Accessibility of Housing Loan Affect on Homeownership in Urban China: A Case Study of Nanjing

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ABSTRACT

Abstract of a thesis submitted in partial fulfillment of the requirements for the Degree of M. C. M.

Accessibility of Housing Loan Affect on Homeownership in Urban China: A Case Study of Nanjing

By Xia (Cindy) Gao

This thesis examines the accessibility of housing loans on homeownership in Urban China. Greater accessibility to housing loans is expected to have a positive effect on consumers' housing purchase decision. In China, housing loans have achieved rapid growth since the reform of the housing market in 1998. Since the reform of housing market and the accelerated urbanization of China, the demand of houses increases dramatically. The increased demand for houses has driven up the price of houses; hence, the surging housing prices have made urban residents difficult to finance their home purchase. This study investigates the impact of socioeconomic factors of homebuyers such as gender, age, marital status, education, economic status and race on the accessibility of housing loans in urban China by. In addition, the types and characteristics of the housing loans and the interest rate charged on the housing loans will be discussed in the study as well. The study uses logistic and multiple regressions to analyze the data. The data is derived from a household survey conducted in Nanjing City, Jiang Su Province of China in Novembers 2010.

Keywords: Homeownership, housing loan, Logistic, accessibility.

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CHAPTER ONE
INTRODUCTION

1. Introduction

The housing market has played an important role in the ongoing economic growth of China during the last decade. According to National Bureau Statistics of China (2009), the gross domestic product (GDP) increased from 8.9404 trillion yuan to 33.5353 trillion yuan from 2000 and 2009. The annual growth rate of the real GDP of China is over 10 percent. Increasing in housing consumption can drive up the national economy in urban China (Yu, 2004; Chen and Zhu, 2008; Ma, 2010). Ronald (2007) also pointed out that the increase in homeownership was expected to expand with net increases in GDP per capita. Based on the finding of Li, Zhang and Chen (2005), a one percent increase in housing investment will cause 0.16 percent increase in China's GDP. According to Ma (2010), the sale volume of houses, which included both new and secondhand houses, exceeded 6 trillion yuan in 2009, which accounted for 20 percent of the country's GDP. In the same year, the new house sales equaled to 13 percent of the country's GDP, which were 5.4 percent higher than the amount in 2008 and 2.6 percent higher than that in 2007. The National Bureau of Statistics of China (2009) reported that the floor space of commercialized residential housing sold was 852.94 million square meters an increase of 43.9 percent in 2008 and 17.7 percent in 2007.

The housing market in China has experienced significant changes since the housing reform at the end of 1970s. For example, the Chinese government abandoned the welfare housing system and allowed people to purchase their own houses in 1978. Meanwhile, the acceleration of urbanization causes a dramatic increase in the population of urban China, thus, there was a strong

increase in the demand for housing in urban China (Zhou, 1999). According to Stephen Roach, chairman of Morgan Stanly Asia Ltd (2010), there was a huge demand of residential properties in urban China, as more and more people move to Beijing, Shanghai and other large cities since 2000. China's urban population increased from 459.06 million to 621.86 million during the period 2000 to 2009 (National Bureau of Statistics of China, 2009). With the boom of the housing market and rising in housing demand, the housing price surged rapidly over the past decade, especially in the first-tier cities such as Beijing, Shanghai and Shenzhen. According to the National Bureau of China (2009), the housing price in Beijing increased from 4557 yuan per square meter to 11648 yuan per square meter for the period 2000 to 2008.

1.1Types of Housing

In China, the urban housing system comprises of common apartments, luxury apartments, villas and economically affordable housing. According to National Bureau of Statistic of China (2009), the common apartments refer to dwellings, which contain hundreds of apartments in a building. The public subsidized housing is another type of common apartment as well. The public subsidized housing has been built and owned by the governments or work units to provide rental accommodation for lower-income households. Such housing is usually in very poor condition; units are not only small, but also lack of kitchens and bathrooms. The luxury apartments are self contained with furniture and can move in at anytime; villas are similar to the detached housing, with gardens and garages included; luxury apartments and villas cater for the high-income households. Both luxury apartments and villas were put up on the market since the early of 1990s. However, speculation has driven the price of those types of housing to unsustainable levels, the great number of them kept vacant for a long period of time, which was between 20 to 30 percent

vacancy rate in major cities of China (Mak, Choy and Ho, 2007). The economically affordable housing is public dwelling units subsidized by the government, particularly for middle to low income households. Hence, the selling price of economically affordable housing is 20-30 percent lower than the common apartment housing（Liu and Xie, 2000）. With a relative cheap price, the economically affordable housing becomes the most affordable for urban households to improve their quality of life.

Table 1 shows that the common apartments made up of 89.05 percent and 73.44 percent of total residential buildings in 2008 and 2000, respectively; only 5.41% of the people can afford the villas and luxury apartments in 2008, and 3.86% in 2000. The affordable housing sold has significantly dropped from 22.69 percent to 5.41 percent for the period 2000 to 2008. The downward trend was mainly caused by the increased in the annual disposable income of urban households. According to the National Bureau of Statistic of China (2009), the annual disposable income of households in urban China was 15,781 yuan in 2008, which was 2.5 times of 2000. In 2009, the annual disposable income of urban households reached to 17,175 yuan.

Table 1: Types of Residential Housing Sold in Urban China

	Sq. m (in millions)		% of All Residential Buildings	
	2008	2000	2008	2000
Common Apartment Housing	527.88	121.69	89.05%	73.44%
Villas & Luxury Apartment	28.65	6.41	5.41%	3.86%
Economically Affordable Housing	36.27	37.60	6.12%	22.69%
Residential buildings	592.80	165.70		

Source from: National Bureau of Statistics of China, 2009

1.2 Housing Reform in China

China housing market reform can be divided into three phases. The first phase is the welfare housing system from 1949 to 1978, the second phase is the housing reform period from 1978 to 1998 and the last phase is expansion since 1998.

a. Welfare Housing System (1949 to 1978)

Traditional housing in China is considered as a welfare housing system, which is the pre-reform period since 1949. During that time, the housings were solely built and owned by the Chinese government. Most of them were allocated to state-owned enterprises and local governments (Chen and Gao, 1993). Then the state-owned enterprise and local government allotted houses to their employees. However, employees only had the right to use, without actually owning the houses. They were required to pay a small amount of fee for the use of public housing. The rent can be directly deducted from their salary and used the fund for housing maintenance and building new houses by the government. However, the annual income from housing rent cannot cover either the cost of housing maintenance or initial investment of housing. Each year, the government is responsible for 25 billion yuan of construction cost for new housing, 10 billion yuan of maintenance but received only 1 million yuan of rent (Tsou et al., 2008). Thus the Chinese government suffered a serious financial deficit problem. Under this system, employees had no option to choose their houses; they only can accept what the state-owned enterprises and the local governments allocated to them.

b. Housing Reform (1978 to 1998)

The new historical era of China housing system began in the late of 1970s.The welfare housing

system caused heavy burden to the Chinese government, and the low-rent policy stimulated the great demand for housing. The government cannot provide sufficient housing to satisfy the people's demands (Zhou, 1999). Due to deficiencies of the traditional welfare housing system, the Chinese government abolished this system in the 1978. People were allowed to purchase public-owned housing at a subsidized price from their work-units. The housing transformation became the most prominent part of the Chinese economic reform policies (Zhang, 1996). Premier Zhu Rongji announced in 1998 that both accelerating housing development and increasing urban homeownership were considered as the top of priority of the government (Zhou, 2004). Meanwhile, the Housing Provident Fund (HPF) was established in Shanghai in 1991. HPF was used to provide long-term reserve funds for employees with low salary to purchase houses. Under this policy, finance support is provided to low-income employees to purchase their own housing, while all employees were requested to contribute four to eight percent of their salary to the fund on a monthly basis.

c. Expansion Period (since 1998)

The welfare housing system was finally terminated in 1998. Following this, the Chinese government established some new policies to escalate housing reform of urban China. The housing system became commercialized. Households with high income are able to buy houses in the open market; the low and middle-income households are encouraged to purchase economically affordable housing; households with the lowest income are allowed to rent the low rental housing units provided by the government (Gu, 1999). This reform boosted the real estate market for housing provision. With the implementation of the housing reform, over 70 percent of houses had become privately-owned in urban China by the end of 2009 (National Bureau of Statistics of

China, 2009). Meanwhile, the growth rate of housing investment in China was 19.5 percent, 19.8 percent and 20.9 percent for the year 2000, 2005 and 2008, respectively. In 2009, the housing investment increased to 3623.2 billion yuan achieving a growth rate of 16.1percent (National Bureau of Statistics of China, 2009).

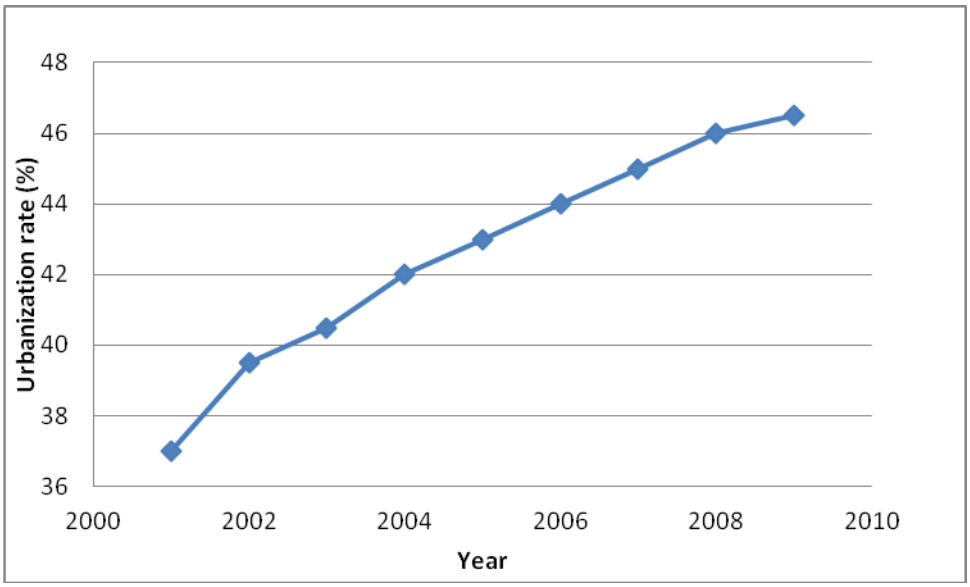
1.3 Housing Demand in Urban China

The housing demand in urban China is strong. Urbanization primarily affected the housing demand in China (China Real Estate News, 2010). The reform of the urban housing system accelerated the urbanization and increased the population of urban China, and there was a huge increase in housing demand in major cities of China (Liu and Huang, 2004; Zhou, 2004). J.P. Morgan (2010) reported that the housing demand will remain strong in the medium to long term; rapid urbanization and strong economic growth are two main causes for increasing demand of housing in China. With an average of 20 million people moving from rural to urban cities each year, most of the cities in China are still in the early stage of urbanization, except some Tier-1 cities such as Beijing, Shanghai and Shenzhen which are urbanized.

Figure 1 shows an upward trend of urbanization from 2001 to 2009, as people in rural area migrate to large cities in China. The National Bureau of Statistic of China disclosed that China's urban population has reached 621.86 million by the end of 2009, and the urbanization rate stood at 46.6% which was much higher than the 37.7 percent in 2001; however, it was still 3.4 percent lower than the world average urbanization ratio. J.P. Morgan (2010) reported that the urbanization rate of China will reach 60 percent in 2020. Therefore, the housing demand will rise significantly in the future. Liu and Huang (2004) predicted that the average annual housing demand will be

more than 0.54 billion square meters before 2020. Another reason for the rising in housing demand is that people are more likely to upgrade their houses and move to new houses with better conditions, as long as their incomes keep increasing (J.P. Morgan, 2010). Recently, there is a significant increase in housing demand from young married people in urban China (Consumption report of Chinese homebuyers, 2009; Mak, Choy and Ho, 2007).

Figure 1. Urbanization of China



Source from: Nation Bureau of Statistics of China, 2009

1.4 Research Problem Statement

A number of researches have examined the housing affordability in urban China (see Chen, Hao & Turner, 2006; Rosen & Ross, 2000, Liu and Shen, 2005). Some of researchers focus on the determinants of house prices with respect to changes in economic fundamentals and housing policies in China (Liu and Shen, 2005; Yu, 2010; Yan, Feng and Bao, 2010; Ma, 2010); other researchers examine the homeownership-oriented housing policies in urban China, such as

Housing Provident Funds and Economic Affordable Housing. (Duda, Zhuang and Dong, 2005; Burell, 2006).

There are limited studies addressing the socio-economic factors influencing consumers' home purchase decisions toward housing loans, and the accessibility to housing loans that can significantly affect the homeownership in urban China. Luo's finding (2010) reported that over sixty percent of home buyers in China financed their houses from commercial banks; and only one quarter of home buyers paid cash by the end of 2009. According to Deng, Zheng and Ling (2004) study, housing loans are crucial for the development of housing market in China. Thus, greater accessibility to housing loans will positively effects house purchase decision. For instance, personal income is considered as an important factor to influence the homeownership in China. Huang and Clark's (2002) study reported that changes in household income will affect the homeownership in China. People with a higher income can access housing loans much easier. However, Deng, Zheng and Ling (2004) reported that most Chinese people are reluctant to obtain a debt. A survey report conducted by Beijing City Survey Organization shows over 75 percent of the local residents are aware of the availability of housing loans, and less than 10 percent of them have ever applied for the loans. In recent years, surging housing prices in urban China made it more difficult for people to finance their houses, especially for people in first-tier cities such as Beijing and Shanghai. This study attempts to investigate the accessibility of housing loans in urban China by considering the socioeconomic factors of house buyers, such as gender, age, marital status, education, economic status and race. In addition, the types and characteristics of the housing loans and banks' criteria of processing the housing loans will be investigated in the study.

1.5 Research Objectives

This research investigates the accessibility of housing loans and its impact on homeownership in urban China. The research objectives are:

i. To determine the socio-economic factors affecting the consumers' house purchase decision in urban China.

ii. To determine whether the current housing loan application evaluation gives differential treatment to the average borrower based on the borrower's characteristics such as gender, race and age.

iii. To determine if differential pricing exists in the housing loans market based on loan size, age, loan source, highest education level, annual household income, loan duration and having an account with the lending institution.

iv. To identify and examine the significant characteristics of homebuyers who are first-homeowners and non-first homeowners financing their homeownership.

1.6 Structure of the Thesis

Chapter One provides an overview of the research problem statement and objectives. Chapter Two reviews the literature on the development of housing loan in urban China followed by the housing price and housing affordability. Chapter Three explains the data collection, variables selection, and methodology used in the study. Following this, Chapter Four presents a discussion of the empirical results and findings and Chapter Five provides the conclusions of the research findings, policy implications, limitations and recommendations for future research.

CHAPTER TWO

LITERATURE REVIEW

2. Introduction

This chapter reviews the literature on housing loans. The chapter is organized as follows. Section 2.1 provides a brief overview of the development of housing loan in urban China, followed by the housing price and housing affordability. Section 2.3 discusses the loan pricing model which is used determine the interest rates charged on the loans. Section 2.4 discusses the factors that financial institutions considered, when evaluating and processing consumers' loan applications, and the determinants of consumers' borrowing. Section 2.5 presents the differential treatment in loans approval process. The last section discusses the price discrimination and price differentiation in the loans market. Different characteristics can affect the borrowers' decisions to borrow such as age, race, gender, education attainment, household income, family life cycle and occupation.

2.1 Housing Finance System in Urban China

China's housing finance system has been restructured by the housing reform. However, the restructuring of the housing finance system was very unbalanced in its early stages. Most of the funds were largely distributed as development loans for housing supply, there were only a small amount of funds which were used in housing consumption (Deng, Shen and Wang, 2009). The first residential mortgage loan in China was issued by China Construction Bank (CCB) in 1986. From the year 1994, the Chinese government started to introduce mortgage loans to home buyers nationwide, along with strict conditions on loans (Di et al., 2008). For instance, applicants must provide bank with at least 30 percent of down payment, and the loan had be paid back in 5 years

(Zhang, 2000). During that period, most urban residents could not meet these requirements. Hence, the individual home mortgage remained only a small portion of all bank loans. In order to boost the growth of the national economy, home mortgage loans were encouraged to expand by the Chinese government since the housing reform in 1998. Hence, strong incentives in the development of housing market cause an increase in the growth of housing finance (Deng, Zheng and Ling, 2004). Despite the impressive growth of residential mortgage loans, the mortgage lending in China still only accounted for 13 percent of GDP in 2004, which is quite low compared to 65% of Singapore, 50% for Hong Kong, 38 % of Korea and 58% for U.S. in 2002 (Ben-Shahar, Leung and Ong, 2008). By 2005, China became the largest residential mortgage market in Asia, with an outstanding balance exceeding two trillion yuan, which was about 89 times the balance of 1997 (Deng and Liu, 2009; Zhu 2006). Over the past ten years, the development of the housing mortgage loans has accelerated. According to the People's Bank of China (2010), residential mortgage loans to individual households increased by more than 11 times, from 126 billion yuan in 1999 to 1.4 trillion yuan in 2009. In addition, by the end 2009, 77.8 percent of the newly added personal loans were newly added residential mortgage loans.

Unlike the U.S. market, China has not developed its secondary mortgage market; there are four major participants in the residential mortgage market in China - China Construction Bank (CCB), Industrial and Commercial Bank of China (ICBC), Bank of China (BOC) and Agricultural Bank of China (ABC). Those four state owned banks are supervised by the People's Bank of China (PBOC), the central bank of China and they accounted for over 90 percent of the commercial home mortgage market share; ICBC and CCB accounted for 70 percent of all commercial home

mortgages (Deng and Liu, 2009). The housing mortgage loans in China commands a significant proportion of personal loans, whereby the largest state-owned commercial bank, ICBC (2009) reported a total outstanding mortgage loan of 874.24 billion yuan in 2009, 1.9 times of 2005, which accounted for 72.4 percent of the total personal loans. Based on the Annual Report of BOC (2009), the total outstanding of personal loans were 979.465 billion yuan, while the outstanding mortgage loans were 764.36 2 billion yuan, 1.85 times of 2000.

Other participants of residential mortgage include insurance companies, housing guarantee institutions, securities companies, other institutions and special housing financial institutions. Special housing financial institutions play an important role in the housing financial systems in developed countries. Housing savings banks and housing provident funds system are two major specialist housing finance institution in China since 1980s. Specialized housing savings banks are located in Bengbu, Yantai and Tianjin. As a source of housing finance, specialized housing savings banks devote all their effort in raising funds and providing loan services for individuals to purchase their houses at a lower interest rate (Zhang, 2000). The Housing Provident Fund (HPF) scheme was first established in Shanghai in 1991. It aimed to raise funds from individuals and work units on the widest scale. Individuals and work units were required to pay 5% of individuals' salaries to their HPF account. The funds could be used for housing related purposes such as home purchase, repairs of housing, etc. HPF created a source of funding both for housing construction and consumers' home purchases (Zhang, 2000).

2.1.1 Source of housing finance

In China, the housing is mainly funded through formal financial institution, such as CCB and

BOC; however, the housing investment comes from three types of sources. The first is funds raised to respond to a particular government policy, such as housing provident funds and economically affordable housing scheme (low cost homeownership scheme) (Zhang, 2000). The second type of financial sources is saving, which could be personal savings or specialist financial institutions by individuals and work units (Li and Yi, 2007). The third type of housing sources is the informal loan such as supports from parents s, relatives and friends ((Li and Yi, 2007; Zhang, 2000).

2.1.2 Types of housing loan

Currently, there are three common types of housing loans in China: individual account housing loans, authorized housing loans, and combined housing loans (Bank of China, 2010; Deng, Zheng and Ling, 2004). Individual account housing loans refer to loans provided for bank customers with certain credit funds in order to facilitate their housing purchases. Authorized housing loans refer to loans to individuals who buy ordinary houses granted by the bank on the authorization of the public reserve fund management department, by using the public reserve deposits as the source of funding. Under this type of loans, individuals are required to deposit a small amount of their salary into their working units as source of the public housing reserve. Combined housing loans refer to loans granted to individual home buyer, using both public reserve deposits and bank credit funds as sources of funding.

2.1.3 Basic loan requirement

The amount of a single housing loan should not exceed 80 percent of the evaluated price of the housing purchased. Meanwhile, the payment to income ratio should not exceed 70%. The

maximum period for the repayment of the housing loans is 30 years. Borrowers in the age group between 18 to 65 years old can apply for the housing loans. The lending rate is adjustable rate mortgage, and it is determined by the People's Bank of China (PBOC). As the PBOC announces the rate adjustment, the new rate applies to all existing long-term mortgage loans starting from the beginning to the following year (Bank of China, 2010). In order to secure the individual housing loan, most banks in China choose guarantees as a requirement in issuing housing loans. The first guarantee is pledging the property of the borrower or a third party (co-borrower); the second is a combined guarantee. It refers to the value of the pledged property provided by the borrower which is not sufficient to cover the amount of the loan, and a joint liability from the third party (co-borrower) can be the guarantor to meet the shortfall. The last guarantee is commercial credit insurance purchased by the borrower (Bank of China. 2010). In terms of processing the housing loan, home loan applicants should provide banks with relevant documents, such as the borrower's identification or marriage certificate, housing purchasing contract, provision of guarantee, etc. Banks will carry out prudent investigation on the borrowers. When the application is approved, the banks and the borrowers are required to sign the mortgage contract. Meanwhile, the borrowers are required to open mortgage account at the banks.

In China, people are reluctant to take up housing loans. When the central bank announces to increase the base rate, many of home loan owners choose to prepay their mortgage loans. According to a survey conducted by the Chinese Central Bank in 2006, the average mortgage payment accounted for 35 percent of a homebuyer's income, and more than 35 percent of the home buyers chose to pay back their loans ahead of the term (Yang and Shen, 2008). With the

development of housing finance, in recent years, a majority of people achieve their homeownership using mortgage loans. According to the report from Investigation of Consumption of Chinese homebuyers (2010), individual housing loans and authorized housing loans were mainly used by people to purchase houses, which accounted for 1.1% and 34.3% of total homebuyers, respectively. Only 9.1 percent of the homebuyers paid cash. Furthermore, the government set up two principal housing policies to help people achieve their homeownerships: Economically Affordable Housing and Housing Provident Funds. The Economically Affordable Housing is designed for people with middle-low income where they can purchase houses at a low price below the market value. In urban China, homebuyers can easily access the credit through commercial banks and Housing Provident Funds (HPF). Compared with the housing loan offered by commercial banks, the housing loan provided from HPF carries lower interest rates (Liu et al., 2009).

2.2 Housing Price and Affordability

The housing price in China has experienced rapid increase over the past few years. According to the National Bureau of Statistics of China (2009), the average selling price of housing in urban China increased from 1.1% to 6.5% between 2000 and 2008. By the end of 2009, it rose to 7.8%, which was higher than the previous year. The reasons for the surge in housing price include rapid economic growth, population increase, liberalization of housing market, and inadequate affordable housing supply (Chung, Kim, & Kwon, 2004). Moreover, in order to benefit from the house inflation as housing price escalated, speculations on China's residential property market were considered as the consequence of the persistent increase in housing prices (Yang and Shen, 2008). Meanwhile, Yan et al. (2010) and Yu (2010) concluded that scarcity of land was another reason of

rising in house prices. By the end of 2009, new house prices in Guangzhou, Shenzhen and Beijing increased by 19.9%, 14.3% and 13.2%, respectively (National Bureau of Statistics of China, 2009). Tightening measures were implemented by the government in order to control the overheated housing market and cool down the house prices in urban China. For instance, the government increased the minimum deposit of housing purchase to 50 percent for the second-home buyers, the mortgage interest rate was increased by 10 percent and the housing property tax was introduced at the same time (Heap, 2010).

With rising house prices, China's housing policy focused on people's affordability in purchasing a new house. The term housing affordability is used to summarize the difficulties individual household faces with accessing adequate housing loans (Hulchanski, 1995). According to Mak, Choy and Ho (2007), affordability is the ratio of the property value over an individual's annual gross income; the ratio of 2.5 was established by Freddie Mac as a benchmark. However, it varied greatly among cities in China. In Shanghai, for the same standard size apartment, it was priced around 273,180 yuan in 2003, the affordability ratio was 13.6, which indicated that an individual would spend 13.6 years to purchase the apartment out rightly.Liu and Li (2003) reported that it was worth 290,220 yuan in Guangzhou, with the same floor space; it was 5.89 times more than the annual gross household income.

In recent years, the housing affordability in urban China is worse than before, especially for some large cities (Ahuja et al., 2010; Lao and Lee, 2006). Chen, Hao and Turner (2005) and Burell (2006) found that there was a large gap between house prices and people's income in Shanghai; the increase in people's income cannot keep up with the rise in the house prices. They also pointed

out that less than 20 percent of Shanghai residents can afford to buy a standardized new home. Similarly, Yang and Shen (2008) pointed out that house price in Beijing increased at an average rate of 25 percent per year, while the average household disposable income increased at a stable annual rate of 12 percent since 2004; there is a disparity between household income and house price. This was supported by Ahuja et al. (2010) findings. In the authors' study, the new measure of affordability ratio is defined by the percentage of monthly mortgage payment to individual household's disposable income. The ratio shows a downtrend over the period 2007 to 2009 for most of selected cities in China (see Table 2). This was mainly caused by the 2008 financial crisis, which slowed down the Chinese economy and largely reduced the housing affordability (Maguire and Yao, 2010). Furthermore, the affordability ratio in Beijing dropped from 74.6 % to 64.7 % during the year 2007 to 2009. The ratio in Shanghai, the largest city in China, decreased from 53.4% in 2007 to 44.1% in 2008, and it increased to 56.6% in 2009. For the second-tier cities, such as Chengdu and Chongqing, the affordability ratio declined as well. In Chengdu, the ratio dropped from 44.8% to 36.9% for the period 2007 to 2009. Within the same period, the ratio in Chongqing decreased from 29.1% to 25.8% (see Table 2).

Based on the report from J.P. Morgan (2010), the average affordability ratio for the entire of China is around 47 percent. Therefore, the affordability ratio in most of the first-tier cities was significantly higher. There were a great number of people living in cities, such as Beijing and Shanghai; they cannot afford to purchase a new house. Even though the ratio might be above 47 percent in the first-tier cities, most of the second-tier cities were still well below 40 percent. Therefore, the cost of homeownership in second-tier cities remained at a reasonable level. Hence,

the high housing price has led to low level of affordability in urban China. Households that have limited income would switch to public rental housing instead, hence, house rent in the public sector increased (Ahuja et al., 2010; Du, 2006). Meanwhile, various subsidies were introduced by the government, such as Housing Provident Funds and affordable housing to help people with middle and low income to achieve their homeownership (Duda, Zhang and Dong, 2005).

Table 2: Affordability Ratios for Some Major 1st and 2nd Tier Cities

Affordability Index (%) (Monthly mortgage payment as % of disposable income)			
	2007	2008	2009
Beijing	74.6	69.1	64.7
Shanghai	53.4	44.1	56.6
Guangzhou	52.1	45.9	39.7
Shenzhen	56.9	63.0	58.8
Chengdu	44.8	44.8	36.9
Chongqing	29.1	24.3	25.8
Tianjing	54.1	42.6	41.5
Hangzhou	58.0	53.7	56.8

Source: CEIC, Soufun, J.P Morgan estimates, 2010.

2.3 Loan Pricing Model

A loan pricing model ensures banks or other financial institutions can earn adequate rate of return for taking risks. Banks should set the loan in a way that the amount of interest should be greater than or equal to all lending costs in processing a loan. The interest rate charged is often determined on either the basis of the prime rate plus a markup or the cost of borrowed funds plus a mark up. The size of markup is directly related to the risk of the loan. The high-risk loan associates with larger markups, the low-risk loan comes with small markups. The criteria for classifying the riskiness of the loan refers to the up-front and annual loan fees, collateral

requirement, payment frequency , etc (Gup and Kolari, 2005).

There are three main purposes of the loan pricing model. First, it helps to establish the minimum level of the loan rate relevant to the default risk that banks bear; secondly, it can determine the income banks earned from loans, which contain all expenses plus a profit. Third, the loan interest should be set low enough to attract customers or survive from competitors. The loan pricing model is a common approach in lending, and it is widely used by most of banks and financial institutions. The different methods can be applied for pricing different types of loans and different models result in different interest earnings. Rose and Hudgins (2009) documented three traditional loan pricing models which were commonly used by most of commercial banks: Cost-plus pricing model, Price leadership pricing model and Customer probability pricing model. With the cost-plus pricing model, the interest rate charged on borrowers can be expressed in the equation below:

Loan interest rate	=	Marginal cost of raising loanable funds	+	Non-fund operating cost	+	Estimated margin to compensate Bank for default risk	+	Bank's designed profit margin

(1)

In a loan pricing model, the bank management considers the cost of raising loanable funds and the operating cost of running the bank. It implies that banks must estimate their costs in order to consistently be profitable and correctly price the loan. In equation (1), the marginal cost of raising loanable fund equals to the interest rate charged on deposits or money market borrowings used to fund the loan; non-fund operating cost is the cost of servicing the loan, which includes application and payment processing, wages, salaries and occupation expense; the estimated margin to

compensate the bank for default risk, that is the risk premium for the default of loans; bank's designed profit margin is the adequate return on bank capital. As the cost of raising loanable funds and the cost of loan increase, the interest rate of the loan increases. However, the model does not consider customers' needs and bank competitors (Deng, 2006).

Price leadership pricing model is another type of loan pricing model which is widely used by financial institutions. Under this approach, the base rate or prime rate is established by bank for their most creditworthy customers on short-term working capital loans; the London Interbank Offer Rate (LIBOR) is another index rate commonly used by bank, it offers on short-term Eurodollar deposits with maturities ranging from a few days to a few months. As a benchmark index rate, it is used by many other types of bank loan products. In order to maintain an adequate return, the bank adds a spread as lending to non-prime borrowers. The general form of the price leadership pricing model is determined as follow:

Loan interest rate	=	Base or prime rate	+	Default-risk premium for non-prime borrowers	+	Term-risk premium for long-term credit

(2)

The price leadership pricing model is more effective, because it takes into consideration bank competitors. In order to maintain an adequate return, banks must keep the funding and operating costs and risk premium as competitive as possible (Rose and Hudgins, 2009; Tan, 1997).

For customer profitability analysis model, the rate charged on a loan may differ from the rate indicated by the loan pricing models presented previously. The customer profitability analysis model focuses on the rate of return from the entire customer relationship. It is used to evaluate all

relevant expenses and revenues associated with the whole customer relationship as bank prices each loan request. The general equation of the profitability analysis model can be expressed as follows:

Net Rate of Return to the bank from customer relationship $= \frac{a-b}{c}$ (3)

Where a = Revenue from loans and other services provided to the customer

b =Expenses from providing loans and other services to the customer

c = Net loanable funds used in excess of the customer's deposits

Some banks price loans by determining the minimum spread that they could accept between their lending rate and their costs plus a profit margin. The profit margin on each loan provides the bank with adequate returns on its capital. Encouraging lending reduces bank's spread; discouraging lending increases bank's spread. Encouraging and discouraging lending reflects banks' changing financial needs (Gup and Kolari, 2005).

In China, the loan pricing models used by commercial banks are complicated, and there are limited studies that addressed on this issue. In general, the base rate of China is established by the People's Bank of China, different lenders appear to have different lending practices and different cost structures; therefore, different loan pricing models are applied by different banks; each bank only has minor discretion in adjusting spread along with its own situation, hence, the interest rate charged on loan is slightly different (Limsombunchai et al., 2005; Brandt and Li, 2002).

In ours study, the interest rate charged on loan are all based on the borrower and loan

characteristics, therefore, the loan pricing model can be formally expressed in general form as follows (Bard et al.,2000):

$$R_i = f\left(B_i\right) \tag{4}$$

Where R_i is the interest rate for loan i;

B_i is a vector of borrower and loan characteristics that may influence credit risk.

2.4 Consumer as Borrowers of Funds

2.4.1 Determinants of Consumers' Borrowing

As discussed previously, increase in housing loans has drawn significant attention in China with a growing proportion of loans made out to consumers. However, different characteristics of the consumers will result in the different attitudes towards borrowing. There are a number of factors affecting consumer's decision to borrow in terms of the socio-economic characteristics of the consumers (Ojo and Ighalo, 2008; Deng Zheng and Ling, 2004; Chien and Devandy, 2001).

The household income is the first factor which influences the consumer's borrowing decision. Moriizumi (2000) and Ojo and Ighalo (2008) identified income as a significant factor of the consumer's housing financing whereby an increase in current household income increases the demand of the mortgage debt. Chien and Devandy's (2001) study shows that as the level of income rises, consumers are less likely to be constrained by the debts, and have more ability to pay off the loan. People with high-income have better attitudes toward credit use. Therefore, the high level of household income is positively related to the consumer's decision to borrow.

The educational attainment is considered as the second factor, which is positively related to the

demand for credit. Deng, Zheng and Ling (2004) revealed that households with a high level of education attainment are more likely to take advantage of mortgages. As a proxy of wealth, households expect their income to rise with increasing level of educational attainment, whereby job security will increase as the level of educational attainment rises (Gertola et al., 2006 and Alves et al., 2010). Therefore, it is hypothesized that high level of educational attainment is positively correlated with demand for credit.

Occupation is the third factor which is positively related to the demand for housing loans. Bertola et al. (2006) concluded that debts are much higher among employed people. With respect to the demand for the housing loans, Ojo and Ighalo (2008) surveyed respondents by their occupations. Their result showed that professional job (54.1%) and civil or public services (31.1%) were two dominated group in their study. Hence, the respondents with professional jobs and civil/public servants were most likely to meet the requirements of housing loan. Chien and DeVaney (2001) also concluded that the professional jobs can provide a borrower with a higher and more stable income. Therefore, higher-income occupation is hypothesized to positively affect the consumer's decision to borrow.

The family life cycle, which can be approximated by age of the head of household, is the fourth factor influencing the consumer's demand for credit for home ownership. Vatne (2008) stated that the demand for debts grows among young households. Gertola et al. (2006) also conclude that younger age household head is more likely to be in debt than older household head. As the majority of younger households belong to the early stages of the family life cycle, most of them have low incomes and not much savings; hence, they are heavy users of debt especially in

purchasing a house (Mylonakis, 2007; Gertola et al., 2006 and Chien and Devandy, 2001).

The high price of a house is another factor which has a positive effect on consumers' borrowing. McCarthy and Steindel (2006) stated that the high value of house can increase the probability of consumer borrowing. It accords with the findings of Anundsen and Jansen (2010) and Hofmann (2003) where higher prices of houses can put upward pressure on the demand for credit and increase the amount of credit needed to finance a house purchase. The increased value of houses can act as good collaterals and reduce the likelihood of consumers' defaults on their loans. Moreover, Tan (1997) also states that the price expectation can heavily influence consumer's borrowing. Since the expected future price of a house increases, it is better to make a purchase now than later; hence, the consumer's demand for credit increases. However, Lauridsen (2008) argues that in the short term, rising in housing price will make low-income households difficult to access the loan.

Parental support, which is considered as a type of received help of loan payment, could be another factor influencing consumer's ability of acquiring a house loan. In recent years, the sharp increase in housing price had a considerable impact on first time homebuyers. First time homebuyers have to provide over thirty percent of the down payment for purchasing houses. Hence, an increasing proportion of first time homebuyers have to rely on their parents either through loans, mortgage guarantee or gift of money. For example, from 1998 to 2005, parental support amounted to 27.6% of housing financing in China (Li and Yi, 2007). Moloney and Bor (2003) states that as a 'parental pledge' product, parental support of the loan payment can facility home buyers to access their mortgage loan. This is especially true for first time home buyers.

The last factor affecting on the demand of loan is the interest rate. Previous empirical studies conducted by Wang (2010) and Vaessen (2001) showed that interest rates of loans are important to determine a consumer's accessibility to credit and an increase in interest rate is negatively correlated with financing a house purchase. Ojo and Ighalo (2008) applied two methods, the Relative Importance Index and the Principal Component Analysis to show that the interest rate is the most crucial factor affecting the borrower's intention in obtaining a housing loan. As interest rate rises, the cost of borrowing increases as well (Painter and Redfearn, 2002). Therefore, an increase in interest rate can negatively affect the demand for the housing loan.

2.4.2 Consumer Demand for Houses

Past researches revealed that income is the most important factor influencing home purchase decision (Huang and Clark, 2001; Fisher and Jaffe, 2003). Studies by Hood (1999), Huang and Clark (2001), Constant et al. (2008) and Tan (2008) also stated that as a proxy of household wealth, the home ownership increases with household income; a higher household income is more likely to cover the potential costs incurred by home ownership. Therefore, an increase in the level of household income could positively influence the consumer's home purchase decision.

Gender of the head of household is also a factor that affects the decision on purchasing a house. By using data disaggregated into primary and secondary housing demand in Spain, Manrique and Ojah (2003), found that males are more likely to commit to homeowners compared with females. Studies conducted by Hood (1999), Sedo and Kossoodji (2004), Gandelman (2005), Lauridsen and Skak (2007) also concluded that males often have relatively higher and stable incomes.

Therefore, males are more likely to acquire homeownership through housing loans than woman (Ojo and Ighalo, 2008 and Blanchflower et al., 1998).

Hood (1999) employed a logistic model and found race to be a significant factor affecting home ownership. The author reported that a white individual was more likely to own a house than a black or Hispanic individual in the US. This finding is also obtained by Sherlund (2004), where 42 percent of white households owned their houses, compared to 28 percent for minorities. The main reason was that black or Hispanic households were associated with financial constrains (Flippen, 2001 and Haurin, Herbert and Rosenthal, 2007).

Kryger (2009) did a study on the impact of age of individual on home ownership in Australia. The home ownership rate increased progressively with age, and the largest proportion of households with a mortgage was from the age group between 35 to 44 years old. According to the logistic regression estimation conducted by Feijten et al. (2003), the age groups of 25 to 29 and 30 to 34 years old had the highest probability of becoming homeowners; this is especially true for the first time homeowner. Hood (1999), Blossfeld and Kurz (2004), Tan (2008), Chua and Miller (2009) and Wang (2010) concluded that older households were more likely to have higher incomes, because of a relative long duration of their employment and increasing level of working experience. Therefore, most of them have sufficient financial ability to cover the potential costs of home ownership.

A study by Oji and Ighalo (2008) revealed marital status of households is a major determinant of home ownership. The authors drew a sample from 327 individual borrowers who have succeeded

in accessing a mortgage loan, and reported that 86.9 percent of the respondents were married and have their own houses. Past research conducted by Bech-Danielsen and Gram-Hansen (2006), Lauridsen and Skak (2007), Hendershott et al. (2008) and Chua and Miller (2009) also stated that married couples have a greater impact on the probability of owning a house, compared with the single and divorced people. Hood (1999) and Huang and Clark (2002) concluded three possible reasons for the previous findings. First, married couples are often interested in a stable life and less mobile than singles. Second, married couples can pool their income and wealth together; compared with singles or divorced people, married couples are more easily to overcome the financial constrains and achieve their home ownership. Finally, married couples always tend to have children, they are more likely to own houses and provide a stable environment for raising up their children. Therefore, married couples have a great probability to acquire home ownership through mortgage loans (Del Rio and Young, 2005; Crook, 2006).

The level of education attainment also determines the decision of purchasing a house. The probability of home ownership falls, as the level of the education attainment of the head of household is low (Lauridsen and Skak, 2007). A household with a higher level of education attainment is always associated with a good job and a steady income; on the other hand, a higher income will widen the likelihood of owning a house (Hood, 1999; Tan, 2008; Chua and Miller, 2008; Constant et al., 2008).

The occupation of the head of household is another factor which influences the consumer's decision on purchase a house. Huang and Clark (2002) and Blossfeld and Kurz (2004) reported that the occupation of household head is highly correlated to the household income; household

with a professional job is associate with a high and stable income, which could potentially secure the loan (Hood, 1999). Hence, a professional job will increase the consumer's demand of purchasing a house.

The number of dependents in a household is correlated to the size of households. Hood (1999) employed a logistic model to test the effect of household size on home ownership. The author argued that a larger household size which has a family greater than five has a negative effect on the probability of home ownership. However, with a family size is less than five, there is lack of significance on the probability of owning a house. The evidence shows that as children or dependents in a family increases, households may encounter financial constrains due to increasing living costs. Therefore, it may be costly to purchase a house as the number of dependents increases (Kryger, 2009). However, Hood (1999) also stated that with the loan assistance, the large size of households can meet their wealth constrain and achieve their home ownership.

The house size, which is measured by the floor space of a house in our study, is a new contribution of the study, used to determine the decision of purchasing a house. There is a lack of studies on the relationship between size of house and home ownership. According to the recent research conducted by Creis Research (2010), 42.1 percent of the households choose their houses with the floor space between 70 to 89 square meters; 19.3 percent prefers to live in the house with the floor space between 50 to 69 square meters; a household living in the house with 90 to 109 square meters accounts for 18.8 percent. Hence, a relative smaller size house is more favorable to most households in urban China. However, Aurora (2005) argued that with the increase in personal income and the privatization of housing market since the late 1990s, most of urban Chinese

households preferred to purchase relatively large apartments.

Credit card ownership and possession of other loans positively influence the consumer's decision to purchase a house (Calem et al., 2010, Hirschman, 1979). Good credit card holders pay credit card balance on time, and the credit score will be higher. Hence, credit card holders who have never failed to pay their balances will be more likely to be approved for the home loans (Cohen-Cole, 2011). Moreover, most good credit card holders are educated and higher income earners; they are more likely to be granted home loans (Mylonakis, 2007). With the sufficient financial resources, consumers can make decision on purchasing houses. On the other hand, existing commitment can be a signal to homebuyer's credit worthiness; people with good credit rating can easily access the credit and achieve homeownership (Calem et al., 2010).

2.5 Differential Treatment in Loans Approval

It is costly to acquire information about an applicant's true credit worthiness, financial institutions, especially banks, may base their decisions on group characteristics, such as age, gender, race, etc. The possibility of differential treatment with respect to the consumers' socio-economic factors has been well investigated in the mortgage market. For instance, Courchane et al. (2000), Blackburn and Vermiyea (2003) and Shapiro (2006) revealed the existence of racial disparities in a loan approval process. Lin (2010) used the Survey of Consumer Finances 1998 to 2007 data set and found that racial discrimination exists in the US credit market; the result showed that the blacks and Hispanics tend to receive worse treatment in their credit demand because of higher average default risks. Pager and Shepherd (2008) also suggested that with the equal credit risk, the blacks

and Hispanics are more likely to be rejected for their loan applications than the whites in the US which implies that racial discrimination is significantly and positively correlated to the approval of the housing loans in the US. Harrison and Glover (2008) applied a probit model to examine the existence of racial bias in home loan lending in Mississippi. The evidence suggests that there is a consistent high denial rates for minority borrowers. However, there is a lack of studies addressing on the racial difference in consumer's borrowing decision in China.

Dietrich and Johansson (2005) tested the impact of age and gender disparities in mortgage granting process. The authors used HMDA data from eighteen statistically modeled fair lending exams conducted by the Office of Comptroller of the Currency from 1996 to 2001, where the evidence suggests that gender and age effects appear in the probability of being denied a mortgage. The positive coefficient of gender shows that males are more likely to be denied credit than females, and this is consistent with the finding of Behr et al. (2011) and Sanders and Scanlon (2000). However, Berlin (2010) stated that gender slightly causes the differential treatment in loan application. Unlike the gender analysis, both younger applicants aged 30 years old or less and older applicants aged 55 years old or above are more likely to be denied a home mortgage loan (Dietrich and Johansson, 2005).

Other studies also attempted to determine the disparity of marital status of the borrowers in the loan market. Sanders et al. (2000) found that married women are less likely to be rejected for the loans than singled women. Mama and Ewoudou (2010) drew a sample from 1996 Panel Study of Income Dynamics showed that married head of households have a greater chance to get approval for their housing loans.

The higher level of education could be a proxy of the wealth maximizing behavior; since high education indicates a high income in the future, thus, a high education attainment can reduce the cost of credit (Getter, 2006). Grant (2003) and Del Rio and Young (2005a) suggested that high level of educational attainment has a positive impact on the consumer's financial knowledge and the higher level of knowledge is associated with the less likelihood of loan defaults, therefore, the consumer with a higher level of educational attainment is less likely to be rejected a loan.

A study conducted by Roszbach (2004) showed annual household income is an important factor which positively contributes to the approval of housing loan. A higher level of income has a lower denial rate of housing loan (Ariccia et al., 2008). Weller (2008) reported the existence of income disparity for the rejection of loan besides racial discrimination; the higher income households are less likely to be discouraged from applying a loan. The author also pointed out that the difference has increased by race and decreased by income since 1995.

The effects of the duration of employment and the type of jobs can affect the process of home mortgage approval. Borrowers with longer and more reliable employment history are associated with less risk; borrowers with professional jobs are more likely to get the home mortgage loan (Rose, 2003; Thompson, 2006; Cook et al., 1992). The household income is another important factor for accessing the housing loan. Borrowers with high-level and stable income can directly affect the ability to pay the loan (Deng, Zheng and Ling, 2004).

Size of household is a critical factor which is positively related to the rejection of a housing loan. According to Tan (1997), size of household refers to the total number of residents in a family. By

holding a certain amount of household income constant, the cost of living increases as long as the household size increases. Therefore, it is more likely to be rejected for a housing loan.

Credit card ownership is found to positively affect the home loan rejection, especially for the first time home buyer. According to Cohen-Cole (2008), credit card can be acted as an integral part of the consumer finance experience and form the building blocks of a consumer's ability to access credit in the future. The author also stated that a consumer who wishes to purchase a house and has a credit card would be negatively related to the housing loan rejection; consumers holding credit cards but has failed to pay cards on time will be positively related to the rejection of a mortgage. Kerr and Dunn (2002) empirically tested the determinants of consumer's credit card balance and credit rejection. The study stated that the repayment of credit card history is crucial to affect household's credit rating; and households with a large amount of outstanding credit card balance are more likely to be denied a housing loan.

2.6 Price Discrimination and Price Differentiation in the Loans Market

Difference in interest rates charged on housing loans are usually attributed to risk related of the borrower's socio-economic factors and loan characteristics. Borrowers are differentiated by level of risk, and interest rates increase with risks. Based on Chakravarty's (2005) finding, the factors, while playing an important role in loan approval, may not significantly affect the interest rate charged on loans. Past studies conducted by Kumar (2010) reported that age could be a factor in determining the price discrimination in the loan markets. The author also stated that the risk of default increases with age of the borrower. Agarwal et al. (2008) documented the age effect on the cost of borrowing; the authors found that younger and older borrowers are charged higher interest

rates compared with middle aged borrowers because of the high default rates among younger and older borrowers. Wang, (2010), Ojo and Ighalo (2008) and Huang and Clark (2002) studies showed that young people earn a relative lower income, thus they are more likely to be charged at a higher interest rate when they apply for housing loans.

A higher interest rate charged on loan reflects the higher riskiness of a borrower. A study conducted by Barr (2002) and Alves et al. (2010) discovered that higher education levels have a positive effect on the lowering of interest rates charged. A high skilled occupation is always associated with a high level of education and high level of income. An increase in a household's income can increase the borrower's financial ability and reduce the default on a loan. Weller (2008) reported similar result in his study where the interest rate charged on housing loan may change with the level of household income; low-income households seem to pay higher interest rates on mortgage loans than high-income households. Therefore, an increase in higher income, higher level of education and higher skilled occupation is negatively related to interest rate charged on loan.

With respect to the loan characteristics, the debt to income ratio, housing loan turndown history, duration of loans and the down payment of loans are related to the interest rate charged on loans. According to Akram and Eitrheim (2007), the debt-to-income ratio is a proxy of the borrower's financial ability; it could affect interest rate charged on loans. Ceyhan et al. (2011) used a logistic regression model to predict the probability of a loan being successful versus unsuccessful. The authors argued that the interest rate was positively related to a borrower's debt-to-income ratio; a borrower with a higher debt-to-income ratio is expected to have a relative high default rate and

should be charged at a higher interest rate. This finding was consistent with Sanchez-Arellano's (2006) finding. Epley et al. (1995) and Kim (2007) reported that as a signal of the default risk of the mortgage loan market, the down payment constrain reflects the maximum availability of the loan-to-value ratio. The larger amount of down payment on housing loans indicates lower default risk of the borrowers. Calcagnini et al. (2009) and Thompson (2006) reached similar conclusion where the authors pointed out that the large amount of down payment on housing loans, the size of the housing loans tend to be smaller, therefore, a lower interest rate should be charged. According to Salas and Saurina (2006) and Calcagnini et al. (2009), the maturity of a loan represents a proxy for the length of lending relationship. A longer maturity of a loan tends to be riskier; hence, it is expected to be charged at a higher interest rate. Calcagnini et al. (2009) revealed that housing loan turndown history also has a positive and significant effect on the interest rate charged on the borrowers, because a higher default rate implies a higher interest rate.

There are not many studies that addressed on the relationship between holding an account with the lending institution and interest rates charged on loan. In general, most banks request borrowers to keep an account with the banks when applying for a housing loan. Simpson and Buckland (2009) and Puri et al. (2011) reported that an applicant who has an account with his or her bank has the priority of applying for a loan. For example, the Puri et al found that only 2.5% of the loan applicants do not have account with their existing banks. The evidence also discovered by Tan (1997) showed that the poor management of money on the bank account could result in a higher interest rate charge and a negative effect on the consumer's loan application.

As previously explained the types of housing loans are divided into three categories: personal housing loans, authorized housing loans and combined housing loans. In China, the different types of housing loans should be charged at different rates. According to Yeung and Howes (2006), the interest rate of the authorized housing loan is always set below the market rates; the personal housing loan is based on the official rate offered by People's Bank of China; and the rate of combined housing loans is set between the personal housing loan and the authorized housing loan.

2.7 Summary

Chapter Two begins with an overview of development of housing finance system in urban China, followed by the issues of housing price and housing affordability; and the empirical evidence on consumer demand for housing loans, different treatment in the loans market and price differentiation and price discrimination in the loans market. The theoretical loan pricing models were discussed in this chapter as well. The following Chapter will detail the theoretical and empirical methodologies, sampling and data collection method.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

Chapter Three begins with a description of the research methodology. The empirical framework in this research is derived from the qualitative choice modeling. Logit analysis was chose because of the binary nature of the dependent variable. Regression analysis was used to determine the factors that affect the price of loans. A discussion of the research design, survey questionnaire development and format, and construct measurement, sample size and sampling technique concludes the chapter.

3.2 The Empirical Framework

The empirical research is developed based on the qualitative choice analysis[1], which is widely used in describing decision-makers' choices in areas such as banking, transportation, telecommunication and housing. A qualitative choice situation is defined as one in which a decision-maker faces a choice among a set of alternatives which satisfy the following criteria:

1) The number of alternatives in the set is finite;
2) The alternatives are mutually exclusive; that is, the person's choosing one alternative in the set necessarily implies that the person does not choose another alternative; and
3) The set of alternatives is exhaustive: that is, all possible alternatives are included, and so the person necessarily chooses on alternative from the set [2](Varian, 1992).

Any choice or decision is represented by a continuous variable is not considered as a qualitative

[1] Qualitative choice analysis adapted from Ben-Akiva and Lerman (1985) and Train (1986).
[2] Consumer demand theory of utility maximization is adapted from Varian (1992). Under the theory, the consumers are allowed to order set of preferences, so it can be represented by a utility function that is a continuous function u: $X \rightarrow R$ such that $x > y$ if and only if $u(x) > u(y)$.

choice situation. A qualitative choice model designates a class of models, such as logit and probit, which attempt to related the probability of making a particular choice to various explanatory factors and calculates the probability that the decision-maker will choose a particular choice or decision from a set of choices or decisions(J_n), given data observed by the researcher. This choice probability (P_{in}) depends on the observed characteristics of alternative i (z_{in}) compared with all other alternatives (z_{jn} , for all j in J_n and $j \neq i$) and on the observed characteristics of the decision-maker (s_n). The choice probability can be specified as a parametric function of the general form:

$$P_{in} = f(z_{in}, z_{jn}, s_n, \beta) \tag{3.1}$$

Where f is the function relating the observed data to the choice probabilities specified up to some vector of parameters (β).

By relating qualitative choice models to utility theory, a clear meaning of the choice probability emerges from the derivation of probabilities from utility theory; the utility from each alternative depends on various factors, including the characteristics of both alternative and decision-maker. By labeling the vector of all relevant characteristics of person n as r_n and the vector of all characteristics of alternative i chosen by person n as x_{in}, we can write the utility as a function of these factors,

$$U_{in} = U(x_{in}, r_n) \tag{3.2}$$

For all i in J_n, the set of alternatives (Varian, 1992).

In Tan's (1997) study, the author uses Varian's (1992) framework which is about Marshall's

consumer demand theory of utility maximization[3], the decision-maker choose the alternative with the greatest utility. The choice is deterministic and decision-maker will choose i ($i \in J_n$) if U ($x_{in,}$, r_n) ≥ U (x_{jn}, r_n), for ($i,j \in J_n$ and $j \neq i$). In order to specify the choice probability in qualitative choice models, U ($x_{in,}$, r_n) for each i in J_n is decomposed into two sub functions: the first is a systematic component, which depends only on factors that the researcher observes; the other represents all factors and aspects of utility which are unknown or excluded by the researcher, labeled as ε_{in}.

$$U_{in} = U(x_{in}, r_n) = V(z_{in}, s_n) + \varepsilon_{in} \tag{3.3}$$

Where z_{in} are the observed attributes of alternative i and s_n are the observable characteristics of decision-maker n.

$$P_{in} = P(U_{in} \geq U_{jn}) \forall i, j \in J_n and i \neq j \tag{3.4}$$

Hence,

$$P_{in} = P(V_{in} - V_{jn} \geq \varepsilon_{jn} - \varepsilon_{in}) \forall i, j \in J_n and i \neq j \tag{3.5}$$

Different qualitative choice models are obtained by specifying different distributions for unknown component of utility (ε_{in}) and deriving functions for the choice probabilities (Train, 1986; Ben-Akiva and Lerman, 1985; Greene, 1990). The logit model is used in this research because of the binary choice of the dependent variables.

The choice probabilities are expressed as follows (Train, 1986; Ben-Akiva and Lerman, 1985; Greene, 1990):

$P_{in} = e^{\mu V_{in}} / \sum_{j \in J_n} e^{\mu V_{jn}} \forall i, j \in J_n$, μ=positive scale parameter, i.e. μ>0.

Or, $P_{in} = 1/(1 + e^{-\mu[V_{in} - V_{jn}]})$ (3.6)

[3] Consumer demand theory of utility maximization is adapted from Varian (1992)

Under relatively general conditions, the maximum likelihood estimator is consistent, asymptotically efficient[4] and asymptotically normal[5] (Ramanathan, 1992).

The logit model is applied to the first, second and fourth objectives of this research. The logit model attempts to predict the probability of homeownership in urban China related to various explanatory factors. In objective one, with the perspective of making a housing purchase decision, the consumers are faced with a simple binary choice situation: to purchase or not to purchase a house. The consumer's utility associated with purchasing a house is denoted as U_{1n}, and the utility associated with not purchasing a house is denoted as U_{0n}, it can be expressed as:

$$U_{in} = V_{in} + \varepsilon_{in} \qquad \forall \qquad i \in J_n and J_n = \{ 0 , 1 \tag{3.7}$$

The consumer will choose to purchase a house if $U_{1n} > U_{0n}$, the utility of each choice (V_{in}) depends on the vector of observable attributes of the choice and the vector of observable consumer characteristics. The error term (ε_{in}), which includes all unobservable and excludes the consumer characteristics, is assumed to be independently distributed. The choice probability of $U_{1n} > U_{0n}$ is given by $P_{1n}^{*} = \Pr_n(U_{1n} > U_{0n}) = 1/(1+e^{-\mu[V_{1n}-V_{0n}]})$, where $\mu>0$. Hence, the parametric functional form of the logit model can be written as below:

$$Y_{in}^{*} = \ln(\frac{P_{in}}{1+P_{in}}) = f\left(X_1, X_2, X_3 ..... X_{12}\right) + \varepsilon_{in}^{*} \tag{3.8}$$

where Y_{in}^{*} = Decision to purchase a house (where 1= purchase ; 0 = do not purchase)
X_1 = Age of consumer (+/-)
X_2= Gender of consumer (where 1= male; 0 = female) (+)
X_3= Race of consumer or ethnic group (where 1 = the Han nationality; 0 = minority) (+)
X_4= Marital status (where 1 = single; 2 = married; 3=divorced/Separated;
4= De facto relationship) (+/-)
X_5= Highest educational attainment (+)

[4] Asymptotically efficient: for large n, no other consistent estimator has a smaller variance.
[5] Asymptotically normal: for large n, they closely approximate the normal distribution, even if the distribution from which the observations were drawn was not normal.

X_6= Annual household income (+/-)
X_7= Occupation (+/-)
X_8= Size of household (+)
X_9= No. of dependent/Children (-)
X_{10}= Size of houses (+/-)
X_{11}=Other loans (where 1= yes; 0 = no) (+)
X_{12}= Credit card (where 1=yes; 0 = no) (+)
ε_{in}^{*} = Error term

The explanatory variables in equation (3.8) include age, gender, race, marital status, education attainment, occupation, annual household income, size of household, number of dependents, size of houses, credit card holder and the possession of other loans.

Based on previous research conducted by Calem et al. (2010) Chua and Miller (2009), Kryger (2009), Tan (2008), Lauridsen and Skak (2007), Bech-Danielsen and Gram-Hansen (2006), Aurora (2005), Blossfeld and Kurz (2004) and Huang and Clark (2002), the coefficient of the borrower characteristics such as age, gender, race, marital status, highest educational attainment, occupation, household income, size of house and size of household are expected to be positively related to homeownership. However, the number of dependents is negatively related to the homeownership; as the number of dependents increases, the probability of homeownership decrease. Meanwhile, credit card holder is hypothesized to have an impact on buying a house. The possession of other loans also has a positive impact on homeownership as well. Thus, the following hypothesis will be tested in objective one:

H_1: The borrower characteristics will significantly affect the decision to purchase a house.

Research objective Two evaluates the housing loan application with respect to the borrower's

characteristics. Since this is a binary decision making situation, the housing loan application can be either rejected or accepted. The observable situation of housing loan application rejection is denoted by Y_{1n} , having an associated utility of U_{1n} ,while the observable situation of housing loan application approval is given by Y_{0n} , with an associated utility of U_{0n} . An unobservable variable (Y_{in}^*) is given by $Y_{in}^* = U_{1n} - U_{0n}$. If $Y_{in}^* > 0$, then there will be a housing loan application rejection. Y_{in}^* can be rewritten as (Train, 1986; Ben-Akiva and Lerman, 1985, Greene, 1990):

$$Y_{in}^* = (V_{1n} - V_{0n}) + (\varepsilon_{1n} - \varepsilon_{0n}) \tag{3.9}$$

$$= x_{in}^* \beta + \varepsilon_{in}^*$$

The systematic component of the utility is assumed to be dependent on the borrower's characteristics, represented by x_{in}^* , with β as the vector of parameters associated with the variables, and ε_{in}^* is the error term for the model for Y_{in}^*. The probability of rejecting the housing loan application for the i^{th} individual can be shown as:

$$\begin{aligned} P_{1n} &= prob(Y_{1n} = 1) \\ &= prob(Y_{in}^* > 0) \\ &= prob(\varepsilon_{in}^* > -x_{in}^* \beta) \\ &= 1/(1 + e^{-\mu[V_{1n} - V0n]}) \end{aligned} \tag{3.10}$$

Which is derived from the cumulative distribution function (CDF) of the ordinal logistic error term:

$$F(\varepsilon_n) = 1/[1 + \exp(-\mu\varepsilon_n)], \text{ where } \mu > 0 \text{ and } -\infty < \varepsilon_n < \infty \tag{3.11}$$

Therefore, the parametric functional form of housing loan application rejection based on the borrowers' characteristics can be written as follows:

$$Y_{in}^* = \ln\left(\frac{P_{in}}{1 + P_{in}}\right) = f(X_1, X_2, X_3 \ldots\ldots X_{10}) + \varepsilon_{in}^* \tag{3.12}$$

where Y_{in}^{*} = Housing loan application rejection (where 1=yes; 0= no)

X_1= Gender of borrower (where 1= male; 0 = female) (+)
X_2= Age of borrower (+/-)
X_3= Race of borrower (where 1= the Han nationality; 0 = minority) (-)
X_4= Marital Status (where 1=single; 2=married; 3=others) (-)
X_5= Highest Education attainment (-/+)
X_6= Occupation (-/+)
X_7= Annual household income (-/+)
X_8= Size of household (-/+)
X_9= Duration of employment (-/+)
X_{10}= Credit card ownership (-)

ε_{in}^{*} = Error term

Previous research found out that the borrowers' characteristics, including age, gender and race, are the most significant factors causing the differential treatment in loan applications (Berlin, 2010; Lin, 2010; Harrison and Glover, 2008; Pager and Shepherd, 2008; Blackburn and Vermilyea, 2003; Brown and Simpson, 2002; Courchane et al. 2000; Martin and Hill, 2000). For example, the default rate was higher for minorities than for white in US. Old-age borrowers were associated with lower risks and less likely to be rejected by the banks; hence, the young-age borrowers are more likely to be rejected. The expected sign for the coefficients of race is hypothesized to negatively affect the housing loan rejections. The expected sign for the coefficients of young-age borrower is hypothesized to positively affect the housing loan rejections. In this section, the explanatory variables such as highest educational attainment, occupation, annual household income, and credit card ownership were also significant in explaining the housing loan rejection (Weller, 2008; Thompson, 2006; Del Rio and Young, 2005a; Roszbach, 2004; Mylonakis (2007); Sanders and Scanlon, 2000). The expected signs for the coefficient of those variables are hypothesized to negatively affect the housing loan rejection. The rest of the explanatory variables,

including gender and size of household were found to be significant and positively affect the denial of housing loan (Kerr and Dunn, 2002; Tan, 1997).

Therefore, the following relationships are hypothesized:

H_2: There is a differential treatment if the age of the borrower has a significant negative relation to the housing loan rejection.

H_3: There is a differential treatment if the gender of the borrower has a significant positive relation to the housing loan rejection.

H_4: There is a differential treatment if the race of the borrower has a significant negative relation to the housing loan rejection.

H_5: There is a differential treatment if the marital status of the borrower has a significant negative relation to the housing loan rejection.

H_6: There is a differential treatment if the highest education attainment of the borrower has a significant negative relation to the housing loan rejection.

H_7: There is a differential treatment if the occupation of the borrower has a significant negative relation to the housing loan rejection.

H_8: There is a differential treatment if the annual household income has a significant negative relation to the housing loan rejection.

H_9: There is a differential treatment if the size of household has a significant positive relation to the housing loan rejection.

H_{10}: There is a differential treatment if the duration of employment has a significant negative relation to the housing loan rejection.

H_{11}: There is a differential treatment if the credit card ownership has a significant negative relation to the housing loan rejection.

The third objective is related to the price of the housing loan with respect to the borrower's characteristics. Different borrowers' characteristics induce different interest rates charged on housing loan applicants. The method used in this objective differs from the other three objectives. In this section, the results and findings are derived from the Ordinary Least Square (OLS)

estimation, to test different borrowers' characteristics on the cost of loans. The parametric equation is given as:

$$Y_{in} = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9) + \varepsilon_{in} \quad (3.13)$$

Where Y_{in}= Cost of borrowing (interest rate charged to borrower)
X_1= Age of borrower (-)
X_2= Occupation (-)
X_3= Annual household income of borrower (-)
X_4= Highest education level of borrower (-)
X_5= Duration of housing loan (+)
X_6= Debt to income ratio (+)
X_7= Account holder of lending institution (where 1= yes, 0 = no) (+)
X_8= Types of housing loans (-)
X_9=Down payment of loan (-)

ε_{in} = Error term

The dependent variable in equation (3.13) is the interest rate charged on the housing loan. The explanatory variables include the age of borrower, occupation, the annual household income, the highest level of educational attainment of the borrower, the duration of housing loan, debt to income ratio, account holder of the lending institution, types of housing loans and the down payment of housing loan.

Equation (3.13) tests different borrowers' characteristics on the cost of a housing loan. The 'housing loan turn down history' variable was excluded from the model because the variable is not a factor on cost of borrowing. A possible reason is that in China most people are reluctant to have loans, so very few people were turned down on their loans. Another reason is that interest rate in China is set by People's Bank of China, so there is no much difference in the interest rate charged on loans for different people.

Past research conduct by Kumar (2010), Alves et al. (2010), Agarwal et al. (2008), Weller (2008), Kim (2007) and Yeung and Howes (2006) showed that age of the borrower, occupation, annual

household income, highest education, types of housing loans and down payment of loan were found to be significantly related to the cost of borrowing; the expected coefficient signs of those variables were hypothesized to be negative to the interest rate of loans. The debt-to-income ratio, the duration of housing loans and holding account with existing banks were found to be significantly affects the interest rate charged on loans. The debt to income ratio is a measure of consumer's capacity for loan default; rising debt-to-income ratio implies that a higher leverage induces a higher interest rate payment. Therefore, the sign of debt to income ratio coefficient is expected to positively related to the interest rate of the loans (Straka, 2000; Davis, 1987; Stafford and Dunkelberg, 1969). The duration of loan is hypothesized to be positively related to the interest rate charged. According to Calcagnini et al. (2009), McEachern (2008) and Salas and Saurina (2006), as the duration of a loan increased, lenders required a higher interest rate to compensate for greater risk, hence, the interest rate increases with the duration of a loan. Therefore, the sign of the duration of housing loans coefficient is expected to be positively related to the interest rate of the loans. Having an account with the banks can positively affect on the interest rate charged (see Tan, 1997).

Therefore, the following relationships are hypothesized:

H_{12}: Age of the borrower is negatively related to interest rate charged on housing loan.

H_{13}: Occupation of the borrower is negatively related to interest rate charged on housing loan.

H_{14}: Annual household income is negatively related to interest rate charged on housing loan.

H_{15}: Highest education level of the borrower is negatively related to interest rate charged on housing loan.

H_{16}: The duration of the loan is positively related to interest rate charged on housing loan.

H_{17}: The debt-to-income ratio is positively related to interest rate charged on housing loan.

H_{18}: Holding an account with banks is positively related to interest rate charged on housing loan.

H_{19}: Types of housing loans are negatively related to interest rate charged on housing loan.

H_{20}: Down payment of housing loans is negatively related to interest rate charged on housing loan.

Objective four tests specific characteristics of the consumers who either use the housing loans to achieve their homeownership (Y_{1n}) or do not use housing loans to achieve their homeownership (Y_{0n}). The traditional demand theory has to be modified to analyze such choice (Train, 1986; Ben-Akiva and Lerman, 1985). The group of homeowners using housing loan financing for the purchase of their houses are denoted by $Y_{1n}=1$, and an associated utility of U_{1n}, based on observable consumer characteristics and attributes. Then, the group of homeowners who do not use the housing loan financing for their purchase with an associated utility is given as U_{0n}. A latent variable (Y_{in}^{**}) is given as:

$Y_{in}^{**} = U_{1n} - U_{0n}$, which can be rewritten as:

$$Y_{in}^{**} = (V_{1n} - V_{0n}) + (\varepsilon_{1n} - \varepsilon_{0n})$$

$$= x_{in}^{**}\beta + \varepsilon_{in}^{**} \qquad (3.14)$$

Where x_{in}^{**} refers to the explanatory variables assumed to affect the utility of either group of homeowners, β is the vector of estimated coefficients for the explanatory variables and ε_{in}^{**} is the error term comprised of all unobservable and excludes attributes and consumer characteristics. If $Y_{in}^{**} > 0$, then the particular attribute or consumer characteristic is found to be the characteristic of homeowners using housing loan to finance their purchase. The logit model is used, since the dependent variable (Y_{in}) represents the two groups of homeowners. Hence, the general parametric functional expression of this model can be given as follows:

$$P_{1n} = prob(Y_{1n} = 1)$$

$$= prob(Y_{in}^{**} > 0)$$

$$= prob(\varepsilon_{in}^{**} > -x_{in}^{**}\beta)$$

$$= 1/(1+e^{-\mu[V_{in}-V_{0n}]}) \quad (3.15)$$

which is derived from the CDF of the ordinal logistic error term (Train, 1986; Ben-Akiva and Lerman, 1985, Greene, 1990):

$$F(\varepsilon_n) = 1/[1+\exp(-\mu\varepsilon_n)], \text{ where } \mu > 0 \text{ and } -\infty < \varepsilon_n < \infty \quad (3.16)$$

Hence, a parametric functional expression for this model is given as below:

$$Y_{in}^{**} = \ln(\frac{P_{in}}{1+P_{in}}) = f\left(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, ..., X_{13}, X_{14}\right) + \varepsilon_{in}^{**} \quad (3.17)$$

where

Y^{**}_{in}= homeowners using housing loan finance (where 1= First-homeowners; 0= Non-first homeowners

X_1= Gender of homeowner (where 1= male; 0 = female) (+)

X_2= Marital status (where 1= single; 2 = married; 3= divorced/ separated; 4= de facto relationship) (-)

X_3= Age of borrower (+)

X_4= Occupation (-)

X_5= Highest educational attainment (+)

X_6= Annual household income (+)

X_7= Size of household (-)

X_8= No. of dependents (-)

X_9= Household status (-)

X_{10}= High Price of house (-)

X_{11}= Received help for loan payment (+)

X_{12}= Housing loan turndown history (where 1=yes; 0= no) (-)

X_{13}= Other loans (where 1= yes; 0 = no) (-)

X_{14}= Credit Card Ownership (+)

ε_{in}^{**} = Error term

The explanatory variables used in equation (3.17) include age, gender, marital status, highest educational attainment, annual household income, size of household, household status, number of

dependents, high price of house, received help for loan payment, housing loan turndown history, existence of other loans and credit card ownership. The coefficients such as gender, age. Highest educational attainment, annual household income and received help for loan payment are hypothesized to have positive signs, which indicate that financed homeowners with those characteristics are first time home buyers. The rest of variables such as gender, marital status, and size of household, etc are expected to be negatively related to the financed homeowners who are not the first time to purchase their houses.

Therefore, the following relationship is hypothesized:

H_{21}: The significant factors will be different for first time homebuyers and non-first–time homebuyers.

Multicollinearity test will be conducted in order to investigate the collinearity between the explanatory variables in above four models. The test ensures that each explanatory variable applied in the estimation is independent to each other. If there is a problem with multicollinerity in the variables, this can be corrected for either by eliminating one of the two variables with high correlated variables or using a new variable in place of its components. The significance level of the estimated parameters is determined by computing the t-test statistics for each variable at 10% significant level.

Previous studies argued that interest rate could be a factor affecting the demand of housing loan; but in China, the interest rate is set by the People's Bank of China, which is almost fixed, so there is no big difference for interest rate charged by different banks. Thus, the interest rate is not included in equation (3.17).

3.3 Questionnaire Design

This research investigates the accessibility of housing loan on homeownership in urban China. In order to obtain more reliable and robust results, a survey questionnaire is used and all questions are derived from previous studies. The questionnaire contains four parts: basic information of the respondents, homeowners, non-homeowners and socio-economic background of the respondents.

The first section of the survey questionnaire comprises of questions which concern with the detailed information of the respondents' current living conditions. The questions include the type of current living accommodation, size of home, structure of the home, loan turndown history (including the reasons why a loan was rejected), and ownership of home. All questions are established in order to help the researcher to understand the current living conditions of the respondents.

The second section of the survey questionnaire contains information of homeowners who achieve their homeownership by using a housing loan. In this section, the factors influencing the home purchase decision towards the housing loan are discussed as well. In addition, the questions also include loan and borrower characteristics, such as down payment of housing loan, interest rate charged on loan, duration of loan, etc. All questions are designed to allow the researcher to match consumers' expectations of housing loan financing to the actual housing loan financing taken.

In the third section of the questionnaire, the questions measure predetermined factors which affect non-homeownership in urban China. This was accomplished by the factors such as high price of

house, high down payment of housing loan, lack of affordability, etc. The factors for not owning a house are measured using a five point Likert scale for the degree of importance of each factor; where 1 indicates very important and 5 not important at all. This allows the researcher to evaluate the degree of importance of each factor, which influences the decision of consumers for not owning a house. Other questions concerned about the previous rejection of loan and source of previous finance.

Section four of the survey questionnaire contained the socio-economic background of the respondents, which could possibly affect the respondents' ability in obtaining a housing loan. All questions are designed to help the researcher to construct the socio and demographic profile of the sample respondents. The general questions in this section include age, gender, race, education attainment, marital status, occupation, etc.

A pre-test is of the survey questionnaire conducted to assess the reliability and validity of the survey questions. As the questionnaire is developed specifically for this research, pre-testing helps to clarify the items and questions used in the questionnaire. A total of 30 questionnaires are randomly distributed to both household residents (both home owners and non-homeowners) in Nanjing aged 18 years and older. The respondents were encouraged to comment on any questions or statements that they thought were ambiguous or unclear. Some minor wording modifications to the questionnaire are made as a result of this process.

3.4 The Data

Cross-sectional data is used to conduct this research. It is useful for comparisons among various population segments (Wong, 1996). This method has the advantage of achieving a good response rate with complete information, good control over the respondent's identity, flexibility during the data collection process, less restriction by the length of the questionnaire, clarity and lack of sequence bias. The data of this study was obtained from the survey questionnaire, which was administered in Nanjing, a second tier city of China, from November 2010 to December 2010. The survey comprises the bulk of data required by this research, which determines the factors influencing the decision to purchase a house. The survey data also identifies the borrower characteristics of both homeowners and non-homeowners. A total of 421 questionnaires were used, and all questions are based on previous studies and secondary reports.

3.5 Sampling Method

The sample is drawn from household residents (both home owners and non-homeowners) in Nanjing, the capital city of Jiang Su Province to examine the factors affecting their decision to purchase a house. The data is collected from a convenience sample of individuals, irrespective of their homeownership status, gender, occupation, or income. Convenience sampling is used in the study due to the practical difficulties in obtaining the list and information of our target population. Respondents aged less than 18 years old are excluded from the survey, as it is perceived they might have encountered difficulties interpreting the survey questions. Household residents are approached to participate in the research in front of four residential areas around Nanjing. We stress clearly "the voluntary participation" criteria before distributing the questionnaire to each

participant to fill in.

3.6 Data collection method

This study selected both homeowners and non-homeowners as the sample. The survey questionnaires were distributed in front four randomly selected residential areas in Nanjing, the capital city of Jiang Su Province. The survey pack included a copy of the cover letter and the questionnaire. During the distribution time, the researcher and her researcher assistants stood around the residential areas to ask residents to complete the survey questionnaire. A total of 600 questionnaires were distributed during a four-week period.

3.7 The Sample Size and Response Rate

This research was based on a 95% confidence interval (z) and an estimated sampling error (e) of 5%, the total population of Nanjing City is around 8,000,000 (National Population and Family Planning Commission of P.R. China, 2011), thus, the sample size (n) can be calculated through formula given by Zikmund (2003):

$$n = \frac{N}{1 + N(e)^2} = \frac{8,000,000}{1+,8000,000(0.05)^2} = 400 \text{ respondents}$$

The total number of survey distributed was 600, but the total final number of useable responses was 421. The response rate was approximately 70 percent of total number of survey questionnaire distributed and the non-response rate was about 30 percent. The non-respondents comprised of all refusals, unusable and incomplete survey.

3.8 Summary

Chapter three discussed the data and methodology used in the research. The questionnaire design, data, sampling method, data collection method and sample response rate were presented as well. Chapter Four discusses the empirical findings, the hypotheses test results and discussion and interpretation of the research findings.

CHAPTER FOUR
RESEARCH FINDINGS

4. Introduction

Chapter Four presents the frequencies and statistics that were generated using SPSS (Version 17.0) and LIMDEP (4.0) from the sample responses to the survey. Results of the hypothesis tests relating to each objective, the empirical results, and the findings are also discussed.

4.1 Descriptive Frequencies of the Respondents

A frequency statistics was conducted by using SPSS (17.0) to obtain the following analysis for the respondents who are homeowners and those who are non-homeowners. Table F.1 shows the descriptive statistics for both homeowners and non-homeowners. From the 421 respondents who have completed the structured survey questionnaires, approximately 60% (251) of the respondents were homeowners while 40% (170) were non-homeowners. The socio-economic characteristics of the respondents were established as follows. The sample of respondents comprised of approximately 42.3% (178) males and 57.7% (243) females. The majority of the respondents were in the age group under 25 years old (19%) and 25-34 years old (61%); and most of them were from the group of working adults in the early years of establishing their careers and possibly married life. The survey results show 50.8% of the respondents was married and 45.6% were single or never married. The main ethnic group among the respondent was Han nationality (96.9%), which is considered as the biggest ethnic group in China. The majority of the respondents have either a bachelor degree (60.1%) or a two-year college degree (23.5%). In term of occupation, 55.3% of the respondents worked as normal company staff and 18.1% engaged in

professional jobs. The dominated level of monthly household income was between 6001 - 8000 RMB and 8001-10,000 RMB, which were 30.2% and 15.2%, respectively. From the surveyed respondents, 43.5% of them worked between 1 to 5 years and 28.7% worked between 6 to 11 years. The sample statistics also reported that 32.5% of the households comprised of a couple with their children, the proportion of immediate and extended family members and adult living alone was 24.9% and 22.8%, respectively. Three people living in the household (including the respondent) with no dependents were considered as the most common current family in China. Of the 421 respondents, approximately 77.7% (327) owned a credit card and 22.3% did not.

A comparison of the socio-economic characteristics between homeowners and non-homeowners is discussed in Table F.2. Most of the homeowners were male (65.3%) and married (72.9%) at the time of the survey. In contrast, majority of the non-homeowners were female (53.5%), and most of them were single or never married (77.6%) at the time of the survey. In the age category, 64.9% of their homeowners were from the age group between 25-34 years old, 27.1% between 35-44 years old, and 3.2% under 25 years old. For the non-homeowners, 55.3% were from the age group between 25-34 years old, 42.4% under 25 years old and 1.8% between 35-44 years old. In terms of education attainment, 63.7% of the homeowners had bachelor degree followed by a two-year college degree (21.1%). In comparison with homeowners, 54.7% of the non-homeowners had a bachelor degree, and 27.10% had a two-year college degree. Furthermore, the majority of the homeowners had a relative higher income than non-homeowners. Table 4.2 shows that 31.1% of the homeowners had a monthly household income ranged between 6001RMB to 8000 RMB. However, the majority (32.9%) of non-homeowners had a monthly household income ranged

between 4001 RMB to 6000 RMB. For the duration of employment, 40.2 percent of the homeowners have worked between 6 and 11 years, while most (58.80%) of the non-homeowners has worked between 1 to 5 years. With regards to the household size, most of the homeowners have three members living in their families, compared to the non-homeowners with a household size of two members.

4.2 Assessment of the Data

The data was tested in order to verify the statistical assumptions of correlation coefficient of each model and logistic regression analysis have been met. The data comprised of two groups of respondents: homeowners and non-homeowners. There were some questions which were not answered by respondents, so they were treated as missing variables and coded as -9 in the data entry.

4.3 Correlation Coefficients of Explanatory Variables in Each Model

Besides generating the descriptive frequencies of the survey responses, the correlation matrices were also generated from SPSS (Version 17.0) between the independent variables of the individual models in the research. The Pearson Correlation matrix was used to inspect the correlations between the independent variables. The correlation matrices (see Tables F.7 to F.10 in Appendix) showed that all correlations were well below 0.80; hence, there was no strong correlation between the independent variables in each model.

4.4 Data Level

Due to the dichotomous nature of the dependent variable, such as homeowners versus

non-homeowners, rejection of housing loan or do not reject the housing loan and first-homeowners or non-first homeowners, the binary logistic regression is used in the research. The socio-demographic characteristics were coded as dummy variables in the analysis.

4.5 Empirical Results and Findings of the Research

The empirical estimation of logit model one, two and four via maximum likelihood estimates (MLE) assume large sample properties of consistency, efficiency, normality of parameter estimates and validity of the t-test of significance. Given these properties, the logit model avoids the major problems associated with OLS estimation of the standard linear probability model (Judge, et al., 1988). The MLE coefficient estimates from the logit analysis have no direct interpretation with respect to the probability of the dependent variable other than indicating a direction of influence on probability. Green (2000) and Koch (2007) recommended measuring the change in probability of a particular choice made with respect to a unit change in an independent variable know as the marginal effects.

4.5.1 Results Pertaining to Research Objective One

Research Objective 1: What are the significant socio-economic characteristics affecting the decision to purchase a house?

Research objective one determines the statistically significant socio-economic characteristics influencing the home purchase decision. The empirical result of the logistic regression of homeownership, which includes goodness-of-fit measurement (McFadden Pseudo R- squared) and the percentage of the correct predictions are reported in the Table 4.3.

The dependent variable in the model is coded as a dichotomy of the consumer's decision to purchase a house and not to purchase a house. Among the 421respondents, approximately 60 percent of the respondents owned a house, while 40 percent were non-homeowners. The explanatory variables, such as gender and race, are dummy-coded variables. Age, marital status annual household income, education attainment, occupation, size of household, number of dependents, credit card ownership are measured as interval units. Age is divided into three groups: young age (below 35 years old), middle age (35 to 54 years old) and old age (55 years old and above). Similar, marital status is divided into three groups: single or never married, married and others (divorced or separated and De facto relationship). Annual household income, which was simply calculated by monthly household income times twelve, has three groups as well: low monthly income (6,000 RMB or less), middle monthly income (6,001 RMB to 12,000RMB) and high monthly income (12,001RMB and above). Occupation is divided into four groups: professional jobs (lawyer, scientists, engineers, teachers, doctors, etc), middle professional jobs (civil servant, company managerial staff and owners of private enterprise), normal company staff and others (unemployed and retired). The education attainment includes four groups such as high school education, two-year college, bachelor degree and others.

The estimated results in Table 4.3 show that the model fitted the data adequately. The chi squared test strongly rejected the hypothesis of no explanatory power. At 5% significant level, most explanatory socio-economic variables were found to be statistically significant to influence the probability of purchasing a house, except size of household and other loans. Moreover, the signs on the parameter estimates support the a priori hypotheses outlined earlier.

Table 4.3 Empirical Results (Logit Model of Homeowners versus Non-homeowners)

Number of observation = 421
Log Likelihood function= -156.0966
Restricted likelihood function= -283.9740
McFadden Pseudo R-squared= 0.4503137
Chi Squared= 255.7548
Degree of freedom= 11
Prob[ChiSqd> value]= 0.000000
Percentage of Right Prediction= 83.135%

Variables	Coefficient	Standard Error	T-statistics	P-value	Marginal Effects
Gender	0.88896***	0.28528	3.12	0.0018	0.19106
Race	1.61241***	0.62008	2.60	0.0093	0.38217
Young age	-1.29991**	0.59479	-2.19	0.0289	-0.22773
Single	-1.76058***	0.33129	-5.31	0.0000	-0.36855
Annual household income: Low	-1.90535***	0.34598	-5.51	0.0000	-0.42456
Educational attainment: Bachelor	0.63310**	0.30670	2.06	0.0390	0.13651
Occupation: Normal company staff	-0.80876***	0.30835	-2.62	0.0087	-0.16700
Size of house :70-89 sq m	-0.73274**	0.32839	-2.23	0.0257	-0.16397
Size of household: Three	-0.23500	0.33783	-0.70	0.4867	-0.04965
No. of dependents: Less than two	1.79334***	0.41712	4.30	0.0000	0.32437
Credit card ownership	1.80091***	0.37549	4.80	0.0000	0.41273
Other loans: Vehicle loan	0.05039	0.07640	0.66	0.5095	0.01066

** denotes statistically significant at the 0.05 level of significance
*** denotes statistically significant at the 0.01 level of significance

As hypothesized, at 1% level of significance, gender is a statistically significant factor affecting the home purchase decision, and the coefficient sign is correct as hypothesized. The result implies that males have a relatively higher probability of purchasing a house than females. The findings on the influence of gender on the home purchase decision are consistent with the finding of Manrique and Ojah (2003), Allen (2002), Gandelman (2005) and Lauridsen and Skak (2007), where they reported males have a higher probability of purchasing a house than females in their studies.

Race of the respondents is statistically significant at the 1% level, and the coefficient sign is

correct as hypothesized. Race positively influenced the respondent's decision to purchase a house. The result implies race discrimination is present in house purchase decision whereby consumers with Han nationality are more likely to purchase a house than the minorities in Nanjing. This is consistent with the findings of Haurin, Herbert and Rosenthal (2007) and Hood (1999) where white households in U.S. have a relatively higher homeownership rate than minority households.

The age of household head is statistically significant at the 5% significant level, and the coefficient sign is correct as hypothesized. The finding suggests that the probability of purchasing a house increases with the age of the respondent, and young age respondents are less likely to purchase houses. Based on our research finding, the largest proportion of homeowners is from the age group between 25 to 35 years old; and there are only a small proportion of homeowners under the age group 25 years old. This is consistent with the research conducted by Feijten et al. (2003), whose result showed that the age groups between 25 to 29 and 30 to 34 years old had the highest probability of becoming homeowners. A possible explanation could be the greater financial capacity and accumulated wealth as the respondents get older, thus, respondents in the relative older age group could have a high affordability of purchasing a house. This result is also consistent with the findings of Wang (2010), Chua and Miller (2009), Kryger (2009), Blossfeld and Kurz (2004) whose studies showed older age households have sufficient financial ability to cover all potential cost of home ownership, because of higher earnings from a longer duration of their employment and level of working experience. Therefore, most of them have sufficient financial ability to cover all potential cost of homeownership.

The marital status coefficient is also significant at the 1% level and has the correct sign as hypothesized. The negative relationship suggests that single respondents are less likely to purchase a house. This is consistent with the findings of Chua and Miller (2009), Lauridsen and Skak (2007) and Bech-Danielsen and Gram-Hansen (2006) who reported that single respondents have a reduced financial capacity compared with married or cohabitating couple.

The annual household income of the respondents is statistically significant at the 1% level with the correct sign. Consumers with a low income cannot afford to purchase a house. This is supported by Hood (1999), Huang and Clark (2001), Constant et al. (2008) and Tan (2008) studies, who found that as the net family income rises, the home ownership also rises and as the family income rises, the cost of homeownership decreases.

Education attainment of the respondents is statistically significant at the 5% level and the coefficient sign is correct as hypothesized. The respondent with a bachelor degree is more likely to purchase a house. A possible explanation could be that the educational attainment could be considered as a proxy of economic success. A consumer with a relative high level of education will often find a good job with a steady income, thus, will have a greater financial capacity to secure a loan. As the level of educational attainment increases, the respondents will have a greater accessibility to obtain a mortgage. The result is consistent with Chua and Miller (2008), Tan (2008) and Hood (1999) studies where the authors reported that a household with a higher level of education attainment is always associated with a good job and a generous income; moreover, a higher income will increase the likelihood of homeownership.

The occupation coefficient is negative which is correct as hypothesized, and the variable is statistically significant at the 1% level. The result implies that company normal staffs are considered as relatively low income earners, they could be constrained by the home purchase decision. Owners of private enterprise and consumers with professional jobs are more likely to own a house. This result is consistent with the findings of Blossfeld and Kurz (2004) and Huang and Clark (2002) who reported that the probability of owning a house increases with the level of household's occupation where household with a relative professional job could be associated with a high and stable income, and could potentially secure the loan.

Similarly, the size of house is statistically significant at the 5% level; the sign obtained in the model is correct as hypothesized. The negative relationship suggests that a house size between 70 to 89 square meters, which is a relative small size of house, is negatively related to the probability of purchasing a house. This was consisted with the findings made by Aurora (2005), where the author reveals that with an increase in personal income and the privatization of housing market since the late of 1990s, most of urban Chinese households preferred to purchase relatively large apartments.

Table 4.3 shows the number of dependents is positive and significant at the 1% level of significance. The number of dependents or children in a family which is less than two will likely have a greater probability of owning a house. On the other hand, a large family may subject to financial constraints and decrease the likelihood of purchasing a house. This finding is consistent with the finding of Kryger (2009).

Credit card ownership is positive and significantly influences the home purchase decision at the 1% level of significance. Credit card ownership acts as a signal of the credit standing and the power of the respondent's income earning ability. Hence, by holding a good credit history, a credit card holder could easily access the housing loans and then achieve their homeownerships (Mylonakis, 2007).

The results in Table 4.3 show that the size of household and existing loan commitments are statistically insignificant but with the correct signs in influencing the respondents' decision to purchase a house. The possible reason could be that in China, most families only have three members; but with the loan assistance, a large family size will be more likely to purchase a house (Hood, 1999). Similar to the credit card holders, existing loan commitments could be a signal to the respondent's credit history whereby respondents with a good credit rating can easily achieve the homeownership (Calem et al., 2010). However, in China, people are reluctant to borrow the mortgage loan, because most of Chinese citizens are not comfortable with the idea of loans; and mortgage holders try to pay off their loans as soon as possible (Li and Yi, 2007). Moreover, the research result shows only 4.8 percent of the respondents have other types of loans. Objective one hypothesis is summarized in the following table:

Table 4.3.1: Test Result for Objective One

Hypothesis	Supported	Not Supported
Gender is positively related to home purchase decision	√	
Race is positively related to home purchase decision	√	
Yong age is negatively related to home purchase decision	√	
Single is negatively related to the home purchase decision	√	
Lower annual household income is negatively related to home purchase decision	√	
Educational attainment is positively related to home purchase decision	√	
Occupation is negatively related to home purchase decision	√	
Size of house is negatively related to home purchase decision	√	
Size of household is negatively related to home purchase decision		√
No. of dependents is positively related to home purchase decision	√	
Credit card ownership is positively related to home purchase decision	√	
Other loans is positively related to home purchase decision		√

Additional analysis of the data was carried out by ranking the means in descending order of importance[6] (see Tables 4.4 and 4.5) towards the influence of predetermined factors on determining the home purchase decision and choosing finance sources. For example, the mean figures which are close to 1 indicate that the factors are very important; the figures which are close to 3 indicate that the factor are moderately important; and the figures which are close to 5 indicate that the factors are not important at all. Table 4.6 presents the results of the relative importance of

[6] Likert scale of importance (5 degree): 1= very important, 3= moderately important, 5=not important at all

each predetermined attitude factor, ranking in descending order of its influence on the decision not to purchase a house.

According to data in Table 4.4, the availability of financing and price of house are the most two important attributes which could influence the respondents' decision to purchase a house, followed by other factors such as being married, location and convenience, improving quality of life and raising up children. The investment and job requirement factors have marginal influence of the respondent's house purchase decision. Similarly, the data in Table 4.5 shows the cost of loan is the most important factor influencing the respondents in selecting finance sources. This is followed by the ease of obtaining loans. The variable recommended by friends or relatives has marginal influence on the respondent's home purchase decision.

Table 4.4 MeanValues of Attributes Measurement in Determining Home Purchase (Homeowners Only)

Attribute Variables	Mean Values
Availability of financing	1.2709
Price of House	1.2869
Getting married	2.6733
Investment	3.4741
Quality of life	2.6135
Job required	3.2351
Location/Convenience	2.3625
Raise up children	2.5139

Table 4.5 Mean Values of Attributes Measurement in Choosing Finance Sources (Homeowners Only)

Attribute Variables	Mean Values
Cost of loan	1.6215
Ease of obtaining loan	2.0677
Having other loans in other banks	3.0398
Flexibility in the loan terms	2.1873
Recommended by friends/relatives	3.2988
Loyalty customers	3.0319

In contrast, the decision not to purchase a house is most strongly influenced by the high housing prices (See Table 4.6). The high percentage of down payment also has a significant impact on the respondents' decision to purchase a house. In this study, the existence of other loan commitments was not a sufficient reason for not owning a house in Nanjing; this was because most of respondents did not have existing loan commitments; meanwhile, there were certain number of respondents who preferred renting a house.

Table 4.6 Mean Values of Attributes Measurement for NOT OWNING a House (Non-homeowners Only)

Attribute Variables	Mean Values
Don't want to buy	3.9882
High housing price	1.1824
High down payment	1.6765
Lack of housing choice in where I want to live	2.9294
High housing price in where I want to live	1.6118
Can not qualify for a loan	2.6294
Cheaper to rent	3.0059
Having other loan commitments	4.0765

In summary, the results of objective one showed that apart from the socio-economic factors, the price of house and housing finance are the other factors which significantly impact the respondents' decision to purchase a house.

4.5.2 Results Pertaining to Research Objective Two

Research Objective 2: Is there differential treatment in borrowing based on socio-economic characteristics for both homeownership using housing loan financing and non-homeowners?

Research objective two investigates if there is differential treatment in borrowing in the form of loan rejection based on the loan applicant's characteristics, such as gender, marital status, age, race, education attainment, occupation, duration of employment, annual household income, size of household and credit card ownership. Homeowners who do not use housing loan financing were not included in the estimation, as the survey respondents showed no respondent fully paid by cash to purchase of a house.

The estimated results in Table 4.7 show the model fitted the data well. The chi squared test strongly rejects the hypothesis of no explanatory power. The result of the logit analysis for both homeowners and non-homeowners suggested that race, educational attainment, size of household and credit card ownership are statistically significant factors affecting the rejection of housing loans at 5% significance level.

Table 4.7 Estimated Result of Loan Acceptance/Rejection
(For both Homeowners and Non-homeowners)

Number of observation = 421
Log Likelihood function= -152.6333
Restricted likelihood function= -161.2755
McFadden Pseudo R-squared= 0.0535868
Chi Squared= 17.28446
Degree of freedom= 9
Prob[ChiSqd> value]= 0.4444329E-01
Percentage of Right Prediction= 87.411%

Variables	Coefficient	Standard Error	T-statistics	P-value	Marginal Effects
Gender	0.14174	0.29386	0.48	0.6296	0.01416
Single	-0.39579	0.33998	-1.16	0.2444	-0.03944
Middle age	0.01816	0.43444	0.04	0.9667	0.00184
Race	-1.52656***	0.39608	-3.85	0.0001	-0.25119
Education attainment: Bachelor	-0.85881***	0.29968	-2.87	0.0042	-0.09341
Occupation: Middle professional	0.28289	0.33818	0.84	0.4029	0.03004
Duration of working: 1-5 years	0.47131	0.34340	1.37	0.1699	0.04878
Annual Household income: Middle range	-0.07162	0.30322	-0.24	0.8133	-0.00725
Size of household: Three	0.62440**	0.31851	1.96	0.0500	0.06311
Credit card ownership	-0.66530**	0.31822	-2.09	0.0366	-0.07741

** denotes statistically significant at the 0.05 level of significance
*** denotes statistically significant at the 0.01 level of significance

The result shows race and education attainment of the loan applicant is negative and statistically significant at 1% level of significance. The result can be interpreted as the minorities in China have a greater probability to be rejected for a housing loan. The result is consistent with the findings from Harrison and Glover (2008) and Black, Robinson and Schweitzer (2000) studies, where the authors reported that the existence of racial bias in home loan lending in Mississippi. The evidence suggests that there is a consistent high denial rates for minority borrowers. Similarly, borrowers with a higher level of education are less likely to be rejected for the housing loan. The result of the logit analysis showed that the respondent with a bachelor degree has a lower probability of being rejected a housing loan. A possible explanation could be that a high level of

education attainment is associated with good jobs and attractive salaries. The findings are similar to studies by Grant (2003) and Del Rio and Young (2005a), where the authors showed that the higher level of knowledge is associated with less likelihood of loan defaults.

The size of household and credit card ownership are statistically significant at the 5% of level. The positive sign of the size of household is corrected as hypothesized. As the size of household increases the probability of being rejected a housing loan also increases. In China, most family consists of three members, hence, a family size with three members is considered as a relative large household size. As the size of household increases, there will be a heavier financial responsibility within the household. Hence, the family with additional members will experience greater difficult to service the loan repayment. The result is consistent with the findings of Tan's (1997) study, where the author reported that by holding a certain amount of household income constant, the cost of living increases as long as the household size increases. Therefore, it is more likely to be rejected for the housing loan.

Similarly, the use of credit card is negatively related to the rejection of housing loans. Thus, credit card holders have a less likelihood of being rejected a loan. The result is similar to Cohen-Cole (2008) finding, which state that the repayment of credit card is crucial to affect household's credit rating; and households with higher level of education can claim to have higher income, hence, they are more likely to be granted a housing loan.

Other explanatory variables such as gender, marital status, age, occupation, duration of employment and annual household income are insignificant but with the correct signs in

explaining the rejection of housing loans.

In summary, the results and findings of the logit analysis suggest the evidence of the discrimination factors such as race, educational attainment, size of household and credit card ownership in housing loan application. Consequently, the test results of hypotheses 2 to 11 are shown in Table 4.7.1.

Table 4.7.1 Test Results of Hypotheses 2 to 11

Hypotheses	Support	Not Support
H_2: There is a differential treatment if the age of the respondent has a significant negative relation to the housing loan rejection.		√
H_3: There is a differential treatment if the gender of the respondent has a significant negative relation to the housing loan rejection.		√
H_4: There is a differential treatment if the race of the respondent has a significant negative relation to the housing loan rejection.	√	
H_5: There is a differential treatment if the marital status of the respondent has a significant negative relation to the housing loan rejection.		√
H_6: There is a differential treatment if the highest education attainment of the respondent has a significant negative relation to the housing loan rejection.	√	
H_7: There is a differential treatment if the occupation of the respondent has a significant negative relation to the housing loan rejection.		√
H_8: There is a differential treatment if the annual household income of the respondent has a significant negative relation to the housing loan rejection.		√
H_9: There is a differential treatment if the size of household of the respondent has a significant positive relation to the housing loan rejection.	√	
H_{10}: There is a differential treatment if the duration of employment of the respondent has a significant negative relation to the housing loan rejection.		√
H_{11}: There is a differential treatment if the credit card ownership of the respondent has a significant negative relation to the housing loan rejection.	√	

4.5.3 Results Pertaining to Research Objective Three

Research Objective 3: Does differential pricing occur based on the age, educational attainment, occupation, annual household income, debt-to-income ratio, duration of a housing loan, down payment of a housing loan, having account with the bank or types of housing loan?

Objective three determines if differential pricing occurs in borrowing. Table 4.8 presents the estimated coefficients of the explanatory variables using an Ordinary Least Squares (OLS).The OLS model assumes the data obtained constitute a random sample from a well-defined population; the population is linear; the error is expected to be zero and should be normally distributed, while the error is independent with the explanatory variables and the explanatory variables are independent of each other (Maddala, 1992). T-tests are performed and the factors such as young age, two-year college, occupation, down payment of housing loan, holding account with existing bank and types of housing loans are statistically significant at the 5% level.

Table 4.8 Estimated Results of the Regression Model

Variables	Coefficient	Std. Error	T-statistic	Sig.
Young age group	0.687**	0.291	2.363	0.019
Education: Two-year college	0.632**	0.319	1.982	0.049
Occupation: Normal company staff	-0.576**	0.273	-2.112	0.036
Annual household income: low income	-0.256	0.371	-0.689	0.492
Debt/Income Ratio	1.264	1.081	1.169	0.244
Duration of loans: 21-30 years	0.412	0.285	1.445	0.150
Down payment: no more than 30%	0.568**	0.256	2.216	0.028
Holding account with existing bank	13.798***	2.065	6.681	0.000
Types of housing loans: Authorized housing loans	-1.859***	0.261	-7.136	0.000
R-square =0 .333				
Adjusted R Square = 0.307				
Durbin-Watson = 1.977				
F-ratio = 13.182 with P-value = 0.000				
** denotes statistically significant at the 0.05 level of significance				
*** denotes statistically significant at the 0.01 level of significance				

With respect to the interest rate charged, young age of the respondents is statistically significant at 5% level of significance. Young people who just begin their career typically earn lower incomes, thus they are more likely to be charged at a higher interest rate when they apply for housing loans. This result is supported by Wang (2010), Ojo and Ighalo (2008) and Huang and Clark (2002)

studies, which showed that young people earn a relative lower income, thus they are more likely to be charged at a higher interest rate when they apply for housing loans.

Educational attainment and occupation are statistically significant at 5% level of. The respondents with a two-year college education tend to pay higher interest rates on loan because a two-year college degree is considered a relatively low level of education. This result is consistent with findings of Barr (2002) and Alves et al. (2010) whose finding showed that a high level of education is associated with a high level of income, and an increase in household income can increase the respondent's financial ability and reduce the default on a loan. Similarly, the results show that normal company staff would be charged at a relatively lower interest rate. A possible explanation could be that normal company staff is associated with a relative stable income, so there will be a small probability of default on the loan. This result is similar to Weller (2008) study, which showed that a higher skilled occupation is always associated with a high level of education and high level of income; it can increase a borrower's financial ability and reduce the default on a loan.

The down payment for a housing loan is also statistically significant at the 5% level. The result implies that the respondents with a small amount of down payment will be charged at a higher interest rate. This result is confirmed by the past researches (Thompson, 2006; Calcagnini et al., 2009). The amount of down payment acts as a signal about the borrower's wealth position. Thus, a large down payment of a loan means the borrower is less likely to default on the housing loan. On the other hand, as the amount of down payment gets large, the size of loan gets smaller, and the risk and default probability will be small, therefore, the interest rate charge will be lower as well.

Holding an account with the bank and types of housing loans are statistically significant at the 1% level. The result shows that having an account the lending institution negatively affects the interest rate charged for the housing loan. The finding is consistent with Lan's result (1997), where the author reported that when applying a housing loan, most of banks request borrowers to keep an account with the banks. The evidence of poor money handling carried on the bank account will result in a higher interest rate. The implication of this finding suggests the relationship between the banks and the borrowers can be detrimental to the borrower's credit standing. A possible explanation for this finding is that having an account with bank is considered as a kind of relationship between the banks and the borrowers; hence, poor cash flow in the borrower's relationship with bank would have an up pressure on interest rate charged.

The authorized housing loan is a special type of loan in China, which is associated with relative low interest rates (Yeung and Howes, 2006). Therefore, the authorized housing loan is negatively affects the interest rate charged on the borrowers.

Annual household income, debt-to-income ratio and duration of loan are insignificant but have the correct hypothesized signs. A borrower with a lower income is more likely to be charged at a higher interest rate in order to compensate the risk associated with a loan. The debt-to-income ratio is positively related to the interest rates charged on loans. As the debt-to-income ratio increases, the interest rate increases as well (Sanchez-Arellano, 2006; Ceyhan et al., 2011). A possible reason is that most Chinese borrowers are reluctant to have debts. According to Li and Yi (2007), more than 50% of the purchasing capital for housing came from the personal saving in Guangzhou in 2005; and many of home purchase capital came from parental supports as well.

Therefore, the debt-to-income ratio is not significant factor in China. Meanwhile, Chinese borrowers prefer to pay off their loan as soon as possible, regardless of the duration of the housing loan. In summary, differential pricing does occur in the housing loan market in China. This is reflected in the factors such as young age, two-year college, occupation, down payment of housing loan, holding account with existing bank and types of housing loans which are statistically significant in influencing the interest rate charged. Consequently, the test results of hypotheses 12 to 20 are shown in Table 4.8.1.

Table 4.8.1 Test Results of Hypotheses 12 to 20

Hypotheses	Support	Not Support
H_{12}: Age of the respondent is negatively related to interest rate charged on housing loan.	√	
H_{13}: Occupation of the respondent is negatively related to interest rate charged on housing loan.	√	
H_{14}: Annual household income of the respondent is negatively related to interest rate charged on housing loan.	√	
H_{15}: Highest education level of the respondent is negatively related to interest rate charged on housing loan.		√
H_{16}: The duration of the loan is positively related to interest rate charged on housing loan.		√
H_{17}: The debt-to-income ratio is positively related to interest rate charged on housing loan		√
H_{18}: Holding an account with banks is negatively related to interest rate charged on housing loan.	√	
H_{19}: Types of housing loans are negatively related to interest rate charged on housing loan.	√	
H_{20}: Down payment of housing loans are negatively related to interest rate charged on housing loan.	√	

4.5.4 Results Pertaining to Research Objective Four

Research Objective 4: Are there differences in the factors and characteristics of first time homeowner using housing financing and non-first time homeowners using housing loan financing?

Table 4.9 presents the results of the logit analysis for differentiating the two categories of homeowners using housing financing: First time homeowners versus Non-first time homeowners. The computed Pseudo R^2 is 0.24, suggesting that 24% of the likelihood can be explained by the model. The chi-squared test is 66.38 with the degree of freedom of 13, and showed that there is an evidence to reject hypothesis of no explanatory power.

Table 4.9 Estimated Logit Results of First Time Homeowners

Number of observation = 251
Log Likelihood function= -105.9997
Restricted likelihood function= -139.1908
McFadden Pseudo R-squared= 0.23845802
Chi Squared= 66.38231
Degree of freedom= 13
Prob[ChiSqd> value]= 0.0000000
Percentage of Right Prediction= 80.876%

Variables	Coefficient	Standard Error	T-statistics	P-value	Marginal Effects
Gender	0.73282**	0.34856	2.10	0.0355	0.11571
Young age	0.33810	0.40271	0.84	0.4011	0.05170
Marital status: Single	0.10528	0.61769	0.17	0.8647	0.01521
Education attainment: Bachelor	0.72653**	0.36131	2.01	0.0443	0.11386
Occupation: Middle professional	-0.79085**	0.37222	-2.13	0.0336	-0.12555
Household status: Couple with children	-0.37407	0.53994	-0.69	0.4884	-0.05517
Size of household: Three	-0.40900	0.58625	-0.70	0.4854	-0.05946
No. of dependents: Less than two	-0.51850	0.52585	-0.99	0.3241	-0.07759
High Price of house	-1.43601***	0.37438	-3.84	0.0001	-0.21762
Annual household income: Low range	0.22230	0.55811	0.40	0.6904	0.03106
Turndown housing loan	1.68817**	0.68348	2.47	0.0135	0.16780
Received help for loan payment	0.15301	0.12995	1.18	0.2390	0.02250
Other loans: Vehicle loan	-0.15534***	0.05164	-3.01	0.0026	-0.02284
Credit card ownership	0.31721	0.47072	0.67	0.5004	0.05018

** denotes statistically significant at the 0.05 level of significance
*** denotes statistically significant at the 0.01 level of significance

The estimated coefficients of gender, educational attainment, occupation, high price of house, turndown a housing loan and other loans are statistically significant the 5% level and have the correct hypothesized signs. The model successfully distinguishes between first time homeowners

using housing financing and non-first time homeowners using housing financing. The results show a total of 251 financed homeowners, where 75.7% of them are first time homeowners and 24.3% are non first time homeowners. For the first time homeowners who financed their homeownership, most of them are males and have a bachelor degree. Previous records of turndown a housing loan is also is positively related to the first time homeowners; however, a relative high level of occupation and high price of a house are negatively related to the first time homeowners who access their homeownership through housing loans. Meanwhile, other loans is negatively related to the first time homeowners; hence, it indicates that first time homeowners, who are currently users of housing loans, are less likely to have other types of loans at the same time.

Other explanatory variable such as young age, single, a couple with children, size of household of three, less than two dependents in a family, low level of annual household income, received help for loan payment and credit card ownership are statistically insignificant at 5% level of significance and have the correct hypothesized signs. The possible explanation could be that first time homeowners were almost from the young age group, and they funded their house purchase through parental supports and personal savings, because young age homeowners earned a relative low income, they cannot afford to purchase houses alone. In China, the structure of household is unique and simple; there is only one child in a family. Hence, the number of dependents or children cannot be a factor affecting the decision of purchasing houses for first time homeowner in China. Most Chinese people are reluctant to have debts; therefore, most credit card holders would like to pay off their debts immediately. Meanwhile, the use of credit card in China is not well developed as most of developed countries, so the ownership of the credit card can not affect the

decision of purchasing houses for the first time homeowners. In summary, Hypotheses 21 are summarized in the following table.

Table 4.9.1 Test Results of Hypothesis 21

Hypothesis	Support	Not Support
Gender has a positive effect on the decision to purchase a house for first time home owners	√	
Young age has a positive effect on the decision to purchase a house for first time home owners		√
Marital status has a positive effect on the decision to purchase a house for first time home owners		√
Education attainment has a positive effect on the decision to purchase a house for first time home owners	√	
Occupation has a negative effect on the decision to purchase a house for first time home owners	√	
Household status has a negative effect on the decision to purchase a house for first time home owners		√
No. of dependents has a negative effect on the decision to purchase a house for first time home owners		√
High Price of house has a negative effect on the decision to purchase a house for first home owners	√	
Annual household income has a positive effect on the decision to purchase a house for first time home owners		√
Turndown housing loan has a positive effect on the decision to purchase a house for first time home owners	√	
Received help for loan payment has a positive effect on the decision to purchase a house for first time home owners		√
Other loans has a negative effect on the decision to purchase a house for first time home owners	√	
Credit card ownership has a positive effect on the decision to purchase a house for first time home owners		√

4.6 Marginal Effect Analysis

Maddala (1991) and Liao (1994) recommended calculating changes in probabilities to show the magnitude of the marginal effect. This refers to the partial derivatives of the non-linear probability

function evaluated at each variable's sample mean (Liao, 1994; Pindyck and Rubinfeld, 1991). For example, in order to identify the most and least important variables influencing the respondent's decision to purchase a house and not to purchase a house, the marginal effect for each of the estimated coefficients in the empirical model were calculated. The marginal effect reveals the marginal change in the dependent variable given a unit change in a selected independent variable, holding other variables constant (Liao, 1994). The marginal effect indicates the level of importance for the estimated coefficients in the empirical model.

Table 4.10 Marginal Effects of Homeowners versus Non-homeowners

Factors	Marginal Effect	Ranking
Gender	0.19106	4
Race	0.38217	2
Young age	-0.22773	8
Single	-0.36855	9
Annual household income: Low	-0.42456	10
Education attainment: Bachelor	0.13651	5
Occupation: Normal company staff	-0.16700	7
Size of house :70-89 sq m	-0.16397	6
No. of dependents: Less than two	0.32437	3
Credit card ownership	0.41273	1

The marginal effect in Table 4.10 shows that a one unit increase in gender (male) factor will result in an estimated 19% probability that the respondent will purchase a house. Similarly, a unit increase in the race factor will result in a 38% of probability that the respondent will purchase a house. In contrast, a unit increase in the young age factor will have cause the probability of house purchase to decrease by 23%. A unit increase in single respondent will result in a 37% of probability that the respondent will not purchase a house. A unit increase in annual household income of the respondent will cause the probability of house purchase to decrease by 42%. For the

educational attainment factor, a one unit increase in bachelor degree will result in the probability of purchasing a house to increase by 14%. For the occupation factor, a unit increase in normal company staff will result in an estimated 17% fall in the probability of purchasing a house. Compare with the occupation, a unit increase in the size of the house of 70 to 89 square meters could result in 16% decrease in the probability of purchasing a house. A unit increase in the number of dependents will result in 32% rise in the probability of purchasing a house, whereas a unit increase in credit card ownership has a positive effect of 41% on the house purchase decision.

Table 4.11 Marginal Effects of Loan Acceptance/Rejection for Both Homeowners and Non-Homeowners.

Variables	Marginal Changes in Probability	Ranking
Race	-0.25119	4
Education attainment: Bachelor	-0.09341	3
Size of household: Three	0.06311	1
Credit card ownership	-0.07741	2

The marginal change in probability for race implies that a unit increase in race of the respondent will result in a 25% fall in the probability of housing loan rejection. Compared with race, a one unit increase in bachelor degree will cause a 9% decrease in the probability of rejection on housing loan application. Similarly, a unit increase in credit card ownership factor will cause an 8% decrease in the probability of rejection of housing loan application. However, the size of household is negatively related to rejection of housing loan, a unit increase in size of household will result in a 6% increase in the probability of rejection of housing loan.

Table 4.12 Marginal Effects of Significant Factors Affecting the Interest Rate Charged on Housing Loan

Factors	Estimated Coefficients	Ranking
Young age group	0.687	2
Education: Two-year college	0.632	3
Occupation: Normal company staff	-0.576	5
Down payment: no more than 30%	0.568	4
Holding account with existing bank	13.798	1
Types of housing loans: Authorized housing loans	-1.859	6

The marginal effect results show that holding an account with the existing bank has the maximum impact on the interest rate charged on housing loans. Young age group has the second highest impact on interest rate charged on housing loans. A unit increase in young age group factor results in an estimated 68.7% rise in the probability of the interest rate charged on the housing loans. Two-year college education has the third most likely impact on the interest rate charged on housing loans. For example, the result shows that a unit increase in a two-year college education results in a 63.2% probability of interest rate charged on the housing loan. Similar with down payment, the result shows that a unit increase in a down payment (no more than 30%) will result in a 56.8% rise in the probability of interest rate charged on the housing loans. The normal company staff and the authorized housing loans have a negative effect on the interest rate charged on housing loan. For example, a unit increase in occupation (normal company staff) will result in a 57.6% drop in the probability of interest rate charged on housing loans.

Table 4.13 presents the calculated marginal effect of the variables between first timer homeowners using housing loan finance and non-first time homeowners using housing loan finance.

Table 4.13 Marginal Effects of First Time Homeowners and Non-First Time Homeowners

Factors	Marginal Effect	Ranking
Gender	0.11571	2
Education attainment: Bachelor	0.11386	3
Occupation: Middle professional	-0.12555	5
High Price of house	-0.21762	6
Turndown housing loan	0.16780	1
Other loans: Vehicle loan	-0.02284	4

A unit increase in both male and bachelor degree will likely cause 12% and 11% increase in the probability of first time homeowners to use housing loan finance, respectively. Turndown a housing loan was found to be negatively related to the characteristic of first time homeowners who use housing loan finance; a unit increase in factor of turndown a housing loan will likely cause a 17% increase in the probability of first time homeowners to use housing loan finance. On the contrary, a unit rises in the middle professional occupation and high price of a house will likely result in a decrease in the probability that the house is owned by first time buyers using housing loan finance by 13% and 22%, respectively. Similarly, a unit increase in favor of other loans will likely cause 2% fall in probability of first time homeowners to use housing loan finance.

4.7 Summary

Chapter Four presented the descriptive statistic results generated from the surveyed respondents. The empirical findings of the four models used to answer the four research objectives were discussed. The following chapter presents the conclusions and summaries of the research findings including limitations and recommendations for future research.

CHAPTER FIVE

RESEARCH CONCLUSION

5.1 Introduction

This Chapter provides a summary of the research, reviews the findings, and provides several conclusions based on the results and discussions presented in Chapter Four. The research limitations and avenues for future research are also discussed.

5.2 Overview and Summary

The development of housing loans has drawn a significant attention resulting from the increasing demand for home ownership in China. However, as housing demand increases, the price of houses also rises dramatically; hence, it is more difficult for people to access their homeownerships. However, this can be improved by using a housing loan to finance their home purchase. Therefore, the accessibility to housing loans has become a major concern in people's home purchase decisions. This research investigates the accessibility to housing loans, the differential treatment and differential pricing in the housing loan market.

The purpose of this research is to identify the factors that influence home ownership and the accessibility of housing loans. There are four objectives addressed in the research:

1) To indentify the socio-economic factors affecting the consumer's housing purchase decision in urban China.
2) To determine whether the current housing loan application evaluation gives differential treatment to the average consumers based on their socio-economic characteristics.
3) To determine if differential pricing exists in the housing loans market based on variables such

as age, educational attainment, occupation, annual household income, debt-to-income ratio, duration of a housing loan, down payment of a housing loan, having account with the bank or types of housing loan.

4) To identify the significant characteristics of homebuyers who are users of home mortgage and those who are non-users of home mortgage.

5.3 Conclusions Pertaining to Research Objective One

Research Objective One: Identify the socio-economic factors affecting the consumer's housing purchase decision in Urban China.

Research Objective One was satisfied as the factors affecting the consumer's housing purchase decision in Urban China were identified. The results of logistic regression show that there is a significant positive relationship between the respondents' decision in purchasing houses and the socio-economic factors such as gender, race, educational attainment (Bachelor Degree), the number of dependents (less than two) and credit card ownership. The results supports the findings of Allen (2002), Manrique and Ojah (2003), Gandelman (2005), Lauridsen and Skak (2007) Haurin, Herbert and Rosenthal (2007), Chua and Miller (2008), Tan (2008) and Calem et al. (2010).

Manrique and Ojah's (2003) study showed that males are more likely to commit to homeownership compared to females. In addition, Lauridsen and Skak (2007) reported that the probability of homeownership falls, as the level of the education attainment of the head of household is low; this is because a household with a higher level of education attainment is always associated with a good job and a steady income. Similar with the findings of Hood (1999) showed

that race disparity exists in China housing loan market where most minorities are less likely to purchase houses.

There is also a significant negative relationship between respondents' decision in purchasing houses and the socio economic factors such as young age borrowers, single, annual household income (low income), occupation (normal company staff) and size of houses (70-89 sq meters). The results are similar to the findings of Huang and Clark (2001), Blossfeld and Kurz (2004), Bech-Danielsen and Gram-Hansen (2006), Lauridsen and Skak (2007), Constant et al. (2008) and Tan (2008), Chua and Miller (2009), Kryger (2009) and Wang (2010). For example, a research conducted by Wang (2010) showed young age household are less likely to purchase houses. A possible reason is that older age group households have higher incomes, a relative long duration of r employment and increasing level of working experience. Therefore, most of older age group household has sufficient financial ability to cover the potential costs of homeownership (Hood, 1999; Lauridsen and Skak, 2007). A study by Oji and Ighalo (2008) revealed that married couples have a greater impact on the probability of owning a house, compared with single and divorced people. Based on our research findings, male respondents who are non-minorities are more likely to purchase a house. Further, the probability of purchasing a house increases as the age of the respondents increases. The respondents holding a bachelor degree, which is considered a high level of education, are more likely to purchase a house. In addition, a normal company staff in China is less likely to purchase a house, because a normal company staff earns a low level of income. Further, the survey results revealed that majority of the respondents were not keen on purchasing smaller homes such as 70 to 89 square meters. With the growth of the economy, most

of the surveyed respondents prefer to purchase large houses. Moreover, the respondents with less than two dependents in their family and holding a credit card are more likely to purchase a house. The reason is that as the number of dependent decreases, the cost of living decreases as well and the respondents are less likely to be constrained by their financial ability. Furthermore, the availability of finance and the price of a house were considered as the most important factors to determine the decision of house purchase.

5.4 Conclusions Pertaining to Research Objective Two

Research Objective Two: Determine whether the current housing loan application evaluation gives differential treatment to the average consumers based on their socio-economic characteristics.

Research Objective Two was satisfied. The result of the logit analysis shows that race, educational attainment, size of household and credit card ownership were statistically significant factors affecting rejection of housing loan. The result was supported by the findings of, Black, Robinson and Schweitzer (2000), Grant (2003) and Del Rio and Young (2005a), Mylonakis (2007) and Harrison and Glover (2008).

Rio and Young (2005a) suggested that high level of educational attainment has a positive impact on the home buyer's financial knowledge and the higher level of knowledge is associated with the less likelihood of loan defaults, therefore, the home buyer with a higher level of educational attainment is less likely to be rejected a loan. In addition, Harrison and Glover (2008) found the existence of racial bias in home loan lending in their study. The evidence suggests that there is a consistent high denial rates for minority borrowers. According to the analysis of our study, the respondents who are non-minorities and have a bachelor degree are less likely to be rejected for

the housing loan applications. However, the size of household is the only factor which is positively correlated to the rejection of housing loans. The estimated result suggests that the respondent with three family members are more likely to be rejected a housing loan. Finally, the respondent who has a credit card is negatively related to the rejection of a housing loan, because a credit card holder is assumed to have a high level of education and sufficient financial knowledge. Therefore, he or she is less likely to be denied housing loans.

5.5 Conclusions Pertaining to Research Objective Three

Research Objective Three: Determine if differential pricing exists in the housing loans market based on variables such as age, educational attainment, occupation, annual household income, debt-to-income ratio, duration of a housing loan, down payment of a housing loan, having account with the bank or types of housing loan.

Research Objective Three was satisfied. The OLS regression model shows that the factors such as young age, two-year college, occupation, down payment of housing loan, holding account with existing bank and types of housing loans were found to be statistically significant to determine the interest rate charged on housing loans. The results are consistent with findings made by Tan (1997), Barr (2002), Huang and Clark (2002), Thompson (2006), Yeung and Howes (2006), Ojo and Ighalo (2008), Weller (2008), Alves et al. (2010), Wang (2010), Calcagnini et al. (2009).

In the studies of Weller (2008) and Alves et al. (2010), high level of education is associated with high level of income, and an increase in the household income can increase the borrower's financial ability and reduce default on a loan; moreover, a higher skilled occupation is associated with a high level of education and high level of income; therefore, a relatively lower interest rate will be charged. Thompson (2006) also reported that borrowers with a small amount of loan down

payment will be charged a higher interest rate. The amount of down payment acts as a signal about the borrower's wealth position, where a small amount of loan down payment signifies the borrower is more likely to default on the housing loan. According to the survey results, the interest rate charged on loans is influenced by young age, two-year college, occupation, down payment of housing loan, holding account with existing bank and types of housing loans. These factors are significant at the 5% level of significance. For example, borrowers who are in the young age group and have a two-year college education are more likely to be charged at a higher interest rate because young age borrowers have lower incomes and a two-year college education is consider a relative low level of education in China. Thus, the borrowers tend to have a lower earning capacity. Similarly, normal company staff is more likely to be charged at a higher interest rate, because of low income earning ability. In addition, a borrower who pays a loan down payment of less than 30% and holding an account with the existing bank are more likely to be charged at a higher interest rate. This is because a lower down payment indicates a large amount of debt which needs to be repaid and holding an account with existing bank can potentially exhibit the borrower's poor cash flows. Furthermore, the authorized housing loan coefficient is negatively related to the level of interest rate charged on the housing loans. The authorized housing loan is the public accumulated funds, and used to lend out at the rate which is much lower than the market interest rate set by the People's Bank of China, in order to facility low-income earners to achieve their homeownership.

5.6 Conclusions Pertaining to Research Objective Four

Research Objective Four: Identify the significant characteristics of homebuyers who are users of home mortgage and those who are non-users of home mortgage.

Research Objective Four was satisfied. Gender, educational attainment, occupation, high price of house, turndown a housing loan and other loans are significant at the 5% level of significance in distinguishing between first time homeowners using housing financing and non-first time homeowners using housing financing. Male respondents with a bachelor degree are more likely to be first time homeowners using housing loan finance. However, homebuyers with a middle professional occupation (such as civil servant, company managerial staff and owners of private enterprise) are less likely to be first time homeowners using housing loan finance. This is because first time homebuyers are almost from young age and low level of occupation group. Meanwhile, most first time homebuyers experience a housing loan turndown because they only have a relative low income. The high price of a house can also have a significant impact on non-first time homeowners using mortgage loan.

5.7 Implications

This research makes a number of contributions to homebuyers, the banking industry and housing market in China. First, the research findings provide homebuyers with a better understanding of the housing loans and the factors that influence a consumer's decision on purchasing a house. With a better understanding of housing loan, homebuyers can accurately assess their financial ability and improve the use of their credit. In addition, Chinese homebuyers should be encouraged to save since savings serve as a step in building their credit worthiness; therefore, their accessibility to housing loans can be improved and the rate of homeownership will be increased as well.

Secondly, the research also provides banks with a better understanding of homebuyers' characteristics that influence their accessibilities to housing loans. Homeownership requires affordable housing financing. Banks should reconcile affordability to borrowers, especial low income borrowers. For instance, first time homebuyers are almost from low income earning group; because first time homebuyers are almost from the young age group. With the aim to increase homeownership, banks should repackage their loan products, and make the housing loans affordable to first time homebuyers.

Furthermore, the housing market should be developed based on the homebuyers' needs and preference in urban China. The research findings provide housing policy makers information on the determinants of a homebuyer's decision to purchase a house. For example, the policy makers should focus on developing a better affordable housing, such as stabilize the high housing price and increasing the number of economic affordable housing with the aim of improving the homeownership rate in urban China. Such implication supports the recent government policy that aimed at controlling the overheated housing market and increasing the availability of affordable housing in China (People's Bank of China, 2010)). The development of the second-hand housing market should be addressed by the Chinese government. As the price of the second-hand houses is lower than most of new houses, thus, the purchase and registration procedures for the second-hand houses should be simplified. Therefore, the homeownership for most low and middle income households can be targeted.

5.8 Limitation and Recommendation of Future Research

The research was conducted in Nanjing City, Jiangsu Province of China. The research was limited

by a small sample size, and homebuyers' characteristics can be varied across the different regions and cities. Moreover, the sample respondents were biased, because the surveyed participants were from certain selected residential areas. Furthermore, the sample probability in a different geographic area may appear different in regards to the homebuyers' characteristics towards the decision to purchase houses.

The second limitation of this research is that this study identifies some significant factors that influenced the homebuyer's decision on purchasing houses. However, there may be other factors that could possibly affect homebuyers housing purchase decisions, such as locations and convenience. For example, location might influences a homebuyer's decision where to live, because homebuyers may choose a house which has a convenience public transport route. Moreover, the homebuyer may decide to purchase a house which is surrounded by some convenient facilities, like hospital and recreation center.

Finally the housing price in different cities should be significantly different in China. Obviously, the housing price for most first-tier cities, such as Beijing, Shanghai and Guangzhou, are dramatically higher than other cities across the county. Nanjing is considered as a second-tier city in China, therefore, this research findings may not significantly applied to other cities.

This research assesses only the influence the housing loans which could affect the decision to purchase a house. Future research could address on the determinants of the homebuyers' decision to borrow to buy houses. Moreover, a larger sample size should be used, and homebuyers could be selected from different cities across the county. This could effectively increase the accuracy of

research results and findings.

5.9 Conclusions

The objective of this research is to investigate the factors affecting the accessibility of housing loan, which could influence the homeownership in urban Nanjing. The research findings reveal that the housing loan can not be easily accessed by Chinese homebuyers. Different pricing and to a certain extent differential treatment based on socio-economic characteristics of the homebuyers appear in the housing loan market which significantly affect the home ownership in Nanjing. With regards to financing homeownership, our research also shows that the first time homebuyers should not to be assumed to have the same preferences and characteristics as non-first time homebuyers. The first time home buyers are closely associated with the early stage of lifecycle where most of the first time homebuyers belong to the young aged group and earn a relative low income.

The variable which measures homeowners using housing loan finance was included in equation (3.17) but excluded in other models because the borrower’s ability to repay the loans is the main concern of the lender's decision. In China, the loan down payment is close to 50 percent, and this is a big issue for first-time homebuyer, so most of Chinese parents provided the amount of down payment for their children to purchase their house. But this factor does not affect people who want to buy houses. Based on the survey analysis, the results showed that parental support only influence the homeowners using housing loan finance, but it does not work well in other models.

We ran the factor analysis for every possible factor in each of the model, but the received for loan payment variable only works well in the equation (3.17). The statistic analysis for equation 3.17

showed that the received help of loan payment coefficient was not a significant factor thus we did not provide any further discussion.

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APPENDIX ONE: TABLES

Table F.1: Descriptive Statistics of Socio-Economic Characteristics of All Respondents

Variables	N		Total Respondents	
			Frequency (No. of Respondents per option)	Percent (%)
Gender	Valid	Male	178	42.30
		Female	243	57.70
		Total	421	100.00
Age	Valid	Below 25	80	19.00
		25-34	257	61.00
		35-44	71	16.90
		45-54	11	2.60
		55-64	2	0.50
		Above 65	0	0.00
		Total	421	100.00
Marital status	Valid	Single/Never married	192	45.60
		Married	214	50.80
		Divorced/Separated	8	1.90
		De facto relationship	7	1.70
		Total	421	100.00
Race	Valid	Han Nationality	408	96.90
		Minority	13	3.10
		Total	421	100.00
Education attainment	Valid	Primary school or lower	0	0.00
		Middle school	4	1.00
		High school	24	5.70
		Two-year college	99	23.50
		Bachelor degree	253	60.10
		Postgraduate degree	41	9.70
		Others	0	0.00
		Total	421	100.00
Occupation	Valid	Professional	76	18.10
		Self employer	21	5.00
		Civil Servant	30	7.10
		Company Managerial staff	36	8.60
		Owners of private enterprise	23	5.50

		Normal company staff	233	55.30
		Unemployed	1	0.20
		Retired	1	0.20
		Total	421	100.00
Monthly household income	Valid	2000 RMB or less	5	1.2
		2001 to 4000 RMB	41	9.7
		4001 to 6000 RMB	84	20
		6001 to 8000 RMB	127	30.2
		8001 to 10000 RMB	64	15.2
		10001 to 12000 RMB	52	12.4
		12001 RMB and above	48	11.4
		Others	0	0.00
		Total	421	100.00
Duration of employment	Valid	less than a year	49	11.60
		1 year to 5 years	183	43.50
		6 years to 11 years	121	28.70
		12 years and above	68	16.20
		Total	421	100.00
Composition of household	Valid	Adult living alone	96	22.80
		Single parent with child(ren)	3	0.70
		Couple, no child(ren)	77	18.30
		Couple, with child(ren)	137	32.50
		Immediate and extended family members	105	24.90
		Others	3	0.70
		Total	421	100.00
Size of household	Valid	One person	7	1.7
		Two persons	196	46.6
		Three persons	213	50.6
		Four persons and above	5	1.2
		Total	421	100.00
No. of dependents	Valid	less than 2	138	32.8
		2 to 4	7	1.7
		5 and above	2	0.5
		None	274	65.1
		Total	421	100.00
Credit Card ownership	Valid	Yes	327	77.70
		No	94	22.30
		Total	421	100.00

Table F.1.1: Profile of Surveyed Respondents

	Variables	N		Frequency (No. of Respondents per option)	Percent (%)
Age	**Young age group**	Valid	Yes	337	80.00
			No	84	20.00
			Total	421	100.00
	Middle age group	Valid	Yes	82	19.50
			No	339	80.50
			Total	421	100.00
	Old age group	Valid	Yes	2	0.50
			No	419	99.50
			Total	421	100.00
Marital Status	**Single/Never married**	Valid	Yes	192	45.60
			No	229	54.40
			Total	421	100.00
	Married	Valid	Yes	214	50.80
			No	207	49.20
			Total	421	100.00
	Others	Valid	Yes	15	3.60
			No	406	96.40
			Total	421	100.00
Education attainment	**High school or lower**	Valid	Yes	28	6.70
			No	393	93.30
			Total	421	100.00
	Two-year college	Valid	Yes	99	23.50
			No	322	76.50
			Total	421	100.00
	Bachelor degree	Valid	Yes	253	60.10
			No	168	39.90
			Total	421	100.00
	Others	Valid	Yes	41	9.70
			No	380	90.30
			Total	421	100.00
Occupation	**Professional**	Valid	Yes	76	18.10
			No	345	81.90
			Total	421	100.00
	Middle professional	Valid	Yes	110	26.10
			No	311	73.90
			Total	421	100.00

	Normal company staff	Valid	Yes	233	55.30
			No	188	44.70
			Total	421	100.00
	Others	Valid	Yes	2	0.50
			No	419	99.50
			Total	421	100.00
Monthly household income	**Low income range**	Valid	Yes	130	30.90
			No	291	69.10
			Total	421	100.00
	Middle income range	Valid	Yes	243	57.70
			No	178	42.30
			Total	421	100.00
	High income range	Valid	Yes	48	11.40
			No	373	88.60
			Total	421	100.00
Duration of employment	**Less than a year**	Valid	Yes	49	11.60
			No	372	88.40
			Total	421	100.00
	1to 5 years	Valid	Yes	183	43.50
			No	238	56.50
			Total	421	100.00
	6 to 11 years	Valid	Yes	121	28.70
			No	300	71.30
			Total	421	100.00
	12 years and above	Valid	Yes	68	16.20
			No	353	83.80
			Total	421	100.00
Composition of household	**Adult living alone**	Valid	Yes	96	22.80
			No	325	77.20
			Total	421	100.00
	Single parent with child(ren)	Valid	Yes	3	0.70
			No	418	99.30
			Total	421	100.00
	Couple, no child(ren)	Valid	Yes	77	18.30
			No	344	81.70
			Total	421	100.00
	Couple, with child(ren)	Valid	Yes	137	32.50
			No	284	67.50
			Total	421	100.00

	Immediate and extended family members	Valid	Yes	105	24.90
			No	316	75.10
			Total	421	100.00
	Others	Valid	Yes	3	0.70
			No	418	99.30
			Total	421	100.00
Size of household	**One**	Valid	Yes	7	1.70
			No	414	98.30
			Total	421	100.00
	Two people	Valid	Yes	196	46.60
			No	225	53.40
			Total	421	100.00
	Three people	Valid	Yes	213	50.60
			No	208	49.40
			Total	421	100.00
	Four people and above	Valid	Yes	5	1.20
			No	416	98.80
			Total	421	100.00
No. of dependents	**Less than 2**	Valid	Yes	138	32.80
			No	283	67.20
			Total	421	100.00
	2 to 4	Valid	Yes	7	1.70
			No	414	98.30
			Total	421	100.00
	5 and above	Valid	Yes	2	0.50
			No	419	99.50
			Total	421	100.00
	None	Valid	Yes	274	65.10
			No	147	34.90
			Total	421	100.00

Table F.2: Descriptive Statistics of the Respondents
(Homeowner versus Non-homeowners)

Variables	N		Homeowners		Non-homeowners	
			Frequency (No. of Respondents per option)	Percent (%)	Frequency (No. of Respondents per option)	Percent (%)
Gender	Valid	Male	164	65.30	79	46.50
		Female	87	34.70	91	53.50
		Total	251	100.00	170	100.00
Age	Valid	Below 25	8	3.20	72	42.40
		25-34	163	64.90	94	55.30
		35-44	68	27.10	3	1.80
		45-54	10	4.00	1	0.60
		55-64	2	0.80	0	0.00
		Above 65	0	0.00	0	0.00
		Total	251	100.00	170	100.00
Marital status	Valid	Single/Never married	60	23.90	132	77.60
		Married	183	72.90	31	18.20
		Divorced/Separated	5	2.00	3	1.80
		De facto relationship	3	1.20	4	2.40
		Total	251	100.00	170	100.00
Race	Valid	Han Nationality	244	97.20	164	96.50
		Minority	7	2.80	6	3.50
		Total	251	100.00	170	100.00
Education attainment	Valid	Primary school or lower	0	0.00	0	0.00
		Middle school	3	1.20	1	0.60
		High school	12	4.80	12	7.10
		Two-year college	53	21.10	46	27.10
		Bachelor degree	160	63.70	93	54.70
		Postgraduate degree	23	9.20	18	10.60
		Others	0	0.00	0	0.00
		Total	251	100.00	170	100.00
Occupation	Valid	Professional	56	22.30	20	11.80
		Self employer	16	6.40	5	2.90
		Civil Servant	23	9.20	7	4.10
		Company Managerial staff	33	13.10	3	1.80
		Owners of private enterprise	15	6.00	8	4.70
		Normal company staff	107	42.60	126	74.10

		Unemployed	0	0.00	1	0.60
		Retired	1	0.40	0	0.00
		Total	251	100.00	170	100.00
Monthly household income	Valid	2000 RMB or less	0	0.00	5	2.9
		2001 to 4000 RMB	9	3.6	32	18.8
		4001 to 6000 RMB	28	11.2	56	32.9
		6001 to 8000 RMB	78	31.1	49	28.8
		8001 to 10000 RMB	55	21.9	9	5.3
		10001 to 12000 RMB	36	14.3	16	9.4
		12001 RMB and above	45	17.9	3	1.8
		Others	0	0.00	0	0.00
		Total	251	100.00	170	100.00
Duration of employment	Valid	less than a year	4	1.60	45	26.50
		1 year to 5 years	83	33.10	100	58.80
		6 years to 11 years	101	40.20	20	11.80
		12 years and above	63	25.10	5	2.90
		Total	251	100.00	170	100.00
Composition of household	Valid	Adult living alone	44	17.50	52	30.60
		Single parent with child(ren)	2	0.80	1	0.60
		Couple no child(ren)	62	24.70	15	8.80
		Couple with child(ren)	123	49.00	14	8.20
		Immediate and extended family members	20	8.00	85	50.00
		Others	0	0.00	3	1.80
		Total	251	100.00	170	100.00
Size of household	Valid	One person	1	0.4	6	3.5
		Two persons	111	44.2	85	50
		Three persons	137	54.6	76	44.7
		Four persons and above	2	0.8	3	1.8
		Total	251	100.00	170	100.00
NO. of dependents	Valid	less than 2	113	45	25	14.7
		2 to 4	3	1.2	4	2.4
		5 and above	1	0.4	1	0.6
		None	134	53.4	140	82.4
		Total	251	100.00	170	100.00

Credit Card ownership	Valid	Yes	218	86.90	109	64.10
		No	33	13.10	61	35.90
		Total	251	100.00	170	100.00

Table F.3: Descriptive Statistic of the Respondents' Socio-Economic Factors

Variables	N	Mean	Median	SD	Var	Min	Max
Gender	421	0.5772	1.0000	0.4946	0.2450	0.0000	1.0000
Age	421	2.0451	2.0000	0.7107	0.5050	1.0000	5.0000
Marital status	421	1.5962	2.0000	0.6160	0.3790	1.0000	4.0000
Race	421	0.9691	1.0000	0.1732	0.0300	0.0000	1.0000
Education attainment	421	4.7197	5.0000	0.7542	0.5690	2.0000	6.0000
Occupation	421	4.4656	6.0000	2.0040	4.0160	1.0000	8.0000
Annual household income	421	4.3112	4.0000	1.5089	2.2770	1.0000	7.0000
Duration of employment	421	2.4941	2.0000	0.8987	0.8080	1.0000	4.0000
Composition of household	421	3.3824	4.0000	1.4715	2.1650	1.0000	6.0000
Size of household	421	3.1283	3.0000	0.5546	0.3080	1.0000	4.0000
No. of dependents	421	2.9786	4.0000	1.4082	1.9830	1.0000	4.0000
Credit card ownership	421	0.7767	1.0000	0.4169	0.1740	0.0000	1.0000

Table F.4: Factors Determining Homebuyers' Decision to Purchase a House

			Frequency	Percent
Availability of financing	Valid	Very important	211	50.10
		Important	19	4.50
		Moderately important	16	3.80
		Not important	3	0.70
		Not important at all	2	0.50
		Total	251	59.60
Price of House	Valid	Very important	206	48.90
		Important	25	5.90
		Moderately important	14	3.30
		Not important	5	1.20
		Not important at all	1	0.20
		Total	251	59.60
Getting married	Valid	Very important	89	21.10
		Important	29	6.90
		Moderately important	61	14.50
		Not important	19	4.50
		Not important at all	53	12.60
		Total	251	59.60
Investment	Valid	Very important	22	5.20
		Important	23	5.50
		Moderately important	94	22.30
		Not important	38	9.00
		Not important at all	74	17.60
		Total	251	59.60
Quality of life	Valid	Very important	53	12.60
		Important	76	18.10
		Moderately important	68	16.20
		Not important	23	5.50
		Not important at all	31	7.40
		Total	251	59.60
Job required	Valid	Very important	23	5.50
		Important	43	10.20
		Moderately important	93	22.10
		Not important	36	8.60
		Not important at all	56	13.30
		Total	251	59.60
Location/Convenience	Valid	Very important	67	15.90
		Important	75	17.80
		Moderately important	79	18.80
		Not important	11	2.60

		Not important at all	19	4.50
		Total	251	59.60
Raise up children	Valid	Very important	54	12.80
		Important	80	19.00
		Moderately important	76	18.10
		Not important	16	3.80
		Not important at all	25	5.90
		Total	251	59.60

Table F.5: Factors in Choosing Finance Sources

			Frequency	Percent
Cost of loan	Valid	Very important	153	36.30
		Important	57	13.50
		Moderately important	28	6.70
		Not important	9	2.10
		Not important at all	4	1.00
		Total	251	59.60
Easy of obtaining loan	Valid	Very important	117	27.80
		Important	48	11.40
		Moderately important	58	13.80
		Not important	8	1.90
		Not important at all	20	4.80
		Total	251	59.60
Having other loans in other banks	Valid	Very important	36	8.60
		Important	40	9.50
		Moderately important	98	23.30
		Not important	32	7.60
		Not important at all	45	10.70
		Total	251	59.60
Flexibility in the loan terms	Valid	Very important	83	19.70
		Important	75	17.80
		Moderately important	67	15.90
		Not important	15	3.60
		Not important at all	11	2.60
		Total	251	59.60
Recommended by friends/relatives	Valid	Very important	11	2.60
		Important	57	13.50
		Moderately important	92	21.90
		Not important	28	6.70
		Not important at all	63	15.00
		Total	251	59.60
Loyalty customers	Valid	Very important	19	4.50
		Important	66	15.70
		Moderately important	96	22.80
		Not important	28	6.70
		Not important at all	42	10.00
		Total	251	59.60

Table F.6: Factors for *NOT OWNING* a House

Factors			Frequency	Percent
Don't want to buy	valid	Very important	21	5.00
		Important	6	1.40
		Moderately important	27	6.40
		Not important	16	3.80
		Not important at all	100	23.80
		Total	170	40.40
High housing price	valid	Very important	149	35.40
		Important	14	3.30
		Moderately important	5	1.20
		Not important	1	0.20
		Not important at all	1	0.20
		Total	170	40.40
High down payment	valid	Very important	97	23.00
		Important	43	10.20
		Moderately important	21	5.00
		Not important	6	1.40
		Not important at all	3	0.70
		Total	170	40.40
Lack of housing choice in where I want to live	valid	Very important	33	7.80
		Important	21	5.00
		Moderately important	66	15.70
		Not important	25	5.90
		Not important at all	25	5.90
		Total	170	40.40
High housing price in where I want to live	valid	Very important	104	24.70
		Important	35	8.30
		Moderately important	25	5.90
		Not important	5	1.20
		Not important at all	1	0.20
		Total	170	40.40
Cannot qualify for a loan	valid	Very important	38	9.00
		Important	38	9.00
		Moderately important	61	14.50
		Not important	15	3.60
		Not important at all	18	4.30
		Total	170	40.40
Cheaper to rent	valid	Very important	26	6.20
		Important	29	6.90
		Moderately important	68	16.20
		Not important	12	2.90

		Not important at all	35	8.30
		Total	170	40.40
Having other loan commitments	valid	Very important	2	0.50
		Important	11	2.60
		Moderately important	43	10.20
		Not important	30	7.10
		Not important at all	84	20.00
		Total	170	40.40

Table F.7: Correlation Coefficient of Model One

		Gender	Age	Marital status	Race	Education attainment	Occupation	Annual Household Income	Size of household	No. of dependent	Size of house	Other loans	Credit Card Ownership
Gender	Pearson Correlation	1.000											
Age	Pearson Correlation	.129**	1.000										
Marital status	Pearson Correlation	.118**	.488**	1.000									
Race	Pearson Correlation	-0.069	0.011	-0.006	1.000								
Education attainment	Pearson Correlation	-.095*	-.110*	-0.049	0.025	1.000							
Occupation	Pearson Correlation	-0.034	-.195**	-.125**	0.028	-0.073	1.000						
Annual Household Income	Pearson Correlation	.126**	.293**	.133**	-.100*	.204**	-.239**	1.000					
Size of household	Pearson Correlation	-0.032	0.056	-.082*	0.017	-0.048	-0.048	.329**	1.000				
No. of dependent	Pearson Correlation	-0.030	-.339**	-.230**	-0.042	0.068	.140**	-0.020	-.510**	1.000			
Size of house	Pearson Correlation	0.072	.274**	.190**	0.011	.086*	-.125**	.319**	0.064	-.103*	1.000		
Other loans	Pearson Correlation	0.022	.209**	.086*	0.039	-0.056	0.001	.099*	0.045	-.150**	.114**	1.000	
Credit Card Ownership	Pearson Correlation	-0.066	0.058	0.075	0.036	.164**	0.062	.296**	.095*	0.000	.136**	0.061	1.000

Table F.8: Correlation Coefficient of Model Two

		Gender	Age	Race	Marital status	Education attainment	Occupation	Annual household income	Duration of employment	Size of household	No. of dependent	Credit Card Ownership
Gender	Pearson Correlation	1.000										
Age	Pearson Correlation	.129**	1.000									
Race	Pearson Correlation	-0.069	0.011	1.000								
Marital status	Pearson Correlation	.118*	.488**	-0.006	1.000							
Education attainment	Pearson Correlation	-0.095	-.110*	0.025	-0.049	1.000						
Occupation	Pearson Correlation	-0.034	-.195**	0.028	-.125*	-0.073	1.000					
Annual household income	Pearson Correlation	.119*	.290**	-.100*	.155**	.183**	-.246**	1.000				
Duration of employment	Pearson Correlation	.166**	.692**	0.068	.499**	-.143**	-.193**	.339**	1.000			
Size of household	Pearson Correlation	-0.032	0.056	0.017	-0.082	-0.048	-0.048	.263**	.126**	1.000		
No. of dependent	Pearson Correlation	-0.030	-.339**	-0.042	-.230**	0.068	.140**	-0.021	-.370**	-.510**	1.000	
Credit Card Ownership	Pearson Correlation	-0.066	0.058	0.036	0.075	.164**	0.062	.245**	.136**	0.095	0.000	1.000

Table F.9: Correlation Coefficient of Model Three

		Age	Education attainment	Occupation	Annual household income	Holding account with existing bank	Types of housing loans	Duration of housing loan	Down payment	Debt/Income Ratio
Age	Pearson Correlation	1.000								
Education attainment	Pearson Correlation	-.110*	1.000							
Occupation	Pearson Correlation	-.195**	-0.073	1.000						
Annual household income	Pearson Correlation	.290**	.183**	-.246**	1.000					
Holding account with existing bank	Pearson Correlation	.509**	0.048	-.259**	.445**	1.000				
Types of housing loans	Pearson Correlation	-0.026	.154**	0.032	-0.012	0.066	1.000			
Duration of housing loan	Pearson Correlation	-0.064	.144*	0.009	0.073	0.094	-0.033	1.000		
Down payment	Pearson Correlation	0.031	-0.035	-0.050	0.004	-.137*	0.058	-.245**	1.000	
Debt/Income Ratio	Pearson Correlation	.129*	-0.071	0.051	-.197**	-.116*	-0.012	0.092	0.054	1.000

Table F.10: Correlation Coefficient of Model Four

		Gender	Age	Marital status	Education attainment	Occupation	Annual household income	Price of a house	Previous turndown loan	Other loans	Size of household	No. of dependent	Household status	Credit Card Ownership	Received help of loan payment
Gender	Pearson Correlation	1.000													
Age	Pearson Correlation	0.049	1.000												
Marital status	Pearson Correlation	0.000	.379**	1.000											
Education attainment	Pearson Correlation	-0.032	-.264**	-0.076	1.000										
Occupation	Pearson Correlation	0.035	-0.095	-0.083	-0.081	1.000									
Annual household income	Pearson Correlation	0.085	0.100	0.021	.190**	-.117*	1.000								
Price of a house	Pearson Correlation	0.001	.206**	0.079	0.029	-0.039	.338**	1.000							
Previous turndown loan	Pearson Correlation	-0.021	0.036	-0.004	-0.019	-0.013	-0.063	-.241**	1.000						
Other loans	Pearson Correlation	-0.015	.171**	0.020	-0.087	0.061	-0.016	0.073	0.017	1.000					
Size of household	Pearson Correlation	-0.072	.167**	-0.039	0.033	-0.028	.222**	-0.010	-0.012	0.038	1.000				
No. of dependent	Pearson Correlation	0.051	-.310**	-.148**	0.070	.110*	0.085	0.101	-0.068	-.118*	-.676**	1.000			
Household status	Pearson Correlation	-0.082	.397**	.348**	-0.080	-0.096	0.056	0.084	-0.079	0.055	.149**	-.342**	1.000		
Credit Card Ownership	Pearson Correlation	-0.085	-0.104	-0.010	.220**	.140*	.146*	.121*	-0.082	0.021	-0.013	0.060	-.132*	1.000	
Received help of loan payment	Pearson Correlation	-0.012	-.142*	-0.053	0.006	-0.053	-.125*	-0.009	0.061	0.004	-0.088	.127*	-.178**	-0.014	1.000

**. Correlation is significant at the 0.01 level (1-tailed);
*. Correlation is significant at the 0.05 level (1-tailed)

APPENDIX TWO: SURVEY QUESTIONNAIRE COVER LETTER

To Whom It May Concern

Dear Sir/Madam:

You are invited to participate in a survey that constitutes part of my Master of Commerce and Management thesis at Lincoln University, New Zealand. The survey is about the factors affecting the accessibility of housing loans, which can significantly influence homeownership in China. The information you provide will be published in aggregate form only, in my thesis and in any resulting academic publications or conferences.

You are invited to participate in this research. This survey will take approximately 10- 15 minutes to complete. If you are 18 years or older, I would be grateful if you would take few minutes to complete the questionnaire and return it to me once you have finished.

This research is completely voluntary in nature and you are free to decide not to participate at any time during the process of completing the questionnaire. Nevertheless, your assistance will greatly help me with my study. However, if you complete the questionnaire and return it to the researcher, it will be understood that you are 18 years of age or older and have consented to participate in this survey. This aggregate information should be of benefit to consumers who purchase their houses through accessing the housing loans, and to academics in the financial market and banking areas.

Complete anonymity is assured in this survey, as the questionnaire is anonymous. No questions are asked which would identify you as an individual. All response will be aggregated for analysis only, and on personal details will be reported in the thesis or any resulting publications as the questionnaire does not require your name or any contact details.

If you have any questions about this survey, please contact me by mail at gaoxia2216@hotmail.com. You can also contact my supervisors Dr. Christopher Gan and Dr. Baiding Hu. Dr. Christopher Gan can be contacted at (03) 32181551 or Christopher.Gan@lincoln.ac.nz; and Dr. Baiding Hu can be contacted at (03) 3218069 or Baiding.Hu@lincoln.ac.nz.

This project has approved by Lincoln University Human Ethics Committee. Thank you for your kind co-operation and assistance.

Yours sincerely,

Xia Gao
Master Student of Commerce and Management

Research Supervisors:

Dr. Christopher Gan
Senior Lecture
Department of Economics and Marketing
Lincoln University

Dr. Baiding Hu
Senior Lecture
Department of Economics and Marketing
Lincoln University

SURVEY QUESTIONNAIRE:

Code No. _____

Accessibility of Housing Loans on Homeownership in China

This survey assesses consumers' accessibility to housing loans on homeownership. There are four sections in this survey. Please complete Section 1, Section 4, and either Section 2 or 3 as per the instructions. Only summary measures and conclusions from this survey will be reported. Your participation is voluntary and all of your answers will be kept confidential.

Section 1 General Information

1. What type of accommodation do you live in?
a. Common apartment
b. Luxury apartment
c. Villas
d. Economically affordable housing
e. Other(s) please specify _____

What is the approximate size of your home?
a. Below 50 square meters
b. 50-69 square meters
c. 70-89 square meters
d. 90-109 square meters
e. 110-129 square meters
f. 130-149 square meters
g. Above 150 square meters

What is the structure of your home you live in?
one bedroom + one living room
two bedrooms + one living room
two bedrooms + two living rooms
three bedrooms + one living room
three bedrooms + two living rooms
Other(s) please specify_____

4. Have you been turned down from a loan before?
a. Yes (Please go to Q 5.) b. No (Please go to Q 6.)

5. What was/were the reason(s) given by the lender (formal and/or informal) for turning down your loan application? (You can choose more than one reason)
a. Insufficient Income/Asset
b. Incurred previous loan(s) (bad credit record)
c. Had no collateral
d. Had difficulty in meeting required documents

e. Age
f. Gender
g. Race
h. Other(s) please specify_____

Do you own a home either outright or have a mortgage?

a. Yes (Please go to **Section 2 & 4**)
b. No (Please go to **Section 3 & 4**)

Section 2 Homeowners Information

Are you a First-homeowner financing your homeownership?
a. Yes b. No

How did you finance your home loan? (you can choose more than one choice)
a. Cash from friends/relatives
b. From savings
c. Borrowed from commercial banks
d. Other(s) please specify _____

What is the current market value of your home?
a. Less than RMB 200,000
b. RMB 200,000 – 390,000
c. RMB 400,000 - 590,000
d. RMB 600,000 – 790,000
e. RMB 800,000 - 990,000
f. RMB 1million or above
g. Other(s) please specify _____

4. How important were the following factors in determining your decision to purchase your home? Please CIRCLE (1-5) the degree of importance for each of the factors (where 1 indicates very important and 5 indicates not important at all).

	Very important		Moderately important		Not important at all
a. Availability of financing	1	2	3	4	5
b. Price of house	1	2	3	4	5
c. Getting Married	1	2	3	4	5
d. Investment decision	1	2	3	4	5
e. Quality of life	1	2	3	4	5
f. Job required	1	2	3	4	5
g. Location/ Convenience	1	2	3	4	5
h. Necessary to raise up children	1	2	3	4	5
i. Other(s) please specify_____					

5. How important are the following factors in selecting your finance source? Please CIRCLE (1-5) the degree of importance for each of the factors (where 1 indicates very important and 5 indicates not important at all).

	Very important			Moderately important	Not important at all
a. Cost of loan	1	2	3	4	5
b. Relative ease of obtaining loan	1	2	3	4	5
c. Have other loans with other commercial bank	1	2	3	4	5
d. More flexibility in the loan terms	1	2	3	4	5
e. Recommended by friends/relatives	1	2	3	4	5
f. Loyalty customers	1	2	3	4	5

g. Other(s) please specify _____

If you finance your housing loan from a bank, what type of housing loans did you applied for?

a. Individual account housing loans
b. Authorized housing loans
c. Combined housing loans
d. Others

If your house finance is from a bank, did you have an account with the bank?

a. Yes b. No

What is the duration of your housing loan?

a. 10 years or less
b. 11 – 20 years
c. 21- 30 years
d. Above 30 years
e. Other(s) please specify_____

How much was the house down payment as a percent of the price for the home?

a. less than 20%
b. 21% to 30%
c. 31%to 40%
d. 41% to 50%
e. over 50%
f. Other(s) please specify_____

What is the variable interest rate charged to your loan last year? _____% per annum.

What is your mode of payment?

a. Fortnightly
b. Monthly
c. Quarterly
d. Semi-Annually
e. Annually
f . Other(s) please specify _____

Are there any additional charges for your loan?

a. Yes b. No

If yes, what are these additional charges?

a. Administrative or service fee
b. Insurance fee
c. Guarantee fee
d. Other(s) please specify _____

Did your loan require collateral or security?

a. Yes b. No

If yes, what kind of collateral or security is/are required?
a. Mortgage property
b. Chattel mortgage (example vehicles)
c. Savings/deposits
d. Promissory notes
e. Co-signor/co-guarantor
f. Other(s) please specify _____

What is the status of your loan?
a. Fully paid
b. Current
c. Past due
d. Restructured

How easy was it to apply for the housing loan?
a. Very easy
b. Fairly easy
c. Not very easy
d. Not at all easy

Have you received any help with the payment of your mortgage?
Yes (Please go to Q19) b. No (Please go to Q20)

In what way have you received help with the payment of your mortgage?
a. Housing benefits
b. Parents /other family member
c. Government subsidies
d. Other(s) please specify _____

What is your monthly repayment for your mortgage or loan?
a. RMB1000 or less
b. RMB 1001-2000
c. RMB 2001-3000
d. RMB 3001-4000
e. RMB 4001-5000
f. RMB 5001 or above

Do you have any other type(s) of financing other than your housing loan?
a. Yes (Please go to Q22) b. No

If you do have other type(s) of financing, what are they? (You can name more than one type of financing)
a. Vehicle (car) loan
b. Housing loan
c. Education loan
d. Leasing financing
e. Other(s) please specify_____

Section 3: Non-homeowners Information

What would best describe your current housing arrangements?
a. Live with parents /relatives
b. Living quarters provided by employer
e. Rent

d. Other(s) please specify _____

Have you ever applied for a housing loan financing before?
a. Yes (Please go to Q3.) b. No (Please go to Q4.)

Who was the source of the housing loan finance?
a. Cash from friends/relatives
b. From savings
c. Borrowed from commercial banks
d. Borrowed from finance companies
e. Other(s) please specify _____

4. How important are the following factors for not owning a house? Please circle (1-5) the degree of importance for each of the factors. (where 1 indicates very important and 5 indicates not important at all)

	Important		Important		important
Don't want to buy a home	1	2	3	4	5
High housing price	1	2	3	4	5
High down payment requirement	1	2	3	4	5
Lack of housing choice available where I want to live (e.g., no condos; no single-family homes; etc.)	1	2	3	4	5
Housing in my price range is not available where I want to live	1	2	3	4	5
Can't qualify for a loan	1	2	3	4	5
Cheaper to rent	1	2	3	4	5
Have other loan commitments(e.g. vehicle/education loans)	1	2	3	4	5
Other(s) please specify_____					

Section 4: Both Homeowners and Non-homeowners Information

1. What is your gender?
Male b. Female

2. Which age group do you belong to?
a. Below 25
b. 25 – 34
c. 35 – 44
d. 45 – 54
e. 55 – 64
f. Above 65

3. What is your marital status?
a. Single/never married
b. Married
c. Divorced/separated
d. De facto relationship

4. To which of these ethnic groups would you say you belong?
a. Han Nationality
b. Minority

5. Which is the highest level of education you have completed?
a. Primary school or lower
b. Middle school
c. High school
d. Two-year college
e. Bachelor degree
f. Postgraduate degree (Postgraduate Diploma/ Masters/PHD)
g. Other(s) please specify_____

What is your occupation?
Professional (lawyer, scientists, engineers, teachers, doctors etc.)
Self employer
Civil Servant
Company Managerial staff
Owner of Private Enterprise
Normal company staff
Unemployed
Retired
Other(s) please specify_____

7. What is your Household Monthly Income before tax? (Chinese RMB in the last month)
a. 2000RMB or less
b. 2001 to 4000RMB
c. 4001 to 6000RMB
d. 6001 to 8000 RMB
e. 8001 to 10000RMB
f. 10001 to 12000RMB
g. 12001RMB and above
h. Other(s) please specify_____

8. How long have you been working full-time?
a. less than a year
b. 1 year to 5 years
c. 6 years to 11 years
d. 12 years and above

9. Which of the following best describes your household?
a. Adult living alone
b. Single parent with child(ren)
c. Couple, no child(ren)
d. Couple, with child(ren)
e. Immediate and extended family members
f. Other(s) please specify_____

10. How many persons live in your household (including yourself)?
a. One
b. Two people
c. Three people
d. Four people and above

11. How many dependents (non-working people such as children and the elderly) are there in your household?
a. Less than 2
b. 2 to 4
c. 5 and above
d. None

12. Do you own a credit card (example visa, master card, etc.)

a. Yes b. No

Your participation in this survey is greatly appreciated. Thank you for your time and if you wish to add any further comments about the credit accessibility, please feel free to voice them in the space provided below. Once again, we assure you that your identity will remain STRICTLY CONFIDENTIAL.