottom)

6.2.2. Field Research, Surveys, and Interviews

A series of field visits to the target area were conducted for preliminary survey and site observation and to understand the housing conditions and the neighborhood during the first half of 2016. Based on the preliminary research, a questionnaire was

designed and on-site surveys through door-to-door interviews were performed from June 22 to July 8, 2016. Local assistants helped to accurately understand the interview and socio-cultural factors of the housing and neighborhood. The questionnaire contained the categories of demographic situation, housing condition, infrastructure, and relocation preference of each household (Table 29). As our research questions sought to highlight why waterfront shanties had inferior conditions, we divided the research site into two parts based on adjacency to the Doi River: the waterfront area (WFA) and the inner block area (IBA). As the primary road (Hoi Thanh) clearly separates the two areas (Figure 61), we first attempted to visit the WFA slum houses (100 units); however, only 29 were available due to the absence of residents or rejection of survey interview. Second, we attempted to use the same sampling strategy and conduct 29 interviews along the primary road on the IBA side. Last, another 29 houses were selected along the secondary inner roads of IBA to understand the housing conditions of the IBA community (Figure 62). In total, 29 samples were collected from the WFA and 58 samples were collected from the IBA. The final data were collected by visiting each house and interviewing the households.

Figure 62. Primary Road(top) and Inner Block Road (bottom) in Study Area

Table 29. Questionnaire Contents

Category	Demographic	Housing	Infrastructure & Public Facilities	Relocation Preference
Detail	Age Family members Marital condition Number of children Education level Occupation Income	Location Housing type Building material Residence period Migration reason Area Room Number Tenure LURC BOLURC	Toilet Water supply Drinking water Solid waste disposal Sewerage Flood frequency Burglary frequency Waterborne disease Transportation	Housing satisfaction Community satisfaction Satisfaction reason Relocation option Compensation option Housing preference

Notes: LURC stands for Land Use Right Certificate and BOLURC stands for Building Ownership and Land Use Right Certificate. They indicate legal property ownership in Vietnam.

Furthermore, the in-depth interviews were carried out to clarify what sort of housing type they hope to relocate for the resettlements and what the backgrounds of the dwellers are for the housing choice. The 10 interviewees from each IBA and WFA[20] explained further detail reasons for their choices.

6.3. Results and Findings

The following sections detail the results of the interviews and subsequent statistical analyses. They are divided by major findings.

6.3.1. Inferior Housing Conditions of Waterfront Areas

The descriptive statistics for housing attributes and location were used as continuous variables in the data analysis (Table 30). The results of the survey indicate that out of all households surveyed in both locations, the average floor area and number of rooms is 56.43m2 and 1.31 per house, respectively. Furthermore, the average number of people per household was 6.1 and there were 1.51 children per household. From this descriptive data, one significant finding stands out: the houses in the IBA were larger (+28.01m2) and had more rooms (+0.88) than those in the WFA.

Table 30. Descriptive Statistics on Selected Housing Traits

Variables (continuous)	Housing Location					
	Total (n=87)		IBA (n=58)		WFA (n=29)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Number of Households	6.10	3.21	6.52	3.37	5.28	2.72
Number of Children	1.51	1.70	1.55	1.79	1.41	1.55
Number of Rooms	1.31	1.50	1.60	1.63	0.72	0.96
Floor Area (m²)	56.43	42.61	66.23	48.77	38.22	17.03
Number of Flood Damage	1.41	2.90	1.10	2.59	2.04	3.44

Notes: IBA stands for Inner Block Area and WFA stands for Waterfront Area.

In examining the categorical variables, a chi-squared test of homogeneity was performed to establish the differences in housing conditions according to locational traits (Table 31). The majority (79.3%) of the total respondents replied that they were using some type of toilet. However, when broken down by location, the results reveal that 61.1% of households in the WFA were not using any type of toilet and were directly dumping human waste into the river. This response is directly connected

[20] See the appendix for detail information of 20 interviewees.

with the household's sewerage condition, in which only half (49.4%) of the total households responded that their houses were equipped with public sewerage. However, most of the households (96.6%) in the WFA were dumping domestic sewage into the river. The results were similar in the condition of the public water supply: even though most of the households (87.9%) were using tap water in the IBA, a large percentage (72.4%) of inhabitants in the WFA was borrowing water from their neighbors who had a public water supply. Additionally, a similar pattern is observed in the housing security category. One-third (33.3%) of interviewees had experienced burglary damage in their current house, and damage from floods occurred 1.51 times per household on average. It appears as though the WFA group is more fragile in terms of housing security because more than a half (51.7%) of respondents reported crime damage with at least two occurrences of flood damage on average.

Table 31. Homogeneity for Housing Attributes and Housing Locations

Variables (categorical)		Housing Location			χ^2 /p-Value
		IBA	WFA	Total	
Toilet Type***	Into the river	0(0.0%)	18(62.1%)	18(20.7%)	47.305† /0.000 ***
	Squat toilet	45(77.6%)	11(37.9%)	56(64.4%)	
	Flush toilet	6(10.3%)	0(0.0%)	6(6.9%)	
	Etc.	7(12.1%)	0(0.0%)	7(8.0%)	
	Total	58(100.0%)	29(100.0%)	87(100.0%)	
Water Supply***	Well	1(1.7%)	0(0.0%)	1(1.1%)	34.136† /0.000 ***
	Neighbor	6(10.3%)	21(72.4%)	27(31.0%)	
	Tap water	51(87.9%)	8(27.6%)	59(67.8%)	
	Total	58(100.0%)	29(100.0%)	87(100.0%)	
Sewerage***	River	16(27.6%)	28(96.6%)	44(50.6%)	37.786 /0.000 ***
	Public sewerage	42(72.4%)	1(3.4%)	43(49.4%)	
	Total	58(100.0%)	29(100.0%)	87(100.0%)	
Experience of Burglary damage in House***	No	44(75.9%)	14(48.3%)	58(66.7%)	6.621 /0.010 ***
	Yes	14(24.1%)	15(51.7%)	29(33.3%)	
	Total	58(100.0%)	29(100.0%)	87(100.0%)	
Household Income	Below 5 M VND	9(30.0%)	7(31.8%)	16(30.8%)	2.268 /0.322
	5 to 10 M VND	15(50.0%)	7(31.8%)	22(42.3%)	
	Above 10 M VND	6(20.0%)	8(36.4%)	14(26.9%)	
	Total	30(100.0%)	22(100.0%)	52(100.0%)	
Housing Satisfaction**	Unsatisfied	3(5.2%)	3(10.3%)	6(6.9%)	6.550† /0.029 **
	Mediocre	32(55.2%)	22(75.9%	54(62.1%)	
	Satisfied	23(39.7%)	4(13.8%)	27(31.0%)	
	Total	58(100.0%)	29(100.0%)	87(100.0%)	

Notes: Chi-square Test was performed. The cells of each factor with a frequency count below five are fewer than 20%. † Stands for Fisher's Exact Test was performed since more than 20% of cells have expected count more than 5. *** denotes 1% significance level; ** denotes 5% significance level. IBA stands for Inner Block Area and WFA stands for Waterfront Area. M VND stands for Million Vietnamese Dong.

The survey results clearly indicate that there are systematic differences in housing conditions between the WFA and IBA groups, and it is concluded that households along the Doi River (WFA) were in worse condition compared to the houses located in the IBA. In line with this difference, we have focused on factors that make differences in housing condition between these two groups. The difference in the levels of satisfaction in each location (13.8% in WFA and 39.7% in IBA) as revealed by the interviewees is quite drastic, and lower levels of satisfaction in the WFA may be related to their inferior housing and environmental conditions. It must be noted that despite the inferiority of the WFA conditions, there is no significant difference in income level between the two areas; the majority of the households (73.1%) earned less than 10 million Vietnamese Dong per month (USD 440).

6.3.2. Settlement Formation in the Waterfront Areas after the Doi Moi

The length of residency within each housing location is also examined (Table 32). The majority (56.9%) of the total respondents had lived in their current house for more than 30 years, and many even for more than 50 years (22.2%). However, about two-thirds (68.0%) of households in the WFA had lived in their current neighborhood for less than 30 years. The relevancy between housing location and residence period is clearly observed in a test of independence. Most of households in the WFA had lived there for less than 30 years; thus, they had moved into this waterfront neighborhood at some time since 1986, $X2=9.719$ ($N=72$), $p<0.01$. It is likely that this can be explained in that the migrants who settled within our target site after the Doi Moi (1986) mostly chose the WFA for their new home, since it was not occupied. This is a critical factor in determining why most of the households in the WFA did not have legitimate ownership over their land and house as opposed to the IBA group. This fact could possibly be explained from an institutional perspective.

Table 32. Homogeneity for Residence Period and Housing Location

Residence Period***	Locations			χ^2 /p-Value
	IBA	WFA	Total	
Below 30 years (After Doi Moi)	14(29.8%)	17(68.0%)	31(43.1%)	9.719 /0.002 ***
Above 30 years (Before Doi Moi)	33(70.2%)	8(32.0%)	41(56.9%)	
Total	47(100%)	25(100%)	72(100%)	

Notes: Chi-square Test was performed. The cells of each factor with a frequency count below five are fewer than 20%. IBA stands for Inner Block Area and WFA stands for Waterfront Area. *** denotes 1% significance level

6.3.3. Housing-based Relocation and Cash-based Relocation

Table 33 reveals the differences in future relocation preference between residents of the IBA and WFA. Previous studies on slum redevelopment projects in HCMC claim that the satisfaction levels of self-relocated residents who received cash compensation were the lowest when compared to those who chose other options such as in-site relocation and "site and services" (Tran & Vo, 2006). In other words, a self-relocation option with financial compensation was observed as the least sustainable option in similar housing contexts. To determine which factors might influence the respondents to choose the self-relocation option in future redevelopments, we conducted a chi-squared independence test between housing locations and redevelopment options. The results prove that the housing locations in selected sites are closely associated with redevelopment options, $X2=6.649(N=84)$, $p<0.05$. The households in the IBA are more likely to choose a cash compensation option in redevelopment than the inhabitants in the WBA, and the waterfront group preferred "site and services" or in-situ relocation approaches.

Table 33. Homogeneity for Relocation Options and Housing Locations

Preferable Relocation Option**	Housing Location			χ^2 /p-Value
	IBA	WFA	Total	
In-situ Relocation	12(21.1%)	10(37.0%)	22(26.2%)	6.649 / 0.036**
Site and Service	7(12.3%)	7(25.9%)	14(16.7%)	
Cash Compensation	38(66.7%)	10(37.0%)	48(57.1%)	
Total	57(100.0%)	27(100.0%)	84(100.0%)	

Notes: Chi-square Test was performed. The cells of each factor with a frequency count below five are fewer than 20%. IBA stands for Inner Block Area and WFA stands for Waterfront Area. ** denotes 5% significance level

6.3.4. Legal Property Ownership and Relocation Option Preferences

The results indicated in Table 33 do not necessarily guarantee that the housing location was a definite factor in redevelopment preference because we cannot clarify the causality based on the given relevancy with housing trait variables. For a detailed analysis, we focused on the distinctive housing traits of each location group with legal property titles, such as a land use right certificate (LURC), building ownership and land use right certificate (BOLURC), and housing tenure statuses. In our analysis, we divided the housing ownership traits into two different variables. The LURC and BOLURC variables identified the households that actually own their house with officially registered certificates. It was noted that the housing tenure does not always align with legal property ownership in that some housing owners do not have any LURC or BOLURC; this means that they have settled in illegal housing. Thus, we clarified the housing tenure with a group of households who own their houses regardless of official housing ownership registration.

These variables were chosen not only because they represent characteristics related to property rights, but also because they were identified as contrasting traits in each location group in a statistical significance test. In addition, we formulated a hypothesis that each household's property ownership status is likely to affect their choice for future redevelopment. The results of the chi-squared independent test demonstrate the interrelation between housing locations and property ownership (Table 34).

Table 34. Homogeneity for Property Ownership and Housing Locations

Property Right Ownership		Housing Location		χ^2 /p-Value
		IBA	WFA	
LURC***	Unauthorized	4(6.9%)	22(75.9%)	43.884 /0.000***
	Authorized	54(93.1%)	7(24.1%)	
	Total	58(100%)	29(100%)	
BOLURC ***	Unauthorized	10(17.2%)	29(100%)	58.538 /0.000***
	Authorized	48(82.8%)	0(0%)	
	Total	58(100%)	29(100%)	
Tenure***	Tenant	1(1.7%)	6(20.7%)	9.399† /0.005***
	Owner	57(98.3%)	23(79.3%)	
	Total	58(100%)	29(100%)	

Notes: Chi-square Test was performed. The cells of each factor with a frequency count below five are fewer than 20%. † Stands for Fisher's Exact Test was performed since more than 20% of cells have expected count more than 5. *** denotes 1% significance level; ** denotes 5% significance level. IBA stands for Inner Block Area and WFA stands for Waterfront Area. LURC stands for Land Use Right Certificate and BOLURC stands for Building Ownership and Land Use Right Certificate.

Households living in the IBA were likely to secure proper land use rights ($X2=43.884$ ($N=87$), $p<0.001$), have a housing ownership registration ($X2=58.538$ ($N=87$), $p<0.001$), and most were homeowners whether it was officially registered or not ($X2=9.399$ ($N=87$), $p<0.01$). On the other hand, the WFA group did not retain a certain level of property ownership. While a large percentage (92.0%) of households in the total sample owned their houses, most of the those that were tenants (85.7%) lived in the WFA.

To further clarify our hypothesis on the choice of redevelopment methods, we conducted another test of independence. In this case, we regarded property ownership variables, such as LURC, BOLURC, and housing tenure, which are dependent on locations, as independent variables and carried out a test for verifying their impact on redevelopment choices. There is a significant interrelation between the aforementioned housing property ownership traits and redevelopment preferences, except for housing tenure (Table 35 (a), (c), and (e)). The residents obtaining LURC and BOLURC were likely to choose cash compensation in redevelopment; this result was derived from their expectation of a high reward based on their officially secured properties. In other words, if households had strong ownership of their properties, they were more likely to choose instant financial compensation in hopes of obtaining significant financial profit through their secured property rather than "site and services" or slum upgrading, which would provide them with a new residential environment through resettlement.

In addition, we questioned whether housing location would still be associated with redevelopment choice preference regardless of property ownership. If the given level of property ownership is equal among households, and housing location remains a factor in their redevelopment preference, then our hypothesis on property ownership may be discredited; in this case, it can be rejected because housing location is a clear factor in choosing one's preferred redevelopment method. To verify its reliability, we introduced verified property ownership traits as control variables on the previously examined test of independence between housing locations and redevelopment preferences. The result clearly indicated that the original relationships disappeared in the LURC and BOLURC variables (Table 35 (b) and (d)). Therefore, it does not necessarily guarantee that the location is a decisive factor for redevelopment preference, because most of the households (92.0%) in our sample group owned their house; thus, the original relationship is repeated in the sample group. This suggests that the original relationship between location and redevelopment preference is spurious, and only property ownership factors such as LURC and BOLURC, affect a household's preference on neighborhood redevelopment regardless of the housing location.

Table 35. Property Ownership and Relevancy between Locations and Relocation

Property Right		Location		Relocation Option: Housing-based (N=38)	Relocation Option: Cash-based (N=49)	χ^2 /p-Value
LURC	(a)*	Unauthorized		14(38.9%)	10(20.8%)	3.286
		Authorized		22(61.1%)	38(79.2%)	/0.070*
	(b)	Unauthorized	IBA	1(7.1%)	3(30.0%)	2.194†
			WFA	13(92.9%)	7(70.0%)	/0.272
		Authorized	IBA	18(81.8%)	35(92.1%)	1.431†
			WFA	4(18.2%)	3(7.9%)	/0.405
BOLURC	(c)**	Unregistered		21(58.3%)	16(33.3%)	5.217
		Registered		15(41.7%)	32(66.7%)	/0.022**
	(d)	Unregistered	IBA	4(19.0%)	6(37.5%)	1.568†
			WFA	17(81.0%)	10(62.5%)	/0.274
		Registered	IBA	15(100%)	32(100%)	-
			WFA	-	-	
Housing Tenure	(e)	Tenant		5(13.9%)	2(4.2%)	2.545†
		Owner		31(86.1%)	46(95.8%)	/0.133

Notes: Chi-square Test was performed. The cells of each factor with a frequency count below five are fewer than 20%. † Stands for Fisher's Exact Test was performed since more than 20% of cells have expected count more than 5. IBA stands for Inner Block Area and WFA stands for Waterfront Area. ** denotes 5% significance level; * denotes 10% significance level. - stands for Partial Relation in which no statics are able to be computed. N/A stands for Not Available in which all factors have expected count less than five.

6.3.5. Predominant Preference for Row houses

The results of the survey and in-depth interviews indicated that for their resettlement many people hoped to relocate to a row house rather than an apartment. Whether they chose cash-based or housing-based compensation options, 97% selected single-family row houses, which are already predominant in HCMC (Table 36).

Table 36. Preferred Housing Type for Relocation

Preferred Housing type for Relocation	Housing Location		Total
	IBA	WFA	
Row House	56(96.6%)	28(96.6%)	84(96.6%)
Apartment	2(3.4%)	1(3.4%)	3(3.4%)
Etc.	-	-	-
Total	58(100.0%)	29(100.0%)	87(100.0%)

Figure 63 illustrates the main reasons for the row house housing preference, which was available as a resettlement option for involuntary moving.

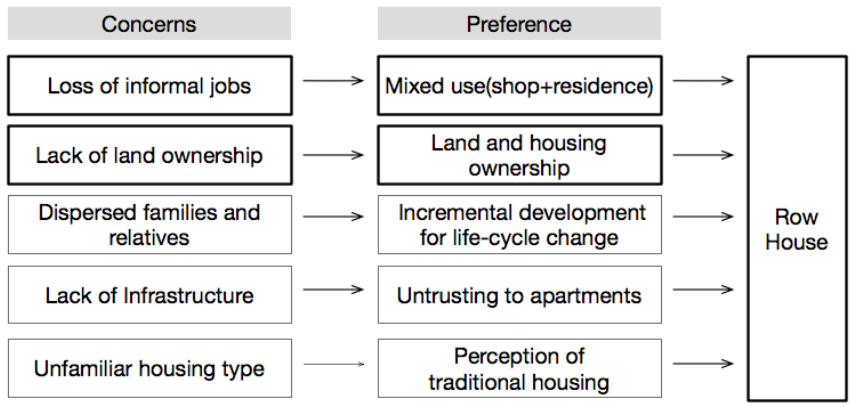

Figure 63. Housing Preference for Relocation

They strongly desired an archetypal modern row house, which is extremely efficient as a mixture of residential and commercial services because the ground floor is a flexible space for micro-businesses, such as shops, small restaurants, cafés, or retail units. After the resettlement, the main concern of the households was the loss of informal jobs such as peddling goods or home-based work, and apartments do not provide job opportunities. Mr. OOO (45) highlights this factor in an in-depth interview.

> *"My current house has been a living and working place for the last decade. Half of the space serves as a repair shop to fix motorbikes from this neighborhood. Most people who live in our community know my special techniques for repairing motorbikes, and this is the only way to gain an income to support my family with two kids. If there was an urban renewal project here, a row house is the ideal type of resettlement, as I can keep my job. Many of the slum residents in HCMC know about the previous case of Tan Hoa Lo Gom (THLG) relocation that supported resettlement to apartment blocks, but many of the original slum-dwellers lost their informal jobs and failed to make the repayments on their housing loans. I do not want to go down the same path, and I want to continue my technician job in my shop. So, I would prefer just to have land to build my own row house rather than an apartment unit."*

In addition, securing property ownership was critical for the relocation of slum-dwellers to a row house. A ground-based house includes a BOLURC that certifies ownership of the land and house. Mr. OOO (58) underlines this factor in an in-depth interview.

"I have lived in this temporary house by the river for more than 20 years without moving. Even though I have enough money to move, I have stayed here, as I expect there will be an urban renewal project with compensation including the right to get a BOLURC, even for illegal housing. As I do not have any legal property ownership for my residence, government officials visit my current home seasonally, issue penalty fees, and threaten to demolish my house. It has been tiring and stressful to stay, but I will be patient because this area is soon going to be considered for a renewal project. I would enjoy a stable life with a legal residence. A row house is the best option for property ownership because the residential building may go someday, but the land is permanent."

Other factors for choosing row houses were underlined by family stories. Half of the interviewees mentioned that they needed a house capable of incremental development as their income increased. They desired to live with their entire family, or relatives moved in together after being separated decades ago during migration from other provinces. The row house is an optimal type of house for incrementally adding more rooms or floors as needed.

6.4. Discussions

The survey results strongly suggest that ownership of households in the slum must be considered an important factor in slum redevelopment planning. Even if slums were easily regarded as a homogeneous housing community with poor living conditions in the city, it is observed that the housing condition and the level of property ownership for each household are quite different. From this point of view, if a household has a high expectation of amends in the redevelopment process based on their officially secured property ownership, they are likely to choose cash compensation for higher individual profit. According to this result, and considering previous studies on slum redevelopment in HCMC, the higher proportion of households with secured property ownership in the slum means increased costs a conflict of interest in the decision-making process by residents.

This study clearly shows that the level of property ownership is related to housing location, which was presumably affected by the time when the resident first arrived in the slum. Residents that immigrated into the slum after 1986 (Doi Moi) had no choice but to reside along the riverbank in spite of the poor housing conditions, as it was the only area that was unoccupied. It is assumed that housing location had an effect on securing legitimate land use rights and housing ownership registration for the household because the land law revision of 1987 allowed the privatization of land use rights and homeownership. The Vietnamese government

enforced the housing policy called “State and the people work together (Nha nuoc va nhan dan cung lam),” which was associated with the land law revision of 1987 and allowed residents to privately own the land that they currently occupied for residential use (Labbé & Boudreau, 2011). Previously, the privatization of property was not permitted since the state adhered to a strong socialist regime. This policy, however, was created to help cope with the housing shortage fueled by rapid urbanization in HCMC because the state scrapped its obligatory housing provision as a socialist country after the Doi Moi (Shin & Choi, 2017). It is assumed that households in the IBA acquired permanent LURCs or BOLURCs from the state for this reason.

On the contrary, the WFA did not meet the minimum standards for home sites due to various residential conditions that were inferior to that of the IBA. The poor location of the WFA is evident in the current temporary housing structures present. Most of the houses in the WFA, for instance, extend over the water surface to secure more floor space since there is very limited land for housing construction. It was observed that most of the households in the IBA held legitimate housing ownership registration while those in the WFA did not. It is likely that the state had preferentially allowed property ownership registration to those who had acquired LURCs or BOLURCs by the aforementioned housing policy. The policy also admitted the privatization of housing by residents regardless of their status of residency or legal permission on the land. This type of government intervention in the housing market catalyzed the self-built housing construction boom since the Doi Moi (Quinn, 2014; UN Habitat, 2014). It is for this reason that most of the households (92.0%) own their home whether they hold legitimate LURCs / BOLURCs or not.

6.5. Conclusions

Vietnam is a transitional country in Asia that has experienced remarkable economic growth since its market-opening in the late 1980s. As a result of its economic achievements during the last couple of decades, the rapid influx of population into the metropolitan city has provoked a housing shortage and degradation issues. As a result, slums became widespread, particularly along the rivers and canals of HCMC. For this reason, slums have been blamed for the water pollution, poor health conditions, and security issues, all of which threaten the sustainable urban environment. Even though the local government tried to promote a redevelopment plan on the basis of slum demolition, there have been challenges derived from a lack of analysis of the conflicts of interests among the slum

inhabitants. In this context, we have discussed the factors contributing to resident preferences in redevelopment options that will encourage sustainable and effective planning.

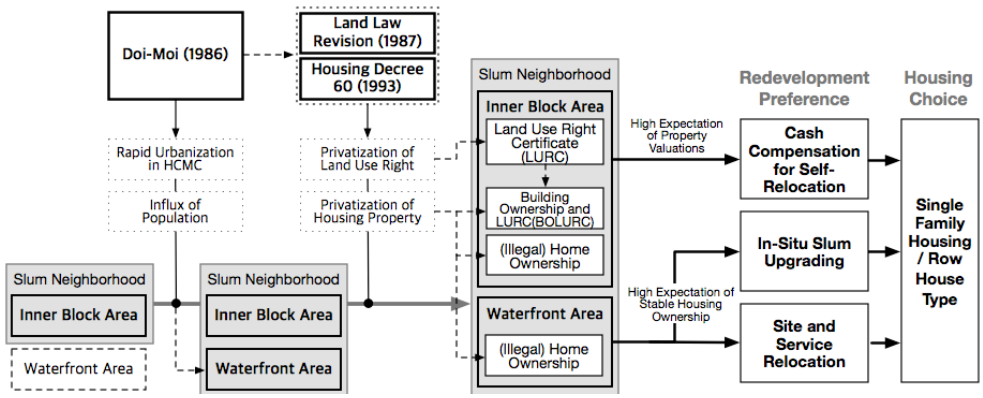

Figure 64. Slum Formation and Resettlement Choice for Slum Redevelopment

This study indicates that the level of property ownership in the WFA household group has been differentiated from the IBA group, even though there is no systematic difference in the household monthly income of both groups. Our examination of the detailed factors in slum redevelopment preference among residents shows that the inhabitants who settled before the Doi Moi (1986) were likely to have secured property ownership via LURCs and BOLURCs, and they often chose the cash compensation-based redevelopment approach. On the other hand, relatively new immigrants with deteriorated housing conditions in the slum who are seeking better housing and therefore expecting in-situ relocation (slum upgrading program) or "site and services" have a hard time becoming beneficiaries of redevelopment. Since they were moved into this slum area on account of rapid urbanization triggered by the Doi Moi, it is assumed that the era of economic transition in Vietnam also strongly influences the level of property ownership of households in the slum (Figure 64). In conclusion, it is important that more preferable and sustainable redevelopment options other than cash compensation be considered in slum redevelopment for long-term residents who have retained a high level of property ownership. This will be one of the significant pre-requisites for the sustainable redevelopment of the current waterfront slums in HCMC.

Chapter 7
Conclusions of Study

7.1. Study Summary

Vietnam is a transitional country in Asia that has demonstrated remarkable economic growth since the Doi Moi policy was enacted in 1986. From the economic achievements of the last few decades, a rapid influx into urban areas and the urbanization of metropolitan cities have provoked a housing shortage, widespread slum formation, and the predominance of self-built row house development. To increase housing supply and heighten housing affordability, the Vietnamese government revised the land laws and housing policies to encourage active involvement of private housing developers and investors with financial aid programs. In this context, multi-family housing development has met the housing demand in HCMC, and dynamic residential mobility and housing choices were observed in both voluntary and involuntary moves. From the two main studies carried out, the key factors were demonstrated in residential mobility and housing choice (Figure 65).

First, voluntary residential mobility in the housing market was empirically investigated. The main reasons for movement to a row house were related to the housing structure attributes of flexibility and adaptability that enabled households to generate economic gains. The ground-based houses were able to adjust efficiently to life cycle changes and economic rationality. However, the major challenges of the housing were the degraded neighborhood environment that included poor commuting and road conditions, burglary risks, and the absence of community spaces and facilities. The drawbacks drove households to move to apartments using government-backed financial mortgages, for improved accessibility to main roads, security systems, and more community amenities.

Second, an extended feature of the study investigated the price determinants of the apartments using a hedonic price model in an affordability frame. With the affordable apartments, housing and locational attributes were observed as affecting the price, whereas the prices of the unaffordable apartments were affected more by advanced community facilities and environmental aspects of the quality of life, such as swimming pools, mixed-use developments, lower-density neighborhoods, and proximity to rivers and international schools. From the urbanization and the transition of HCMC, the location of apartments has had an impact on the price of both types of apartments. In particular, affordable apartments have significant associations with urbanization, including commuting difficulties and traffic jams, and an absence of public spaces. Dense self-built districts adjacent to main roads and with proximity to downtown HCMC were also critical to the price.

Third, involuntary residential mobility and housing choices were empirically investigated in a slum to analyze state-driven slum redevelopment. For mobility determination, the key factor was property ownership. The inhabitants who settled before the Doi Moi was introduced in 1986 were likely to have secured property ownership (LURCs and BOLURCs), and they often chose cash compensation-based resettlement, whereas relatively new immigrants who settled in deteriorated housing conditions without property ownership selected in-situ relocation or "site and services" for better housing. As they were moved into this slum area because of the rapid urbanization triggered by the Doi Moi, it can be assumed that the era of economic transition in Vietnam strongly influenced the level of property ownership of households living in the slum.

In conclusion, residential mobility and housing issues were associated with the varying contexts of a transitional, urbanized Vietnam that experienced remarkable economic growth by converting a centrally planned economy to a free market mechanism. In particular, the transition of property privatization significantly affected both voluntary and involuntary residential mobility. The predominant preference to move to a row house and secure land and property ownership demonstrated behaviors driven by economics and the phenomenon of market mechanisms within a socialist country. Even for slum redevelopments, the high levels of property ownership were considered the most significant strategy for sustainability of the project. In addition, households focused on the negative externalities of urbanization for residential mobility and housing choices, including dense neighborhood environments, lack of road infrastructure, traffic congestion, air pollution, and widespread slum formation threatening public safety and security (Gough & Tran, 2009; Ho & Clappier, 2011; UN Habitat, 2014; Waibel et al., 2007; Zhu, 2012). These factors were also observed directly or indirectly in the price determinants of the housing. In this regard, the significance of sustainable

development in the housing sector was underlined in both qualitative and quantitative terms through urbanization in transitional Vietnam.

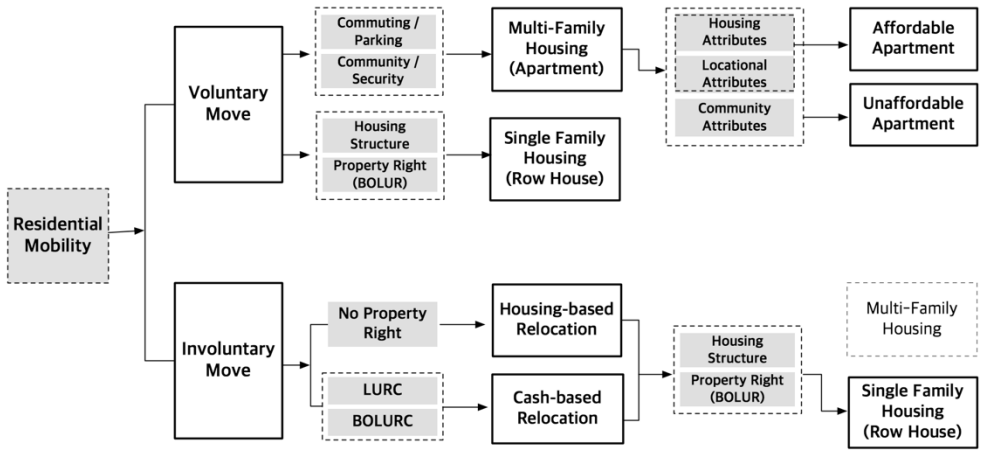

Figure 65. Summary Diagram of the Studies

7.2. Implications

Property ownership has been considered a driving force for development, and it still represents the domain of the wealthy and powerful. Land and housing ownership is an exemplary right of a capitalist society. These studies have implications for understanding urban transitional Vietnam, which was restructured from a state-driven economy to a market-oriented socio-economic society after the Doi Moi in 1986. Before the economic reform, housing was considered as a component of the land value, as markets for land and housing did not exist, and so property transactions were not allowed. However, the notion of housing is now mixed to include a home and economic value with the ideology of capital. The institutional changes of land and housing laws caused the emergence of the real estate market and played a significant role in highlighting capitalist perceptions of housing in Vietnam. With rapid urbanization and serious housing shortages in major cities, people attempted to obtain their own land and houses by securing legal ownership of the properties as a base for economic prosperity. Housing choices for voluntary and involuntary residential mobility were dependent on the mechanisms of settlement and investment, which generated economic profits from the house. As this study clearly demonstrates, the row house was a representative model that prioritized the economic rationality of housing choices in HCMC.

However, HCMC is confronted with diverse urban problems and incomplete institutions of private property rights that Vietnam has been recalcitrant to develop. Vietnam is struggling to develop institutions befitting a market economy in transition. With a lack of infrastructure and road networks, illegal expansion or construction, and temporary installation of row houses to obtain property rights or compensation benefits from public land, the city still struggles to develop an adequate number of row houses. Despite incomplete property rights, properties are transacted in the market with various forms of legal documents[21] and types of housing ownership[22] (Kim, 2004). Therefore, in addition to economic reform, Vietnam requires institutional property rights reform with policy prescriptions of legal amendments, title regularization programs, and dispute resolution. The clarity of property rights is a crucial prerequisite for the stability of market economies in a transition country such as Vietnam.

Unlike other socialist countries, like Czech Republic, Poland, and Hungary, where the legal system of property rights was based on neo-liberal models, Vietnam, like China, has implemented property right systems based on interventionist policies (Kim, 2004). Some scholars argue that institutional flexibility has played a role in the remarkable growth of transition countries such as Vietnam (Fforde & De Vylder, 1996; Gainsborough, 2002). However, although flexible institutional frameworks can generate efficient productivity during the early stages of the transition period, they cannot be a model for sustainable socio-economic growth. This flexibility can weaken the government's individual property rights management and monitoring system and can cause inequitable socio-spatial distribution with polarization of housing status. This has led to the development of uncontrollable self-built housing, and as negative externalities of the development process, these widespread clusters still challenge urban growth management. Therefore, the transition in Vietnam is not so much about flexibility but about development in progress.

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[21] Called 'giay to hop le' in Vietnamese
[22] Called 'chu quyen tu nhan' in Vietnamese

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