Bangkok Urban Dynamics and Housing Market

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Abstract

This paper provides the critical review of literature concerning urban structure theories and urban dynamics growth models in order to investigate Bangkok urban growth structure and land use patterns. The impact of urban dynamics on Bangkok housing market is examined. Furthermore, institutional variable such as the government housing policy and economic variables such as interest rate and GDP per capita are also taken into account in order to make the housing market analysis more comprehensive. This paper found that Bangkok is the multi-nuclei city, but not the edge city, because it has only one CBD and several sub-centers. CBD and sub-centers still keeps growing and it has no sign for a decline in CBD. Major transport mode is the own vehicles. The city grows along major transportation routes including railways and roadways. Similarly, housing projects are also developed on land parcels along major transportation routes. Bangkok urban dynamics is in an intermediate stage between urbanization and suburbanization. Neighborhood characteristics can well explain how households make a decision to choose a dwelling, while the filtering process seldom takes place in Bangkok housing market. The private sector plays a key role in housing development, whereas, the government housing policy apparently fails to help the poor and to organize the city planning. In an economic perspective, Bangkok housing market has been facing several negative factors. Construction cost and land price has been trending upward, whereas the real purchasing power has been declining. Moreover, there is still a certain oversupply of housing stocks. Political instability has also a negative impact on overall economic confidence. However, Bangkok housing market still expands because of high housing demand from middle-income population and Bangkok urban area extension.
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Abbreviation

BMA Bangkok Metropolitan Area
BMR Bangkok Metropolitan Region
BTS Bangkok Transit System
CBD Central Business District
Condos Condominiums
EMR Extended Metropolitan Region
GHB Government Housing Bank
LDCs Less Developed Countries
MDCs More Developed Countries
MPC Monetary Policy Committee
MLR Minimum Loan Rate
MRR Minimum Retail Rate
MRT Mass Rapid Transit
NHA National Housing Authority
SEA Southeast Asia
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1. Introduction

Bangkok is the capital city of Thailand. The number of Bangkok urban population is 34 times larger than that in the second largest city, Nakon Ratcharima, whereas, the total number of population in Bangkok and its vicinity is only about 4 times of that in Nakon Ratchasrima (Department of Privincial Administration, 2010). Compared to other cities in SEA region, Bangkok has the highest primacy level (Brunn & Williams & Zeigler, 2003). There has been an effort by the government to decentralize the urban growth and development to other parts of the country since 1970. Two cities, Chiang Mai in the North and Khon Kaen in the northeast, were expected to be new growth poles for regional industrial development. Moreover, this policy was expected to indirectly slow down the urban growth and alleviate urban problems in Bangkok (Glassman & Sneddon, 2003).

However, the result turned out unfavorably. Bangkok has continually grown and kept a high level of primacy. Industrial development has expanded to its vicinity and neighboring provinces, while residential and industrial development has spread through Bangkok urban fringe and suburban area. This phenomenon is called an urban sprawl (Hara, Y. et al., 2010), which has a substantial influence on Bangkok housing market. Bangkok housing market constitutes the proportion of 70% of the real estate market. Bangkok has experienced certain booms and busts in housing market since 1950 (after World War II). Housing market changed from government-led to private-led orientation. The peak boom period was during 1986-1996 and the market collapsed in 1997 (Pornchokchai, 2002).

Bangkok urban growth structure directly relate to the real estate sector. To understand land use patterns in a site’s location in relation to overall urban dynamics is a basis for real estate market analysis and forecasting (Fanning, 2005, p.99). In the real estate sector, productivity analysis is defined as a study on the ability and the characteristics of a property to serve a market segment. The characteristics of a property reflect a property’s value or a market price. Productivity analysis consists of three dimensions as follows:

- Site and building improvement
- Institutional attribute such as the housing policy
- Location attribute such as neighborhood characteristics and urban structure

In other words, a property’s value depends on three fundamental factors, which include physical, legal and location factors. A change in a property’s value causes a variation in a property price and create real estate life cycle (Fanning, 2005, p.32-33).

A change in economic variables has relatively a fast influence on housing market. For example, a reduction in interest rate is likely to stimulate both demand and supply in housing market in the short-run (Hossain & Latif, 2009). Whereas, urban dynamics is a changing process that take a long period of time to show a
significant impact on housing market. Therefore, urban dynamics plays an important role in a long-run analysis.

Urban growth structure can be explained by two groups of classic city structure theories: social ecological theories and bid-rent theory. Social ecology group of theories includes (Fanning, 2005)

- Concentric zone theory
- Sector theory
- Multi-nuclei theory
- Axial theory

However, they seem to be static analysis tools. Later, these classic theories have been fundamentally used to develop several models to explain the city growth in the more dynamic way. These urban dynamics growth models include

- City-life cycle model and Urban-life cycle model
- Comprehensive model
- New suburbanization model

In addition, other two models, filtering model and neighborhood characteristics externalities model, which help to describe how households make a decision on choosing their dwellings and where they live are applied to link urban dynamics to explain housing market.

Nevertheless, most modern cities become more complex in terms of urban growth structure and land use patterns compared to cities in the past. Therefore, one city can have mixed patterns of urban structure (Sharkawy & Chotipanich, 1998). Those theories mentioned before have fundamentally been used to develop other models that can better fit to a specific city or a region. For example, McGee (1991) proposed a general model of urban growth patterns for countries in SEA. According to the statistics from the United Nations, in 2000 Southeast Asia has almost the least percentage (37.2%) of the population living in urban areas, whereas Europe’s figure is 74.8%. In the SEA region, Bangkok’s figure is very low at 33.6% compared to Malaysia with 71.3% and Philippines with 48% (Montgomery, et al., 2008).

McGee’s model indicated that a rapid urban growth rate and a high level of primacy created a disordered mixture of urban and rural land use that resulted in certain environmental and social problems. For instance, a higher urban population growth compared to a city development causes a slum problem (Yap & Wandeler, 2010). Urban sprawl in the urban fringe area results in an invasion of agricultural area (Hara et al., 2010). This model for SEA classified Bangkok as the “high density EMR”, which reflects an unplanned and less-organized city growth. On the other hand, Kualar Lumpur is defined as the “low density EMR” and Singapore city has a special pattern called an “expanding city-state”. Both cities present a well-functioning urban planning (Brunn & Williams & Zeigler, 2003, p.405). However, McGee’s model failed to give a deep explanation in a national level
1.1 Research questions

Sharkawy (1998) claimed that Bangkok’s urban structure does not follow concentric zone theory developed by Park and Burgess in 1925. Its growth patterns have a combination of multiple nuclei theory and axial theory developed by Hurd in 1911. Bangkok Metropolitan Region (BMR) has grown along the major highways. In aspect of an increase in urban population, Jones (2002) stated that rural-urban labor migrants are the main factor in urban population change in SEA including Bangkok. In the past decade, Bangkok urban structure still keeps changing rapidly and the city keeps growing. These certainly affect a change in the housing market. Therefore, Bangkok’s urban growth structures need to be re-examined.

How Bangkok urban growth structure and land use patterns have changed and are changing?

Which theories and models can properly explain urban growth structure in Bangkok?

How location attribute resulted from urban dynamics affects Bangkok housing market?

How economic variables and institutional variables have an influence on Bangkok housing market?

1.2 Aim and objective

- To investigate Bangkok urban growth structures and land use patterns
- To analyze the effect of urban dynamics on Bangkok housing market
- To describe how economic and institutional variables affect urban dynamics and Bangkok housing market
- To analyze the current Bangkok housing market

1.3 Methodology and Structure

As mentioned before, productivity analysis constitutes physical, legal, and location factor. This paper concentrates on examining the effect of location attribute on housing market. Therefore, we undertake theories and models in a critical literature review to investigate Bangkok urban dynamics and its effect on housing market. Furthermore, government housing policy and its result, which is one of institutional attributes, is briefly analyzed. The impacts on involving parties in the housing market from housing policy are presented. After that, economic analysis approach, which directly relates to physical attribute, is applied to explain Bangkok housing market in order to make the whole analysis more comprehensive.

This paper content is divided into 5 chapters as follows:

- The first chapter reviews the critical existing literatures. The definition of necessary terminologies mentioned in this paper is properly defined to help readers to understand the same context. Urban growth structure theories and models used in the analysis are summarized.
- The second chapter analyzes Bangkok urban dynamics. The change in urban growth structures and land use patterns in Bangkok are examined
based on the literatures, which is mentioned in the first chapter. Moreover, this chapter examines the effects of urban dynamics on housing market. Neighborhood characteristics externalities model and filtering model are also applied to link Bangkok urban dynamics to the housing market.

• The third chapter analyzes how the government policy affects the housing market. Furthermore, the empirical study on the recent housing policy is investigated.

• The forth chapter examines the housing market based on the economic approach. Certain economic variables are used to explain the impact on the housing market. In addition, the analysis on housing market overview in 2009-2010 is conducted.

• The fifth chapter is the conclusion and the recommendation of the paper

1.4 Originality / Value
Bangkok is apparently known for an unplanned and uncontrolled city planning. This paper is probably useful for a policy maker in order to set an appropriate urban policy direction for a sustainable urban growth, or at least to reduce urban problems. For example, the local government should be well prepared for waste management on a potential urban sprawl area (Hara et al., 2010). For developers, location is one of the key competitiveness indicators in real estate development (Zhang, 2010). Therefore, to understand land use patterns and urban structure helps them find a potential parcel of land for their development projects. Individuals can also gain advantage because this paper presents a big picture of city’s growth direction related to housing market situation. When they want to buy a house, the knowledge in this paper can also guide a housing market forecasting. Moreover, it would hopefully inspire readers to come up with an idea and curiosity to pursue a further research in this field.

1.5 Delimitation
It is important to be noted that this paper’s aim is not to develop a new model or theory for Bangkok. This paper only fetches a concept from different existing studies that could fit to explain Bangkok urban dynamics and housing market. Certain factors have significant impacts on housing market in the short-run and some in the long run. Therefore, this paper provides an analysis in general and concentrates on associating factors in different dimensions to analyze overall Bangkok housing market. Although this paper does not go deep in details, it illustrates a big picture of Bangkok urban growth pattern and its housing market
2. Literature Review

This chapter provides a comprehensive literature. Firstly, the specific terminologies that are mentioned in this paper are clearly defined. After that, two groups of classic city structure theories including Social ecology theories and Rent theorists’ theories, which are used to explain urban growth structures, are elaborated. Later, three urban growth dynamics models developed by empirical studies in the United States during 1950-1980 are reviewed. The difference is the first two theories use a static analysis, while the models developed later used a dynamic approach. However, those previous theories provided a fundamental knowledge and have a great contribution to later researchers. Furthermore, neighborhood characteristics externalities and filtering model, which help to explain how households choose a dwelling, are also described.

2.1 Terminologies

2.1.1 City
A city is generally defined as “a place with relatively high population density including residential areas, industrial districts, commercial areas, roads, schools and city parks” The tradition way to calculate urban population density is total population in metropolitan area divided by the amount of urban land use (O’Sullivan, 2007, p.138). In the past, the cities were originated according to a single purpose such as needs of administration, needs of strategic defense, needs of trade and commerce. Later, the movement of population and an increase in demand for goods and services has driven cities to function more to serve multi purposes (Knox & McCarthy, 2005, p.23).

2.1.2 Industrial city
Most cities in Europe and North America originated during industrial revolution in 18th and 19th century. Thus, it is called an industrial city, which refers to the city that experiences the process of urban growth (urbanization) depending on manufacturing based economy. The city produces both light manufacturing products such as furniture, textiles, and food processing, and heavy manufacturing ones such as auto parts, cement, appliances. The dramatic change in manufacturing, agriculture, mining and transport started in the United Kingdom, then spreading throughout other European and North American countries. There appeared a transition from labor-based economy to capital based economy. The Nobel prizewinner, Robert E. Lucas (2002), stated, “For the first time in history, the living standards of the masses of ordinary people have begun to undergo sustained growth. Nothing remotely like this economic behavior has happened before”. For cities in more developed countries (MDCs), urban growth and industrial growth took place as a parallel process in the same time (Brunn & Williams & Zeigler, 2003, p.17).

2.1.3 Postindustrial city
Postindustrial city is the next step of urban transformation. The major change is the transition from manufacturing based economy to service based economy. Service sector includes finance, insurance, telecommunication, and Research & Development in health care, medicine. Light manufacturing factories such as textile and furniture relocates to suburban area and cities’ vicinity, whereas
heavy industries such as automobile parts, petrochemical, electronics circuit are located in other provinces in which are promoted as special industrial zones impacts (Brunn & Williams & Zeigler, 2003, p.18). For example, Eastern Seaboard area in Thailand in which comprises Rayong Province, Chacheongsao province, Samut Prakarn province and Chonburee province (Asian Business Review, 1995). Light industries that produce small consumer goods are likely to be allowed to locate near residential areas because they cause less environmental problem (Murakami, A. et al., 2005).

2.1.4 Primate city
“A primate city” term was firstly proposed by Mark Jefferson in 1939. A primate city refers to “the tendency for countries to have one city that is exceptionally large, economically dominant and culturally expressive of national dominant” The existence of primate city implies that the urban development and rural development in general is imbalance. The higher primacy level the city becomes, the more inequality the development process undergoes. For example, Paris is only seven times larger than Lyon, the second largest city. Whereas, Bangkok is 34 times larger than the second largest city. In 2000, the population in Bangkok and its vicinity was more than 10 million people. The city with more than 10 million populations is generally called a mega city (Brunn & Williams & Zeigler, 2003, p.18).

2.1.5 Urban area
An urban area changes over time in multi dimensions. Therefore the study of urban dynamics is to analyze and understand how cities have changed and are changing (Knox & McCarthy, 2005). According to the U.S. Bureau of the census in 2000, urban area is “a densely settles geography area with a minimum population of 2,500 people and a minimum density of 5,000 people per square mile”(O'Sullivan, 2007, p.3). However, to classify urban area by the minimum size of population is different from country to country. For instance, in Denmark and Sweden requires at least 200 people, in Canada and New Zealand at least 1,000 people, in France at least 2,000 people, in Belgium at least 5,000 people and in Greece at least 10,000 people. In general, urban area is the area that significantly has a higher population density than areas surrounding. Urban area can be at any size, but it need to contain high population concentration in a relatively small area. Moreover, urban area has to be a place in which agricultural activities does no longer dominate the economy. There is a transformation process from rural to urban area. Urban area can be in cities, towns or conurbations (urban sprawl), but not in rural area like villages and hamlets (Brunn & Williams & Zeigler, 2003, p.7).

2.1.6 Urbanization
“Urbanism is a broad concept that generally referred to all aspects- political, economic, social- of the urban way of life. It is not a process of urban growth, but rather the end of result of urbanization. It suggests that the urban way of life is dramatically different in all respects from the rural way of life. As people leave the country and move to the city, their lifestyles and livelihood change” (Brunn & Williams & Zeigler, 2003, p.5). The more common used term is 'urbanization'.
Urbanization is the process of creating and developing urban areas. Urbanization is broadly divided into two necessary stages. The first one is the movement of population from rural to urban area. The other is life styles transformation of urban population. The driving factors that lead to the first stage are population density, economic functions, and the change from agricultural sector to trade, manufacturing and service sector. For the second stage, it needs the behavior and social changes of urban population. For example, the family size is smaller for urban people because the expense to raise up children in an urban area is relatively higher than in a rural area (Brunn & Williams & Zeigler, 2003, p.5).

According to the statistics presented by the United Nation, 2009, up to 1900 the numbers of people who live in urban areas were about 13% of world population. By 2000, there has been a substantial increase in urban population to more than 47% of the world population. In 2000, the population in MDCs is totally 1.2 billion people and 75% of them live in urban areas. Meanwhile, the population in LDCs is totally 4.9 billion people and only 40% of them reside in urban areas. By 2010, 51.3% of population resides in urban areas. According to the forecast, people who will be living in cities and towns are expected to reach six billions which is about 70% of total population in 2020 (Montgomery et al., 2008)

2.1.7 Metropolitan area & Central business district (CBD)

There is apparently a confusing idea between urban area and metropolitan area (Metropolis). They are different in certain respects. According to the definition by the U.S. Bureau of the census, “Metropolis is a core area with a substantial population nucleus, together with adjacent communities that are integrated, in an economic sense, with the core area”(O’Sullivan, 2007, p.3). Metropolis requires following features: having population at least 50,000 residents at the core area, including not only urban area but also rural territory that is socio-economically connected and integrated with the core. Therefore, urban area is only one part of metropolis. At present, metropolitan area is widely used to refer to any large city (Brunn & Williams & Zeigler, 2003, p.13). The metropolitan area includes urban area, urban fringe area, and suburban area. The mixed land use between urban area and rural area is caused by urban sprawl.

Central Business District (CBD), in North America, this term is the closest corresponding term to downtown or city center. CBD expresses the area in which is the center of economic, social, political and cultural life in the cities in the U.S. In other countries, CBD refers to the geographic center of trade and commerce in the city. (Knox & McCarthy, 2005, p.29). In this context, it presumes that CBD and city center basically has the same meaning.

2.1.8 Urban Sprawl

Urban sprawl happens when a city expands and takes over the lands and the resources in rural area, mostly agricultural areas. It is usually dependence of automobile and roadways expansion. Urban sprawl is commonly used in a negative way. It can refer to an unplanned and uncontrolled expansion of urban areas including roadways into the natural areas and surrounding countryside (Hara, Y. & Takeuchi, K & Okubo, S., 2005)Although urban sprawl has many disadvantages including high dependence on automobile, low variety of housing and business types, higher cost in providing infrastructure, environment
deterioration, it conversely leads to certain advantages as follows: lower land price, more single houses with large lots, lower crime rate and better quality schools, less noise and pollutions (Hara, Y. et al., 2010).

Regarding policy direction, the government policy has a critical influence on whether or not encouraging urban sprawl. For instance, many policies in the United States such as congestion externalities, mortgage subsidy, lower price of fringe infrastructure, cause low population density in urban areas. This policy indirectly encourages an urban sprawl. Whereas, European countries’ policy mostly leads to high population density due to relatively higher transportation cost, especially automobile and higher taxes on consumption. For example, sales tax on car sold in Netherland is 9 times heavier than that in the United States. Urban policy in Europe supports small convenient stores in the city rather than mega stores in suburbs (O’Sullivan, 2007, p.147). Cultural differences across cities also affect the difference in urban density. For example, Asian society is relatively more collective and values expanded family. Therefore, Urban density in Asia is much higher than other parts of the world (Bertaud & Malpezzi, 2003). High population density in an urban area leads to a high level of primacy.

### 2.1.9 MDCs and LDCs

Most Countries in Europe and North America are broadly defined by United Nation as More Developed Countries (MDCs), whereas, most countries in Asia, Africa and South America are defined as Less Developed Countries (LDCs). In MDCs, urbanization has been completely resulted from the process in industrialization and economic development. Economic growth, industrialization and rapid urbanization lead to a decline in population growth in an urban area. On the other hand, urbanization in LDCs is partly affected by those factors mentioned before. The principal factor for urbanization in LDCs is labor mobility from rural to urban area, which is called rural-urban migrants (Montgomery, M.R. et al., 2008). People in rural area decide to move to the city with unrealistic expectation. They seek opportunity for a better quality of life. Nevertheless, most of them end up with worse quality of life and facing more trouble. (Sivam, A., 2002). In MDCs, Urban growth and urban development, health care, education service, has apparently grown in the same level and in the same time, whereas in LDCs, urban development is not kept up with urban growth. Likewise, only numbers of population increases in an urban area, while public services and necessary infrastructures have not been developed sufficiently (Brunn & Williams & Zeigler, 2003, p.4).

In South East Asia, the most critical factor driving urban growth is the movement of rural people to urban area (rural-urban migrants). In 1990, Thai census recorded that more than 1.5 million rural people moved to Bangkok. But it was expected that in reality there were more than double-recorded number of migrants. Moreover, the majority of migrants in Bangkok is female and came from North Eastern part of Thailand. In 1980, their share was 62% of total internal migrants. The figure reached 70% in 2000. In contrast to Thailand, Singapore and Malaysia mostly experienced international immigrants, not
internal ones like other countries in this region (Brunn & Williams & Zeigler, 2003, p.401).

2.2 Urban structure theory
To examine the land use patterns and the distribution of population groups in a city, it is necessary to study the existing theories on spatial structure of cities. There are two classic groups of thoughts, which are widely well known and commonly used. The first one is social ecology theories, which examines the linkage between socioeconomic factors and land use patterns. The other is rent theorists’ school of thought, which is known as bid-rent theory. Bid rent theory’s concept states that the urban structure reflects a trade-off between rents and transportation costs. Social ecology theory includes concentric zone theory, Sector theory, multiple-nuclei theory, and axial theory.

2.2.1 Social ecology theory

2.2.1.1 Concentric zone theory
In the middle of 19th century, Friedrich Engels developed the concept of the concentric zone theory (Fanning, 2005, p.74-76). He observed urbanization of Manchester, one city in England, which used to be a center of textile manufacturers, during industrial revolution. Engels assumed that other industrial cities were likely to share a similar pattern of land use as Manchester. Engels stated that the business area including offices, retails, wholesales, are at the center of the city. Then the city kept expanding to outer and larger circle in all direction. The more outward circle from the center, the higher income and upper class residents live. The first ring closest to the center was the place for factory workers. Engels was the first person presenting this idea, but E.W. Burgess is the person who developed and disseminated the theory to public. Thus, Burgess is considered a founder of concentric zone theory. The idea is city growth is resulted from a radial expansion from the business center, then lead to concentric rings. The process of forming concentric rings was called invasion and succession. Firstly, people residing in an inner ring try to invade to a next outer zone. Then, there is a distribution of land use between residential and commercial areas. Burgess classified city area into five zones: CBD, zone of transition between residential and commercial use, low-class residential area, middle and high-class residential area, and the commuter zone, which includes suburbs and remote communities (Brunn & Williams & Zeigler, 2003, p.34).

![Figure 1: Concentric Zone Theory](image-url)
2.2.1.2 Sector theory
In 1934, Homer Hoyt proposed the concept of sector theory. The theory was developed through the observation and analysis of the movement and the variation of household rents in 142 cities in the United States (Fanning, 2005, p.77-78). Hoyt concluded that land use patterns in the cities form predictably, not randomly. Moreover, they were likely to develop as sectors, not concentric rings. All cities tended to apply to sectors patterns. Residential land use follows the direction in which highways are heading from CBD. Upper-class residences, a house with high rent, dominate the direction of city growth. Sector theory can also be described by filtering model, which will be mentioned in detail later. High-rent residences pull offices and stores to build in their sector area. Meanwhile, there appears a process to separate middle-class and low-class residences from high-rent dwellings area, which is called filtering process (Brunn & Williams & Zeigler, 2003, p.35).

![Hoyt Sector Model](image)

Figure 3: Sector Theory

2.2.1.3 Multi-nuclei theory
The third theory is Multiple-nuclei theory developed by Chauncy Harris and Edward Ullman in 1945. Harris & Ullman (1945) noted that cities could have several nodes or many centers and cities distinctively grow and expand from these nodes. There are certain features associated with the multi-nuclei theory. The first feature is that any activity is restricted in a particular location or area; for example, retailing stores should locate in a central area because it is easy to have access by people. Secondly, some related business activities are prone to group in the same area, which is called economic clustering. The reason is that it is convenient for customers, and then it creates more opportunity to sell more products and services. Thirdly, upper-class residences for high-income population locate far away from heavy industrial area. Finally, any office or business store which can not earn enough income to afford a high-rent location in CBD need to relocate to a lower-rent location.
Multi nodes can grow by their own and affect city growth and city development. Another important factor is the expansion of personal transportation (automobile), more highways. This factor accelerates the city growth and lead to urban sprawl. Land uses tend to become mixed patterns and multi purposes including residential, commercial, and industrial. Many economic functions occur in the city area (Brunn & Williams & Zeigler, 2003, p.36). When many nodes in the city are expanding, it can be called the galactic metropolis. When some nodes develop and become a new CBD in suburb and emerging urban centers spread in suburb surrounding older central cities, it can be called as an edge city (O’ Sullivan, 2007, p. 136).

2.2.1.4 Axial theory
The forth theory is Axial theory developed by Hurd in 1903. This theory stated that urban area grows and develops along major transportation route such as railways and highways. Accessibility to CBD is the initial concept of this theory. Hurd (1903) believed that “accessibility accounts for both the economic and location of a transshipment point”. Retail and services business are located in and close to CBD. Low-income groups live in low-rent apartments and close to public transportation. Middle and higher-income groups live far from the commercial and industrial areas, but close to transportation routes and public facilities such as schools, parks, and hospitals. (Fanning, 2005, p.83).

2.2.2 Bid-rent theory
The second school of thought concerning urban structure is the rent theorists’. Bid rent theory was developed by Ricardo Alonso in 1964. It emphasizes on the choice of location and describes the spatial distribution of employment and population within
the city (O’Sullivan, 2007, pp. 119-122). The theory stated that the closer a parcel of land to CBD, the higher price or demand for that site and the further a parcel of land from CBD, the higher transportation cost to CBD. It is the trade-off between location and accessibility. The theory presents how land users with a specific purpose choose different locations (close or far from CBD). The behavior of land users leads to land use patterns in an urban area and separate the land use zone for different purposes. Different purpose of land use shows different level of demand for land. For example, retail and office use are more willing to locate close to CBD than residential use. Thus, retail users are willing to pay more money for the land close to CBD (Fanning 2005, p. 86).

Figure 6: Bid Rent Curve

2.3 Urban dynamics growth models
To study Bangkok urban dynamics, certain aspects of city structure including economic growth, urban growth and development, urban location patterns have to be analyzed and together. In practical, it is difficult to take all factors into consideration or to develop a new model. Therefore, empirical studies of urban dynamics in developed countries are applied to this paper. They may not seemingly be up-to-date research, but the stage of urbanization in developing countries is likely to be far behind that in developed countries and have different patterns in certain aspects (Jones, 2005). The models are mentioned in an aspect of their general idea, not deep into the details. The change in urban location and land use pattern in Bangkok may be similar to certain aspects of each model. Urban dynamics growth models are as follows:

- Comprehensive model by Katherine Bradbury in 1982
- New suburbanization model by Thomas Stanback in 1991

2.3.1 City-life cycle and Urban-life cycle model
In 1979, R.D. Norton proposed the City life cycle model, while Urban-life cycle model was created by Van Den Berg and his colleagues in 1982. These two

\[\text{Figure 6: Bid Rent Curve}\]

\[\begin{align*}
\text{Office} & \quad \text{Retail} \\
\text{Shopping zone} & \quad \text{Commercial (office) zone} \\
\text{Residential zone} & \quad \text{Distance from centre}
\end{align*}\]

\[\begin{align*}
\text{Office price (m)} & \quad \text{Residential} \\
\text{Distance from centre} & \quad \text{Retail}
\end{align*}\]

1 Appendix G
models are similar to each other in terms of the concept and idea. The first one was conducted in the United States and the latter was conducted in Europe. The initial idea of them is that urban growth goes through a cyclical pattern pursuing a business and industrial life cycle. Van Den Berg et al. (1982) described urban development in accordance with a certain cyclical pattern by the observation of Western European countries. Urban life cycle remarked the influence of a change in the economy and the society on the dynamics of urban growth patterns. Moreover, Van Den Berg et al. (1982) proposed that urban dynamics consist of four stages and go through all stages as a cyclical pattern. The four stages are as follows (Leetmaa, K. et al., 2009)

- Urbanization Stage
- Suburbanization Stage
- Disurbanization Stage
- Reurbanization Stage

Norton started to observe the decline of population in old cities’ centers and the rise of that in new cities’ centers such as California and Texas during 1950-1975. The new central cities played an incubation role of new industries and new technology. People started to move to industrial center and led the new city center to grow. There also happened a phenomenon of industrial clustering that causes the economies of scale and competitiveness. If the city growth depends on the industrial development, the city growth pattern is likely to show a life cycle as well. In his research, Norton concentrated on two variables: population growth rate and employment rate, and classified areas in the city into the city center area and the urban area. He found that the population growth rate in the new city area was three times over that in the old city area. Employment rate in the new industrial area was also higher than that in the old area. Look into the central city area, the population growth rate in the old one dropped by 21 percent while in the new one it rose by 124 percent in average (Karsada, 1983).

As a result, it led the new city area to expand while the old city area had no such that potential. For another thing, the average income of old city population in industrial era is lower than that in suburban area, Whereas, average income in new city area is much higher than that in its suburban area. Karsada (1983) concludes that an increase in population is a consequence of an expansion of urban area. In other words, urban area expands first, then the population increases. Norton, again, stated that the decline of old city center in industrial era is inevitable but the change in suburban area was not mentioned in his study. Norton merely explains how the urban area spreads out and population increases during the industrialization process.

2.3.2 Comprehensive model
The second model that will be mentioned is the Comprehensive Model by Bradbury et al (1982). Bradbury conducted a research on an increase in population rate and employment rate in an urban area during 1960-1970. The study paid less attention on the relation to suburban area. The initial idea is similar to Neo-classical economics, and together with Keynesian Economics. Keynesian economists encourage the central government to control and intervene the economy by fiscal and monetary policy. Likewise, Bradbury
supports the central government to prevent the central city area and help the poor in that area. The study found that the economic growth in urban area relies on the growth of labor force. The supply and demand factors of goods and services caused by an increase in population in the area have taken into account. The development of mixed industries aims to shift up the ability to respond to changing demand of goods and services. The assumption of this model is that the boundary of central city is constant. The model explains that the decline of employment rate in the city center is resulted from low growth rate of population and high growth rate of income, high tax rate, and inefficiency of mixed industries (Bradbury et al., 1982).

2.2.3 New suburbanization model
The third model is “New Suburbanization Model” by Thomas Stanback Jr. (1991). The study concentrated on the spatial growth of suburban area and proposed that the growth of suburban area is a crucial mechanism for city growth. Stanback used the data of fourteen large cities in the United States during 1969-1987. The relation between central city and suburban area had significantly changed. The economic change in the United States showed that more employment had moved from industrial sector to service sector. This phenomenon was caused by a decline of industrial sector in central city area. Afterwards, the industrial development would spread out to suburban area. Therefore and employment base had rapidly expanded. The influential factors that affected labor force the change in city area during 1970-1980 in the United States are as follows. The growth of service sectors increase employment rate in CBD. However, most labor force still lived in suburban area and used public transport to their office in downtown. Meanwhile, suburban area had created large scale of employment center and economic clustering. These elements led suburban area to be directly competitive against CBD. Thus, suburban area became a new economic center of city area. Another factor is the change in labor demand. Labor market required more educated and higher skilled labor force. The study concluded that the growth of employment rate in suburban area was higher than that in CBD. There was a significant increase in employment in three business categories, which include finance, insurance, and real estate. For service sector, most offices located in CBD while industrial sector relocated to suburban area. The model proposed that economic cluster is the most crucial reason for the growth rate of employment in suburb. The model classified employment centers according to urban geography as follows: parallel with the street, inside the retailing area, around the shopping center, in old town centers, in office centers, in the center of mix used area such as hotel, specialization centers such as airport and university, corridors of high-tech firm (Herson, 1992).

Besides, Cervero (1991) found that the employment centers in suburbs chiefly are back offices that operate specific tasks such as maintenance, data collection, customer service, billing. However, the development of suburb encounters certain problems. The most critical issues are traffic congestion and imbalance between job opportunity and residential location. Inlanfeldt (1995) argues that CBD would not be deteriorated or disappear because CBD has an influence on making its surrounding area to be an urban area and attracting investors to develop the whole urban area. City center area has a lot of cultural attractions and is the center of education and recreation. City center acquires “Sense of
Place”, for example, some people feel proud to live in the city center with dignity. City center area still acquires economic clustering that could probably not occur in suburban area. For example, a business that requires “face to face contact” should locate in CBD due to low transportation cost and convenience.

Moreover, Schwartz (1992) found that there were five important service businesses located in CBD, which include:

- Consulting company
- Accounting company
- Banking
- Investment banking
- Law firm

They are mostly located in CBDs of large cities like Chicago, Los Angelis and New York. On the other hand, most companies located in suburban areas had relevant operation with these service businesses in CBD.

New suburbanization model concluded that population and employment in CBD had an influence on growth rate of suburban area. Under the assumption that Central Business District (CBD) has limited expansion, the study found that certain new business ventures had emerged in suburban area such as wholesale, transportation, back office, light industry. The empirical study showed that in some areas in the United States, center of economic gravity had moved from CBD to suburb (Herson, 1992).

Again, three urban dynamics growth models are briefly mentioned, Norton (1979) focused on explaining the growth of city central area during industrial revolution while Bradbury (1982) tried to analyze the whole urban area, not only city central area. On the other hand, Stanback (1991) concentrated on researching the role of suburban area and its growth.

**2.3.4 Urban dynamics model for cities in Southeast Asia (SEA)**

Those theories and models mentioned above were created in the United States and Europe. Thus, they may not completely fit to explain land use patterns in South East Asian (SEA) countries. Large cities in South East Asia has been growing and expanding more rapidly than those in North America. McGee (1991) proposed the model of city structure in SEA region and assumed that there is no clear land use pattern in one specific area in large cities in SEA. It was stated that only port zone and market gardening zone are located separately, whereas other areas between these two constant zones are mixed economic activity and land use.
Recently, urban researchers has often mentioned about Extended Metropolitan Regions (EMRs) to explain urban structure in SEA. EMRs can be considered as a metropolitan concept in North America. The idea of EMRs has been influenced by the colonial period that led to primate cities. Moreover, cities have been much involved with global economy and there has been a dramatic effort to urbanize rural area in order to utilize natural resources. EMRs is a unique form of SEA urbanization and can be classified into three common forms (Brunn & Williams & Zeigler, 2003, p.405):

- Expanding city-state is the pattern that both political and economic activity area is extended to the boundaries between urban and suburb area. An expansion of the city is balance in terms of equality of development and growth distribution. Singapore is the only example for this form of EMRs.
- Low density EMR is the pattern that the government is capable of controlling the relatively low population density in the city, simultaneously urban area keeps growing and developing. Kuala Lumpur is considered as low density EMR. The urban policy of Malaysia is well planned and there is a clear direction. Low density EMR implies controlled and managed urban growth by the government. Moreover, the policy implementation is effective and consistent.
- High density EMR is the pattern that the government is unable to keep a low-density population in the city. High density EMR shows the lack of planned urban policy and clear direction, also inefficient policy implementation. There appears an agricultural land invasion and transform to industrial and residential area. Urban area continually grows according to more rural-urban migrants, but urban development in terms of infrastructure, health care, education etc. does not grow as rapid as urban population and area. Bangkok, Manilla and Jarkata are considered as a high density EMR (Brunn & Williams & Zeigler, 2003, p.407).

2.4 Choice of location model
As mentioned before, to understand a land use patterns in a site’s location in relation to urban dynamics is a basis for market analysis and forecasting in real estate. Theories and models mentioned before help to explain city structures and urban growth patterns. Hence, it is considered as a macro level analysis. It is, on the other hand, necessary to analyze housing market from a household’s perspective, which is considered a micro level approach. A housing unit is a heterogeneous product,
which differs in utility, location, size and age. Individual has a variety of dwelling preferences. Moreover, it is durable. Moving from one house to another is costly. Thus, buying a house and moving process is a big decision for households. In housing market analysis, there are two classic models to examine how a household chooses a dwelling and underlying factors behind the decision, which is called the process of residential succession (O'Sullivan, 2007, p.283). These two models are the neighborhood characteristics externality model the filtering model for the housing market

2.4.2 Neighborhood characteristics externality model
The neighborhood characteristics externality model explains the effect of neighborhood attributes on the choice of location of households. When a household buys a house, it is not only to choose a dwelling. The neighborhood characteristics and local public services such as schools and public safety in that area are significantly taken into account. For example, their children go to school and socialize with children in the same area, thus households desire the best for their kids under their constraint. There are two sides of externality effect: a positive and a negative externality. For instance, high-educated neighbors positively influence children. When adults become a good role model for children, they don’t get paid anything. This is called a positive externality. Conversely, if an alcoholic adult in a neighborhood tends to be a bad role model for children, but he does not need to pay anything for a negative impact. This is called a negative externality (O'Sullivan, 2007, p.161). Coulson & Bond (1992) proposed that neighborhood income level, but not racial issue, played an important role on the value of housing unit. Consequently, high-income households are willing to pay more and prefer to live in high-income neighborhood area.

2.4.2 Filtering model for the housing market
According to Muth (1972), the filtering model explains how economic factors cause the house to decrease in quality and move down to be occupied by a lower-income household. When time passed by, without maintenance and renovation, a house of higher income groups deteriorate and its value falls. Higher income groups will live in this house until the gap between ideal and actual house is large enough, then they will move to a better house that can satisfy them. The old house will pass through lower income groups. Coulson & Bonds (1992) conducted an empirical study on residential succession and argued that there was a little evidence to show a significant relationship between age of housing stock and income groups.

2.5 Chronological Bangkok Housing Development
After 1945 (World War II): Public housing provided by the government

1959: Limit the ownership of empty land, encourage agricultural and Industrial investment

Early 1960: Apartments, relocate over 10,000 slum dwellers

1960: buy a land parcel (household) and build a house
1963: Public housing apartments for low-income urban population
Late 1960: Detached houses on private service plot of land
1950-1967: Government plays a key role in housing development
1968-1975: Turnkey housing units, ready-to-move-in units
1970-1984: Townhouses and Condos
1973: Established Government housing bank (GHB) and National housing authorities (NHA)
1973: Oil shock crisis, slump in economy
1980: Second oil shock crisis
After 1980: Off the plan projects, townhouses in urban fringe areas
1983: First formally national housing policy framework
1986-1990: Foreign investment, especially from Japan
  Urban fringe: from Agricultural land use to factory sites and townhouses projects
  Inner city: low-income housing plots to condominium projects
1991-1996: The gulf war: drop in housing value
1997: The Asian financial crisis: the slump of economy and real estate sector
1997-2002: Debt restructuring and old projects rebuilt, recovery period
2002-2007: Booms of condominiums projects along rail transit routes
2007: Subprime mortgage meltdown, economic slow-down
2007-2010: Political instability, low growth rate

All theories and models mentioned in the literature review chapter are applied to analyze and explain Bangkok urban dynamics and how urban dynamics affect Bangkok housing market in chapter II.
3. Bangkok Urban Dynamics Analysis and the impact of urban dynamics on housing market

3.1 Bangkok
In this chapter, Bangkok is investigated in aspects of demography and geography. Those theories and models mentioned in the first chapter are applied to explain Bangkok urban growth structures and the change of its land use patterns.

Figure 8: Thailand map and Bangkok location (red)

In this paper, Bangkok Metropolitan Area (BMA) refers to the area managed by Bangkok Metropolitan Administration, whereas, Bangkok Metropolitan Region (BMR) consists of the whole area of BMA plus 5 adjacent provinces:

- Samut Prakan
- Nontaburi
- Pathum Thani
- Samut Sakhon
- Nakhon Pathom

Figure 9: Bangkok Metropolitan Area (BMR)
In other words, BMR composes of Bangkok and its vicinity (Yap, K.S. & Wandeler, K.D., 2010). BMA comprises 50 administrative districts (Khet). They are widely divided into three zones:

- Inner city (orange)
- Urban fringe (green)
- Suburb (blue)

In 2004, BMA was classified into 12 zones according to land use purposes and development plans\(^1\) (Bangkok Metropolitan Administration, 2010).

### 3.1.1 Bangkok population

The number of population in Bangkok in 1960, in 1970, and in 1980 were 3.1, 4.7, and 6.6 millions respectively. The population growth rate was higher than 3% per annum during 1960-1970 and decreased to approximately 2.7% during 1970-1980 (National Statistics Office of Thailand, 2010). Moreover, it dramatically declined to 0.66% per annum during 1990-2000. The decline in population growth rate has not only occurred in BMA but also in Bangkok’s vicinity. However, the population growth rate in 5 adjacent provinces is still higher than that in BMA (The World Bank Database, 2010). The number of urban population in BMR (11 millions) is approximately half of the total urban population in Thailand (22 millions). This indicated that Bangkok is obviously a primate city. In terms of economy, BMR dominates the whole Thailand economy because almost half of the gross national product belongs to BMR (Choiejit, R. & Teungfung, R., 2005).

### Table 1: Urban Population 1980-2009

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>BMA</td>
<td>4,697</td>
<td>5,876</td>
<td>5,784</td>
<td>5,695</td>
<td>5,716</td>
<td>5,710</td>
<td>5,702</td>
</tr>
<tr>
<td>% change</td>
<td>25.1</td>
<td>-1.6</td>
<td>-1.5</td>
<td>0.4</td>
<td>-0.1</td>
<td>-0.1</td>
<td></td>
</tr>
<tr>
<td>Vicinity</td>
<td>1,947</td>
<td>2,706</td>
<td>2,570</td>
<td>4,235</td>
<td>4,349</td>
<td>4,451</td>
<td>4,535</td>
</tr>
<tr>
<td>% change</td>
<td>39.0</td>
<td>-5.0</td>
<td>64.8</td>
<td>2.7</td>
<td>2.3</td>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td>BMR</td>
<td>6,644</td>
<td>8,582</td>
<td>8,354</td>
<td>9,930</td>
<td>10,065</td>
<td>10,161</td>
<td>10,237</td>
</tr>
<tr>
<td>% change</td>
<td>29.2</td>
<td>-2.7</td>
<td>18.9</td>
<td>1.4</td>
<td>1.0</td>
<td>0.7</td>
<td></td>
</tr>
<tr>
<td>Urban Population in Thailand</td>
<td>na</td>
<td>16,661</td>
<td>19,389</td>
<td>21,707</td>
<td>22,089</td>
<td>22,453</td>
<td>22,809</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16.4</td>
<td>12.0</td>
<td>1.8</td>
<td>1.6</td>
<td>1.6</td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) Appendix D
3.1.2 Bangkok CBDs
Bangkok CBDs can be broadly divided into 5 zones according to the type of buildings and economic activities (Bangkok Metropolitan Administration, 2010).

• Zone A: mainly luxurious high-rise apartments and condominiums with a few office buildings, rare horizontal housing units
• Zone B: main tourist zone on Sukhumvit road, tourist elements and shops along the main road
• Zone C: expats residential zone and some tourists zone, high-rise condominiums & service apartments
• Zone D: scattered expats, less shopping infrastructure, mainly old Thai neighborhoods
• Zone E: purely high-rise office buildings, hotels, and nightlife (northwest zone E), high-rise condos, apartments and old Thai neighborhood (southeast zone E)

Figure 11: Bangkok CBDs

Next, each theory and model are applied to explain Bangkok urban dynamics. Again, each theory and model has different limitation and assumption. What this paper is trying to do is to select certain critical factors in different aspects and take them into consideration.

3.2 Concentric Zone Theory application.
Concentric Zone is not applied to Bangkok urban structure because Bangkok has many sub-centers and each sub-center has its own retails, wholesales and offices (Sharkawy, M.A. & Chontipanich, S., 1998). According to Bangkok land use plan¹, there are commercial zones (red) spreading over the Bangkok. There appears a high-density population in CBDs and the inner city zone. The further the area from CBD, the less density population it becomes. However, no evidence shows that the further the households live from CBD, the higher income groups they become. The reality is the land use forms a mixed of different purposes and different level of income groups lives together in the same area. Nevertheless, the process of invasion and succession is true because many developers are likely to invade into an outer area, which used to be a low-density residential area (yellow) or agricultural area (green), and develop more residential projects (Hara, Y. et al., 2010).

¹ Appendix A
If only look up the inner city zone of BMA, inverse concentric zone is partly able to explain that high-income households and elite group live closest to CBD and lower-income groups live further around the outer rings.

3.3 Sector Zone Theory application
Some parts of Bangkok urban growth patterns follow this theory. For example, the direction of highways and rail transit network has a substantial influence on residential land use. It can be implied by an increase in land value along the rail transit projects. Chalermpong (2007) conducted a research regarding the relationship between a property price and a proximity to a rail station. It indicated that a property price approximately increases US$10 for every meter closer to a rail station. In other words, a property located next to a rail station is worth US$ 10,000 more than an identical property located 1 kilometer away from a station. It is also proved the statement “any improvement in transportation infrastructure is capitalized into land values in a short-term urban partial equilibrium” (Celik, H.M., Yankaya, U., 2006).

Bangkok has grown as a sector pattern, not concentric rings. Sector theory also stated that high-income households have an influence on pulling commercial stores and office buildings. Thus, the city growth direction depends on a pulling effect of high-income residence. For example, Sukhumvit has been the residential area for elite group such as diplomats, foreigners, businessmen, and noblemen. The land value has increased dramatically due to a high demand of premium shopping stores, luxurious high-rise condos and office buildings projects(Hara, Y. & Takeuchi, K & Okubo, S., 2005). There exists the filtering process in this zone. There are seldom middle and low-income households residing in this residential area (Yap, 1996).

3.4 Multi-nuclei theory application
Unlike most Western cities, Bangkok urban growth pattern can be explained by the combination of multi-nuclei and axial growth pattern. (Sharkawy, M.A. & Chontipanich, S., 1998). According to Bangkok land use plan1, it shows that Bangkok has several sub-centers with mixed land use and each sub center has potential to grow by itself due to economic clustering (Brunn & William & Zeigler, 2003, p.36). Although commercial use area and high-density residential area are compact in CBD and the inner city zone around CBD, other parts of Bangkok also have their own commercial use area (red) spreading over BMA. Moreover, most areas around sub centers are middle-density residential use. Sub-centers are mainly located close to highways and main roads because it is easy to have access by people. Retail and Wholesale stores need to provide the accessibility to their customers. Harris & Ullman (1945) stated that personal transport vehicles including automobiles and motorcycles significantly stimulate the multi-centered city. Transport mode in Bangkok largely relies on roadways. Transportation development since 1970 has mainly concentrated on building more roadways and highways (Choiejit, R. & Teungfung, R., 2005).

There are no longer heavy industries left in BMA. Most heavy industries moved to Bangkok’s vicinity and the special industrial zones in the eastern seaboard area and southern seaboard area (Asian Business Review, 1995). Hence, it makes sure that most dwellings in Bangkok, especially upper-class residences, are located far away

1 Appendix A
from heavy industries. This feature complies with the multi-nuclei theory. Because of very high-rent for a parcel of land in CBDs, stores or businesses that cannot afford to pay such a high rent have to relocate to a less accessible location with a lower rent (Chalermpong, 2007).

Although Bangkok has many sub centers. There is no any sub-center has a potential to grow beyond the existing CBDs. Sub-centers in urban fringe and suburban area are still much smaller than CBD. Certain sub-centers exist due to an expansion of CBDs. Furthermore, Murakami et al.(2005) indicated that the Green Zones policy in the eastern and western suburbs of Bangkok is successful. It implies that the urban area has not much invaded agricultural area in suburbs. What has happened is that CBDs has expanded along the mass transit route because the existing area is too dense. For example, the oldest CBD is Silom. Then it expanded to Sukhumvit and Sathorn, then Asoke and Ratchadapisek along MRT line (Kagawa,Y. et al., 2009). As a result, Bangkok is not considered as an edge city yet because none of sub-centers in suburban area tends to be a CBD in a near future. However, Bangkok has a potential to become an edge city in the future when all the mass transit system plans has been completed\(^2\). Mass transit system will be likely to accelerate the urban growth and turn residential suburbs to be a new CBD.

### 3.5 Axial theory application

This theory can well explain Bangkok urban growth pattern. Bangkok urban growth follows the direction of major transportation such as railways and highways. The land value along the railways, both completed and under construction projects, have dramatically increased. The closer a property to a rail station, the higher price a property has(Zheng, S. & Kahn, M.E., 2008). Medium-density residential areas (yellow) in urban fringe and suburbs are mostly located along the main roads or highways. A higher bid rent shows a higher demand on a parcel of land. Urban area grows along a direction in which more and more people are willing to live in.

### 3.6 City-life cycle and Urban-life cycle model application

City-life cycle theory focuses on two variables: population growth rate and employment rate. Unlike most cities in the United States, Bangkok urban area is still expanding. The employment rate in CBD has not declined because the inner city, Lumpini group zone\(^1\) is the center of office buildings for commercial purpose, financial businesses. Financial and service sectors are the major sources of employment in CBD (Bangkok Metropolitan Administration, 2010). Thus, an average income of employees in CBD is higher than that in suburbs(Choiejit, R. & Teungfung, R., 2005). What Mentioned above goes against the City-life cycle model. However, population growth rate has declined in CBD, whereas, it has increased in Bangkok’s vicinity (Department of Provincial Administration, 2010). Urban-life cycle model proposed that there are four stages of urban dynamics process. Most western cities may follow this pattern respectively. In turn, most cities in SEA may not do because the origin of city growth is different. For example, Bangkok never experiences the industrial revolution period and the urban decline of CBD. Bangkok jumped to be the postindustrial city without the presence of industrialization (Glassman, J. & Sneddon, C., 2003).

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\(^1\) Appendix C

\(^2\) Appendix B
Haase et al. (2009) defined “Reurbanization as a process of populating and diversifying the inner city with a variety of residential groups of different ages and socio-economics backgrounds”. It is not only the process of moving back to the city, but it also relates to city mindedness as a housing preference and the ‘sense of place’. In the past decade, hundreds of condos projects have constructed along the BTS sky train and MRT subway stations. Bangkok Mass transit system has almost covered all the area in the inner city. CBD accessibility and convenience provided by this transportation service encourage more middle and high-income groups to live in the inner city. They are young generation who are seeking for a modern city life style, not old generation. Hence, it is not the process of moving back to the city (Choiejit, R. & Teungfung, R., 2005). While Manila is in the early stage of urbanization and Jakarta has entered the suburbanization stage, Bangkok is in the intermediate stage between Manila and Jakarta (Murakami, A. et al., 2005). However, Bangkok CBD is unlikely to be deteriorated because CBD has a dramatic influence on surrounding area to be urbanized and CBD is still the most important business center of the country. Moreover, it provides the “Sense of Place” for high-income groups to live in CBD (Ihlanfeldt, 1995). To sum, Bangkok urban growth pattern does not apparently follow a cyclical pattern. In other words, this model does not fit to Bangkok.

3.7 Comprehensive model application

This model stated that an economic growth in an urban area depended on a growth of labor force. Rural-urban migrants, mostly from Northeastern part of Thailand, are the major source of low-cost labor in Bangkok. Most of them are temporary or seasonal laborers. They work both in informal and formal sectors. Thus, they are considered as an essential driving factor for Bangkok to become competitive in a global market (Yap, K.S. & Wandeler, K.D., 2010). This model assumed that the boundary of a city center is constant. On the other hand, Jones (2002) argued that the urban growth study should not fix a boarder or scope of the area by administrative map because urban area can grow beyond the administrative districts and urban growth process is dynamic. The urban population in the United States is counted almost 90% of the total population. Hence, in the United States the rural and urban terms has no longer much meaning in dividing the spatial boundary (Jones, 2005).

The idea of the comprehensive model is similar to Keynesian economics school of thought. Keynesian economics proposed that the government should intervene the economy by ensuring the efficient resource distribution and social welfare (Rakodi, 1992). Similarly, Bradbury believed that the government should remain the importance of CBD and help to the poor in an urban area. In contrast, Bangkok city planning is considered unorganized and uncontrolled by the government authority. The city structure plan developed by Litchfield Whiting Browne & Association was firstly announced in 1960. But it has been started to implement, 30 years later, in 1990. Moreover, since 1968 the government policy has encouraged the private sector to be active and take the principal role in real estate development1. In Bangkok, the roads distribution and construction has no systematic plan, while, cities in Latin American follow the Spanish grid-street pattern. Bangkok local government divides road construction projects to many contractors and allows them to build each part according to their plans (Sharkawy, M.A. & Chontipanich, S., 1998). As a result,

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Bangkok is considered as the high density EMR, which reflects an inefficient city structure plan and ineffective implementation by the government.

There has been an effort to relocate slums and squatter dwellings in the inner city zone to suburban area since 1960, but slum dwellers are reluctant to move and some move back to the inner city area, but different place. Moreover, many public housing projects have been developed in suburbs. Nevertheless, this policy is eventually considered not successful because public housing projects cannot satisfy the low-income groups’ needs in terms of a location and a quality. They need to stay close to their employment center, which mostly locate in the inner city, in order to reduce the transportation cost and convenience. In addition, some projects offer such a high price that they cannot afford. As a result, low-income groups prefer to stay in their same squatter dwellings (Yap, 1996). The estimated slum population in BMA is 1.1 millions in 2000 (Yap, K.S. & Wandeler, K.D., 2010). Nevertheless, Jones (2002) argued that Bangkok has less crowded urban slums compared to that in Manila and Jakarta. To sum, this comprehensive model seem not to explain Bangkok urban dynamics well because it assumes that the city boarder is constant. More importantly, both central and local government in Thailand apparently has a little and insignificant role in manipulating Bangkok urban growth patterns. Conversely, private sector is a prominent actor to shape the direction and patterns of urban growth and land use in Bangkok.

3.8 New Suburbanization model application

Stanback (1991) proposed that the growth of suburban area is an essential factor for city growth. In this context, “suburb” includes Bangkok suburban zone and Bangkok’s vicinity. In aspect of population growth rate, Bangkok’s vicinity has a higher population growth rate than that in BMA. Unlike most cities in Europe, Bangkok never has heavy industry located in CBD. Heavy industry such as cement plant used to locate in Bangkok inner zone, but they had already relocated to Bangkok’s vicinity and other industrial zones. While, light industry is mainly located in Bangkok suburb and its vicinity. (Asian Business Review, 1995). Employment structure indicates that service and financial sector are chiefly located in the inner city zone, whereas, production sector play an important role for employment in the outer Bangkok and its vicinity. For its vicinity, four fifth of the employment distributes to the production sector. Commercial and financial sector share a very little proportion. (Choiejit, R. & Teungfung, R., 2005).

According to Bangkok land use plan\(^1\), high-density residential area forms as a concentric ring pattern around CBD, which is called the inner Bangkok. The next outer zone is for medium-density residential area, then the low-density residential area, which is in the urban fringe zone. In suburbs, most land is preserved for agricultural purpose (green). As a result, Bangkok suburbs and its vicinity have not yet urbanized. The process of suburbanization may get started because only a few parts of suburb (green) have become a residential area (orange and yellow), but there is a very little commercial use area (red) in the west. Nevertheless, Hara et al. (2004) suggested that the regulation for urban growth control is really needed to protect Bangkok suburbs from urban sprawl because the mixture of urban and rural land use in suburbs is causing several environmental problems. Moreover, the land use in

\(^1\) Appendix A
suburbs is changing from paddy fields to urban residences. In detail, “Area subject to rice plantations with linear canal systems are occupied by townhouses, whereas, areas subject to paddy fields with irregular canal systems are occupied by slum-types housing” (Hara, Y. & Takeuchi, K & Okubo, S., 2005)

It is known that urban sprawl may cause much environmental problems, for example, parcels of agricultural land, which can be useful such as water retention capability and preservation of visual quality, have been invaded by residential and industrial projects (Murakami, A. et al., 2005). According to the research on two different land use scenarios for 2020, the result showed that in Bangkok’s vicinity a low-storey sprawl development scenario was more environmentally efficient than a high-rise compact scenario in terms of material input and energy consumption. Therefore, the urban policy in Bangkok suburbs should concentrate on population density control rather than arbitrary land use zoning lines (Hara, Y. et al., 2010). In aspect of homebuyers, urban sprawl may be advantage since the residential projects in suburbs is comparatively less expensive with a larger lot of spatial land use. Moreover, people residing in suburbs encounter a low level of pollution².

Murakami et al. (2005) noted that Bangkok urban growth was at an intermediate stage of urbanization, but not enter the stage of suburbanization yet. One factor that hinders the growth of suburb is the absence of mass transit system. At present, the existence of mass rapid transit is still in the inner Bangkok zone and parts of urban fringe. They have not extended into suburban area (Newburn, D.A. & Berck, P., 2006). However, mega projects on Bangkok rail transit network have been carrying out. When the project reaches suburbs, it would certainly have a dramatic impact on suburbanization. It can be seen that most people prefer to live in the inner city zone or urban fringe zone, but not suburbs due to accessibility to CBD. Most employment still takes place in CBD and the inner city zone.

Urban-life cycle model proposed four stages of urban dynamics. Most western cities may follow this pattern respectively. In turn, most cities in SEA may not do because the origin of city growth is different. For example, Bangkok never experiences the industrial revolution period and urban decline in CBD. Haase et al. (2009) defined “Reurbanization as a process of populating and diversifying the inner city with a variety of residential groups of different ages and socio-economics backgrounds”. It is not only the process of moving back to the city, but it also relate to city mindedness as a housing preference and the ‘sense of place’. In the past decade, hundreds of condos projects have constructed along the BTS sky train and MRT subway’s stations. Bangkok Mass transit system has almost covered all the area in inner Bangkok. CBD accessibility and convenience provided by this transportation service encourage more middle and high-income groups to live in the inner city. They are young generation who are looking for a city lifestyle, not old generation. Thus, it is not the process of moving back to the city (Choiejit, R. & Teungfung, R., 2005).

3.9 Neighborhood characteristics externalities model application
A house price is determined by not only its land parcel and building but also its location attributes, which is also called neighborhood characteristics. Buying a house is also a decision to choose the place including surrounding area to live. Moreover, A

house is a durable good, which has a long life cycle. It is very costly to move a house as well (Keivani, R. & Werna, E., 2001). Therefore, buying a house is apparently a big decision for a household. Neighborhood characteristics constitute several location attributes. In this paper, location attributes, which have a significant impact on a property value, are selected and elaborated. Attributes that have a positive impact include CBD accessibility, neighborhood quality, road and rail transit accessibility. On the other hand, ones with a negative impact are crime rate, and air pollution & traffic congestion (Kryvobokov, 2007).

3.9.1 CBD accessibility
CBD is the main employment center for Bangkok urban population. Therefore, households apparently want to stay close to their work place in order to save their transportation cost and time. However, bid rent theory indicated that the closer to CBD, the higher the bid rent for a land parcel. It is the trade-off between CBD proximity and transportation cost (O’ Sullivan, 2007, pp. 119-122). People may not have to stay very close to CBD, but they want to stay in which they are able to commute to CBD conveniently and within controlled period of time. Thus, CBD accessibility is seemingly more important than CBD proximity(Celik, H.M., Yankaya, U., 2006). This attribute can explain why people prefer to live close to public transit or highways heading to CBD. This also makes dwelling projects that have an easy access to CBD more expensive than those locate far away (Chalermpong, 2007).

3.9.2 Neighborhood quality
In the United States, African Americans tend to live together in the same neighborhood area separating from white Americans’ families. This situation is resulted from racial issue (O’ Sullivan, 2007, pp. 161-162). Moreover, households with different income level tend to live in different districts distinctively. This is called household clustering (Plaut, P.O. & Plaut, S.E., 1998). Unlike cities in the United States, household clustering does not obviously exist in Bangkok. In almost every administrative district, there exists a combination of low, medium and high-income households. What difference is the proportion of each household group. However, there apparently exists class discrimination. Although low and high-income households may live next to each other, they seem to know their territories. They seldom share any public service such as a playground or a park. High-income households tend to possess their private facilities. In aspect of neighborhood quality in Bangkok, developers are able to build a proper neighborhood quality for their customers in their project territory (Yap, K.S. & Wandeler, K.D., 2010). However, Bangkok tends to be a city of diverse neighborhoods rather than a segregated city because each area has quite a mixture of households with different races and income.

3.9.3 Road and rail transit accessibility
Both Sector theory and Axial theory proposed that main transportation route such as highways and railways is a significant factor to determine the direction of the city growth and urban land use patterns. For several decades, Bangkok residential developments have intensively taken places along both sides of main road transportation and hinder the development in land parcels far from main roads (Choiejit, R. & Teungfung, R., 2005). Chalermpong (2007) conducted a research on the relationship between mass public transit proximity and a property value and found that the closer a property is located to a rail station, a higher value a property become. In average, a property, which is located right at a rail station, is US$10,000 more expensive than an identical property located 1000 meters from a rail station. Another
similar research conducted regarding Izmir subway in Turkey apparently found the same result and proved that a rail transit improvement is able to increase a land value and a property price in its surrounding area, whereas, bus transit improvement has an insignificant impact on a property value. This is also called a positive externalities effect on a land and a property value (Celik, H.M., Yankaya, U., 2006).

According to Bangkok land use plan, residential land use area with a low and medium density in suburbs zone is located along the highways. Also, Kaset-Nawamin road\(^1\) is a new developing residential area in the east Bangkok urban fringe. Since 2007, there have been 23 residential projects with total 6,850 units. Land value has increased double within a few years (Real Estate Information Center, Thailand, 2010). This area has both main roads and highways, but no mass transit system, connected to all the area in Bangkok. Another area is Ratchadapisek-Ladproa road\(^2\). This area has MRT subway and covers from Rama IX station to Paholyothin station\(^3\). Since MRT started operating in 2004, there have been 33 residential projects with total 15,600 units, mainly condominiums, constructing in this area. In addition, land value has almost increased double (Real Estate Information Center, Thailand, 2010). On Ratchadapisek-Ladproa road, land use is more intensive and land value is higher, so high-rise building for both commercial and residential use is a proper development alternative (Cypher and Haynga, 2010).

### 3.9.4 Crime rate

By economic approach, criminals make a decision on the cost and the benefit of crime and respond to incentives. As a result, the simple way to reduce the crime rate is to increase the cost and decrease the benefit of crime. A society may add more police officers and make penalties more severe, and also make sure that criminals be executed. In addition, a society should focus more on public education service. A higher-educated person is more unlikely to commit crime because he has a better job opportunity compared to school-dropouts group (O’ Sullivan, 2007, ss. 257-259).

In Bangkok, social rules and public security standards are still not properly manipulated in certain urban area by the government authorities. Although the literacy rate for youth 15-24 years old in 2003-2007 is about 98%, the secondary school attendance ratio in 2003-2008 is only about 80% (Unicef, 2009). There still exist an economic problem and wide income gap among population in Bangkok. Therefore, households, who have a sufficient ability to choose where to live, tend to consider public security in the residential area as an important factor. For example, high-income households choose not to stay close to a slum community due to a high possibility to drug problem and robbery (Yap, 1996). This can be called a negative externalities effect.

### 3.9.5 Air pollution level and Traffic congestion

Transportation system in Bangkok has relied on roadways for several decades. Although government authorities have given more importance to rail transit system for a decade, Bangkok transportation development mostly focus on road construction. Bangkok has a highest proportion of car and motorcycle ownership per 1,000 people.

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\(^1\) Appendix F  
\(^2\) Appendix E  
\(^3\) Appendix C
in Asian and also higher than that in Tokyo. Moreover, Bangkok has a highest proportion of all daily trips by private transport in Asian (Kenworthy, 1995). Therefore, it can be implied that Bangkok has been facing air pollution, which is directly caused by an increasing amount of private vehicles.

Households with children tend to stay in urban fringe or suburbs rather than CBD or inner Bangkok in order to avoid high level of air pollution. For example, Kaset-Nawamin road in the east Bangkok, it is a new emerging residential area in urban fringe with less air pollution and larger lots of single-family houses (Real Estate Information Center, Thailand, 2010). Households can choose to live close to green belt zones in both east and west Bangkok or to stay in residential projects that provide green environmental amenities (Hara, Y. & Takeuchi, K & Okubo, S., 2005). To avoid traffic congestion, households are willing to pay more for a dwelling that has easy access to mass rapid transit system or highways. A dwelling that can provide a convenience in commuting is basically more demanded.

Due to unplanned and uncontrolled land use and transport policy, Bangkok has rapidly expanded in the horizontal direction. Moreover, private vehicle become the most frequent transport mode for Bangkok’s residents. Choiejit & Teungfung (2005) proposed that the higher employment density the residential area is, the more residents is likely to commute to work by public transport. Furthermore, an improvement of walking infrastructure has also a positive impact on commuting by public transport. Conversely, residents are more likely to use their private vehicles when more road supply is built in the residential area. Therefore, Choiejit & Teungfung (2005) suggested that in the short run government authorities should urgently improve the level of public transport services and pedestrian infrastructures. In the long run, mass rapid transit projects have to be extended citywide and connected with other modes of transportation.

3.10 Filtering model for housing market
The filtering model for housing market presents the process of a dwelling’s change by a decrease in quality and a decrease in occupant income when time passes by. A decrease in quality happens due to physical deterioration and technology obsolescence. Meanwhile, a dwelling moves down to a lower-income occupant. Filtering model assumption is regardless of neighborhood characteristics. Moreover, the quality of house can be classified into a high-end, medium-end and low-end house and the demand for each class can be also prioritized. For example, a high-income household demands a high-end house. More importantly, a lower dwelling can be substituted by a higher class dwelling (O’ Sullivan, 2007, pp. 292-293).

However, Three groups of housing products in Bangkok is unlikely to be substituted by one another because each group of products is specially designed and only built to serve its target customers. Moreover, the price gap among different housing products is too wide. Thus, middle-income groups seemingly cannot afford to buy a high-end property, even its price has moved down to lower ladder step. Similarly, a medium-end property that moves down is still too expensive for a low-income household to afford (Choiejit, R. & Teungfung, R., 2005). It can be implied that the income distribution in Bangkok is inefficient, so income gap among people is very wide. When there exist an excessive housing supply in the market, market mechanism should be able to eliminate the surplus and adjust itself to a new equilibrium within a certain period of time. But in this case, Market cannot properly adjust because
housing stocks with different type and class cannot be completely substituted (Sahachaisaeree, 2009) (Pornchokchai, Housing Speculation in Bangkok: Lessons for Emerging Economics, 2005).

3.10.1 High-end housing unit
A high-end housing unit in Bangkok is obviously determined by neighborhood characteristics rather than its location. High-end housing projects spread over the city area. High-income group may desire to live in CBD or in inner city area that close to their work place. They may want to live in suburban area, which is more a live place that close to the nature and far away from air pollution because they have ability to choose. That is the reason why location is not the first concern for a high-income group, but neighborhood characteristics of the housing project have to be differentiated from other lower quality houses (Atkinson-Palombo, 2010). For instance, facilities like swimming pool, sport and fitness club, and high-standard security system, green environmental zone, convenient infrastructure are provided to this group of households. Furthermore, High-end projects may close to well-known educational institutions or shopping centers. Some projects may be close to slum or crowded population area, but they are built to be totally separated from the community around and also have a clear territory and security system (O’ Sullivan, 2007, pp. 161-167).

3.10.2 Medium-end housing unit
For a medium-end housing unit, the projects mostly are located in urban fringe and suburban area. The projects are built as a townhouse or a single-house with less than 400 square meters (Sharkawy, M.A. & Chontipanich, S., 1998). It can be said that the expansion of medium-end projects lead to a rapid enlargement of urban sprawl. The factors that determine where to develop a project are surrounding villages, close to work place, and convenient transportation route. The price level is the most concern and determines the decision for this group of customers, not the premium facilities provided like high-end projects (Hara, Y. et al., 2010).

3.10.3 Low-end housing unit
For a low-end housing unit, low-income households can be divided into two groups. The first one has low but constant income including low level government officers, peddlers, factory labor and office labor. The first group has potential to afford a low-end house because the new construction technology and more vertical land-use decrease the average home price, especially public housing projects. The latter group has no permanent job, so their income is not constant. Most of the second group moves in to Bangkok from upcountry to find a job. They are not even able to afford a low-end house due to low and inconsistent income (Sahachaisaeree, 2009). They have to live in the informal settlements that are built and invade in others’ land, thus they don’t legally belong to those lands. It leads to eviction problem and certain social problems. The government housing has put an effort to develop public housing units in suburban areas for low-income groups (Yap, K.S. & Wandeler, K.D., 2010). The projects started with a good will and intention, but practically the projects do not work well because of a few reasons.

The first one is that most low-income population needs to stay close to employment center like factories or construction sites or food markets because it costs too much for a daily transportation expense and also wastes time if they live in the remote
suburban area. It seems to be better for them to live in squatter settlements in the city and close to work place (Sivam, A., 2002).

The second reason is that the second group of low-income population still cannot afford the public housing projects. Moreover, some middle-income households try to buy these dwelling units. Last but not least, there have been many problems during the project implementation. For example, the contractors have been changed many times, so the construction process is very slow. Moreover, the government policy has no clear direction. As a result, public housing projects undertake very slowly and discontinuously (Yap, 1996).

As mentioned before in the introduction part, the market analysis in real estate requires an understanding of land use patterns in a site’s location in relation to urban dynamics. Therefore, the change in urban structure and land use patterns has an influence on housing market in aspects of choice of housing location and neighborhood characteristics. Next chapter will be examined the institutional attribute that also has a significant impact on both an urban growth structure and a housing market.
4. Housing Policy

This chapter describes a concept of housing policy direction in Thailand and its result. Housing policy is one of the legal attributes that have a certain impact on housing market. As mentioned before, this paper does not focus on the institutional dimension. However, to understand the overview of Bangkok housing policy is evidently useful for the overall analysis. Therefore, this chapter is concise in terms of contents. This chapter comprises four parts as follows:

- Housing policy principles
- Housing policy for middle-income households
- Housing policy for low-income households
- Housing policy analysis during 2008-2010

4.1 Housing policy principles

In principle, the government has two initial thoughts and conceptual alternatives on housing policy direction (Fitzpatrick, 2007):

- Free Market mechanism concept
- Social safety net concept

The first alternative is to let market mechanism adjust by itself. This concept believes that players in the market will learn from experience and the market will develop and become stable. Then in the long run, demand and supply will move to equilibrium. In the short run, low-income population, however, are taken advantage and forced to live below the living standard. This results in other social problems in squatter settlements area. This is considered as negative externalities for social welfare (Yap, 1996). The second thought is to consider a house as a merit good and to concern about social safety net concept. The government had better help and subsidize low-income population to own a house with a proper quality and have a better living standard. This policy principle will also decrease certain social problems (Fitzpatrick, 2007). The government should focus more on supply-side housing policy, even though it seemingly requires more cost to operate. Market intervention is necessary to foster the underprivileged. Nevertheless, too much subsidy for low-income population will cause labors to have less work motivation and it will result in a decrease in labor productivity (Dowall, D.E. & Ellis, P.D., 2009).

Housing market and development in Thailand is prominently dominated by the private sector rather than the government sector. However, housing policy implemented by the government authorities still has a significant effect on housing market. The local government has seemingly a little role to manipulate housing market. They let market mechanism to function. While, the central government focuses on implementing the housing policy in Bangkok due to a very high level of primacy and half of total urban population residing in Bangkok. Housing policy can be divided into two parts. The first one is the policy to enhance middle-income population to own a house. The other is the policy to help low-income population to have a better dwelling (Giles, 2003). Housing can be classified as a merit good like public health service, education service, and recreation service. These sorts of goods and services not only affect an individual’s interest but also social welfare. Therefore, the government authority should take externalities effect into the consideration. For example, the government should control a minimum standard for housing projects for
low-income group in order to ensure a good surrounding environment and public security in the community (O’Sullivan, 2007, ss. 301-103).

4.2 Housing policy for middle-income population

In the United States, the government subsidizes medium-class housing projects. This policy makes the construction cost decline and leads to a decrease in housing rent for middle-income households. Hence, they can afford a better quality house. For low-income population, some of them move to a new better house, which higher-income occupants have left, because housing rent decrease. The phenomenon is called a filtering process. Thus, they can afford a better one with the same income. Housing rent for low-end housing units decrease and the stocks of them also decline. It can be inferred that the subsidy policy for medium-end projects cause both middle and low-income population to leave the old dwelling to a better one (O’ Sullivan, 2007, pp. 304-307). In Bangkok, there are many economic tools to subsidize middle-class housing projects. For instance, banks lend money to developers with a low interest rate. GHB was established in 1973 by the government to secure appropriate housing finance for low-income households. However, GHB practically make a housing loan to middle-income households as well. The government launched the regulations that allow including housing loan interest expense to reduce an income tax. Moreover, housing market in Bangkok is a market-led by the private sector and there are many competitors in the market especially medium-end housing projects. As a result, developers have to intensively compete by improving the quality of houses and control the budget to offer a competitive price to customers. Therefore, the middle-income population is better off by this policy direction.¹

4.3 Housing policy for low-income population

The main purpose of this policy is to provide a sufficient amount of dwellings for low-income population with a certain level of quality. The government put an effort to help this group of urban population to live in a better dwelling rather than squatter settlements(Sivam, A., 2002). There are two government units that mainly work on this policy. The first one is GHB supporting housing finance to low-income population and the other is NHA working on developing public housing projects. Nevertheless, the housing policy for low-income group has not been functioning well in Bangkok because of discontinuity and inefficiency in both policy direction and implementation level. In practical, they serve the wrong group of population (middle-income) instead of low-income group because they have to work as a profit-making organization. That is the reason why these two organizations are not be able reach the initial objective, which is to help the poor in the city (Yap, 1996). Moreover, recently the board of GHB has been accused with bribery indictment. Most customers of these two organizations turn out to be middle-income households instead of low-income households. In 2007, National housing authority permitted a household who earn less than 15,000 baht per month to buy a public housing unit. But in 2010 the maximum income increased to 40,000 baht per month. The figure shows that there is still a large amount of excessive housing supply left. Therefore, the government authorities have to lessen the maximum income regulation to serve wider group of customers because

low-income households still cannot afford a public housing unit. Furthermore, they are not willing to move to remote area or suburbs of which public housing projects are located (Yap, K.S. & Wandeler, K.D., 2010). They prefer to stay at the same informal settlements in the inner city because it is close to their work place. This housing policy practically undergoes against the original purpose, which is to serve low-income population with a better living condition.

Housing policy focuses on supporting middle-income population to buy a house, but apparently ignore low-income population in Bangkok. Although the government launches the policy, for instance, public housing policy in order to help the underprivileged to have a chance to own a better house, the policy implementation practically fails. For instance, Low-income population is unable to afford a house in public housing projects built by NHA and they are not even willing to buy because it is located in remote areas (suburbs) and far from their work place(Yap, K.S. & Wandeler, K.D., 2010). Moreover, some public housing projects have apparently poor quality and take many years for construction. Due to many problems when implementing a supply side policy, the government mostly uses a demand side policy such as financial subsidy and tax abatement. However, the policy implementation is less effective than expected due to the policy mismanagement and inefficient government authorities(Jones, 2005).

4.4 Empirical study: Housing policy Analysis during 2008-2010

During 2008-2010, the government has launched three important measures to urge real estate market due to the lower domestic demand and world economic downturn. The first two measures started to manipulate in April 2008 and January 2009 respectively and ended in May 2010.

- The first measure is to decrease the fee for property ownership transfer and hypothecate, also to decrease the rate of property transaction tax.
- The second measure is to increase tax reduction benefit from property purchase.
- The third measure is to keep the housing loan interest rate low especially loan from GHB (Ministry of Finance, Thailand, 2008).

In 2009, Bank of Thailand made an announcement to decrease an interest rate three times and the interest rate had totally decreased for 1.5%. For commercial banks, they had decreased its MLR for premium customers for four times, totally from 6.75% to 5.85% (GHB) (Bank of Thailand, 2009). The reason for launching urging measures is because the real estate situation in Bangkok in 2008 decelerated and tended to become worse. The purchasing power of consumers was very weak due to world economy recession and domestic political instability. More businesses had to close or lay off employees(Pornchokchai, Rethinking Real Estate Cycles, 2007). People had more caution to spend money. Moreover, the real estate sector plays an important role in the overall economy and financial circulation. If the real estate sector were halted, the whole economy would dramatically face a negative impact.

The measures have certain impacts on real estate developers, customers, and financial institutions. The impacts on each evolving party are analyzed

4.4.1 Impact on real estate developers

Developers, especially who are holding a large amount of stocks, directly gain a benefit from the measures. It is easier to release their housing stocks. At the end of
2009, a number of finished residential units waiting to sell in Bangkok are about 100,000 (Real Estate Information Center, Thailand, 2010). Furthermore, more under-construction units will continuously enter the market in 2010 because developers have more capital circulation and more liquidity in managing a project. The level of market competition becomes lower because the measures encourage a demand side of the real estate market and boost up the willingness to buy of more customers. The first two measures have lasted for two and half years. As a result, developers who want to gain benefit have to finish or sell their projects before the mid of 2010. Compare between condominium projects and townhouse projects or single-family house projects, the latter can be built more rapidly and take a shorter time. Thus, horizontal housing projects perhaps have more advantage compared to vertical housing projects like condominium (Sun et al., 2005).

4.4.2 Impact on customers
Customers have directly positive impacts according to these measures. They pay less to acquire the same quality of dwelling. The fee for ownership transfer decreased from 2% to 0.01% of government valuation price. The registration fee for property mortgage also dropped from 1% to 0.01%. Furthermore, a household who buys a house will gain the income tax reduction equaling to the paid value of property, but not more than 300,000 baht, also income tax reduction from housing loan interest rate equaling the paid value, but not more than 100,000 baht per year (Real Estate Information Center, Thailand, 2010). The measures accelerate the potential customers to make a faster decision to buy a property. This group of customers has a strong financial status and need to buy a dwelling. On the other hand, people who have a sensitive financial status tend to ignore these measures and postpone their decision to buy a property in this risky situation in terms of economic downturn and political instability. This sort of situation causes the sensitive group of people feels worried about their career security and future income (Baffoe-Bonnie, 1998).

4.4.3 Impact on financial institutions
Financial institutions serve more customers and are able to make more housing loan which means more liquidity and more profits. However, a credit officer has to verify a borrower more carefully in order to decrease the level of non-performance loan. To reduce the lending interest rate does not affect the profitability of financial institutes because they can also reduce the deposit interest rate and gain the same revenue.1

4.4.4 Impact on the government
Although these measures from the government may boost up the real estate market, the government has to cut the government revenue from the property tax. The measures are restricted by the fiscal limitation. As a result, the government had better prioritize the measures and focus on some groups. For example, the measure should only offer a benefit to a new property purchase in order to wipe out the excessive housing stocks. The measure should not support the second-hand property purchase because it may be for the speculative purpose.1

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5. Housing Market Analysis: Economic Perspective

This chapter examines the short-term dynamics and impacts of economic variables on Bangkok housing market. Several studies found that the housing price volatility is significantly affected by several factors including interest rate, GDP per capita (household income)(Charoentrakulpeeti, 2006) and construction cost & land price (Adams, Z.& Fuss, R., 2009)(Hossain, B. & Latif, E., 2009). Household income has an impact on housing demand side, while construction and land price has an influence on housing supply side. Interest rate affects both demand and supply side.

5.1 Market mechanism development

During the Asian financial crisis in 1997, many real estate developers had been bankrupted and many investors had lost a large value in stock exchange market. This crisis had wiped out a lot of speculators in real estate market and the survivor (developers and investors) has seemingly learned an important experience and been much more careful to invest. However, the history may repeat itself. In 2007, there was a subprime mortgage crisis in the US. But the negative impact on real estate market in Bangkok was not as severe as the crisis in 1997(Pornchokchai, Rethinking Real Estate Cycles, 2007). Although, some time there becomes excessive housing stocks than the real market demand, the market may spend a while to adjust itself and finally move to the new equilibrium. In other words, there is an excessive supply in the short run, but in the long run the market can adjust to the equilibrium. It shows that players in the market are more professional because they can have access to market information more easily than earlier(Pornchokchai, Housing Speculation in Bangkok: Lessons for Emerging Economics, 2005). It has to be noted that the market mentioned above only refers to the market for high and medium end houses. For low-end houses, the demand is still much more than the supply. Low-income population still need more better dwellings, but the profit rate or gross margin rate to develop residential project to serve this market segment is relatively low. (Yap, K.S. & Wandeler, K.D., 2010) As a result, private developers are seldom interested in. This duty should belong to the government authority to create more housing supply for low-income population.

5.2 Interest rate

Macro economic variable that has a large impact on real estate market is interest rate. If the loan interest rate increases 1%, the mortgage payment will increase about 7-8%. It means that the borrowers have more financial burden or their loan may not be approved or they may have to buy a cheaper house(Adams, Z.& Fuss, R., 2009). When the domestic interest rate is relatively high, there will be a large amount of foreign capital inflow in order to both investing and speculating purpose. This situation occurred in Thailand during 1993-1997. Domestic financial institution used a short-term deposit from foreign investors and made a long-term loan to real estate developers in Thailand. The average interest rate for 12-month deposit during 1993-1997 was in between 7-13% and the loan interest rate for small customers was in between 14.5-19.25%. Compared to the interest rate in July 2010, the 12-month deposit interest rate is 1-1.25% and the loan interest rate is 6.5-6.88% (Bank of Thailand, 2010). It can be seen the big interest rate gap between two periods. As a result, banks are more careful to make a loan due to less capital formation from foreign saving. Current interest rate is relatively high compared to average
international interest rate. Moreover, Bank of Thailand tends to keep this level of rate or increase the rate in the medium term.

5.3 GDP per capita and income level
Another important factor is GDP per capita. The average rate annual growth for GDP per capita during 1988-1998 is 5.7%, during 1998-2008 is 4%, in 2008 is only 1.8% and the estimation during 2008-2012 is -0.2% (World Bank, 2009). The figure implies that the purchasing power of population become lower and lower. GDP per capital illustrates a negative impact on the growth of real estate business. In Bangkok, the number of middle class population has enlarged and become the majority in Bangkok (Charoentrakulpeeti, 2006). Meanwhile, the income for low class population in Bangkok is still very low and there is no sign that their status would be better. Most of them move from upcountry and they have a little chance to find a well-paid job (Yap, K.S. & Wandeler, K.D., 2010). For high-income population, they mostly live in single-family houses around Bangkok or condominiums in the city area (Sharkawy, M.A. & Chontipanich, S., 1998).

5.4 Construction cost
Construction cost can be reduced because the new construction techniques have developed continually. Furthermore, the expansion of condominium market spreads from high-end condominium in the city to lower-class condominium in urban fringes and suburbs. The cost per unit has decreased due to intensive and vertical land-use. Compared to a single house or a horizontal land-use, condominium project gains more advantage in terms of average cost per unit (Cypher, M.L., Hayunga, D.K., 2010). Moreover, land price in suburban area is much cheaper than that in inner city area. Nevertheless, the cost of building materials have continuously increased because building materials market is apparently oligopoly (Real Estate Information Center, Thailand, 2010). There are a few manufacturers dominating the market, thus main producers can be associated and set a market price that would benefit them all. Producers try to avoid competing by cutting price policy that leads to price war. Home construction cost index (HCCI) in third quarter 2010 is 128.8, which has increased 2.8 from 126.0 in third quarter 2009. The base year was 2000. Totally in 10 years, HCCI has increased around 28% (Real Estate Information Center, Thailand, 2010).

Another factor is labor cost. The minimum wage has not changed yet. It is still kept at 206 baht ($US 7) per day. Anyhow, a government plans to increase minimum wage to 250 baht ($US 8.3) sooner or later (Bank of Thailand, 2009). In the long-run analysis, the growth rate of minimum wage has gone up faster than that of productivity of labor in construction industry and there is occasionally a shortage of labor. Most construction labor is on and off (temporary) employees. That is the reason why it is difficult to improve their skills and demand consistency (Sharkawy, M.A. & Chontipanich, S., 1998). To sum up, the positive impact on housing market from new construction techniques and more intensive land use has less influence on housing development than the negative impact from higher cost of building materials and low-skilled labor. Home construction cost is likely to keep rising, but in a low rate.

5.5 Land price
According to Bangkok house price and land price index during 1995-2009, house price index increases a lot in 1997-1998 that is around 8% and 2004-2005 that is around 11%. Afterwards, it started to increase a little and then had a negative change.
It can be seen that after the Asian financial crisis in 1997 and subprime mortgage crisis in 2007, house price started to drop significantly. House price changes like a cycle and in the past 15 years house price has increased about 12%. Meanwhile, land price has increased about 22%. Land price is more stable and keep increasing gradually in the past 5 years. However, land price index shows a slow growth in the price level of land in 2009 and the first half of 2010 because of a dramatic increase of land price during 2005-2008 and overall economic contraction (Department of Provincial Administration, 2010).

House price basically consist of building materials cost, labor cost, and management cost. Assume that labor cost and management cost is constant, it implies that house price changes in accordance with the change in building materials price (Zheng, S. & Kahn, M.E., 2008). To sum up, the figures present that land cost has more impact on a property price than construction cost. Although the new technology and construction technique make the construction cost lower, an increase in land price and dramatic demand of dwellings in Bangkok have more influence on house price (Real Estate Information Center, Thailand, 2010).

It can be seen that the level of land price has a significant influence on real estate business. The impacts can be forecasted and explained into a certain points. Firstly, The trend of horizontal land-use expansion still keeps growing continually because the land is considered as superior goods and people are willing to build a house on their own land. This trend causes the city area to expand continuously because developers have to put an effort to seek for a cheap land parcel in urban fringe and suburban areas that has potential in the near future (Hara, Y. et al., 2010). A potential land is, for example, the area that is near transport infrastructure project such as mass rail transit system or close to a new employment center such as the international airport. Secondly, the concentration of land use becomes higher in inner Bangkok area like Silom, Asoke, Satorn, Sukhumwit because of the total separated land use patterns between government and private sectors. The high level of land price in CBD also affects the land price in surrounding areas (Jones, 2005). Thirdly, the innovation and construction technology will be an important success factor for developers. Due to the high level of land price, developers have to search for the modern technique in both construction part and management part to keep to total cost low and also deliver the product that satisfy the customer’s needs in the same time (Zhang Xiuling et al., 2010). Finally, the level of land price may decelerate because of two main reasons. The first one is that the development of property agent system decrease the land speculation and causes the land price more stable. A property agent works more professional. Meanwhile, a seller and a buyer can have access to more market information (Pornchokchai, Rethinking Real Estate Cycles, 2007). The second reason is the slow down of world economy for example, the economic stagnation in Japan, the financial trouble in Europe.

5.6 Bangkok housing market overview in 2009-2010

Housing market in 2009 had a little growth because the major obstacle is domestic political trouble. Moreover, the downturn of world economy is another negative impact. These factors resulted in lower consumer confidence and people put off their decision to buy a property. However, the situation became better in the latter half of 2009 because of the government measures urging real estate business and the
recovery of world economy. Developers were more confident to start a new project and people were more motivated to buy a house.

5.6.1 New and Finished residential buildings in Bangkok in 2009
Finished residential buildings in Bangkok in 2009 reached into 90,071 units from 83,065 units in 2008, which had increased by 9.5%. The projects that started to construct 1-2 years ago tried to complete in 2009 because it could gain benefit from the government measures including tax reduction and low transaction fee. To classify an amount of each residential building type, condominiums share a major proportion, which is 51% (46,452 units). It was the first time in more than 10 years that the number of registered condominiums went beyond that of horizontal residential buildings. Single houses’ share was 34% (30,848 units) and townhouses and commercial buildings’ share was 15% (13,670 units). There were 50,331 new opening residential building in 2009 that decreased by 25.8% from 67,791 units in 2008. The new opening projects had decreased for 2 consecutive years since 2007 (Real Estate Information Center, Thailand, 2010).

5.6.2 Housing loan interest rate in 2009
Financial institutions have created a variety of financial products to attract the customers. They try to offer a loan package that is flexible and optional for a borrower. For example, 0% (the first 6 months) then 1.25-5.25% (fixed rate in the next 1-3 years) or 1.25-7.00% (floating rate in 1-3 years). The average lending rate of commercial banks for a premium customer (MLR) had been reduced four times in January, March, April and May, totally by 0.9% from 6.75% to 5.85%. While, the floating interest rate of GHB (MRR) dropped from 7% to 6.5% in May 2009. The loan interest rate of GHB for new borrowers was 2% lower than MRR. Loan interest rate basically tends to be affected by a change in repo rate 1 day. The government can carry out the monetary policy by changing repo rate 1 day. Repo rate is set by the MPC. In 2009, repo rate had been reduced three times from 2.75% to 1.25% which was the lowest repo rate ever since (Bank of Thailand, 2009). Other countries had also executed a lower interest rate policy in order to boost up the downturn economy resulted from subprime mortgage crisis in the United States (World Bank, 2009).

5.6.3 Housing market dynamics in 2010
Housing market in the latter half of 2010 tends to decelerate because a lot of housing demand has been absorbed in 2009 and the first half of 2010. Most buyers and sellers had tried to make a deal during the period of special measures implementation in order to gain a benefit. Besides, developers have to encounter many downside factors as follows, political trouble, and sensitive world economy, higher price level of construction materials, upside trend of interest rate.

5.6.3.1 Political instability
Political instability has apparently been the most critical issue for Thailand for a couple of years. This political trouble involves not only politicians but also all the level of societies in Thailand. The situation has been worse and no one knows when and how it will end although the current situation seems to be better. The government cannot totally concentrate on implementing the policy to boost up the economy. This

1 Interest rate at which a central bank repurchases a government securities from the commercial banks (BusinessDictionary.com)
results in undermining the level of investors’ and consumers’ confidence (Bank of Thailand, 2009). Furthermore, the government officers are not encouraged to work efficiently because the policy direction is unclear and political situation is unstable. That is the reason why most officers try to be neutral, keep her or him low profile and avoid making any important decision. In general, people do not feel secure about their career and financial status, so they are worried about spending money (Glassman, 2010).

5.6.3.2 Sensitive world economy
After the subprime mortgage crisis starting in 2007, the world economy has been in the downturn period. The recovery sign is still ambiguous. Although the financial problem in the U.S. becomes better, there has appeared an economic trouble in some countries in Europe, especially Greece. Moreover, an unemployment rate in the U.S and Europe is still high (statistics). Japan has still faced an economic stagnation for many years. Although China economy is still growing very fast and China has recently become the second largest economy in the world instead of Japan, there are certain doubts in aspects of sustainable growth, economic stability and social inequality. These risk factors have certain impacts on the recovery of Thai economy, and also the real estate market in Bangkok (World Bank, 2009).

5.6.3.3 Change in construction cost
The average price of residential buildings tends to be higher because of a rise in construction cost. Oil price and construction materials price, especially iron, has increased continuously. Recently, four major cement producers in Thailand have called for an increasing price. Beside higher construction cost, special government measures to support developers were not extended. As a result, house price inclines to go up in order to cover the total cost and gain some profit (Real Estate Information Center, Thailand, 2010).

5.6.3.4 Change in interest rate
The governor of Bank of Thailand predicts that the repo rate (policy interest rate) is likely to go up to 2% by this year. In 2009, the inflation rate is pretty high at 5.5% (Central Intelligence Agency, 2009). The government announced that the consumer price index (CPI) in the first half of 2010 increased 3.4% compared to the same months in 2009. Non-food product was up 1%. While food and beverages was dramatically up 6.9%. There is a concern over future inflationary risk. Therefore, Monetary policy committee decided to raise the repo rate from 1.25% to 1.50% in July 2010 (Bank of Thailand, 2009). In Asia and other emerging markets, most countries currently use tight monetary policy due to inflationary concerns. In contrast, the long-term interest rate in the U.S. tends to decrease to boost up the economy. The expectation of upward policy interest rate makes the interest rate of financial institute prone to increase. Developers are expected to bear more cost from loan interest in building a new project. As a result, they need to be ready for more competitive atmosphere by implementing new marketing plan to compensate the higher cost.
6. Conclusion

6.1 Conclusion and Recommendation
Bangkok is the postindustrial city, which depends on service-based economy. Like most cities in developing countries, Bangkok has been facing with urban sprawl and an obsession with cars. Its urban dynamics cannot be completely explained by only one theory or model. Bangkok has not experienced a complete industrialization revolution. It jumped to be a postindustrial city. Bangkok has only one CBD, which currently covers Sukhumvit, Silom, and Sathorn area. Buildings in CBD are mainly luxurious high-rise condos, service-apartments, hotels, and office buildings. Bangkok CBD is the center of economic activity based on financial and service sectors and condos for high-income and elite groups.

Bangkok CBD has still been expanding along rail transit system (MRT and BTS) such as Asoke and Paholyothin area because CBD become too compact and the land price in CBD has dramatically increased. As a result, there is no sign for a decline in Bangkok CBD. Meanwhile, there are several sub centers in the inner city area and urban fringe area such as Ratchadapisek-Ladprao road. Thus, Bangkok should be considered as the multi-nuclei city, but not the edge city. Most sub-centers are located along the mainroads or railways. Most housing projects the in inner city are condos located close to MRT and BTS stations. Whereas, most housing projects in urban fringe and suburban area are townhouses and single-family houses located close to mainroads and expressways. As a result, major transportation routes are the most significant factor to determine Bangkok urban growth patterns. Urban area has grown as a sector pattern, not a concentric pattern. Moreover, in some emerging sub-center such as Kaset-Nawamin area, high-income households have attracted the commercial both retail and mega stores as well as shopping complex to the area, but the area still have mixed income level of households. There is no distinct filtering process except in CBD in which only high-income groups can afford to pay for a high-rent dwelling.

Bangkok is inbetween the stage of urbanization and suburbanization. There is no sign that any sub center would have a potential to compete with existing CBD and be able to become a new CBD in both urban fringe and suburban area. Bangkok and Bangkok CBD has a high level of primacy. Suburbanization process and edge city is unlikely to happen with Bangkok in the near future because the rail transit system has not yet linked to suburban areas. Transportation mode in Bangkok has mainly depended on automobile and roadways for several decades. Rail transit system has only operated in the inner city and a few parts of urban fringe areas. Suburbanization process may start to exist when all the rail transit system has completely constructed and start to operate.

Households choose a dwelling and where to live according to neighborhood characteristics. The important positive attributes include CBD accessibility, a quality of neighborhood, road and rail transit accessibility. On the other hand, negative attributes comprise crime rate, air pollution and traffic congestion. The most concerns for households, who are capable of, are public security and location accessibility. Households are willing to stay where they can conveniently commute to their work place. That is why land parcels along mainroads and railways have relatively high prices and most housing projects are built along transportation routes. Households
who avoid air pollution can buy a house in urban fringe or suburban area. Moreover, house price in suburbs is relatively cheaper and acquires a larger lot.

Bangkok is classified as a high density EMR, which showed an unplanned and uncontrolled urban planning. It seems to be true because the first formally adopted nation-housing policy was carried out in 1983. Moreover, the first formal city spatial development plan (Litchfield plan) was carried out in 1990 in despite that it had been done since 1960. In the past 40 years, a private sector plays a key role in Bangkok housing development, while a government sector works through GHB as a loan provider and NHA as a housing developer. GHB and NHA were established to initially help low-income households to afford a better dwelling, but they apparently fail to reach the original goal. Practically, a major group of GHB customers is middle-income households. Public housing projects constructed by NHA are located in suburban area (remote area) with lack of public transport accessibility and far from employment centers. Therefore, low-income households who currently reside in squatter settlements are reluctant to move to a new place. To sum up, government units apparently have a low impact on Bangkok housing market.

In the short-run, economic variables have more influence on housing market than urban growth patterns. The significant variables includes interest rate, GDP per capita and income level, construction cost, and land price. Land price index has been increased with a higher rate than an increase in house price index. Bangkok housing price increases because of a rise in land price, building materials prices, as well as high housing demand from middle-income population expansion. New technique of construction and intensive land use, which reduce house price, shows a relatively less impact compared to variable mentioned before. Nevertheless, house price index has decreased since 2007. The figure indicates that there appears a housing oversupply in the market. Furthermore, estimation of GDP per capita 2008-2012 shows a negative growth, which means that overall purchasing power become lower. These negative factors mentioned before combined with the political sensitivity can probably lead Bangkok housing market into trouble. Therefore, authorities and involving parties should protect the market. They should realize that previous crisis happened because every investor only expected a short-term capital gain without accurate market information and failure to use relevant data in decision-making.

6.2 Further study
This paper provides a broad perspective of Bangkok urban growth structure and housing market. Further study should focus more on any specific area in Bangkok, for example, sub-centers that have rapidly grown such as Ratchadapisek-Ladprao area. Housing market in any sub-center should be analyzed, especially the area along the rail transit system. BMA has been divided into 12 zones according to the spatial development plan. Therefore, each zone should be deeply examined in terms of land use patterns and housing development.
7. References


8. Appendices

8.1 Appendix A: Bangkok Land Use Plan 2006

Yellow: low-density residential area (less than 5000 population / km²)
Orange: medium-density residential area (5000-10,000 population / km²)
Brown: high-density residential area (more than 10,000 population / km²)
Red: Commercial area
Purple: Industrial area
Light purple: Warehouse
Green: Suburbs and agricultural area
Pink: Cultural conservation area
Blue: Government offices and infrastructure buildings
8.2 Appendix B: Bangkok rail transit network planning
8.3 Appendix C: Current Bangkok Rail Transit Network
8.4 Appendix D: Bangkok map by new development zoning (12 zones)
8.5 Appendix E: Ratchadapisek-Ladprao roads
8.6 Appendix F: Kaset-Nawamin road