A FEASIBILITY STUDY OF MORTGAGE FINANCING FOR HOUSING IN CHINA

by

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Submitted to the Department of Architecture
in Partial Fulfillment of the Requirement for the Degree of

MASTER OF SCIENCE IN REAL ESTATE DEVELOPMENT

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ABSTRACT

China is the world's most populated country, home to almost one out of every four people in the world. A shortage of housing has been a severe problem in China's urban areas, especially in the major cities. With the progress of China's modernization, more and more people are migrating to large urban centers. The market-oriented economic reforms encouraged by Deng Xiaoping have resulted in a Gross Domestic Product (GDP) growth of more than 10 percent per annum in recent years. As a result, real estate development has been booming.

Due to income gains provided by economic reforms, many people living in urban and suburban areas of China may be able to purchase homes if sufficient financing mechanisms are in place and the government provides incentives. In the United States, mortgage financing is widespread and has proven to be an effective way to make housing affordable for most people. With the aid of a similar financing mechanism, more and more people in China will be able to participate in home ownership, and the burden of providing virtually all of the country's housing will be partially lifted from the government.

Many things can be learned from the western experience. However, significant political and cultural differences between the U.S. and China should be recognized. A naive duplication of the U.S. system should be avoided when trying to apply it to fit Chinese conditions. Hence careful study of the U.S. system is important and necessary to make the method effective and successful in China.

The purpose of this thesis is to examine the facilitation of home ownership by providing a form of mortgage financing for Chinese citizens, and to study the positive roles and special constraints of mortgage instruments in a broad context. This study may serve as a guideline and/or a starting point to establish China's mortgage system. However, further case studies are needed to design primary mortgage systems for specific urban areas and to create a national secondary mortgage market.

Thesis Supervisor: Thomas A. Steele
Title: Chairman of Center for Real Estate
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Part I: Overview of Urban Housing and Financing in China

Chapter 1. China's Housing and Economic Growth

1.1 China at Present

Mainland China, at 9.6 million square kilometers, is geographically the third largest country in the world behind the former Soviet Union and Canada. China has about 7.1% of the world's land area (see Chart 1-1 on page 8).\(^1\) Nearly one quarter of the world's human population is Chinese. Population growth still concerns leaders in the only country in the world with more than a billion inhabitants. Some 24 million infants are born each year,\(^2\) the population will double in 50 years if this trend continues. Vigorous efforts at improving medical care have boosted life expectancy from 32 years in 1949, when communist rule began, to 68 in 1990.\(^3\) Infant mortality has plummeted. Since 1979 China has urged couples to have but a single offspring. This policy has been enforced strictly in cities, but is less effective in countryside. The government calls the program "voluntary", but imposes heavy fines and other discriminations for and to each subsequent child.

The current population in China is 1158.23 million.\(^4\) Nearly all of China's people inhabit the fertile, humid lowlands of the east; 450 million live along the coast. Dry western highlands make up more than half China's territory yet are home to only 6 percent of the population. As a whole, China has a population density three times the world average of 35 people per square kilometer (91 people per square mile) of land. Shanghai, the most

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\(^2\) Ibid., p.78.
\(^3\) U.S. National Geographic Society, National Geographic Magazine, July 1991, p.3. Also, the last datum is confirmed by the 1992 Statistical Yearbook of China, p.847.
\(^4\) State Statistical Bureau of P.R. China, op. cit., p.845.
populous city, has 13 Million Residents, packing 34,025 people into each square kilometer. The Shandong Peninsula and North China Plain form a rough triangle smaller than Texas yet more populous than the entire U. S. The Sichuan Basin, the size of Michigan, is home to 70 million people. Some 150 million people live by the Changjiang (Yangtze River). One of the basic hard facts about China is that it must grow food for 22% of the world's people on only 7% of earth's arable land (refer to Chart 1-2 on page 8 and Chart 1-3 on page 9).

Only a quarter of China's population is urban, partly because authorities have discouraged migration to cities. Yet greater urbanization seems inevitable as mechanized farming creates a labor surplus in the countryside, and the urban areas seek employees with the country's rapid movement towards industrialization and modernization.

Economic modernization has long been a priority, at least outwardly, for the People's Republic of China except during the 10-year Cultural Revolution (1966-1976). China is a developing country, where farming employs 60 percent of the work force and makes up 34 percent of GNP. Mao Zedong's economic initiatives -- collective farms, central planning, isolationism (which he called "independence") -- have been modified since his death in 1976. Industrial output rose 12 percent a year in the 1980s, as managers gained freedom from central, though not local, authority. In 1979 China created 5 Special Economic Zones (SEZs), whose low taxes, cheap land and labor, and comparative economic freedom were designed to lure foreign capital. Nearly 22,000 joint ventures, 952 with American firms, had begun by 1989.

5 U.S. National Geographic Society, op. cit., p.3.  
7 U.S. National Geographic Society, op. cit., p.3.  
8 Ibid., p.3.
CHART 1-1: the Percentage of China's Land Area in the World


CHART 1-2: the Percentage of China's Population in the World

1.11 Urbanization and Shortage in Housing Supply

With the development of national economies, a process of urbanization began in many countries featuring a fall in the percentage of rural population and a rise in that of urban population. Histories of these developed countries show that urbanization reflects economic development, i.e. the economically advanced countries tend to have a higher level of urbanization. During the 30 years between 1949 and 1978, the process of urbanization was very slow, with an average rise per year of 0.24%, and a decline in 12 of those years due to political upheaval and natural disasters. The ten years after 1978 have seen a rapid development in China's national economy, as well as a high urbanization rate. The yearly increase was nearly 1% during the last few years. This means more than 11 million people immigrate to cities every year in China, an amount slightly less than the size of Shanghai, but larger than the city of Beijing. This growth has made policy


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10 This denotes the national demographic changes indicated by the ratio of the urban population/the overall population.
12 Ibid., p.172.
makers see the urgent need to study the problems of urbanization. One of the biggest problems to solve is the severe urban housing shortage, a critical issue for years.

According to the result of the third national census published in October 1982, the urban population reached 206.6 million, accounting for 20.6% of the total population. A current survey indicates that Chinese urban population composes of 26% of the total population (see Chart 1-4), i.e. about 300 million people living in cities or towns, which is more than the total population of the United States.

![Chart 1-4: Demographic Changes of P.R. China](chart)


In the 12 years following 1978 (when Deng Xiaoping's reforms began), housing construction in China, following the national economic development, has been greatly increased. About 1,500 million sq. m. (16,146 million sq. ft.) of residential housing in cities and towns were completed during this period, more than twice the total housing completed in the 30 years after the founding of the P.R. China in 1949. Within the 12 years of economic reform, an average of 2.3 - 2.5 million families in cities and towns were

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13 Ibid., p.172.
14 State Statistical Bureau of P.R. China, op. cit., p.80.
15 China State Ministry of Construction, Housing Report, 1990, p.3.
moved into newly developed houses annually. During this same time period, 5 million households were renovated annually to improve the living conditions.\textsuperscript{16}

However, there is still a considerable proportion of households with severe problems, among which include: families having less than 4 sq. m. (43 sq. ft.) of space per person, overcrowded households and households with inappropriate space distribution (boys and girls over 13 years old two married couples living in the same room). Surveys performed by the State Statistical Bureau showed that the percentage of households with severe housing problems in 1982, 1984, 1986, 1988, and 1990 were 33.56\%, 26.63\%, 18.49\%, 14.86\% and 12.18\% of the total number of urban households respectively.\textsuperscript{17} Although families with severe housing problems have been significantly reduced, it does not mean the housing shortage problem in China is being solved. The reality is that most families in China's cities and towns, particularly those living in big cities, do not have enough space to live in (less than 6 sq. m. living area per capita). On the other hand, the government is having a harder and harder time absorbing the financial burden required to maintain the huge public housing stock. Further improvement in national housing condition will be difficult to achieve relying on government subsidies alone.

Generally the people living in small and medium sized cities and towns have greater living space compared with those living in the major cities of Shanghai, Beijing and Tianjin. The quality of buildings in the major cities is generally better, and more importantly, in the major cities there is usually better infrastructure (transportation, communication, shopping, recreation and education facilities). However, although the building quality is better in these major cities, the quality of life is worse because a significant number of people do not have enough living space.

\textsuperscript{16} Ibid., p.5.
\textsuperscript{17} Ibid., p.11.
For example, in Beijing, the average living area per capita is 6.8 sq. m. (73 sq. ft.) at present.\textsuperscript{18} There are many houses that do not provide adequate shelter, and there is much unsafe housing that is in urgent need of renovation. According to surveys, at present there are approximately 382 thousand households that lack adequate housing, comprising 23% of the total households in Beijing.\textsuperscript{19} This figure includes 47 thousand households on waiting lists for better housing, 148 thousand living in insufficient accommodations, 107 thousand living in overcrowded households and 80 thousand living in unsafe housing and poor environments.\textsuperscript{20} Unsafe housing districts occupy approximately 2 million sq. m. (21.5 million sq. ft.).\textsuperscript{21} Only 0.1 million sq. m. (1 million sq. ft.) of these districts can be renovated or rebuilt in one year according to the city's construction capability.\textsuperscript{22} So at this rate it will take at least 20 years to complete the renovation work, not considering the decay of other housing into dangerous conditions during that time. Shanghai's situation is even worse than that of Beijing. The goal of Beijing's urban comprehensive development plan is that by the year 2000 residents will have reached a well-to-do living standard and every household will have a decent unit with separate bedrooms and an average living area per capita of 9 sq. m. (97 sq. ft.).\textsuperscript{23} On the national level, the goal is to strive for reaching an average living area per capita of 13 sq. m. (140 sq. ft.) by year 2000.\textsuperscript{24}

During the 13 years from 1979 to 1991, the yearly investment in China's urban and rural housing construction was 7% of GNP, and the yearly investment in housing construction for the urban non-agricultural population, who made up 22% of the China's total

\textsuperscript{18} Beijing Sample Survey on Basic Living Indicators of Residents, 1991, p.17.
\textsuperscript{19} Ibid., p.19.
\textsuperscript{20} Ibid., p.19.
\textsuperscript{21} Ibid., p.19.
\textsuperscript{22} Ibid., p.19.
\textsuperscript{23} Urban Planning Department of Ministry of Construction, Basic Data and Information of Urban Construction in China, 1989, p.371.
\textsuperscript{24} Ibid., p.387.
Although this clearly represents enormous amount of investment in urban housing construction, it has yielded a very small amount of return, since the rental rate is next to nothing and cannot cover the maintenance and management costs for government-built and government-owned residential properties (this will be discussed in detail later in this thesis). One thing is certain: with a gradually decentralized economy in China, it is now much more difficult to depend completely on government investment to meet such strong need in residential real estate development. Therefore, it seems that the goal of continuous improvement of housing is an impractical idea for the government without housing reforms to create incentives to encourage individuals, enterprises and local governments to share the heavy financial burden of housing.

1.12 Economic Growth and Housing Reform

1.12.1 Economic Growth

Briefly, China's economic reform, begun in 1978, can be considered in several steps. The first step, including price and market reforms, the "open door policy", and liberalization of the distribution system, involves the creation of a market price incentive system to supplement and replace the planned allocation of goods. The next step involves changes in property rights, broadly defined to include the management, as well as ownership, of assets. Accompanying these reforms are measures to decentralize resource allocation away from the center, and to create a market-supporting financial sector. Finally, the current step is the shift from a planned to a market economy, which involves policy changes to separate out the productive side of the economy from the state's role in the

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area of social protection. Social sector reforms begun in areas such as health care and housing, are only on a cautious and experimental basis.

"China's opening-up to trade and foreign investment, its massive de-collectivization of agriculture, liberalization of the distribution system and growth of nonstate industry involved a far stronger commitment to commercialization and domestic competition than that made by Eastern Europe and the former Soviet Union. On the other hand, it has maintained central planning and a distinctive two-price system."26

"In contrast to the dismal 1960s, China boosted its growth rate dramatically in the late 1970s and 1980s, eclipsing India's efforts and matching the performance of the Asian comparators, while the socialist comparators like Eastern Europe and the former Soviet Union stagnated before experiencing a sharp output loss after 1989. China appears as a high investment country which boosted its economic efficiency from low levels to those characteristic of other Asian countries. China's investment was overwhelmingly financed through domestic savings: by the 1990s its net foreign debt was only 3% of GDP compared with 22% for India and 53% for socialist comparators. China's low inflation during the 60's and 70's was due to price controls but it also contained inflation to Asian levels through the period of price liberalization - a marked contrast to the European socialist reform experience. Beginning with the economic reforms in the late 1970s, the economic growth rate was 8% and 10.2% through 1978-1984 and 1984-1988 respectively. The macroeconomic stabilization concurrent with the reassertion of political controls during 1989-1991 caused a sharp reduction in GDP growth to 5.3%. In 1992 the growth rate returned to its pre-1989 double-digit levels (13%)."27 (refer to Chart 1-5 on page 16) Now some western experts are predicting that China could become the world's

27 Ibid., p.9.
dominant economy early in the 21st century. Many economists believe a standard estimate of China's per capita gross national product ($370) is already two to three times too low. Former World Bank chief economist Larry Summers recently argued that China could surpass both Japan and the United States to become the world's largest economy by 2020.28

By the 1990s, two thirds of all Chinese exports came from special economic zones, with the state sector accounting for two thirds of these and the nonstate sector for the remainder. Ongoing research on coastal zones suggests that the level of foreign investment is correlated with provincial-level growth rates. The most important impact on China's productivity has always followed measures to decentralize decision making, first in agriculture, then in rural and urban industry. Success on a local basis of experimentation has spurred replication and eventual national acceptance. In addition, decentralization has created domestic competition between different provinces, regions and localities, for investment funds, domestic markets and foreign investments. At the same time, the process of decentralization has weakened central monetary control.29 Currently, how China deepens reforms in response to the weakened financial position of the state-owned-enterprises will play a critical role in determining whether macro-destabilization can be avoided. "There is evidence showing that China may open up the state enterprises sector to foreign investment to facilitate its integration into world markets. Although some studies about China find evidence of chaotic institutional arrangements, redundant and undisciplined labor, interference by supervisory bodies, ill-defined ownership, bank lending with no prospect of repayment and other problems, but on balance the impact of the reform process in China on economic efficiency has been favorable."30

28 China News Digest, Beijing Rising written by Frank Gibney Jr., June 27, 1993, p.5.
29 Alab Gelb & Gary Jefferson, op. cit., p.18.
30 Ibid., p.15.
"Population growth has slowed in China (as in Asia) to well below Indian levels."\(^{31}\) "In terms of national income distribution, at the start of reforms rural income per head on average represented only 42% of urban income per head as conventionally measured in China. This was a wider divergence than India's 71%, Thailand's 45%, and even Brazil's 43%."\(^{32}\) These differentials have persisted because of strict regulation of migration from the countryside through the system of urban registration and because many benefits like subsidies are tied to jobs. The variance in income within rural areas is considerable, while within urban areas it traditionally has been insignificant. As a whole, the national income distribution tends to higher inequality as the nation is encouraging entrepreneurial activity.

\[
\text{CHART 1-6: Growth of NATIONAL INCOME}
\]


1.122 Housing Reform

China's housing reform was actively initiated in 1988. Housing commercialization is at the core of the reform. Urban housing reform in China may be classified as follows: 1) to bring the initiatives of residents in cities and towns into play as well as encourage,

\(^{31}\) Ibid., p.20.
\(^{32}\) Ibid., p.20.
promote and organize individuals to invest for housing construction or housing purchase;
2) to improve the housing distribution system by changing the methods of public housing
allocation and promoting the production of new housing and rehabilitation of existing
housing. Such a reform has encouraged urban housing construction to move from the
centralized government investment structure to a more pluralistic investment structure
which includes the central government, local governments, enterprises, individuals and
foreign investors.

At present, there are two major kinds of buyers: organizations and individuals. With the
annual national completion of residential buildings at over 100 million sq. m. (1,076.4
million sq. ft.), the proportion of housing bought by individuals is only about 17%, while
the housing bought by organizations per year can reach 70 or 80 million sq. m. (753.5-
861.1 million sq. ft.) per year, a certain amount of which will be resold to residents in the
future.\textsuperscript{33}

The low rent housing system which has been practiced up to now in many cities of China
provides the staff, workers and residents with public housing constructed by the
government or enterprises at a low rent of about 1% of the total expenses of a family for
housing management and maintenance (see Chart 1-7 on page 24). The disadvantages of
such a system of gratuitous distribution without payment, and subsidies given to the
management and maintenance, have been realized extensively in all the public housing.
The most serious problem is that the increasing heavy load of housing cost has been borne
by the government or state enterprises. At the same time, a sharp increase in housing
demand has been caused by the extremely low rents being charged by the government.
Even families whose housing conditions are relatively good are seeking to upgrade the
quality of their living conditions.

\textsuperscript{33} China Academy of Building Science, Building in China, March 1991, p.22.
The Chinese government and the residents in cities and towns have come to realize that it is imperative to reform the system of low rent (rent being a trivial expense in earned wages compared to other expenses) and raise housing rent, but the increase of the housing rent concerns residents because of the low wage system now practiced in China. The mechanics of reform, such as how to raise the housing rent, how much the increase is, whether or not low income staff and workers should be given subsidies, and how to make the relevant improvements on wage, commodity price, tax revenue, finance, etc. are quite cumbersome in execution. Furthermore, China is a country with over 10 thousand cities and towns. There are great differences among these cities and towns in the fields of social, cultural and housing conditions.

However, it is observable that the old distribution system and free use of the public housing is being transformed to reflect actual costs through rent increases. It is hoped that housing subsidies will cease to be an ever increasing financial burden on the state, and that increased rents will not only cover costs, but provide returns to the government for reinvestment in additional housing.

1.2 Chinese Family and Housing Situation

Chinese tradition puts great emphasis on family values. Chinese tend to have large extended families, where the grandparents take care of grandchildren and young couples are in charge of their elderly parents. This mutually beneficial pattern has been practiced thousands of years. Stability in marriage is regarded as a virtue of a person's personality, although this is now facing challenges as western culture intrudes on the traditional Chinese culture. It is generally believed that Chinese family members have closer relationships compared with those in the western world. And more importantly, the
Chinese family valued homeownership very much before 1949. For thousands years, handing real property down to heirs had been considered a sign of personal success. The size and quality of a house, including decoration, represented a family's economic and social position. Also, Chinese families traditionally would like to purchase housing/real-estate to preserving "real" value or investing for appreciation.

The general housing situation in P.R. China has been improved within the recent decade. In Beijing, the living floor area per capita grew from 4.75 sq. m. (51 sq. ft.) in 1949 to the present 6.9 sq. m. (74 sq. ft.) (see Chart 1-6). But with the population explosion, the decentralization of the national economy, and the growth of a free market system, gradually the old housing system is finding it harder and harder to meet the housing needs of the people. Therefore, the system is currently undergoing dramatic change. The housing reform currently in China aims to promoting housing investment and productivity, strengthen affordable housing supply, and maintain fairness in social welfare so people's support of the reforms can be maintained.

However, despite these improvements, the quality of housing is still poor. There are many common problems in building products, in construction, and in design which need prompt attention. Meanwhile, on the other side, the dominating role played by the old housing system greatly hinders the growth of the housing reform. Seeing the low rental system remain unchanged, most residents feel that it is not in their benefit to buy a house right now.
Traditionally, in urban areas of China, the family is not required to take any financial risk in housing, and the average Chinese family is extremely reluctant to borrow money. They would rather pay for something outright or pay rent. At this point in the thousands of small cities and towns (except a few big cities), people's wages are too low to afford the housing that is being built, and banks are not willing to use a residence as collateral. In the event of foreclosure, the resident's grip on his home is so strong, it would be nearly impossible to evict him, sell his home, and recover the loan because social security has been a distinctive merit of a socialist country. Therefore, considering these problems, it seems that employer (enterprise or working unit) insurance of mortgages and more experience with borrowing money will be needed in China before housing loans are possible.

1.21 Family Size and Housing Tradition

Since the founding of P.R. China, the former feudal-extended families have been disintegrating, resulting in a natural reduction of family size, especially after the implementation of China's family planning policy in the 1970s. In China the typical family
sizes are 3-person and 4-person per household in cities and towns. The number of persons per household has decreased from 4 to 3.3 in big cities while the average size is somewhat bigger in small cities and towns. While in the rural areas, the distribution of family size is more even ranging from 2-person to 6-person per household.\footnote{According to the third national census and the sampling survey in 5 major cities, Beijing, Tianjin, Shanghai, Chengdu and Nanjing, conducted by the Chinese Academy of Social Sciences.}

The housing units currently in urban China have some common attributes. The living room is usually small or combined with a dinning room or a bedroom. The kitchen is very important since Chinese people like cooking. It is rare for a Chinese family to own a car, but almost everybody has a bicycle. So people live close to their working place and near their school. Convenient public transportation is always important. People living in cities like to locate their homes in a central area, which is different from the United States because car is not available for most Chinese families. There are many newly established cities like Shenzhen (the earliest SEZ in China), there are also many historical cities like Beijing where traditional housing in a deteriorating condition urgently needs to be renovated and modernized. Hot water supply system is generally not available in Chinese housing units. Relatively few families have telephones at home. Without housing reform, people obviously are not willing to purchase a housing unit if public housing is easy accessible to them and the rental rate is trivial.

1.22 Personal Income and Household's Consumption Pattern

China is a developing country and personal income has been very low. According to the survey conducted in 1991, the average annual personal income of people living in cities and towns is 2150 yuan RMB (US$370), which is about US$31 per month.\footnote{1991 National Surveys on Household's Revenue and Expenditure in Cities and Towns of China, p.4.} In the same...
year, the average annual personal income of the highest income group is 3000 yuan RMB (US$520), about US$43 a month. Compared with 1990, the average income growth rate is 11.3%. Therefore, although the absolute income level is still very low, the income growth rate is substantial, matching high growth rate of the national economy. By purchasing power parity (PPP) the per capital annual income/revenue in China is believed to be US$1,500.

The sources of urban resident's personal income have been varied during the economic reform period. Besides basic wage, there are extra wage for additional working hours, bonus, subsidies and allowances, etc. The weight of additional income as a percent of total income is increasing. The consumer goods a family is purchasing are increasing with the growth of income, electrical appliances in particular. Some families increase their spending on vacation travel rather than housing.

The present urban housing system of China is mainly characterized by the allocation housing units to urban residents who are employees of government institutions or enterprises. These institutions are owners of the housing, and lease it at a negligible rent. This system, born of the economic and political conditions of early 50s, has gradually revealed more and more defects in practice as time advances. The annual average expense per person of household on housing rent is 13.2 yuan RMB, which is only 1/6 of money spent on cigarettes and tea, and 1% of total annual personal consumption expense (refer to Chart 1-7 on page 24). With the construction cost of one square meter of floor area at

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36 Ibid., p.5.  
37 Ibid., p.4.  
40 Ibid., p.8.  
41 Ibid., p.17.
343 yuan (60 US$), a two-bedroom unit of 56 sq. m. requires 19,200 yuan RMB (3,360 US$) to build. The allocation of such a unit to a government employee means granting a very high welfare subsidy to that person, as high as more than 10 years accumulated salary of an average worker. This serves as an ample stimulation to urban dwellers to reach their hands to the state/enterprises for houses, hence the feverish demand. As the owner of about 75% of urban housing, the central government and its enterprises are responsible for both the maintenance and management of the houses under their control. Yet the rentals can not even cover this basic outlay, let alone recover the cost of construction. Normally the annual cost of maintenance and management per sq. m. is 2.60 yuan RMB (0.042US$ per sq. ft.) while the annual rent in some areas, where the housing reform has not yet completed, is about 1.20 yuan RMB per sq. m. (0.02US$ per sq. ft.). This means that the state must increasingly shoulder the financial burden of subsidization of operating costs.

While the housing/real estate industry in many countries is an important contributor to GDP, China's housing industry (60% the entire building industry), devours state and local government resources rather than making any contribution to GDP.

CHART 1-7: AVERAGE PERCENTAGE OF HOUSING EXPENSE AS OF TOTAL EXPENSE FOR CHINA'S URBAN HOUSEHOLDS


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42 State Statistical Bureau of P.R. China, op. cit., p.166.
Chapter 2. The Impact of China's Political, Banking and Legal Systems on Housing Finance

2.1 Brief History

After overthrowing the nationalist party in 1949, the new communist rules of China adopted a course of complete socialization of urban housing. The government tried to supply housing for all its employees (all urban citizens were at that time deemed government employees or dependents of employees), within the framework of a planned economy. Market forces or land values were not allowed to impact on the construction or allocation of housing, nor were they used to determine the rent paid by the residents.

By virtue of Article 10 of the Constitution of the People's Republic of China, the title to land is vested either in the state, in the case of urban land, or in the communes, in the case of rural or semi-urban land that has not already been vested in the state, and no individual has any claim on the title to any land. Hence the original wording of Article 10 of the Constitution classified leasing as illegal. The land tenure system practiced in China prior to the 1978 reforms, which still exists in most areas today, is that of allocating land to users by administrative methods without any charges or limitations on the length of time it could be held. State allocation of land thus was substituted by market mechanism. The disadvantages of this system has include the increasing burden on the state or state enterprises of having to provide housing while those agencies are getting poorer due to the decentralization of the national economy; continued immobility of workers who may be better in an other position, usually tied to state enterprises; and a lack of responsibility on the part of the occupants. This system also blocked foreign investment into property, as
land and buildings were held with an unspecified period of possession, and with occupants rights not fully and clearly defined.

The centrally planned nature of China is reflected in its administrative structure (see Exhibit 2-4). The highest ranking organ in the hierarchy of state power is the National People's Congress with the State Council as the executive organization, both of which are effectively under the control of the Communist Party of China. The State Council administers the country through a series of commissions, ministries, special agencies, offices and administrative units at the national level. At present, the most important administrative organs concerned with different aspects of real estate development at the national level are: State Land Administration (LAND supply control and all land registration); Ministry of Construction (BUILDINGS design, construction and registration, and most urban land transferal control); People's Construction Bank of China (MONEY supply and capital investment regulation). Besides these, the State Economic Planning Commission, the National Bureau of Construction Materials, and the National Bureau of Environmental Protection are also important in the whole approval process of real estate development. Note that responsibilities overlap and interests conflict between these departments.

The national structure is repeated at each of the lower levels of the administrative hierarchy. This structure maintains central administrative and political control and often creates a government bureaucracy. There are thirty first order provincial administrative units including three municipalities (Beijing, Shanghai and Tianjin), twenty-two provinces and five autonomous regions. The P.R.C.'s administrative structure is not always stable and is currently experiencing dramatic restructuring during the economic reforms.
The overriding characteristic of the economic system in China is that it is a communist, centrally planned system. Amongst the major changes which have taken place in the last decade are the Open-door Policy and the establishment in the late 1970s of the Special Economic Zones (SEZs) and the Coastal Open Cities, primarily to encourage foreign investment in the PRC. Nevertheless, the PRC is, and can be expected to remain, a centrally planned economy, and the Communist Party will continue to go to any lengths necessary to preserve its control.43

In the 1980s, the influence of the Communist Party of China on the day-to-day running of enterprises had been considerably moderated. There had been a general move to investigate and apply capitalist management theory and techniques. Initially the impact of these changes was most marked in the agricultural sector and has boosted agricultural production and increased peasant incomes. The changes extended to the real estate related industrial sectors with, for example, the introduction in 1984 of competitive tendering procedures in the construction industry and the granting of land-use rights by tender and auction to indigenous organizations and, since 1987, to foreign enterprises. By 1988, the economy had begun to overheat and retrenchment was considered necessary. In mid-1989 the overheating in the macroeconomy had largely subsided and the accelerating trend of inflation had been halted and reversed. By early 1990 the economy was still deteriorating after 1989 Tiananmen Event, but the trade situation was improving and China's leaders were becoming less preoccupied with the political situation and turning to concentrate on national economic reform and development. Constraints on economic growth persist, particularly with respect to shortages of infrastructure, energy and some raw materials, and the concern of investors about the political situation. However, what is

being witnessed in China today is an economic experiment of massive dimensions without parallel political reforms.44

All the banks in China are government-owned and government-run agencies operating under the control of the State Council of Chinese government (see Exhibit 2-5). "The People's Bank of China is established as the central bank with supervisory powers over the various specialized banks and financial institutions. It does not handle credit and loan business for enterprises and individuals, but devotes itself to carrying out research and formulating macroeconomic policies, strengthening the management of credits and loans, and maintaining stability of the currency. Fundamentally two institutions, the Bank of China and the People's Construction Bank of China, are actively involved with financial control. The Bank of China is the overseas banking arm of the People's Bank of China and operates with the parties involved with the project for matters such as foreign currency and guarantees. Until recently, the People's Construction Bank was only a conduit for distributing state funds for capital projects and dealt with local contributors such as construction companies and suppliers which are paid in local currency. It has now broadened its business scope significantly to include international banking and therefore foreign exchange business which was once the monopoly of the Bank of China. The Construction Bank has broadened its funding sources by tapping international markets and aggressively attracting domestic deposits. It puts major efforts into real estate financing, loans for commercial buildings, leasing, and project and investment consulting. The other specialist banks, Agricultural Bank of China and Industrial & Commercial Bank of China, have also been reformed for greater business freedom. The state pursues a policy of centralized control and unified management of foreign exchange. Only financial institutions that have the approval of the State Administration of Exchange Control are

44 Ibid., p.62.
permitted to engage in foreign exchange business. Several banks and financial institutions have now been approved for foreign exchange dealing."^{45}

In April 1985, the "Regulations Governing Foreign Banks and Joint Chinese-foreign Banks in Special Economic Zones of the People's Republic of China" were published. They allow foreign and joint Chinese-foreign banks to engage in commercial banking activities in these areas. Prior to this, in December 1984, banking services in Shanghai were opened to certain local and foreign banks. These included the Bank of East Asia, Standard Chartered Bank, Hongkong and Shanghai Banking Corporation and Overseas Chinese Banking Corporation. In addition, there are currently more than 60 foreign bank representative offices in China, mostly in Beijing.^{46}

"China has traditionally adopted an attitude of self-reliance when financing development and overseas borrowing has been minimal. Since the early 1980s, the country has remained a conservative borrower but is making greater use of foreign capital and foreign financing, including government assisted facilities and project and trade financing. China has also forayed into the international capital market in the last few years. In 1987, several PRC institutions issued bonds and certificates of deposit totaling US$2.17 billion. Mortgage financing, although not for housing development, is being experimented with in the economic zones. In Guangdong regulations have been issued and foreign banks are allowed to advance loans secured by properties, but there are still a number of problems to solve before such business become substantial. These include the need for development of legal, registration and foreclosure procedures, another problem is that an enforced sale will generate RMB, not foreign currency."^{47}

^{45} Ibid., p.28.
^{46} Ibid., p.28.
^{47} Ibid., p.29.
The foreign exchange rate is determined by the People's Bank of China by comparison with a basket of currencies in which the US$ weighs heavily. The RMB is not an internationally convertible currency. Foreign exchange controls are strict. Besides the official exchange rate, there exists an unofficial or arbitrated rate. There is a significant difference between the "official" rate and the market rate. Currently, US$1=5.8 ("official" yuan) and 10 ("market" yuan) RMB respectively.48

In April 1988, the 7th National People's Congress passed a most significant amendment to the Chinese Constitution which revised Clause 4 of Article 10 by adding "The rights of land use can be transferred in accordance with the law" to "No organization or individual may appropriate, buy, sell or lease or unlawfully transfer land in other ways."49 In December 1988, following from the amendment to Article 10, the 5th Session of the Standing Committee of the 7th National People's Congress subsequently amended the "Land Administration Law of the People's Republic of China" in a way which further clarified the legality of transferring land-use rights. These amendments have been seen as a landmark heralding the formal establishment of a system of private property rights and a real estate market in China.50

On May 19, 1990, a significant piece of legislation, entitled "Provisional Regulations on the Granting and Transferring of the Land Use Rights over the State-owned Land in Cities and Towns" which passed earlier in the People's Congress, was published as a decree of the state council. The major contents of the legislation are the separation of land ownership and the right of land use, and the right to sell, transfer, lease and mortgage land-use rights. At the same time, "Provisional Measures for the Administration of Foreign Investors to Develop and Operate Plots of Land' was also published allowing

foreign investors to acquire land-use rights, either independently or in joint ventures. These rules only apply to the Open Coastal Cities and Economic Zones. They are designed to encourage large tracts of land to be developed such as sections of the Pudong, which has been made available for development of Shanghai. Another piece of legislation established in 1991 at the provincial level is the "Regulation of Guangdong Province Special Economic Zone for the Administration of Secured Loans". These are essentially mortgage regulations for situations where the borrower has provided the lender with property as security to ensure repayment of the loan. Although this regulation is not related to home mortgages for individual families, perhaps its mechanism could be looked at as a guide for residential mortgages in China. Most recently, the People's Construction Bank of China and its Beijing Branch published the "Provisional Measures on Mortgage Financing for Housing of Employees and Workers" and the "Implementation Rules on Mortgage Financing for Housing of Individuals" respectively. All of these regulations (see Exhibit 2-1) illustrate the apparent determination of the government to push ahead with land reform to the establishment of real estate market.\(^{51}\)

2.11 Property Rights

No private ownership of land exists, or is expected to exist, in China. But the private ownership of buildings has been preserved since the founding of P.R. China, primarily for those old buildings built and owned privately pre-1949. At Present, in cities and towns, over 70% of the residential housing called publicly owned housing belongs to the local government and different government-owned units, and another 30% are those of privately owned housing, largely owned by the residents themselves.\(^{52}\) In villages, almost all the residential housing is constructed and owned by local residents. Government-

\(^{51}\) Ibid., p.384.

\(^{52}\) China State Ministry of Construction, Housing Report, 1990, p.15.
owned urban housing is under a rental system and is constructed with government and
government-owned enterprise investment.

Under the reform program, housing, including the attached definite land use right, is being
endowed the nature of a commodity, i.e., it should not only serve as a residence but
should be able to be bought and sold, inherited, granted or transferred. It is quite
foreseeable that commercialization and privatization of housing will continue and
eventually lead to private ownership becoming a major form of ownership in the P.R.C.

2.12 Development

There are now over 2,000 real estate development companies in China, most are state-
owned and state-run, a few are joint ventures. They obtain land-use rights from the
government either by allocation or paid transfer. The paid transfer can be obtained by
preferential price and market price from the government. Local governments at different
levels have corresponding power to decide land use allocation or paid transfer in terms of
land size, e.g., the approval of central government is necessary if the land size is larger
than 200 hectare (3000 Chinese mu, 2 sq. kilometers). The companies sell their
development to users with the aim of making a profit. Profits have been high for the
reason that land prices have been low.

There are two different kinds of housing in China, one is commercial housing and the
other is public housing subsidized by the government. Investment magnitude in housing
development is strictly controlled by government through the bank's control of credit and
the economic planning commission's control on supply of principal construction materials

54 China State Land Administration, op. cit., p.218.
like steel and wood. In this sense, some state-owned enterprises and institutions cannot build houses without governmental approvals even though they have the capital to do so. On the other side, public housing can only be sold by the development company at the price decided by government to avoid speculation, while there is a maximum price arbitrated by government for those commercial housing transactions. Generally speaking, although the market is playing a more and more important role in the governmental regulations, most housing cannot be sold at fully free market prices.

The approval process of real estate/housing development in China is quite complicated, and is rather man-ruled than law-ruled in many cases. Most of the results depend on a series of negotiations. Usually a single project needs to have more than one hundred government stamps on its documents, and even more for a bigger project. The government formulated a policy giving preferential treatment to Comprehensive Development of Residential Districts where all houses and apartment buildings are built with compatible infrastructure with schools and shopping centers, etc.

Most commercial housing developed in SEZs and the Coastal Open Cities, particularly those with high standard housing, was bought by investors from Hong Kong, Taiwan, Singapore. When funds have become unavailable from Chinese banks, it has become essential to find foreign investors for financing these housing projects. Furthermore, projects financed by foreign funds are usually easier to get through the government approval process as they are not supposed to eat up money from state annually planned major capital investment projects like ports, roads, etc.
2.13 Distribution

Housing in China since the 1978 reform is no longer viewed as something the government is obliged to provide, and has become more and more identified as a consumer item. In the past twelve years or so, most urban housing has been built in the form of housing estates owned by Municipal Comprehensive Development Companies which sell the units to working units at a market-referred price. At this stage in China's economic development it is virtually only work units which can afford to buy housing. Wages are not yet high enough and the difference between average wage and housing price is increased by the monopoly which development companies have on housing construction and access to materials. Beijing's municipal development companies, for instance, are doing a very good business selling apartments on a pre-paid basis to relatively wealthy state work units. The apartments, once purchased, are distributed at low rents to families who have employees in the wealthy state work units. Housing is becoming a commodity, but the players in this market are work units, not families.

Housing distribution is still strictly controlled by the government regulations on all the public housing. The state has very detailed standards on how to distribute public housing according to an employee's seniority and rank, which is usually very disadvantageous to young people. While the government is searching for a solution to the housing problems of many people who have low incomes or are unfortunately working for poor state work units, housing has already become less of a problem for some families. But these families still continue to ask for better housing, which is going to be constructed by using the money not in their pockets but the money of state-owned wealthy work units. Equalizing

55 In China, people commonly call employers, most of them are the government agencies and institutions and government-owned enterprises, as "working units".
56 The price is a discounted price based on its market price.
social welfare and controlling public expenditure in some state units is a major concern in the regulation of public housing distribution.

Another concern is how to encourage individuals and work units not to overspend on housing, thereby using savings which otherwise could be used by the government in reinvestment on national production, infrastructure construction and technological development. Housing purchases of enterprises need to get approval from the government, but this is not necessary for an individual's housing purchases. Also, development companies usually do not like to sell houses one at a time to individuals, but prefer to sell houses to enterprises wholesale. Moreover, most people are not rich enough to be able to buy housing with cash, although it may be economical to purchase housing rather than lease public housing when rents are getting significantly higher.

2.2 Reform in Housing Finance

It is clear from the overview above that the problem of housing shortage cannot be resolved by government action alone as it is getting harder and harder for central government to continue subsidizing such a large housing stock. A reformation of the old housing system is imperative. According to the plan approved by the State Council of China, the objective of housing reform is to replace the conventional system (see Exhibits 2-2 and 2-3, whereby the state builds apartments and distributes them through work units) with apartments being sold to individuals in line with the demands of the socialist market economy. To accomplish this objective, the housing reform will consist of the following: 1) changing the fund distribution system from state subsidies for housing construction and maintenance to state subsidies for wage earners; 2) replacing the present planning and management system that takes housing as a fixed capital investment with a system that regards it as commodity production, and; 3) forming a housing fund to streamline various
funding channels;\textsuperscript{57} 4) the final goal of these reforms would be the opening of a real estate market and developing real estate financing.\textsuperscript{58}

During the Chinese economic reform period, the structure of housing investment has been changed (see Chart 2-1). Although the absolute amount of housing investment from both central and local finances was little changed, the proportion of that investment for housing construction dropped precipitously from 90\% of the total to 15-18\%, with greater investments from enterprises and individuals making up the difference.\textsuperscript{59} The investment for housing construction from enterprises (government-owned working units) was particularly important, now accounting for 60-70\% of total housing investment for cities and towns.\textsuperscript{60}

The old housing investment system had an adverse impact on political stability and solidarity. With rent invariably low, people would vie to get bigger and better houses. And abuse of power within government agencies concerned with housing, often called "back door", was not unusual in executing housing allocation. Such demoralizing practices give rise to tension between leaders and the led, and among employees as well. In extreme cases a factory's production can be disrupted by a pending allocation, because all eyes are turned to that event and no heart is devoted to production. Unfairness in such assignment is almost ubiquitous and automatically generates discontent.

Another feature of China's present housing system is the lack of a fixed channel for housing investment. Under the present system, investment comes from the State, regional, enterprise, and individual sources. Of the total, over 60\% is made by enterprises to meet

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\textsuperscript{57} The China Daily, Housing Reform for Whole Country, March 11, 1988, p.3.
\textsuperscript{58} Ibid., p.3.
\textsuperscript{60} Ibid., p.17.
the need of their employees. Yet there is no earmarked 'housing fund' in the financial bookkeeping of any enterprise. The State allows a state-owned enterprise to use part of its after-tax profit, depreciation funds and budgetary renovation appropriations to finance new housing developments. Thus many enterprises simply use their production funds to make up the shortage. This practice is bound to have two serious consequences: production will suffer in the long run as a result of capital diversion, and; it will lead to extremely uneven distribution of housing investment, because enterprises differ widely in their financial strength and profitability. On the other hand, the enterprise's housing investment, over 60% of the total for housing, is still made on a yearly, random, and autonomous basis by individual enterprises.

Before looking into the reform, we need to keep in mind its background. The low rent system has been in practice for well over 30 years. It has become part of the financial system and an important economic factor, whose change will inevitably cause a chain reaction throughout the financial system. Moreover, the changes will also affect people's thinking, attitudes and moral standards, and thus have important social effects. Although housing reform programs vary in a number of ways to suit the local conditions, all have two things in common: rent increase accompanied by subsidy, and; the establishment of housing funds.

Government saving has played a key part in China's economy, and the urban housing finance system is dominated by the public sector: over 70% of China's urban housing stock is public stock. Private housing owned by individual households are mostly pre-1949 structures. Since 1950s, housing in large has been provided as a public good, supplied either by the government or by individual enterprises. The average rent, which has been frozen for more than 30 years, is only about 0.10-0.15 yuan per sq. m. (US$0.0017-0.0025 per sq. ft.) of floor area a month, while the maintenance cost is 0.26 yuan
(US$0.047) a month. One of the presuppositions of the low rent is low wages. Low wage paid by the Chinese government helps preserve government capital. Actually, low rent and low wage are mutual presuppositions. If the government pays low wages, they have the obligation to subsidize housing.

Government saving is composed of state savings and state enterprise savings. Although there are many interactions between the two, it is worthwhile to examine the specific saving mechanism. Previously, enterprise paid employees under labor cost and remitted all the profit to the government. Then, through government budget allocation, enterprise received investment funds. In that period, budget allocation was the main index of housing investment. China has undertaken a series of remarkable reforms over its fiscal and tax systems since 1978. These reforms have changed the previous practice of overcentralization. Now the income distribution pattern has changed. The state imposes tax, and after-tax profits are left to enterprises. The after-tax profit retained by state enterprises increased from 3.7% in 1978 to 43.1% in 1986.61

The interesting feature can be seen in the comparison of existing housing stock and newly constructed units. "In 1983, the government had a 25.5% share of the housing stock, while enterprises were in charge of 57.7%. In the case of the newly constructed units in 1989, government agencies only posses a 5.2% share, while enterprises expand their share to 76.4%. Enterprises are now the leading player in housing construction. This is one of the fundamental features of the new housing system in China. Yet different cities have different ownership structures. Government agencies have only 25% of the current housing stock and enterprises 57% in Beijing. In Tianjin, 42.9% of current housing stock is in the charge of government agencies, with enterprise possessing only 40.7%. A striking difference is found in Shanghai where 71.2% of the current housing stock comes

61 Ibid., p.18.
under the authority of government agencies while only 7.5% is in the charge of enterprises. Regardless of the great difference in current housing stock, newly constructed units have the same characteristics: enterprises dominate the situation by controlling 60% in Shanghai, 73.3% in Tianjin and 81.6% in Beijing.62

Therefore the state enterprises now have the capacity to play a distinctive part in government saving. The means for individual enterprises to get funds are varied. Their bargaining capacity with the government and pricing authorities are the most important ones. There are striking differences in the bargaining capacity and pricing authority among industries, cities, and enterprises, and this is also the case with the capacity to finance housing.

There is another distinctive phenomenon in current urban housing finance: the contribution of the rural households. The earning of rural households is much less than that of urban households due to the especially low price of agricultural products. Urban households may enjoy welfare housing as a compensation for low wages. Rural households get low prices for their produce, while, among other things, they must contribute to finance urban housing subsidies.

There are three players in current urban housing investment in China: government (central, provincial and municipal governments), enterprises, and urban households. Besides these three housing financiers, there are housing developers and emerging bankers. But public housing in China is more than a little complicated: 1) the investment channel is always misleading: funds from budgetary allocation actually take the form of enterprise funds; 2) although housing investment is made through the enterprise, the administration or authority in some cases would come from government agencies. With the various kinds of

62 Ibid., p.17.
interrelations, one sometimes can hardly tell whether certain housing is government-owned or enterprise-owned.63

An emerging and very promising player in the housing industry is the urban household. Private investment has been expanding since 1978, especially in the small and medium sized cities and towns, because of the tradition of individual housing construction, sufficient land for housing construction, and simple design of housing. In 1980, private investment got a 2% share. By 1990, the percentage reached 17%. In 1988, the area of housing construction invested by individuals was over 40,000,000 sq. m., which made up 30% of the total newly built area that year, and 16 times of that of 1979.64 So the trend is obvious, and a careful evaluation of the role of private investment is of great significance in reaching a solution to housing shortage in China.

Housing finance through public expenditure would rely heavily on cooperation of different branches and actors. Previously the cooperation was dominated by the central government economic plan, which again was based on a series of basic economic relationships. Among them, income distribution pattern and means to allocate production resources are the most important. The two basic conditions of the previous housing finance system have been undergoing dramatic changes during the past few years.

Previously, resource allocation was made through an integrated economic plan, and there was actually not much room to bargain. Since the economic reform, the scope of state mandatory planning and unified pricing has been reduced, and the market mechanism has started to play its regulatory role.65 The changes in resource allocation have led to the need for a series of adjustments to establish a fair price system to guarantee a fair

63 Ibid., p. 18.
64 Ibid., p. 17.
65 Ibid., p. 16.
competitive environment, which has proved difficult to set up. This has produced direct impact on housing, which, however, is not so desirable to date. One problem is that, for all the enterprises owned and run by government, some enterprises may get a larger portion from the current price-taxation system, while others can not. Those who get more may spend their extra funds to improve the housing condition for the employees.

The dramatic changes in the revenue-investment circle and resource allocation are generating serious conflicts between the current housing finance system and the changing environment. China's whole economy is just at a turn-around point from public saving to private saving. In this context, the only way forward for the housing finance system is to set up a system based on private saving. The guideline for restructuring housing finance based on private saving is to substitute public expenditure with household's saving in urban housing finance, i.e., to introduce new housing rent standards to cover the construction costs and maintenance fees, to raise household increase in revenue to match the higher housing cost within certain limits, and encourage individual households to buy homes.

CHART 2-1: THE OWNERSHIP STRUCTURE OF HOUSING STOCK IN CHINA

EXHIBIT 2-1: IMPORTANT LEGAL REFORMS ON BANKING, LAND AND PROPERTY IN CHINA

<table>
<thead>
<tr>
<th>Date</th>
<th>Title</th>
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<td>April, 1985</td>
<td>Regulations Governing Foreign Banks and Joint Chinese-Foreign Banks in Spacial Economic Zones of the People's Republic of China</td>
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<td>April, 1988</td>
<td>Chinese Constitution Amendment on Land Use Rights Transference</td>
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<td>May, 1990</td>
<td>Provisional Regulations on the Granting and Transferring of the Land Use Rights over the State-owned Land in Cities and Towns</td>
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<td>May, 1990</td>
<td>Provisional Measures for the Administration of Foreign Investors to Develop and Operate Plots of Land</td>
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<td>1991</td>
<td>Regulation of Guangdong Province Special Economic Zone for the Administration of Secured Loans</td>
</tr>
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<td>1993</td>
<td>Provisional Measures of Real Estate Credit Department of People's Construction Bank of China on Mortgage Financing for Housing of Employees and Workers</td>
</tr>
<tr>
<td>June 29, 1993</td>
<td>Implementation Rules of Beijing Branch of People's Construction Bank of China on Mortgage Financing for Housing of Individuals</td>
</tr>
</tbody>
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EXHIBIT 2-2: MECHANISM OF GOVERNMENT FUNDS IN CHINA (before housing reform)

*Enterprise profits are the result of payments for labor and farmer's produce being less than the "true cost" of production due to price regulation by the government.

EXHIBIT 2-3: CHINA'S URBAN HOUSING FINANCE SYSTEM (before housing reform)
EXHIBIT 2-4: CHINA ADMINISTRATIVE STRUCTURE
(as of 1993)
EXHIBIT 2-5: FINANCIAL INSTITUTIONS OF CHINESE GOVERNMENT

The mortgage markets in the United States are quite mature, and almost all home owners use mortgage instruments to finance homeownership. Although there are considerable political, economical, and cultural differences between China and the United States, it is helpful to first understand the mechanism of a mortgage system in the U.S. before delving into the China's potential mortgage markets. There is much from the U.S. experiences that can be drawn upon by China to help establish an effective mortgage financing system.

3.1 Origination and Goals

Homeownership is a dominant feature of American society. It is a status symbol, and evidence of personal achievement, as well as the largest investment and biggest asset most households will ever have. Promoting homeownership is politically responsive to an almost universal aspiration. A 1975 Roper poll sought to determine what were the components of a "good life". Eighty-five percent of the respondents indicated that owning their own home was one component.66

Homeownership is considered important for a variety of public policy reasons. Homeownership improves neighborhoods by promoting stability, enhancing residential value, maintaining the housing stock and preserving the supply of housing. For local

communities this translates into higher tax revenues and lower per unit service costs. A home purchase represents a substantial investment in building materials and consumer durables, as well as other consumer items and service. Homeownership is also important for the individual because it may represent a good investment opportunity, provide shelter and security, and serve as an asset to pass on to heirs.

The U.S. is a nation of homeowners, almost two thirds (65%) of American households now own their own homes. The rate of homeownership has increased steadily between 1930, when only one-third of households were owners, and 1970. Progress came to a halt in the 70s; since then the rate has remained steady.67

In the United States an individual typically finances the purchase of a primary residence by issuing a mortgage. A mortgage is a secured loan where the borrower pledges the home being financed as security for payment of the loan. When the mortgagor (borrower) can not make the contractual interest and principal payments, the mortgagee (lender) has the option to foreclose on the property. The value recovered in the foreclosure process depends on the explicit costs of the foreclosure process, and the value of the property.

In the United States, both government agencies and private lenders have played significant roles in helping families achieve homeownership by making available the necessary mortgage financing. In the U.S. the vast majority of home purchases are financed with mortgages, and mortgage interest rates and the structure of mortgage instruments play crucial roles in determining the annual cost of owning a home.

3.2 Funds and Institutions

"During any given time, some individual households and businesses are seeking funds to use for investment in real estate, while others will have excess funds. To raise the necessary funds, households, business, and government create financial claims and obligations. For households these claims usually take the form of consumer and mortgage loans. Businesses generally make business and mortgage loans and issue stock, commercial paper, and bonds, while government agencies usually issue bonds, bills, and notes. These financial claims become financial assets for lenders who will supply funds for some specified period and earn either interest or dividends in return for use of funds. Each claim created by business, households, and government has either an interest or dividend rate, which reflects the price each borrower is willing to pay to raise funds and the rate that lenders demand to supply funds."68

The demand for mortgage funds arise from business and households desiring to make investments in real assets, such as single family residential housing, multifamily housing, apartment complexes, and commercial developments (shopping centers, hotels, and office buildings) which require financing. Residential mortgage loans constitute the largest category of loans among the various types of mortgages made in the United States. Among the total outstanding mortgage loans in 1990, the 1-4 family loan constituted 69.7%, Multifamily 7.8%.69

The most important intermediaries in the mortgage market may be classified into: 1) depository-type institutions such as savings and loan associations, commercial banks, and

69 Ibid., p.653-685.
mutual savings banks, offer a variety of deposit accounts to savers; 2) contractual-type institutions such as life insurance companies and pension and retirement funds. 3) specialized mortgage market intermediaries including mortgage companies, real estate investment trusts, and federally related agencies which restrict their investment activity primarily to the mortgage market.\textsuperscript{70}

Another source of funds is from foreign investment in real estate, which has run at about 10\% of total direct foreign investment for the past few years, mortgage investment is an increasing share of the foreign bank portfolio. The total mortgage portfolios of foreign branches and agencies in the U.S. market is on the order of $30 billion. Adding U.S. chartered subsidiaries would bring the total closer to $50 billion, which is about 7\% of all bank mortgages outstanding as of year-end 1989.\textsuperscript{71}

The mortgage instruments are determined by the various institutional players in the mortgage market. In the U.S., there is an extensive housing finance system that has grown over time, increasing the flow of capital to the home mortgage market.

3.3 Structure of Mortgage Markets

The housing finance system in the U.S. is composed of primary mortgage markets and a national secondary mortgage market. That provision of a mortgage to a borrower may be made through a depository institution such as a commercial bank or thrift or non-depository institutions such as mortgage banks.

\textsuperscript{70} Ibid., p.653-685.
\textsuperscript{71} Marc Louargand, Foreign Bank Participation in United States Mortgage Markets, MIT-CRE, WP #24, December 1989, p.11.
3.31 Operating Mechanism

"Traditionally, local banks, particularly thrifts (saving and loan institutions), provided the funding for the majority of mortgage loans. These institutions took the short-term deposits originated from household savings and used those funds to make long-term mortgage loans. The major operating features of a primary mortgage market are:

- The availability of mortgage credit within a particular local area depended on local savings.
- When interest rates were relatively stable, funding long-term mortgages proved to be a profitable business. However, in an environment with rising interest rates, institutions had to pay higher rates on short-term deposits than were earned on their existing portfolio of long-term fixed rate mortgages, and long-term mortgages could not adjust to higher rates without call options.
- The mortgage loans were long-term assets with little liquidity; once a mortgage was in the portfolio, it was hard in selling when necessary.
- The borrowers have three choices over the term of mortgage: 1) choose to make the scheduled mortgage payment; 2) not to make the payment; 3) pay the balance of the loan through refinancing or sale of the property.

The mortgage instrument translates the purchase price of a home into an annual cost of homeownership."

With the creation of the secondary market, local lenders who originate mortgage loans can then sell those loans to a secondary market participant, who then sells the loans to an investor. The investor may be a pension fund or insurance company with a long investment time horizon. Meanwhile, the local lender can originate more mortgages by

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72 This section summarizes findings contained in *The Economics of Real Estate Markets*, by DiPasquale and Wheaton, forthcoming from Prentice-Hall, Draft in March 1993, Chapter 9.
recycling the proceeds from the sale of previous mortgages. The goal was to create a national mortgage market to replace the large number of independent local markets. In a secondary mortgage market, mortgage loans must be standardized regardless of the local market in which they are originated. Mortgages must be commodities with similar structures and terms and with similar borrower qualification requirements.

In the modern mortgage market, when a depository institution originates a mortgage loan it can either hold the loan in portfolio or sell it. Non-depository institutions only sell loans. Originators can sell loans either directly to an investor or to the secondary market conduit. The secondary market conduit then makes the sale to an investor.

3.32 Government Facilitating and Regulations

The federal government made a commitment to the development of a secondary market by creating:

- The Federal National Mortgage Association (Fannie Mae) with the mandate to create a secondary market for mortgage loans and take a leadership role in creating standards for mortgage loans in the 1930s.
- In 1968, Fannie Mae was divided into two institutions, resulting in the creation of the Government National Mortgage Association (Ginnie Mae), an agency of the federal government housed in the Department of Housing and Urban Development (HUD). Its mandate is to make a secondary market in government insured mortgages (largely by Federal Housing Administration (FHA)). Fannie Mae became a federally-chartered but privately held corporation which is exclusively in the business of making a secondary market for mortgages.

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73 Ibid., Chapter 9.
• The Federal Home Loan Mortgage Corporation (Freddie Mac) was created in 1970. Like Fannie Mae, it also is a government sponsored enterprise (GSE) with a federal charter. Freddie Mac was created originally to make a secondary market for mortgages originated by thrifts.

Today, Freddie Mac and Fannie Mae compete to serve the broad spectrum of mortgage originators. In the last decade, investment banking firms have increased their role in buying and selling mortgage loans, but the market is clearly dominated by the federal credit agencies such as Fannie Mae, Freddie Mac and Ginnie Mae.

3.4 Income, Mortgage Credit Availability and Affordability

The initial cash required to purchase a home (downpayment), as well as the income required to qualify for a mortgage, limit the ability of some households to own their homes:

• In the U.S. mortgage market, the operating rule of thumb is that monthly housing expenses (mortgage payment, taxes and insurance) generally should not exceed 28% of gross monthly household income. This criteria is set by the federal credit agencies (Fannie Mae and Freddie Mac) which provide liquidity to the mortgage market by purchasing and selling mortgage loans.

• A household typically is required to pay between 10-20% of the purchase price in the form of a cash downpayment, financing the remainder with a mortgage. Commonly home prices represent 2-3 years of family's annual income.74

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74 Interview with Marc louargand, a faculty of MIT Center for Real Estate and Department of Urban Studies and Planning, May 20, 1993.
In the United States, "poor people" are defined as those below the official poverty threshold of $11,000 per year for an urban family of four. The national median household annual income is about $22,000. "Homeownership has not been easy for everyone to obtain, especially for the poor."75 "Only 40% of the poor own their own homes, while among those who earn more than $50,000 per year, more than 80% do. Homeownership is also much higher among whites than among blacks; among Southerners and Midwesterners compared to Northeasterners; and among suburban and rural households compared to those who live in central cities,"76 among older workers compared to young workers.77 "During the period 1970-1984, there were three major recessions, rapidly increasing construction prices, rising land costs, augmented demand from baby boomers and historic new highs in interest rates. All of these, plus declining real income, contributed to the crisis of affordability."78

3.5 The Price of Housing and Mortgage Design

As a capital asset, the value of a home may be expected to appreciate over time. The total cost of homeownership takes into account the expected appreciation in the price of the home and subtracts this from the annual after-tax costs. While accrued gains are not directly comparable to the cash costs of housing, they do represent real wealth which potentially can be converted to income.

"House prices rose dramatically in the mid- and late 1970s, generating high estimates of expected capital gains between 1978 and 1980. Actual house price appreciation slowed

76 Ibid., p.6.
78 Phillip Clay, op. cit., p.31.
considerably in the 1980s, resulting in much smaller expectations about future price growth. When expectations about house price appreciation are taken into account, the costs of homeownership in the late 1970s through 1980 are much lower than throughout the rest of the 1980s and early 1990s.⁷⁹

Theoretically, there are two possible forms of mortgage: fixed payment mortgage (FPM) and the price level adjusted mortgage (PLAM). Their distinctive features are listed as follows:

- The nominal FPM payments are constant, but real payments decline over the term of the mortgage, assuming some level of inflation. The nominal PLAM payments rise or fall with inflation/deflation over the term of the mortgage, but remain constant in real terms. The PLAM offers considerably lower initial payments, but the borrower takes on a liability that increases or decreases at the inflation/deflation rate.

- Under both the PLAM and the FPM, the principal is paid off by the end of the term of the mortgage. However, with the FPM, the nominal as well as the real principal always declines over the term of the mortgage; with inflation, the balance due on the PLAM decreases in real terms but not in nominal terms. The fact that the balance due does not rise in real terms allows the full amortization of the loan at the end of the term.

- The homeowner's equity in the house is defined as the market value of the house minus the outstanding balance on the mortgage. The homeowner accumulates equity in the home over time both through house price appreciation as well as the repayment of principal on the original mortgage.

- With the FPM, the homeowner decreases the outstanding balance on the mortgage with every mortgage payment. In addition, all house price appreciation belongs to the

⁷⁹ DiPasquale and Wheaton, op. cit., Chapter 9.
homeowner in the form of increased equity. With the PLAM, the borrower builds equity at a much slower pace. In effect, with a FPM the borrower has certainty of payment over the term of the loan. With a PLAM, the borrower has a more gradual build up of equity.

3.51 Fixed Interest Payment

The standard mortgage instrument in the U.S. is the 30 year, fixed payment mortgage, which has a fixed interest rate, fixed payment. By making all scheduled periodic payments, the amount borrowed is fully repaid at the end of the term. The features of this kind of mortgage instruments are:

- With a FPM, the borrower pays the lender the same amount each month and at the end of the term the loan is paid off. The monthly payments cover interest due and part of the principal. Early in the mortgage, the majority of each payment goes to interest. As the principal is paid off the interest due declines and more of the payment goes to paying off principal. At the end of the term, both interest due and the total principal are fully paid.

- Although the FPM has fixed payments over the term of the loan, these payments may decrease in real terms if there is inflation in the economy over the term of the loan. The lender as well as some borrowers may prefer a mortgage with declining real payments. For example, assuming that incomes keep pace with inflation, the mortgage payments become less of a burden over time, decreasing the risk of mortgage default.

- Since the standard FPM does not give the lender a call option (an option to force the borrower to refinance the mortgage before the end of the term), the lender bears the risk. The lender must hold the mortgage even if it no longer provides a market rate of return. Actually the average number of years that a FPM is outstanding is 7 years in
the U. S. Lenders protect themselves with "due on sale" clauses.\textsuperscript{80} Borrowers have the option to refinance if interest rates fall. There are costs to refinancing, so the saving from getting a new mortgage at a lower interest rate must be greater than the costs of refinancing.

\section*{3.52 Adjusted Payment Mortgage and Others}

An alternative mortgage to the FPM is the price level adjusted mortgage (PLAM). The borrower makes a payment that rises exactly with inflation (that is, payments in real terms are constant) or the country's price index. The features of this kind of mortgage instruments are:

- The PLAM payment is calculated on the basis of a real mortgage interest rate, $i-g$, where $g$ is the inflation rate and $i$ is the nominal mortgage interest rate. If there is no inflation, then the PLAM is equivalent to the FPM. If there is inflation, the initial payment on the PLAM is always less than the initial payment on the FPM, thus the homebuyer can qualify for a larger mortgage loan. In subsequent years, payments rise with the rate of inflation, $g$.

- One problem with originating PLAMs is that the real mortgage interest rate is not known ex ante since the rate of inflation is not known. Thus, estimates of expected future inflation are sometimes used.

- Since payments and the outstanding principal are both indexed to inflation, both the lender and the borrower are unaffected by inflation. While payments are fixed in real terms, income may fall in real terms, making it difficult for the borrower to keep up with the payments. The lender is protected from the risks of unanticipated inflation but retains the risk associated with raised in the real interest rate. The borrower

\textsuperscript{80} This knowledge came from Tom Steele, my thesis supervisor.
retains the risk associated with real interest rate declines unless the borrower has the option to refinance.

Three major objections have blocked PLAM used in the U.S.: 1) the negative amortization in nominal terms is considered a major problem; 2) homeownership in the U.S. is largely viewed as a major savings vehicle. The home is the largest single asset of most American households, who may prefer a FPM which promotes savings rather than a PLAM which enhances current consumption; 3) based on recent economic trends, there is concern that incomes may not always keep pace with inflation, making it difficult to meet the rising mortgage payments under the PLAM.

Mortgage lenders have developed another form of mortgage instrument: the adjustable rate mortgages (ARM) which shifts some of the risk of inflation from the lender to the borrower. Under an ARM, the borrower is charged the floating short-term nominal interest rate that adjusts periodically (e.g., every one, three or five years). Since short-term rates are usually less than long-term rates, initial payments under an ARM are generally lower than with an FPM. When the short-term rate changes, monthly payments are calculated so as to insure amortization of the unpaid balance over the remaining life of the loan. In today's market, most ARMs carry limits or "caps" on the allowed increases in the interest rate each time the rate is adjusted or the cumulative interest rate increase over the life of the loan.

3.6 Risk of Mortgage Default and Mortgage-backed Securities (MBS)

Mortgage-backed securities (MBS) are a capital market innovation that gained popular acceptance in the 1980s and are even stronger in the 1990s. These instruments have
revolutionized real estate mortgage markets and are popular investments for both individual and institutional investors.

"The secondary market conduits may simply sell whole loans to investors, or they may pool a group of mortgages and package them into MBS. They can also issue bonds backed by a pool of mortgages and sell the bonds or securities to investors. An MBS may be backed by thousands of mortgages or just a few. An investor in an MBS purchases shares of the pool of mortgages. Investors often prefer purchasing an MBS to an individual mortgage loan for much the same reason that investors prefer a diversified portfolio. Rather than taking the risk that an individual borrower will make timely payments of principal and interest, the investor takes on the risk that a large group of borrowers will make timely payments."81 Because the borrower has the option to prepay a mortgage at any time, the eventual term of an individual mortgage can be very uncertain. When a mortgage in the pool is prepaid, the prepayment of principal is passed through to the investors in proportion to their shares in the pool.

With any mortgage investment there are two types of risk: 1) default risk, and; 2) prepayment risk. In case of default, the lender decides if default has occurred by choosing whether to work with the borrower or to foreclose. The studies of default show that: 1) the risk of default increases with a higher interest rate; 2) the term of the loan and property value are found to be negatively correlated with mortgage default risk; 3) the people whose incomes exhibit the greatest volatility are more likely to be delinquent than are professional people whose income is less volatile; 3) areas with high unemployment rates are found likely to have higher loan default rates; 4) good condition of property and neighborhood are negatively correlated with mortgage interest rate premiums (less risky);

81 DiPasquale and Wheaton, op. cit., Chapter 9.
5) mortgage risk increases with a lower downpayment or no unit appreciation; 6) under different mortgage instruments, increases in risk, however, are found to be particularly severe under the price level adjusted mortgage (PLAM) and the adjustable rate mortgage (ARM); 7) in addition, the transaction costs, crisis events, expectations and the difference between market and par value of the mortgage, all exhibit significant effects on mortgage default.\(^{82}\)

MBSs issued by the federal credit agencies provide some security to investors. Fannie Mae and Freddie Mac guarantee the timely payment of principal and interest to the investor. Ginnie Mae's MBS are guaranteed by the full faith and credit of the U.S. government.

### 3.7 Government Tax Subsidies

The annual cost of owning a home is influenced by the treatment of the mortgage payment under federal income tax law. Between 1935 and the present, the federal government created a national mortgage system that extended financial assistance to buyers; financed a national highway system to open up the suburbs; gave generous preferential tax treatment to homebuyers; and facilitated a favorable regulatory structure (zoning, mortgage lending regulations, code enforcement, etc.). By far the largest federal subsidy to housing comes through the federal tax code.

For federal income tax purposes, both interest paid on home mortgage loans and local property taxes are deductible from taxable income. In addition, the capital gains when the home is sold are exempt from taxation if the homeowner uses the gain to purchase another

home within two years of the sale. For homeowners over age 55, there is a one-time exclusion from capital gains tax (for the first $150,000 of gain), making it easier for the elderly to sell their homes and use the proceeds for other retirement needs.

All taxpayers are granted a standard deduction from income regardless of expenditures on deductible items. In order to calculate the tax savings from homeownership, we must consider only deductions above the standard deduction. In 1991, the standard deduction for a married couple jointly filing a federal tax return was $5,000. For first-time homebuyers who typically purchase less expensive homes, their total deductions do not exceed the standard deduction by much. For higher income households, the value of housing deductions is considerably larger.83

Current estimates suggest that the mortgage interest and property tax deductions alone cost the U.S. Treasury in the neighborhood of $70 billion annually.84 The capital gains exclusion adds further to this subsidy. The impacts on first-time buyers are relatively small. Instead the policies tend to benefit those with greater income or equity in a home. This is why many wealthy individuals, although they are able to purchase a house using all cash, still like to take a mortgage to finance their home in order to take advantage of the tax benefits.

83 DiPasquale and Wheaton, op. cit., Chapter 9.
84 Ibid., Chapter 9.
Although many people have achieved higher incomes, few have the resources to buy a house with cash. For those living in big cities, or SEZs, where housing prices are relatively high and unaffordable for young urban professionals who have great prospective incomes but badly need a decent living space right now, the reformation of the housing finance system is urgently needed. As mentioned earlier in this thesis, the government is finding it harder and harder to continue to subsidize housing development and to maintain a huge housing stock. Thus financial instruments, such as government backed mortgages are an appealing answer to the problem. This chapter will look at the basic economic factors that are decisive to the possibility and feasibility of mortgage financing for residential units in China.

4.11 Income Growth Rate and Savings

Average income per capita\(^85\) (in RMB) in China's cities and towns and their average annual growth rates are shown below in Exhibit 4-1.\(^86\)

EXHIBIT 4-1: AVERAGE INCOME PER URBAN CAPITA & AVERAGE ANNUAL GROWTH RATE

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<tbody>
<tr>
<td>yuan/year</td>
<td>235</td>
<td>316</td>
<td>439</td>
<td>685</td>
<td>1,387</td>
<td>1,544</td>
</tr>
<tr>
<td>yuan/mon.</td>
<td>20</td>
<td>26</td>
<td>37</td>
<td>57</td>
<td>116</td>
<td>129</td>
</tr>
<tr>
<td>A. A. Growth</td>
<td>na</td>
<td>1.3%</td>
<td>19.3%</td>
<td>9%</td>
<td>15.3%</td>
<td>11.2%</td>
</tr>
</tbody>
</table>

\(^85\) The definition of "income per capita" here is not the average income per "employment age person" but per "any age person" in households.
4.1 Urban Resident's Income Growth

In China, urban residents' income has been increasing rapidly since 1978 due to the nation's higher speed economic development driven by the state's economic reforms and "open door" policy in effect during this period. Another factor contributing to the growing wealth of many families in the last decade is the change in the nation's income distribution system that has allowed local governments and individuals to share more of the nation's wealth, as was discussed in Chapters 1 and 2.

However, not all the workers and staff (almost all of them are government or government-owned enterprise employees living in the cities and towns) incomes are increasing equally. The nature of the economic reform is changing the old rigid social and economic (to some extent even political) system into a more dynamic one by which people have more incentives to work harder and more creatively. Recently, the pattern of growth in income among individuals has become more differentiated since income is linked to performance, which tends to be different among people. In addition, some incomes could be constrained by non-controllable factors such as being located in poorer urban areas or having different family backgrounds which do not provide the same opportunity for income growth.
According to the official exchange rate, the 1991's per capita urban resident's income was 1,544 yuan/year and 129 yuan/month (U.S. $270/year and $23/month). According to the new estimation method, based on the Purchasing Power Parity model, the 1991 numbers could actually be 3-4 times bigger closer to US$950/year and US$80/month, respectively. During 1957-1978, the average annual growth rate of urban resident's income was only 1.3% while the average annual growth rate, in general, has been above 10% from 1978 to 1991. This clearly demonstrates the positive impact the economic reforms have had on the revenue growth of Chinese urban families.

Average wages of staff and workers (in RMB) in China's cities and towns and their average annual growth rates are shown below in Exhibit 4-2.87

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<tbody>
<tr>
<td>yuan/year</td>
<td>624</td>
<td>615</td>
<td>762</td>
<td>1,148</td>
<td>2,140</td>
<td>2,340</td>
</tr>
<tr>
<td>yuan/mon.</td>
<td>52</td>
<td>51</td>
<td>64</td>
<td>96</td>
<td>178</td>
<td>195</td>
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<tbody>
<tr>
<td>A. A. Growth</td>
<td>7%</td>
<td>-0.1%</td>
<td>12%</td>
<td>8%</td>
<td>13%</td>
<td>10%</td>
</tr>
</tbody>
</table>

RMB 2340 yuan = $410 (PPP $1440); RMB 195 yuan = $34 (PPP $120)

87 Ibid., p.275.
The Exhibit 4-2 contains a similar pattern to Exhibit 1, but with a decrease in wages from 1957 to 1978 while the Exhibit 1 showing that per capita income of urban families has slowly increased. The decline in wages can be explained by the "Big Economic Jump Forward Movement" of 1958-1960 and the following "Cultural Revolution", which two periods together lasted about two decades from 1958-1978. The small per capita income growth in Exhibit 1 during 1957-1978 in the urban households could be a result of changes in the urban family's structure. Many urban families created in the 1970s were composed of people born in the 1950s. These families usually were characterized as smaller in size with fewer dependants than the prior generation. This historical change of the family's structure can explain the differences between wages and the average per capita income of households. As this trend continued from 1978-1991, it had an impact on the growth rate of family per capita income, which is reflected in Exhibit 1.

Higher income has brought higher family savings and deposits, which families could make use of to improve their living standard at present or in the future. However, there needs to be a way to mobilize these additional funds into housing construction (although the savings of individual families are not yet large enough to buy a house).

For one Chinese (including both urban and rural residents), the average saving deposits\(^88\) at year end and corresponding average annual saving increments (in RMB) and their average annual growth rates of per capita gross savings are shown below in Exhibit 4-3.\(^89\) Per capita average saving deposits\(^90\) of Chinese urban residents at year end and corresponding average annual saving increments (in RMB) and their average annual savings.

\(^{88}\) These are "official" savings and do not account for "mattress money".
\(^{89}\) China State Statistics Bureau, op. cit., p.275.
\(^{90}\) These are "official" savings and do not account for "mattress money".
rates (the percentage of each year's savings as of the year's total income) and their average annual growth rates of per capita gross savings are also shown below in Exhibit 4-4.\textsuperscript{91}

EXHIBIT 4-3: AVERAGE PER PERSON SAVING DEPOSITS AT YEAR END & AVERAGE ANNUAL SAVING INCREMENTS & AVERAGE ANNUAL GROWTH RATES OF SAVINGS

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<tbody>
<tr>
<td>year end</td>
<td>22</td>
<td>40</td>
<td>153</td>
<td>615</td>
<td>787</td>
</tr>
<tr>
<td>yuan/yr.</td>
<td>0.8</td>
<td>9.0</td>
<td>22.6</td>
<td>92.4</td>
<td>172.0</td>
</tr>
<tr>
<td>A. A. Growth of Savings</td>
<td>7%</td>
<td>35%</td>
<td>31%</td>
<td>32%</td>
<td>28%</td>
</tr>
</tbody>
</table>

RMB 787 yuan = $138 (PPP $484); RMB 172 yuan = $30 (PPP $106)

EXHIBIT 4-4: AVERAGE PER URBAN RESIDENT SAVING DEPOSITS AT YEAR END & AVERAGE ANNUAL SAVING INCREMENTS & AVERAGE ANNUAL GROWTH RATES OF SAVINGS

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</thead>
<tbody>
<tr>
<td>year end</td>
<td>141</td>
<td>481</td>
<td>2077</td>
<td>2663</td>
</tr>
<tr>
<td>yuan/yr.</td>
<td>na</td>
<td>68</td>
<td>319</td>
<td>586</td>
</tr>
<tr>
<td>A. A. Savings Rate</td>
<td>na</td>
<td>9.9%</td>
<td>23.0%</td>
<td>37.7%</td>
</tr>
<tr>
<td>A. A. Growth of Savings</td>
<td>na</td>
<td>28%</td>
<td>34%</td>
<td>28%</td>
</tr>
</tbody>
</table>

RMB 2663 yuan = $467 (PPP $1635); RMB 586 yuan = $103 (PPP $360)

\textsuperscript{91} Calculated based on the data of 1992 China Statistical Yearbook, p.281.
The above two exhibits (the Exhibit 4-3 and Exhibit 4-4) clearly show that in recent years:

1) all people's savings have increased rapidly; 2) the savings rate is growing increasingly, and; 3) the average annual growth rates of per capita gross savings are very high; 4) the urban resident's savings size is much bigger than that of the rural resident's; 5) the peasants benefited from the economic reform a little bit earlier than their urban fellows, but later the situation was reversed, and in the end their savings increase at about the same pace; 6) in the same pattern as the revenue, the urban people surpass their rural fellows by a large margin in saving deposits because of their larger saving basis, although their consumption level is usually higher. These indicate that Chinese urban residents have more and more additional funds after family's expenditure on their basic living needs.

The economic miracle of the recent Chinese economic reform is also reflected by the national annual gross incomes and average per capita annual income levels (in RMB) as shown in Chapter 1 and Chapter 2. China's GDP growth has been generally maintained at around 10%, although in some areas, like southern China and areas along the east coast, the economic growth has been more in the range of 15%. Therefore, some economists believe that China is going to become a world economic superpower by the turn of the century. It is generally believed that China could easily reach a per capita income level of US$1,500 if the country's economic policies are continue on the same track.
However, although China is gaining a stronger economy, the government finds it more and more difficult to put money in construction of state subsidized housing due to the government sharing less and less, proportionally, in the nation's wealth, as shown in Chapters 1 and 2. The percentage of the total government investment on urban housing construction in GDP has decreased in recent years, as shown below in Exhibit 4-5.92

**EXHIBIT 4-5: PERCENTAGE OF THE TOTAL GOVERNMENT INVESTMENT ON URBAN HOUSING CONSTRUCTION IN GDP**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>H. Inv.*/GDP</td>
<td>3.67%</td>
<td>3.36%</td>
<td>3.24%</td>
<td>3.21%</td>
<td>2.54%</td>
</tr>
</tbody>
</table>

* H. Inv. is the abbreviation of the "Government Housing Investment."

In view of this, the people waiting for an allocation of State subsidized housing certainly will be disappointed. Because the people are not able to buy housing with their very limited savings, they continue to wait. Now appears to be the time for a mortgage type of financial instrument. The trend shown in the Exhibit 4-5 may have shown further deterioration in recent years due to: 1) the country's population growth; 2) more and more people immigrating into cities and towns; 3) the government's declining resources due to the decentralization of the economy.

### 4.12 Income Differentiation

It is also should be noted that all Chinese urban residents are not getting wealthier at the same pace, as should be expected in a "market" economy. Although income growth rate is admirably high, it is evident that most people's income level, when compared to the urban housing price levels shown in Section 4.3 (below), are not yet high enough to buy a...
house. Seeing this, some may argue that with such low income levels, urban residents can not use a mortgage instrument to finance their housing without banks risking a high mortgage default rate. However, incomes for a small group of entrepreneurs are growing rapidly. It is these people who would be able to use the mortgage finance mechanism now, if the instrument were available to them. With the nation's continuing economic development, more and more people will be seeking a mortgage type of instrument to help finance their housing.

To identify the income differentiation, and most important, the saving's differentiation, Exhibit 4-6 shows the comparison of per capita consumption and savings between urban and rural residents. The difference in consumption is not very large between the urban and rural residents: however, the difference in savings is relatively larger for urban people as income increases.

EXHIBIT 4-6: COMPARISON OF PER CAPITA CONSUMPTION AND SAVINGS BETWEEN URBAN AND RURAL RESIDENTS

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratio of Urban Household/Rural Household in Consumption</td>
<td>2.7</td>
<td>2.2</td>
<td>2.8</td>
<td>3.0</td>
</tr>
<tr>
<td>Ratio of Urban Household/Rural Household in Savings</td>
<td>10</td>
<td>7</td>
<td>8.5</td>
<td>8.6</td>
</tr>
</tbody>
</table>

Refer to the next exhibit (Exhibit 4-7), among urban residents, over the period shown, the relative position has stayed constant, growth about same, but absolute yuan difference has increased between the high and middle income urban people. The average income of the highest urban income groups is much greater than the average income of the middle urban income groups. Furthermore, the income growth rate of highest income group is slightly higher than the latter's. As China has the largest population size, the absolute number of people in each income group is very large even though the percentage may be small. The
creation of a mortgage instrument is very significant to the country even if it is only applicable to a portion of the people in the highest income group. In 1987 and 1991, the average per capita incomes in China's cities and towns and their average annual growth rates by different income household groups are shown below in Exhibit 4-7. The information in the Exhibit 4-7 is for the country as a whole; however, the income levels vary between cities. Normally in China, the income of the residents living in the major cities is higher than that of the small cities and towns, and the income of the residents living in coastal areas especially, in SEZs, is higher than the inland cities.

EXHIBIT 4-7: AVERAGE PER URBAN CAPITA INCOMES & THEIR AVERAGE ANNUAL GROWTH RATES BY DIFFERENT INCOME HOUSEHOLD GROUPS

<table>
<thead>
<tr>
<th>Income Category</th>
<th>Middle</th>
<th>Highest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>yuan/year</td>
<td>yuan/year</td>
</tr>
<tr>
<td>1987</td>
<td>991.44</td>
<td>1,734.24</td>
</tr>
<tr>
<td>1991</td>
<td>1,671.43</td>
<td>2,956.81</td>
</tr>
</tbody>
</table>

Average Annual Growth (%)

|                  | 13.8 | 14.1 |

RMB 139 yuan = $24 (PPP $85); RMB 246 yuan = $43 (PPP $150)

Below in the Exhibit 4-8 is shown the comparison of the per capita incomes in RMB and their average annual growth rates and the per capita income in each city as of the per capita income of Beijing between several major cities of China in 1987 and 1991.94

---


94 Calculation based on ibid., 1987 (p.292) and 1991 (p.230) respectively.
EXHIBIT 4-8: COMPARISON OF THE PER CAPITA INCOMES & THEIR AVERAGE ANNUAL GROWTH RATES BETWEEN SEVERAL MAJOR CITIES

<table>
<thead>
<tr>
<th>City</th>
<th>Beijing</th>
<th>Shanghai</th>
<th>Tianjin</th>
<th>Shenzhen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>yuan/yr.</td>
<td>yuan/yr.</td>
<td>yuan/yr.</td>
<td>yuan/yr.</td>
</tr>
<tr>
<td>1987</td>
<td>1284</td>
<td>1452</td>
<td>1188</td>
<td>na</td>
</tr>
<tr>
<td>1991</td>
<td>2186</td>
<td>2503</td>
<td>1845</td>
<td>4602</td>
</tr>
<tr>
<td>Average Annual Growth</td>
<td>14.2%</td>
<td>14.5%</td>
<td>11.7%</td>
<td>na</td>
</tr>
<tr>
<td>Each Income as a % of Beijing</td>
<td>100%</td>
<td>115%</td>
<td>84%</td>
<td>211%</td>
</tr>
</tbody>
</table>

RMB 182, 208, 154, 384 yuan = $32, 37, 27, 67 (PPP $112, 130, 95, 235)

As you see, the income level between major cities is also significantly different.

4.2 Interest on Savings and Inflation Rate

The interest rate on savings is controlled by the government through the People's Bank of China. It was low before the economic reform for several reasons: 1) the family's saving was generally very small in those days, the interest rate was not a big concern in people's mind; 2) families didn't have many options to make use of their savings for a better return (they had the choice of either putting their money into a bank or putting it under a pillow). No stocks, bonds or any other kind of investment instrument existed at that time. On the other hand, the inflation rate was very low at that time, due to the prices of goods being controlled by the government. The nation's economy was stagnant.

The situation was changed after the economic reform, particularly after 1985. Interest rates have been getting high since that time, often accompanied by higher inflation rates (at same periods higher than the interest rate). There are several characteristics of the
relationship between interest rates and the inflation rate after 1978: 1) the interest rate has frequently been lower than the inflation rate (thus real interest rate is often zero or even negative). In some extreme cases, the discrepancy has been up to 5%-10%; 2) the movements of the interest rate, which has been effectively controlled by the government, has always lagged behind increases in the inflation rate, sometimes they even change in opposite directions. The inflation rate has greater volatility than the interest rate because the government sets interest rates (all banks are owned by the government) in accordance with political and economic policy. In addition, the government attempts to modulate economic growth in order to avoid social unrest.

Inflation rates were the highest during the 06/88-05/89 period and the 06/92-05/93 period when they reached levels in excess of 15%, and the nation's economy became overheated. During these two periods the corresponding interest rates did not exceed 10%.

The recent annual interest rates (in %) for major fixed period deposits are shown below in Exhibit 4-9.  

EXHIBIT 4-9: ANNUAL INTEREST RATES FOR MAJOR FIXED PERIOD DEPOSITS

<table>
<thead>
<tr>
<th>Date</th>
<th>01/01/1990</th>
<th>04/15/1990</th>
<th>08/21/1990</th>
<th>04/21/1991</th>
<th>06/1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 year</td>
<td>11.34</td>
<td>10.08</td>
<td>8.64</td>
<td>7.56</td>
<td></td>
</tr>
<tr>
<td>5 years</td>
<td>14.94</td>
<td>13.68</td>
<td>11.52</td>
<td>9.00</td>
<td>12.00</td>
</tr>
<tr>
<td>= &gt;8 years</td>
<td>17.64</td>
<td>16.20</td>
<td>13.68</td>
<td>10.08</td>
<td></td>
</tr>
</tbody>
</table>

95 China State Statistics Bureau, op. cit., p.662. The interest rates are similar to the interest rate of saving account in the U.S.
96 Barnathan and Forney, Beijing Starts Pumping the Brakes, Business Week, July 19, 1993, pp.42-43.
And the annual interest rates (in %) for short term deposits is shown below in Exhibit 4-10.97

**EXHIBIT 4-10: ANNUAL INTEREST RATES FOR SHORT TERM DEPOSITS**

<table>
<thead>
<tr>
<th>Date</th>
<th>01/01/1990</th>
<th>04/15/1990</th>
<th>08/21/1990</th>
<th>04/21/1991</th>
</tr>
</thead>
<tbody>
<tr>
<td>current</td>
<td>2.88</td>
<td>2.88</td>
<td>2.16</td>
<td>1.80</td>
</tr>
</tbody>
</table>

Also the annual interest rates charged (in %) for major construction loans, are shown below in Exhibit 4-11.98

**EXHIBIT 4-11: ANNUAL INTEREST RATES FOR MAJOR CONSTRUCTION LOANS**

<table>
<thead>
<tr>
<th>Date</th>
<th>01/01/1990</th>
<th>04/15/1990</th>
<th>08/21/1990</th>
<th>04/21/1991</th>
<th>06/1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; =1 yr.</td>
<td>11.34</td>
<td>10.08</td>
<td>9.36</td>
<td>8.46</td>
<td>12.00</td>
</tr>
<tr>
<td>&gt;1 yr.- =3 yr.</td>
<td>12.78</td>
<td>10.80</td>
<td>10.08</td>
<td>9.54</td>
<td></td>
</tr>
<tr>
<td>&gt;3 yr.- =5 yr.</td>
<td>14.40</td>
<td>11.52</td>
<td>10.80</td>
<td>9.54</td>
<td></td>
</tr>
<tr>
<td>&gt;5 yr.-10 yr.&gt;</td>
<td>19.26</td>
<td>11.88</td>
<td>11.16</td>
<td>9.72</td>
<td></td>
</tr>
</tbody>
</table>

The annual inflation rates, which cover the whole economic reform period, are shown below in Exhibit 4-12.100

**EXHIBIT 4-12: ANNUAL INFLATION RATE**

<table>
<thead>
<tr>
<th>Year</th>
<th>78</th>
<th>79</th>
<th>80</th>
<th>81</th>
<th>82</th>
<th>83</th>
<th>84</th>
<th>85</th>
<th>86</th>
<th>87</th>
<th>88</th>
<th>89</th>
<th>90</th>
<th>91</th>
<th>92</th>
<th>93</th>
</tr>
</thead>
<tbody>
<tr>
<td>R(%)</td>
<td>1</td>
<td>1.9</td>
<td>7.5</td>
<td>2.6</td>
<td>2</td>
<td>1.9</td>
<td>2.8</td>
<td>11.9</td>
<td>7</td>
<td>8.8</td>
<td>20.7</td>
<td>17.8</td>
<td>6.5</td>
<td>7.1</td>
<td>11.2</td>
<td>16</td>
</tr>
</tbody>
</table>

---

97 China State Statistics Bureau, op. cit., p.662. The interest rate is similar to the interest rate of checking account in the U.S.

98 China State Statistics Bureau, op. cit., p.662. The interest rates are similar to the construction loan interest rates in the U.S.


100 Anthony Walker, the Land, Property and Construction in the People's Republic of China, HK Univ. Press, p.11. The last three inflation rates are estimated by the author of this thesis based on the recent relevant information.
The above exhibits imply that with real interest costs being negligible, the incentive is to borrow to purchase tangible assets such as real property to offset the impact of high inflation to preserve their families' fortunes. Mortgage instruments could enable people to hedge against inflation through home ownership.

Furthermore, with the real estate market in China becoming more mature, the development of a residential sales market will help promote liquidity. The value of a home may be expected to appreciate over time, which will be evidenced later in this chapter. Rather than putting money into a bank, many people would prefer to purchase housing. Housing can not only be used to meet the family's basic living needs, but also as an investment and inflation hedging instrument.

4.3 Construction Cost and Housing Prices

We also need to examine the cost of production and the prices of housing to understand their trend and possible impacts on affordability. From the analysis of this section, we will
learn that it is the land appreciation rather than the increase in construction cost that is the primary factor causing the increase in urban housing prices, especially in major cities.

4.31 Cost of Housing Construction

The construction cost of housing can be divided into two basic parts, one is the direct cost (hard costs) and another one is planning, financing, and construction management costs (soft costs). The direct construction cost can be further divided into: labor, material, equipment, and other miscellaneous costs. In China, building construction types are not differentiated because: 1) almost all the residential buildings in cities and towns are multi-story apartment buildings, or high rise buildings in central areas of major cities; 2) the decoration and facility systems are relatively simple and not very specialized, especially among the non-industrial buildings. Since there is a lack of special statistical data on the cost components of housing construction, the cost composition of housing construction can be approximate by data for the whole building industry, which is shown below in the Exhibit 4-13.101

EXHIBIT 4-13: THE COST COMPOSITION OF HOUSING CONSTRUCTION

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A. the direct construction cost (%)</td>
<td>85</td>
<td>85</td>
<td>84</td>
<td>84</td>
<td>84</td>
<td>85</td>
</tr>
<tr>
<td>A1. labor cost (%)</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>A2. the material cost (%)</td>
<td>63</td>
<td>62</td>
<td>61</td>
<td>61</td>
<td>60</td>
<td>59</td>
</tr>
<tr>
<td>A3. the equipment cost (%)</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>A4. Other Miscellaneous Cost (%)</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>B. the c. management cost (%)</td>
<td>15</td>
<td>15</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>15</td>
</tr>
</tbody>
</table>

101 China State Statistics Bureau, op. cit., p.575, the statistical data is generated from the sampling of state-owned construction companies. So far, almost all the construction companies in China's cities are state-owned enterprises.
Laborer's wages tend to be getting higher with the nation's economic development. The increase in labor's cost is also due to more training for workers, higher education requirements for technical staff, and more social welfare benefits.

Currently, a monthly basic wage for a general laborer working for a construction company may be 100 yuan RMB (US$17.5) and is approximately double for a senior skilled craftsman, an engineer and may be triple or more for a senior engineer and a manager. Additionally, a bonus of 30-50 yuan RMB (US$5.2-8.6) per month may be earned.\(^{102}\) Construction workers will also receive subsidized housing, and other social welfare benefits such as health care, education, pension fund, etc. for him/her)self and his/her family. Normally, the size of the welfare benefits depends upon the status of the worker. Although the labor's wages and bonuses will rise significantly, as they have in Shenzhen, in comparison to developed countries such as the U.S., Chinese laborers are still much cheaper to use, in many cases, than sophisticated equipment.

\(^{102}\) Anthony Walker, op. cit., p.96. The data have been adjusted by update information.
Materials cost are the major cost in building construction. The production, distribution and prices of some critical materials such as cement, timber and steel reinforcement have been controlled by the state through its central planning system, as demand has often outstripped supply. The prices of these hard to obtain materials are usually very high. When the economy is overheated, in short run this portion of the cost can increase considerably. As shown in the Exhibit 4-13, the materials costs will decrease in the long-run as the nation's productivity of critical materials, such as steel, increases.

The source of materials varies from project to project depending upon the project's status. For example, a top priority project may have 100% of materials supplied by the State or local Bureau for Building Materials. Some projects may only get partial or may not receive any allocation. The balance of materials has to be obtained on the open market outside the state planning system. The prices of these critical building materials sold on the open market are usually much higher than the same quality materials allocated by the state. If foreign materials are needed, approval from the State Bureau for Building Materials to import these materials is necessary.

In the short-term, construction companies in China will avoid using sophisticated equipment, but will rely on cheaper labor as much as possible. This tendency will be changed with labor's increasing costs and the relative affordability of equipment. In addition, the sophistication of the types of buildings under construction in the major cities is increasing, many are towers and big complexes, which require complex construction equipment. Also, advanced equipment can often save time and money. Hence in the long-run, this portion of the cost will most likely increase.

The approval process for real estate development in China is very complicated as mentioned in the previous chapters. The application fee and all other kinds of approval
fees are charged to miscellaneous costs. Besides these expenses, this cost is allocated to meet unusual work caused by some unforeseeable factors and serves as a resource fund to bridge the gap between budget and actual expenditure. It could be maintained in this level in the future.

Two factors are important to the future costs of construction management. One factor will be the increase in cost as projects become bigger and more complicated. In the process of this kind of project, more management time needs to be spent coordinating the many pieces of the project. Another factor is the emergence of communication systems and other advanced management tools applied in construction projects. This more effective means of communication may reduce management costs if such advanced tools are not too expensive to exploit. The total impact of these two factors is unknown. However, it should be noted that the management cost varies from project to project. On a smaller magnitude, the cost of other factors also differ from case to case, rather than maintaining a fixed ratio.

From the Exhibit 4-13, we learn that the major portion of the pure cost of housing construction is the material cost, which is, by observation, decreasing gradually. Although both the labor's cost and the equipment cost are increasing gradually, the total pure cost of housing construction, by inference, will not increase rapidly.

The national average unit costs of urban residential buildings completed through capital construction and the average annual rates of cost increases are shown below in the Exhibit 4-14 in RMB from 1985 to 1991 respectively.103 As we can see from the Exhibit 4-14, the pure cost of housing construction in China is generally very low.

103 China State Statistics Bureau, op. cit., p.166. The cost is not including land cost, demolishing and removal expenses and investment in outdoor supplementary projects.
EXHIBIT 4-14: NATIONAL AVERAGE PURE COST OF HOUSING CONSTRUCTION PER UNIT

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>yuan/m²</td>
<td>113</td>
<td>177</td>
<td>213</td>
<td>241</td>
<td>290</td>
<td>316</td>
<td>343</td>
</tr>
<tr>
<td>Growth(%)</td>
<td>na</td>
<td>9.4%</td>
<td>9.7%</td>
<td>13.1%</td>
<td>20.3%</td>
<td>9.0%</td>
<td>8.5%</td>
</tr>
</tbody>
</table>

RMB 343 yuan/sq. m. = $60 (PPP $210)/sq. m. = $5.8 (PPP $20)/sq. ft.

Furthermore, as we can see later in this chapter, the increase in the pure cost of housing construction is much smaller than that increase in the housing prices in cities and towns, particularly in major cities. Also, note that the average per capita income growth is significantly higher than the average growth of the pure cost of urban housing construction, by comparison of Exhibit 4-14 and Exhibit 4-1 (8.5% vs. 11.2%). In the long run, the rise in incomes should exceed the rise in cost of housing construction. Therefore, the pure cost of housing construction, by reasoning, will become less of a factor in housing affordability. This will be analyzed further in the next section. However, market price increases, to the extent these develop a "free market", may compound the "affordability" problem.
4.32 Housing Price Changing Dynamics\textsuperscript{104}

The housing in China can be generally divided into three categories: 1) welfare housing; 2) limited profit housing; and 3) commercial housing.\textsuperscript{105} The proportional figure varies with the cities and times. In Shenzhen in particular, the proportion of commercial housing in comparison to all the housing developed in the city as a whole was 50\% by 1992. In Shanghai, the proportion was 20\%. Welfare housing and limited profit housing are usually only sold to governmental agencies and government-owned enterprises, respectively. Individual commercial housing projects must include a minimum amount of welfare and/or limited profit housing as stipulated by government. In Shanghai, for example, the minimum amount is 10\%-15\%, determined by the government according to different criteria. The price of welfare housing usually only meets, and sometimes even is lower than, the development cost.

The return rate on investment before tax (called "profit rate" in China) for housing development companies is normally about 10\%-15\% and usually can not exceed 25\% due to regulation by the government. Additional tax will be charged for the land appreciation if profits exceed 25\%. The allowed profit rate is lower for some tax-free nonprofit housing projects. The nonprofit housing projects enjoy many benefits such as many fee exemptions and have access to low interest rate construction loans supplied by the government. The tax rate is low in Shenzhen, only 15\% for all realized profits. In cities which are not part of a SEZ, the tax rate can be as high as 55\%.

\textsuperscript{104} The original data and information in this section come from "The Investigation Report on China's Real Estate Market and Industry" written by Chin Zheng, Li Qin-Yong, and Chen Yin, May 1992.

\textsuperscript{105} Commercial housing is built for sale on the open market at prices set by negotiation. See Chapters 1 and 2.
The price of commercial housing primarily depends on two major factors: 1) land value which is mainly determined by location and local economic development; 2) negotiation with the local government to set a housing price; and 2) cost of housing construction which is mainly determined by the quality and standard of the housing. But the former one is often the most important factor in housing price increases. The national average price levels of housing in RMB over the recent ten years and its average annual growth rates are shown below in the Exhibit 4-15.

EXHIBIT 4-15: NATIONAL AVERAGE PRICE LEVELS OF HOUSING

<table>
<thead>
<tr>
<th>Year</th>
<th>1984</th>
<th>1987</th>
<th>1991</th>
</tr>
</thead>
<tbody>
<tr>
<td>yuan/sq. m.</td>
<td>293</td>
<td>408</td>
<td>802</td>
</tr>
<tr>
<td>Growth rate (%)</td>
<td>na</td>
<td>11.67</td>
<td>18.41</td>
</tr>
</tbody>
</table>

RMB 802 yuan/sq. m. = $150 (PPP $500)/sq. m. = $14 (PPP $47)/sq. ft.

From the Exhibit 4-15, we learn that: 1) the housing price level, in general, is very low, in comparison to that housing in developed countries; 2) housing prices are increasing more quickly than the increase of the pure cost of the housing construction (18.41% vs. 8.5%, refer to Exhibit 4-14).
The rate of house price increases varies by geographic area. The growth rate of prices in major cities such as Beijing are much higher than the national average, more than 30% per annum in recent years. In Shenzhen, the annual growth rate in prices has reached 40-60% in recent years. In inland cities, especially in small and medium-sized cities, the price growth rates is less than 5%. The price levels among the major and minor cities can differ by more than ten fold.

Within any major city, the housing price levels are also very different. China's price level pattern is quite different from what would be found in the U.S. Normally in China, the price of the housing located in the urban central area is much higher than that of the housing located in suburban areas. The major reason for the big difference is in the location rather than the quality of housing. The Exhibit 4-16 shows the average 1991 housing prices in the highest and lowest levels in several major cities in RMB and in US$.

EXHIBIT 4-16: AVERAGE 1991 HOUSING PRICES IN THE HIGHEST AND LOWEST LEVELS IN SEVERAL MAJOR CITIES

<table>
<thead>
<tr>
<th>City</th>
<th>Beijing</th>
<th>Shanghai</th>
<th>Tianjin</th>
<th>Shenzhen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5,500</td>
<td>2,000</td>
<td>3,500</td>
<td>2,200</td>
<td>780</td>
</tr>
<tr>
<td>$/sq. ft.</td>
<td>90</td>
<td>33</td>
<td>57</td>
<td>20</td>
</tr>
<tr>
<td>Cost for 1,000 sq. ft. Unit</td>
<td>90,000</td>
<td>33,000</td>
<td>57,000</td>
<td>20,000</td>
</tr>
</tbody>
</table>

The housing price level and its changing pattern, compared to the people's income level and its changing pattern, are important components in the feasibility of mortgage instruments for housing in China. This will be analyzed in the following chapter.
Although in some cities the housing price growth rate is high, especially for the commercial housing in major cities, the growth rate of family savings and income is also high. With the nation's economic development and people's income increasing, and with the incentives provided by the government, the mortgage instrument may gradually become popular for Chinese housing. Some of the basic requirements for designing a mortgage finance system for housing will be discussed in the next chapter.
5.1 Initiation of Mortgage Market in China

The reason why it is inevitable that a mortgage market will be established in China is that both the urban residents and the government have incentives to do so. The whole economy has been developing to the point that is time to make a mortgage system available.

Who will be the mortgagors (borrowers)? In the short term, they will probably be higher income people such as joint-venture employees, successful self-employed businessmen, movie and sport stars, well-paid professionals who can moonlight, senior governmental officials, relatives of wealthy offshore Chinese and many of the Chinese nationals returning from abroad. Many of these people have something in common in that they are relatively more wealthy than the average Chinese person, but not rich enough to buy a house with cash. Also, they are unlikely to be allocated subsidized housing from the government because most of them are not government employees or employees of government-owned enterprises. Even if some of them are hopeful of renting a unit in government subsidized housing, they do not like waiting a long time for the housing. This is especially true for those young people who are ready to get married but have a lower priority for obtaining an allotment of rental housing from the government.

As discussed in previous chapters, it's possible that employees may get subsidized housing from their employer (working unit or enterprises) rather than from the government, since some employers are relatively rich and feel this is necessary to attract or retain their employees. But the problems are: 1) many enterprises, especially government-owned
enterprises, may not be able to get permission from the government to build or purchase as much housing as they want; 2) from the employee's standpoint, the benefits of employer-subsidized housing are contingent upon employee remaining employed by the unit, which constrains the ability of people to change their jobs. Furthermore, people tend to purchase their own home rather than rent a home if both options are available to them because: 1) they can gain from the housing appreciation; 2) they can avoid the uncertainty of rising rents in government subsidized housing due to current and future housing reforms; 3) they can preserve their asset value by purchasing a home rather than putting the money into a bank, due to high inflation and low or negative real interest on savings. In the long term, as we have seen in the last chapter, as people's income, and especially their savings increase, more and more people will desire to have mortgage financing available in response to both declining government investment in subsidized housing and rental increases of government-subsidized housing.

However, the fundamental points are not whether people prefer to rent government-subsidized housing but: 1) the fact that the government is becoming incapable of supplying enough housing for all who need or want it (as a result, most of the renters are government employees or employees of government-owned enterprises), and; 2) the fact that there are many incentives for people to purchase homes if it's financially feasible.

The aim of current housing reform in China is for the housing in the majority of all cities and towns throughout the country to charge rents which allow the government to at least break-even, i.e. create enough income to cover all of the five major cost elements: depreciation, maintenance, management, interest and property taxes.

It is generally believed that the rental rate of government-subsidized housing will increase considerably once the housing reform is carried out and expanded. A comparison of rental
rates and the average per capita rentals per month of government-subsidized housing in RMB before and after the recent housing reform in several major cities of China is shown below in the Exhibit 5-1.106

EXHIBIT 5-1: COMPARISON OF RENTAL RATES AND THE AVERAGE PER CAPITA RENTALS PER MONTH OF GOVERNMENT-SUBSIDIZED HOUSING

<table>
<thead>
<tr>
<th>City</th>
<th>Beijing</th>
<th>Shanghai</th>
<th>Tianjin</th>
<th>Shenzhen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average sq. m. per capita</td>
<td>8</td>
<td>6</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>Rate (yuan/sq.m./month) before reform</td>
<td>0.1</td>
<td>0.2</td>
<td>0.1</td>
<td>0.3</td>
</tr>
<tr>
<td>Rental (yuan/person/month) before</td>
<td>0.8</td>
<td>1.2</td>
<td>0.9</td>
<td>3.3</td>
</tr>
<tr>
<td>Rental (US$/person/year) before</td>
<td>1.68</td>
<td>2.53</td>
<td>1.89</td>
<td>6.95</td>
</tr>
<tr>
<td>Rate (yuan/sq.m./month) after reform</td>
<td>1.0</td>
<td>2.0</td>
<td>1.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Rental (yuan/person/month) after</td>
<td>8.0</td>
<td>12.0</td>
<td>9.0</td>
<td>33.0</td>
</tr>
<tr>
<td>Rental (US$/person/year) after</td>
<td>16.84</td>
<td>25.26</td>
<td>18.95</td>
<td>69.47</td>
</tr>
</tbody>
</table>

RMB 8, 12, 9 and 33 yuan = US$1.40, 2.10, 1.60 and 5.70 (PPP $5.00, 7.40, 5.60 and 20.00)

The corresponding graph is exhibited below:

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106 According to the latest data collected through my recent communication with friends in P.R. China and confirmed by other relevant information as of June-July 1993.
Before 1991, when the housing reforms were incomplete in most cities and towns, the average rental rates of government-subsidized housing were very low and increasing slowly. The average per capita monthly housing rentals in RMB and average annual growth rates of rentals in several major cities of China in 1987 and 1991 are shown respectively below in Exhibit 5-2.107

EXHIBIT 5-2: AVERAGE PER CAPITA MONTHLY HOUSING RENTALS & AVERAGE ANNUAL GROWTH RATES OF RENTALS IN SEVERAL MAJOR CITIES

<table>
<thead>
<tr>
<th>City</th>
<th>Beijing</th>
<th>Shanghai</th>
<th>Tianjin</th>
<th>Shenzhen</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year</strong></td>
<td><strong>yuan/yr.</strong></td>
<td><strong>yuan/mon.</strong></td>
<td><strong>yuan/yr.</strong></td>
<td><strong>yuan/mon.</strong></td>
</tr>
<tr>
<td>1987</td>
<td>11</td>
<td>0.92</td>
<td>16</td>
<td>1.31</td>
</tr>
<tr>
<td>1991</td>
<td>13</td>
<td>1.08</td>
<td>28</td>
<td>2.33</td>
</tr>
<tr>
<td><strong>Growth</strong></td>
<td>4.1%</td>
<td>15.5%</td>
<td>3.5%</td>
<td>na</td>
</tr>
</tbody>
</table>

RMB 1.08, 2.33, 1.17, 3.5 yuan = $0.19, 0.41, 0.21, 0.61 (PPP $0.67, 1.44, 0.74, 2.14)

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107 According to and calculated based on Annual National Survey Reports on Household's Revenue and Expenditure in Chinese Cities and Towns of 1987 (p.304) and 1991 (p.247) respectively.
More significantly, even for cities that have experienced housing reform, the rental rate may increase further in the future down the road since the housing is owned (thus totally controlled) by the government, which continues to promote "housing commercialization". Furthermore, although government-subsidized housing is still much more affordable than private ownership, as mentioned above, due to price increases and limited supply by the government, people in need of housing won't be able to attain a subsidized housing assignment when they need one (see Chapters 1, 2 and 4).

In addition, it should be noted that government-subsidized housing still needs to be available and promoted by the government since most family incomes are still very low, and in the near future, any kind of private market mortgage financing will be unaffordable for them. As we know, even in the more advanced western countries, such as the United States, the federal, state and local governments have established many housing programs which provide subsidized housing for low income families. Establishing a mortgage financing system in China will provide both the emerging moderate and higher income families with an alternative way to resolve their housing problems sooner and more economically.

Who will the mortgagees (lenders) of the future be? First of all, any new initiatives will not be successful without the government's extending support, given the political reality in China. The current economic (and to some extent political) reform, is more likely to create many powerful local governments and independently functioning institutions in replace of one powerful central government, although the central government is still struggling to maintain its authority. As the result, within China's banking system, there increasingly exists internal competition among the state-owned, and specialized banks
The People's Construction Bank of China (hereinafter referred to as "PCBC"), which has traditionally supplied construction loans to the state-owned construction enterprises, has been looking into the possibility of using the mortgage instrument as a tool to promote business from both construction companies and housing seekers. Besides the advantage of using mortgage instruments to attract more business customers, it is possible that the large number of mortgages which would be originated when the market matures can be further pooled and packaged into MBSs (defined in the Chapter 3) to sell to foreign investors in international financial markets. This will probably require a government guaranty to investors a certain amount of return better than the nominal interest rate including a reasonable risk premium. The PCBC recently created the "Provisional Measures on Mortgage Financing for Housing of Employees and Workers" and later on, following this regulation, the Beijing Branch of PCBC drew up the "Implementation Rules on Mortgage Financing for Housing of Individuals" to be carried out in Beijing urban areas on an experimental basis. Its English translation is attached to this thesis as an appendix and some of the key provisions will be analyzed later in this chapter.

The incentives for the bank to provide mortgage financing are: 1) the Chinese government could support the loans by appropriating partial housing subsidies in its annual budget to the PCBC as the starting funds; 2) the mortgage instruments could help some people solve their housing needs while benefiting the bank by providing incentives to make deposits to the bank from construction enterprises that built the financed units and the retention of the 30% deposits from mortgagors, according to the bank's mortgage credit requirements; 3) housing industries will be expanded with the additional financial resources available, which

108 Although the first vice premier Zhu Rongji of China State Council recently took over the People's Bank of China and is tightening its central control to maintain consistent policies within the whole national banking system, all the banks have been given more autonomy and responsibility in operating their own businesses during the economic reform period.
is in the interest of PCBC; 4) opportunities to participate in international financial markets by selling the mortgages or MBSs to foreign investors with the credit of Chinese government.

The reasons why the Chinese government would like to support a mortgage financing system are: 1) the possibility of shifting some of the financial burden of housing subsidies to some wealthy individuals by offering them housing ownership; 2) as a way to encourage foreign investment in Chinese housing, either by encouraging an investor's relative to finance housing mortgages or through the sale of mortgage loans (or MBSs) to foreign investors; 3) as a means of promoting the national insurance business for the state-owned People's Insurance Company of China; 4) to enhance national savings, since the mortgage financing serves as a vehicle which will allow families to use less of their savings; 5) a means of creating social stability by letting people have more private interests; 6) to provide movement of capital through a separate capital market as a replacement of the old, centrally regulated banking system; 7) to stabilize the existing housing market through more public access to information (i.e. real estate valuation and legal registration). The PCBC's motives are generally in consistent with the state's interests in promoting a mortgages system for the country.

It appears that the PCBC, which is currently very active in the establishment of a mortgage markets in China, will play a decisive role (at least in the primary mortgage markets) as a major mortgage loan generator. Other financial institutions such as the Industrial and Commercial Bank (probably the most powerful rival of PCBC in the mortgage business), Bank of China, Investment Bank of China, Agricultural Bank of China and China International Trust and Investment Corporation may also get involved in the mortgage business and compete with PCBC, as the specialization of each of these institutions becomes blurred by the central government's weakening control.
There is concern that mortgage instruments will result in greater funds going into housing to the detriment of having savings available for government's priorities, which are: a) technological ventures, b) existing industry, c) infrastructure and d) cutting the government's deficits. To address this concern, the mortgage markets should be operated by mortgagees through established criteria: 1) by setting up standards for mortgage loans to limit loan sizes according to a family's income; 2) by packaging the pooled mortgages into MBSs to sell to investors; 3) through principal amortization restoring a portion of the funds supplied originally by the government to the PCBC in order to continue the lending cycle. Housing is a basic need. The supply of this product to the society is not optional in the long-run. From the viewpoint of the government, housing financed by individuals would be better than that financed from the state's budget. Hence, in the long run, mortgage financing represents savings for the government rather than the need for additional spending.

5.2 The Price of Housing and Mortgage Design

A mortgage has three important features: the interest rate, the type of interest payments (variable or fixed), and the amortization period (the term of the loan). These three features determine how much the borrower must pay each period and how quickly the homebuyer builds equity through the repayment of principal.

The mortgage design for housing in China should take account of the existing political, economic and cultural conditions in China. The political conditions have important impacts on the amount of governmental subsidies on housing, the setting of mortgage interest rates, and the securing of mortgage. Economic conditions will heavily influence mortgage interest rates, the downpayment, the term of the loan, the payment schedule and
household incomes. The Chinese traditions will affect people's attitudes about the term of the loan, the insurance of mortgaged property, the housing size, the payment schedule and the securing of loan and other legal considerations. All of these factors will influence the implementation of mortgage financing instruments.

5.21 Features of a Typical, Prospective Mortgagor

Given the current stage of economic development in China, the typical mortgagor would probably be a young couple, with at least one person earning a relatively high income. The mortgagor's family will most likely be small due to the fact that couples can only have one child according to Chinese civil law. Thus, the typical profile is three family members. Taking into account the Chinese tradition that guests from outside town spend the night in a family's home, there is a need for flexible living space to accommodate this tradition plus long-term changes in the family. The optimum size of the home would require at least 60 sq. m. (646 sq. ft.), including 2 bedrooms (one 15 sq. m. and another one 12 sq. m.), one guest room (8 sq. m.), one living room (13 sq. m. also served as dinning room), a kitchen (8 sq. m.) and a bathroom (4 sq. m.). The necessary circulation space has included in these rooms.

Based on the analysis of Chapter 4, the high income families at present in China could be characterized as having an average per capita income of at least RMB 300 yuan/month in major cities. At present, for a three-member family, the required total household monthly income to qualify for a mortgage would have to be about RMB 900 yuan (US$155) (refer to section 4.12 of the Chapter 4) or higher. The income requirement for a mortgage loan in different cities will be different and be indexed to housing prices. Some major cities may require an income level higher than this basic level while some minor cities could require an income level lower than this.
From my Chinese experience, a young couple both working for the government or for a government-owned enterprise will find it difficult to reach an average wage of RMB 900 yuan per month for a household. For families to reach this income level, the typical solution is to combine a high and a low income from each of the family members. This can be done by one party working for a joint-venture company or working for himself (to earn a high income), while the other party works for the government, and earns a low salary, but is able to enjoy the many welfare benefits provided to government workers. An alternative way for those young families to earn enough income is for both people to work for the government or a government-owned enterprises, and to also take on a second or even a third job (moonlight). However, this solution is only practical for those professional people which are in high demand and allows the person to market their professional skills to the private sector.

5.22 Downpayment Requirement

The cash downpayment required will most likely be larger than the typical downpayment in the U.S. (10%-20% of the purchase price), due to the newness of mortgage instruments in China. Although the people who currently qualify for a mortgage loan will generally have a higher incomes than the average Chinese, their incomes are generally more uncertain than those of the U.S. To make sure the mortgagor will have the incentive to make the scheduled payments, and taking into account the fact that normally there are large household savings, compared to its incomes, the downpayment requirement should not be less than 30% of the total housing purchase price.

Although downpayments would most likely be larger, the criteria for household monthly income level can be more liberal than the American rules of thumb (the required
borrower's monthly income in relation to the monthly payment could be lower), since Chinese families usually have a much smaller living budget than American families. A Chinese family's regular expenses consist of food, clothes, books for some people, and recreation (to the cinema, theater and gymnasium). Rarely do families have larger travel or entertainment expenses. The operating cost of a home is small due to the small-size of houses, there is usually no hot water system in ordinary housing for Chinese urban residents, no air-conditioner and no car. The property taxes and fees for insurance are significant. This is why the Chinese saving rates is very high (see Chapter 4). The accumulation of a family's savings are only interrupted occasionally by the purchase luxury goods in China, such as a color TV, VCR or a refrigerator. In the U.S., as mentioned in Chapter 3, the mortgage loan lending criteria suggests that monthly housing expenses (mortgage payment, taxes and insurance) should not exceed 28% of gross monthly household income. But in China this 28% ratio could be safely raised to 40%-50%) for those relatively high income households, since a half of the household income of these higher income families could still be enough to cover other living expenses. This adjustment of a family's consumption pattern will be very significant to the commercialization of the Chinese economy.

There are two other factors which could allow young families to spend a larger part of their income on housing: 1) Chinese family's tradition. The tradition is that elder members of a family are always willing to help their children in the form of financial assistance even when the children have formed their own separate families. Since the people of older generation usually have already obtained subsidized housing from the government and have relatively high wages owing to their senior status in a working unit, they may be able to offer financial assistance to their descendants; 2) some employers, including some relatively wealthy government-owned enterprises, provide financial assistance to their employees with such conditions as that the employees can only use the assistance in home.
buying to meet their own living needs and must have worked for the employers for at least three or five years.

5.23 Housing Price Levels

In the major cities of China, there are three kinds of housing development: welfare, limited, and commercial. Within these classifications, there are two separate housing markets: the internal housing market (only for Chinese citizens, primarily related to welfare and limited profit housing), and the external housing market for offshore Chinese or foreign investors (primarily related to commercial housing). Commercial housing is influenced by western-style standards, and the buildings are usually well located. The price of commercial housing is much higher than that of the welfare or limited profit housing, as much as ten times higher. As discussed in Chapter 4, the average commercial housing price at the lowest level in 1991 was RMB 2,000 yuan/sq. m. (US$33/sq. ft.). For the welfare housing and limited profit housing in Beijing, on average the prices in 1991 were RMB 600 yuan/sq. m. (US$10/sq. ft.) and RMB 800 yuan/sq. m. (US$13/sq. ft.), respectively. By using these three different prices, assuming the sizes of houses are all the same at 60 sq. m. and the terms of mortgage all are same at 15 years, the monthly payments are calculated respectively in a table which is shown below in Exhibit 5-3.109

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EXHIBIT 5-3: MONTHLY MORTGAGE PAYMENT OF A TYPICAL HOUSING UNIT FOR DIFFERENT HOUSING CATEGORIES

<table>
<thead>
<tr>
<th>Category of housing</th>
<th>Commercial(min.)</th>
<th>Limited Profit</th>
<th>Welfare</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unit price in RMB (yuan/sq. m.)</strong></td>
<td>2,000</td>
<td>800</td>
<td>600</td>
</tr>
<tr>
<td><strong>Size of home (sq. m.)</strong></td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td><strong>Total price in RMB</strong></td>
<td>120,000 ($21,053)</td>
<td>48,000 ($8,421)</td>
<td>36,000 ($6,316)</td>
</tr>
<tr>
<td><strong>Term of mortgage</strong></td>
<td>15yrs(180mths)</td>
<td>15yrs(180mths)</td>
<td>15yrs(180mths)</td>
</tr>
<tr>
<td>Annual interest rate of mortgage loan</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td><strong>Downpayment in 30% in RMB &amp; US$</strong></td>
<td>36,000 ($6316)</td>
<td>14,400 ($2526)</td>
<td>10,800 ($1895)</td>
</tr>
<tr>
<td><strong>Loan of mortgage in 70% in RMB</strong></td>
<td>84,000</td>
<td>33,600</td>
<td>25,200</td>
</tr>
<tr>
<td><strong>Monthly payment in RMB (yuan/mon.)</strong></td>
<td>1176</td>
<td>470</td>
<td>353</td>
</tr>
<tr>
<td><strong>Monthly payment in US$ ($/mon.)</strong></td>
<td>206</td>
<td>82</td>
<td>62</td>
</tr>
</tbody>
</table>

According to the above calculations, compared to my previous estimates, it can be concluded that even for those relatively wealthy families in China, the commercial housing seems not affordable with only their own financial strength. 36,000 yuan is a daunting number for most families, and the 1176 yuan monthly payments are almost impossible to
meet, since the typical upper income family has monthly income of only about 900 yuan (see 5.21). However, as shown in the Exhibit 5-3, both the limited profit housing and the welfare housing are affordable. Assuming a family has a 1,000 yuan monthly income, the 470 yuan and 353 yuan are 52% and 39% respectively of monthly income. For those families whose annual income is 11,000 yuan, the welfare housing price of 36,000 yuan is equivalent to 3.3 years income. All the Chinese urban residents are eligible to buy limited profit housing located in the cities or towns where they live or work. Usually only the government employees are eligible for welfare housing located in the cities or towns where they work. Assuming the monthly payment can be as high as 40% of the household income, the minimum income criteria for a household with at least one government employee to purchase the welfare housing is to have monthly household income about RMB 900 yuan.

Beijing represents only one of the more expensive living areas in China. In other major cities, the housing price and family's income do not bear the same relationship. However, the differences are not significant enough to invalidate the observations made in this section. In the minor cities and towns (excluding SEZs), as the housing prices are much cheaper compared to the major cities (refer to the section 4.32 of the Chapter 4), the housing is likely cheaper, although family income is usually lower.

5.24 Term of Mortgage Loan

The term of a mortgage loan in China should not be as long as the typical loan (30 years) in the United States for several reasons: 1) Chinese culture has emphasized a tradition of savings before spending for thousands years, and families usually have some savings despite their income level. This is reflected in the very high growth rates of savings in Chapter 4. Neither borrowers nor lenders are willing to make very long term financial
commitments. Although this tradition could change with the changing environment and increased international exchange, it takes time for people to get used to spending by using credit, especially long term credit; 2) during the economic reform period, when the national economy overheats, the inflation rate can be very high, up to about 20%. With a fixed payment mortgage (FPM), the initial mortgage interest rate, which increases with the term of loan, could be very high in anticipation of future inflation, and thus the monthly payments would be prohibitive. If the price level adjusted mortgage (PLAM) is used, although the initial interest payments would be considerably lower (since the lender is protected by periodic payments that are indexed to an interest rate that reflects the inflation rate), when the interest rates get higher (in recent years the volatility of the inflation rate is very high in China) in response to a rising inflation rate, the required payments could also get very high and thus the borrowers could be forced to be delinquent on the payments; 3) to avoid payment default, the banks want the borrower to build equity in the house quickly. This is accomplished both through high initial equity and rise in value due to inflation. To sum up the above main points, the mortgage loan term in China is probably most acceptable at 15 years.

Below in the Exhibit 5-4 we compare the payment differences caused by the different terms such as 30, 15 and 5 years, assuming the needed mortgage credit to buy a typical housing unit is RMB 33,600 yuan (US$5,793) (see Exhibit 5-3 limited profit housing) and the annual mortgage interest rates are either the same as 15% or 16%, 15% and 12% respectively (as we know from Chapter 3, the mortgage interest rate is usually increasing with the increase in the term of mortgage loan due to anticipated inflation risk).  

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110 Here the mortgages all have the fixed payment schedule but with the different terms of mortgages. Assuming whether the interest rate is fixed for all mortgages with different terms or not just theoretically shows the changing pattern of monthly payments. In addition, the Exhibit assumes principal amortization over the term plus the interest payments.
EXHIBIT 5-4: COMPARISON OF THE PAYMENT DIFFERENCES CAUSED BY THE DIFFERENT MORTGAGE TERMS

<table>
<thead>
<tr>
<th>Term of mortgage loan (year)</th>
<th>30</th>
<th>15</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual fixed interest rate of mortgage loan (%)</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Monthly payment in RMB (yuan)</td>
<td>425</td>
<td>470</td>
<td>799</td>
</tr>
<tr>
<td>Adjustment of interest rate to reflect mortgage term (%)</td>
<td>16</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td>Monthly payment in RMB (yuan)</td>
<td>452</td>
<td>470</td>
<td>747</td>
</tr>
</tbody>
</table>

According to the above calculated results, the monthly payments are not as sensitive to the increase in the term of the loan when the term is getting longer than 15 years as to change in interest rates. This observation is shown more clearly in the monthly payments of adjusted interest rate payment schedule at the bottom of above table. It implies that keeping the mortgage term limited to 15 years is also in the borrower's interest, excluding considerations of taxes and opportunity cost.

5.25 Payment Schedule

As we know in Chapter 3, there are basically two kinds of payment schedule: 1) fixed interest payment (FPM); and 2) adjusted interest payment (PLAM). The latter one, based on the real interest rate, has many varieties: 1) adjusted according to the inflation rate; 2) adjusted periodically with "caps", i.e. ARM.

Recent years have shown relatively high and very volatile inflation rates in China. The simple adjusted interest payment schedule is basically not practical in China for the reasons discussed in section 5.24: 1) the inflation rate could be very high. It is not practical that the monthly payments are indexed to the inflation rate since during a high inflation period...
the people's income is unlikely to keep up with the sudden increase in inflation; 2) Chinese tradition encourages saving, but the adjusted interest payment schedule is arranged for the borrower to forgo some future wealth in exchange for lower payments and greater current disposable income; 3) the fixed interest payment schedule is easy to implement in an environment where people are unfamiliar with mortgage instruments.

The fixed interest payment schedule also has problems such as: 1) taking into account the possibility that the inflation rate could be very high, the long term mortgage interest rate should be very high. With the high mortgage interest rate, the monthly payment would be prohibitive; 2) without refinancing options, when the interest rate declines, the borrower is in a less favorable position; 3) without call options, when the interest rate is running very high, the bank is in a less favorable position.

Therefore, the mortgage interest rate should be fixed based upon the average interest rate and inflation rate forecasts for the economy. In the case of an unusual situation, whether against the bank's interest or the borrower's interest, the bank may have the right to adjust the mortgage interest rate accordingly, considering that all the banks in China are government-owned, public banks. Hence, an alternative may be to allow periodic adjustments in the mortgage interest rate over the term of the loan. This system may be functional based on the mutual cooperation of the borrower and the lender, and only if both parties being considerate on each other's interest when an adjustment of the mortgage interest rate is necessary, in an environment both the borrower and the lender have little experience of mortgage instruments. When necessary, the fixed interest rate could be adjusted on the basis of the increase in people's incomes, rather than the inflation rate, similar to a system used in Mexico. In addition, the lending banks interest recovery could be stretched out over the remaining term of the loan in order to smooth out the impact of inflation spikes.
5.26 Mortgage Interest Rate

So far it has been clarified that basically using fixed interest rate payment schedule in mortgage instruments is more practical in China. Hence, how to determine the mortgage interest rate is an essential issue in the mortgage design.

Monthly payment schedules are very sensitive to the interest rates. Thus the fixed interest rate for different terms of mortgage loans must be defined very carefully. For example, in Exhibit 5-4, if the interest rate of 16% for the mortgage with the term of thirty years is increased to 17%, the monthly payments become 479 yuan. It is unlikely that a borrower, for the same 33,600 yuan mortgage credit, would be willing to make the monthly payment with 30 years term that is larger than that for a 15 years term. The calculation results are shown below in the Exhibit 5-5.

EXHIBIT 5-5: COMPARISON OF DIFFERENT MORTGAGE MONTHLY PAYMENTS CAUSED BY THE ADJUSTMENT OF MORTGAGE INTEREST RATE

<table>
<thead>
<tr>
<th>Term of mortgage loan (year)</th>
<th>30</th>
<th>15</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual interest rate of mortgage loan (%)</td>
<td>16</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td>Monthly payment in RMB (yuan)</td>
<td>452</td>
<td>470</td>
<td>747</td>
</tr>
<tr>
<td>Annual interest rate of mortgage loan (%)</td>
<td>17</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td>Monthly payment in RMB (yuan)</td>
<td>479</td>
<td>470</td>
<td>747</td>
</tr>
</tbody>
</table>

From Chapter 4, we know in China, both the annual interest rate on savings and the annual inflation rate were around 10% after 1985 with the inflation rate sometimes shooting very high. In reference to the annual interest rates of loans (Chapter 4) originated by PCBC, the mortgage interest rate would start at about 10% and increase
proportionally with the term of the mortgage loan taking into account the anticipated inflation. Referring to the Exhibit 5-3, the limited profit housing price in Beijing in 1991 was RMB 800 yuan per sq. m., and the current price is estimated to be higher than that of two years ago. From the discussion in the section 5.21, the typical housing unit has a 60 sq. m. living area. Hence, the total purchase price for one typical limited profit housing unit in Beijing can be reasonably assumed to be at least RMB 50,000 yuan (US$8,621) currently in Beijing and in other major cities. After subtracting 15,000 yuan (US$2,586) for the downpayment of 30% of the purchase price, the needed mortgage credit is 35,000 yuan (US$6,035). Using the mortgage terms and the mortgage interest rates defined in "Implementation Rules on Mortgage Financing for Housing of Individuals" (see Appendix, hereinafter referred to as "Credit Rules") which was enacted by the Real Estate Credit Department, Beijing Branch of PCBC, the corresponding monthly payments are calculated and shown below in Exhibit 5-6.

**EXHIBIT 5-6: MONTHLY PAYMENTS OF A TYPICAL LIMITED PROFIT HOUSING UNIT IN BEIJING ACCORDING TO THE MORTGAGE INTEREST RATES OF "CREDIT RULES"

<table>
<thead>
<tr>
<th>Term (year)</th>
<th>Annual I. (%)</th>
<th>Payment (yuan/month)</th>
<th>Payment (US$/month)111</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9.36</td>
<td>3,067</td>
<td>529</td>
</tr>
<tr>
<td>5</td>
<td>12.24</td>
<td>783</td>
<td>135</td>
</tr>
<tr>
<td>10</td>
<td>15.84</td>
<td>583</td>
<td>101</td>
</tr>
<tr>
<td>15</td>
<td>16.56</td>
<td>528</td>
<td>91</td>
</tr>
</tbody>
</table>

111 The payment in US$ is calculated based on the average official exchange rate as of 1993.
Assuming the mortgage payment can not exceed 40% of the household income, thus the minimum monthly income requirement for a 10 year loan is 1,457 yuan (US$251), and 1,320 yuan (US$228) for a 15 year loan. As discussed earlier, despite the increase in income over the last two years, it seems that only a few families in Beijing would be able to use these mortgages based on their own financial strength, especially those families whose members are working for the government or government-owned enterprises.

5.3 Government Facilitating and Subsidies

People may argue that, although some families are able to use the mortgage credit to finance their homeownership at present, there will be fewer and fewer families being able to do so when taking into consideration the rapid increase in housing prices in China's major cities. It appears that family income in these cities is not keeping pace with housing prices. Although family savings growth rate in China is very high, and income gains among some families may offset the effect of housing price increases to enable more
families being able to afford homeownership (because their incomes are getting much higher than the average), this concern is more or less worthy of attention.

Based on the facts in Chapter 4, below is shown the national average growth of people's income, saving, and housing price during 1985-1991 in the chart below for comparison.
As we can see, the growth of housing prices is larger than the growth of people's incomes and is smaller than the growth of people's savings. If the housing prices are increasing faster than the people's income is increasing, the people's savings may be exhausted in the long run, since the amortization of mortgage credit largely depends on the family's income although the first payment (downpayment) largely depends on savings. Therefore, there is some possibility that although not many people utilize a mortgage now, even fewer people in the future may be able to use a mortgage if housing prices are not brought under control in some way, especially in major cities.

What can the government do to help its people in financing their home ownership? Under the conditions we recognized earlier, with fewer capital resources controlled by the government, it will be difficult for the government to maintain an increase in housing subsidies. However, we know that housing price increases are caused primarily by land value appreciation, especially in major cities. As all the urban land is owned by the state and the government's control of the land supply for cities and towns is expanding,112

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112 The lease term of land-use right has laid down by the National Legislation on May 19, 1990 as 70 years for residential, 50 years for both industrial and social, and 40 years for commercial buildings according to the "Provisional Regulations on the Granting and Transferring of the Land Use Rights over the State-owned Land in Cities and Towns" promulgated by the State Council of the People's Republic of China.
Thus, the government, if it desires, can indirectly subsidize the people's financing of their home ownership by providing the internal housing market with favorably priced (or even free for some low-income housing projects) land. Therefore, the increase in housing prices in the government subsidized sector can be reined in significantly by government regulations.

As the price increasing of welfare housing and limited profit housing is curbed by the government by providing preferential land, the housing includes government indirect subsidies. Hence this type of housing should be forbidden to be sold freely at market, especially at the external housing market, to avoid speculation. The limitations may be specified as that the housing should only be bought by the people who meet the same income requirements as the vacating tenants.

The housing subsidies should only cover internal housing market and not the external housing market (high-standard residential developments) at present as the commercial housing price level is still low in comparison to a foreign investor's income. In the long term, when the people's incomes are greatly increased, the government can cutback its land subsidy. The housing products for the two separate housing markets will then become more comparable, and the markets might be able to operate freely. To encourage more affluent purchasers to own a home, using the experience of the U.S. for reference, the expenses incurred in financing their first home could be used as a deduction from income tax.113

The Credit Rules contains the provision that only families living in urban areas are qualified to use the Credit, this is to prevent the farmers from immigrating into the cities

113 In China, the income tax is only charged when personal income reaches to a certain level. Most people are exempted from income tax, which is not the case in the U.S.
for purchasing a home. Generally speaking, constrained by the current economic and political conditions, in the internal housing market the government needs to pay more attention to social welfare. In the external housing market, the government needs to pay more attention to capital investment.

Another benefit the government can extend to the mortgage system is to thoroughly reform its national banking system in accordance with the "socialist market economic theory" proposed by Deng Xiao-Ping. Even after partial reform of its highly centralized banking institutions and introduction of some elements of western financial markets such as stocks, bonds and other securities, there is no complete market system to replace the old system in order to work in harmony as a whole. China's banking system is disordered during the present transition to the Chinese Socialist Economy. With an inherently mature market financial system, China can establish a national secondary mortgage market engaged in MBSs to powerfully push forward the whole mortgage system by attracting money from the international capital markets. The Chinese banking system is supposed to undertake a thorough reform soon since Vice-premier Zhu Rongji recently became the Governor of the People's Bank, the central bank of China.

5.4 Securing of Mortgage

Traditionally, a mortgage is a secured loan where the borrower pledges the home being financed as security for payment of the loan. The lender has the option to foreclose the property in case the borrower can not meet the scheduled regular payments.

There are some conditions regarding the security of mortgage credit in China: 1) the legal structure is not mature, especially in the economic sector. In reality many economic disputes have to be resolved by negotiation rather than by court's justification; 2)
individual's incomes, in many cases, do not depend on the personal effort involved in working, but rather depend on the national economic policy (wages) and interpersonal relationship (bonus). This is especially true for high income people, who's income tend to be more unstable because of present political uncertainty; 3) the mortgagor is bearing the financial burden of the government and his/her working unit since, traditionally in China the government, and more specifically the working unit, has the responsibility to help its employees with almost free housing. The working unit (or enterprises) usually is very active in encouraging and/or economically assisting its employees to buy housing in order to scale down the number of people waiting for subsidized rental housing. Therefore, it is feasible that the banks require a working unit or enterprise, which is financially sound, to serve as a third party guarantor for its employee's mortgage loan. In this way, the lending bank shifts the default risk to a third party who is more capable of sharing the financial burden. The same idea is represented in Beijing's Credit Rules.

But the dilemma is that both the PCBC and most working units or enterprises are government-owned and even government-run institutions therefore their economic interest are intrinsically the same. For example, the profits and losses of an enterprise eventually go to the state after paying the worker's wages and operating cost, as do a bank's profits. Hence, the third party guarantor may actually may shift the risk of financial loss to the state in the case of a default, in which case they have no responsibility. It is also can be true that the working unit may charge penalties to the employee who causes a default. In addition, tying an employee to and employer is detrimental to the mobility of human resources, thus detrimental to further establish an efficient market economy.

On the other hand, since the downpayment is very high (meaning the mortgagor has a high level of equity) and housing in foreclosure can be sold out at a good price (prices for housing are expected to rise for a long period due to the massive housing demand), the
default risk for the mortgage credit is in reality very low. This has been the experience in the U.S. for a long period of time.

In addition, it appears that the Credit Rules do not mention if the borrower could have the option of prepayment. The bank would prefer to avoid the issue since the prepayment is usually not welcome for the bank (the prepayment stops the bank from its ability to earn interest on the mortgage loan after the bank did much work to administer the loan). Also in a secondary market, the prepayment option adds the difficulty in definition of MBSs due to the uncertainty as to when the loan will be repaid, although the bank may charge prepayment penalties to the borrower. But, the bank can not deny that borrower has the right to do so according to the international standard practice or Chinese tradition.

5.5 To Establish Secondary Mortgage Market in China

It is necessary to establish a secondary mortgage market in China at the proper time because: 1) without a secondary mortgage market, the primary mortgage market, where funds are actually provided to the borrower, can not operate with as much flexibility. The secondary mortgage market, where existing mortgage loans are bought and sold by investors, can take capital in areas with excess funds available and move them into areas with a shortage of funds. Hence, the secondary mortgage market can unify the large number of independent local markets to become a national mortgage market; 2) most importantly, the secondary market conduits may sell the mortgage loans to international investors, either in whole loans or in MBSs. By doing this, the national mortgage market can originate more mortgages by recycling the proceeds from the sale of previous mortgages to foreign investors who have invested funds in the international capital markets.
The "socialist market economy" may be conducive to creating a secondary mortgage market by government regulations after a number of local primary mortgage markets are established in China. To operate efficiently, the secondary mortgage market requires that the mortgage loans must be standardized regardless of the local market conditions. The standard loan means it could be easily priced with similar payment schedules, terms, borrower qualification requirements, and legal conditions. Therefore, the PCBC as a pioneer in this field, having business branches nationally, can set the tone for taking the leadership role in creating standards for all the mortgage originators in China. Moreover, the PCBC can play roles both in mortgage loan originating and, selling/buying existing mortgage loans by packaging them into MBSs for China's other financial institutions (mentioned at the beginning of this chapter) or for sale to international investors. To expedite this process, MBSs should be priced and issued basically in compliance with international standards and should be acceptable to both the issuers and investors in terms of risk and return.

5.6 Potential Problems

There are some potential problems which need to be addressed further: 1) more broadly, an effective mortgage financing system calls for a well-developed and mature financial market, and in particular a well-developed debt market (bond market). The bond market, as one subset, should be integrated into a whole system of financial intermediation. For this, the establishment of a supportive institutional structure and cultural acceptance are essential. To date, China has taken very tentative steps to develop a bond market; 2) a mortgage is secured firstly by property value. The difficulties of property valuation could be enormous without a mature and liquid real estate market; 3) improvement in the relevant legislation and the ability to enforce mortgage foreclosure is crucial. It is also very important to separate the public and private interests and clearly define property
rights in mortgage instruments; 4) the current secured wage system, for government employees and employees of government-owned enterprises, should be reformed in order to allow the incomes of more skillful and hardworking people to increase more rapidly than others. This would increase accessibility to the housing market for these individuals; 5) consistent payment schedules and mortgage interest rates are extraordinarily important to put a mortgage market to work. As the current inflation rate is very volatile, attention needs to be paid to how to protect both the interests of the mortgagees and the mortgagors. Taking account of the complexity of China's developing economy, this is no easy task. And perhaps the most important is to carefully incorporate Chinese specific economic and political conditions into calculable numbers like the mortgage interest rate. These are totally uncharted waters, and there is little foreign experience in these areas which can be drawn upon.

Based on the foregoing discussion, it can be concluded that establishing a mortgage system for housing in China is both feasible and necessary in an economic and a political sense. Every participant would benefit from the mortgage system. It would not only make housing more valuable to society, but it would also overcome the financial problems created by declining government subsidies in housing. This gap would be closed by mobilizing the increasing savings of individual households through a carefully and deliberately designed capital market.
Chapter 6. Summary and Conclusions

The housing shortage is a severe problem in China, primarily in non-rural areas. The problem is getting worse due to the maturing of those involved in the "population explosion" during the 60's and early 70's (this age cohort is now seeking housing) and the fast urbanization in recent years in this country. Both the government and citizens are looking for solutions to nail down the problem through the current housing reform movement characterized as "housing commercialization". It is recognized that the creation of a new urban housing finance system is not only an important issue, but also its creation is urgent in order for housing reform to be successful.

Since the market-oriented economic reform was adopted in 1978, the Chinese economy has been developing rapidly, creating dramatic changes in the economic conditions of the general population. The results of this transition, from a highly centralized planned economic system to a socialist version of a free market system, are: 1) both people's incomes and savings are growing quickly; 2) the government is finding that it is becoming more and more difficult to continue to provide subsidized housing and to maintain the huge stock of current housing for all its people living in urban or suburban areas (most of them are government employees or employees of government-owned enterprises). In the past, the Chinese government took responsibility for financing urban housing. However, it is finding this policy more difficult to implement due to rapid economic decentralization. As China's national economy is changing from public to private savings, the only feasible way to establish a workable housing finance system is to set up a system based on private savings; 3) in the urban areas, where most residents do not own their own homes, there is incentive to promote private ownership of housing because the rental rate of government-subsidized housing is growing considerably. In addition, in the major cities such as
Beijing, the value of private housing has appreciated considerably due to such factors as high inflation, increasing demand, and the renewal of Chinese tradition of homeownership which preceded the communist era.

The merits of homeownership could be summed up as: 1) to encourage more enthusiasm for housing reform by allowing individuals to have more private ownership; 2) to reduce the financial burdens on the state; 3) to make better use of private saving deposits in banks by channeling them into housing development; and 4) to allow individuals an opportunity to build equity in their own homes. All of these are conducive to the commercialization of housing in China.

But will people be able to purchase housing? Few, if any, Chinese urban residents can purchase housing with cash due to the large discrepancy between their savings and income and housing prices. However, if mortgage instruments were available, there might be an alternative way for some higher income families to achieve their homeownership goals because: 1) it is easier for a person to buy a home with mortgage credit than with cash; 2) for some families (such as young couples), the desire to own their home is very high. These families anticipate that it will be more and more difficult to obtain housing from the government or their working units in the near future because of the cutback in government subsidies. But they do have a relatively high household income which would enable them to finance their homes by taking advantage of mortgage instruments. The thesis envisions that, in light of the nation's rapidly growing economy, there will emerge more demand for mortgages which will lead to an increasing rate of homeownership in China. It is in the interests of all parties in the society to move toward a housing finance mortgage system.

Currently, there are three types of housing in China: welfare; limited profit; and commercial. There are two separate housing markets in China: 1) an internal housing
market only for local Chinese citizens; 2) an external housing market only for foreigners. The external housing market only has access to the commercial housing market. The typical prospective mortgagors are those high income young couples with one child. It is estimated that even for these relatively well off young families in major cities such as Beijing and Shanghai, it will difficult for them to purchase commercial housing even with a long-term mortgage because of the high housing price levels due to rapid land appreciation.

To be practical, at present only the welfare housing and limited profit housing can be purchased in the internal housing market by all but a very few upper income Chinese urban dwellers. The rising price of welfare and limited profit housing can be curbed by the government providing these kinds of housing projects with subsidized land. Such government subsidy is necessary for a certain period of time in order to maintain and enhance the affordability of homeownership for the vast majority of the people.

Some employers, including some relatively wealthy government-owned enterprises, are also providing financial assistance to their employees under the condition that the employees can only use the assistance in home buying to meet their own living needs, and that they must have worked for the employers for at least three or five years. Accordingly, these kinds of housing can not be sold or transferred to the external housing market, thereby avoiding speculation. When the average per capita income rises further, the "internal housing market" will require less subsidy and the "external housing market" will becomes larger as it becomes accessible to more urban residents in China. The incentives for the people to purchase commercial housing in the "external housing market" is that the commercial housing is more fully controlled by its owner. Hence, the owner of commercial housing can take advantage of the rapid land appreciation in the "external housing market". However, the point here is that a significant number of people can only
achieve their homeownership by using mortgage instruments in combination with the government's indirect subsidies and/or employer's financial assistance at present and for the near term future.

The People's Construction Bank of China (PCBC), one of the major, specialized banks owned by the government, is very active in helping to establish a mortgage financing system in China. Most recently PCBC laid down the "Provisional Measures on Mortgage Financing for Housing of Employees and Workers". Following its publication, the Branch of Beijing instantaneously created the "Implementation Rules on Mortgage Financing for Housing of Individuals" (Credit Rules) as an experimental test. I predict that the PCBC will become the leader in the primary mortgage market in China and a major player in the future of China's secondary mortgage market. Other national banking organizations may also participate in the mortgage market if the current small scale experiment proves to be successful. The PCBC, with government support in its mortgage business, may receive special assistance funds from the annual government housing subsidies budget to support the creation of a mortgage market. To avoid excessive financial commitment, the PCBC could implement mortgage qualification requirements for its branches to follow which would restrict the amount of lending available throughout the system.

By analyses, given the economic and political conditions of China, the features which a Chinese mortgage instrument should have, are: 1) a larger downpayment than in developed countries, perhaps as much as 30% percent of the total housing purchase price, deposited in a bank before obtaining a mortgage; 2) easier income criteria for a certain size of mortgage (the monthly payment may reach to 40%-50% of household's monthly income for the high income families); 3) a mortgage term limited to 15 years; 4) a periodically fixed payment schedule which the nominal mortgage interest rate could be adjusted regularly with "caps" to protect the borrower. The borrower's interest should be
protected properly, given the current government monopoly of the national banking system. Some of these features, such as the larger downpayment requirement and the mortgage term limited to 15 years, are part of the Credit Rules.

Securing of the mortgage loan in China may have some distinctive features. One of the important features of China's "socialist market economy" is the integration of the employment, wage, and social welfare systems. Since many individual private interests are linked with the employer's interests, the employer may be an ideal third party to guarantee its employee's mortgage loan. But tying an employee to an employer is detrimental to the mobility of human resources, thus detrimental to further establish an efficient market economy. Furthermore, in many cases the employer is the government or the government-owned enterprise, and having the employer as the third party guarantor is adding to the difficulty of defining the public and private interests. To provide both mortgagees and mortgagors with legal protection and to guarantee both public and private interests, legislation should be greatly improved in the legal arrangement of mortgage enforcement, such as the foreclosure of mortgaged property.

An efficient primary mortgage market system can be greatly enhanced by the existence of a secondary mortgage market. Hence, the planning for a national secondary mortgage market should begin soon after a number of primary mortgage markets are established. As the government controls the nation's whole banking system, and probably will continue to maintain control over the near term, this may facilitate the establishment of a secondary mortgage market with standardized mortgage loans in China. The PCBC would play a leading role in setting up the lending criteria for all the prospective mortgage generators. Different from the role of Fannie Mae or Ginnie Mae in the United States, the PCBC would play three roles (mortgage originator, secondary mortgage participant, investor) in the China's mortgage markets. The People's Insurance Corporation of China could serve
as the mortgage loan insurer. The PCBC would be able to pool a large number of mortgages and package the mortgage loans into MBSs according to international standards in order to sell them to foreign and/or domestic investors on the secondary mortgage market. At present, the state has made policy to gradually release restrictions on the Chinese national's investment in the housing industry. Since all mortgage loans will be made by government-owned banks, there is an implication that all mortgages will be government insured. Learned from the Credit Rules, the mortgage qualification requirements are strict and the default risk will be relatively low. China's mortgage market can not function very well without deepening the reform of the overall financial system in the country.

Although there exist many constraints to the establishment of a mortgage financing system in China, it can be concluded from the data in this thesis that it is the time and it will be beneficial to both the government and the people to make mortgage instruments available. Mortgage financing options offer positive prospects for China to solve its current severe urban housing problems. This thesis serves to outline and discuss in a broad context the requirements and forms which would put the mortgage financing system into effect in China.
IMPLEMENTATION RULES ON MORTGAGE FINANCING FOR HOUSING OF INDIVIDUALS

(Promulgated by Real Estate Credit Department, Beijing Branch of People's Construction Bank of China, in Beijing's Daily on 29th June, 1993 -- Unofficial translation for reference only)

Chapter 1 General Provisions

Article 1
To coordinate the housing regulation reform in Beijing, to promote housing commercialization, these rules are enacted in accordance with the "Provisional Measures of Real Estate Credit Department of People's Construction Bank of China on Mortgage Financing for Housing of Employees and Workers".

Article 2
Mortgage Financing for Housing of Individuals (hereinafter referred to as "Mortgage Credit") is a specialized credit only for those residents who buy housing to meet their own living needs.

Article 3
The rules on Mortgage Credit are applied in the principles of: 1) depositing a downpayment before using the mortgage loan, 2) combining deposit with credit, 3)
mortgaging with guarantee, and 4) borrowing credit once in whole and paying back equal installments monthly.

Chapter 2 Applicable Individuals and Qualification Requirements

Article 4
Applicable Individuals: Residents who buy housing to meet their own living needs.

Article 5
Conditions of the credit.
Applicable individuals should satisfy requirements listed below:
1. Must be a formal registered permanent residence in urban areas (city and towns) of Beijing.
2. Must have an authoritative contract (permit) to purchase housing.
3. Must have at least 30% of the total housing price deposited in a lending bank (hereinafter referred to as "Bank") no less than 6 months prior to applying, which serves as a downpayment (first payment) on purchasing a residence.
4. Must have a stable income and enough economic capability to meet the regular payments required (principle and interest of the credit).
5. Must be willing to sign agreement to mortgage housing property and other valuable securities to Bank. The housing property and other valuable securities must be recognized by the bank and the housing property used to apply mortgage must be insured.
6. Must have an enterprise or working unit, which is recognized by the Bank, serve as the guarantor of the mortgage (paying off the principal and interest of the credit).
Article 6

Borrower should submit to Bank the documents listed below:

1. Borrower's identity card and permanent residence booklet.
2. Certification from the borrower's employer to show borrower has had a stable income in the last two years, or borrower's tax receipts in the last two years.
3. Legal contract (permit) to purchase housing.
4. Notarial identification document and financial statements in the last two years of the borrower's guarantee.
5. Valuation report, appraisal statement and insurance receipt of mortgaged property.
7. Other certificate documents and materials required by Bank.

Chapter 3 Term and Interest Rate of Mortgage Credit

Article 7

Term of credit: determined by Bank (according to specific case, up to 15 years).

Article 8

Mortgage Interest Rate: one year mortgage interest rate adopts the same rate of one year floating fund's credit rate stipulated by the People's Bank of China. Mortgage interest rate increases with the loan term, getting longer year by year. The increase of term is calculated based upon a complete year, even if the term is increased by less than one year. If the State regulates interest rates, the mortgage interest rate and the borrower's monthly payment are subject to adjustment accordingly. (The table of mortgage interest rate is attached to these rules in Appendix II.)
Chapter 4 Determining Size of Mortgage and Procedure of Obtaining Mortgage Credit

Article 9
The size of a mortgage is based on the current market value of the mortgaged property. The borrowed loan should not exceed 70% the value of mortgaged property and should not exceed the price of the housing to be purchased by the borrower.

Article 10
The complete procedure of obtaining a mortgage credit is:
1. Borrower submits to Bank an application for mortgage credit and all documents and materials stipulated in Article 6 of this rule.
2. Bank examines borrower's application and submitted documents and materials.
3. Borrower provides the affidavit of his/her guarantor who serves as a third party to secure the loan.
4. Borrower signs a contract with the Bank for borrowing a mortgage credit.
5. Borrower registers the mortgaged property.
6. Bank withholds the borrower's housing property ownership certificate (or withholds borrower's contract of housing purchase and invoice before issuance of his/her housing property ownership certificate) or valuable securities.
7. The contract of borrowing a mortgage credit goes into effective and the Bank transfers the mortgage credit and borrower's downpayment to the housing seller's account at the Bank, according to the borrower's housing purchase contract.
8. Both Bank and borrower enjoy the rights and perform the obligations stipulated in the contract for borrowing a mortgage credit.
Chapter 5  Securing of Contract for Borrowing Mortgage Credit

**Article 11**

Credit secured by mortgaged property:

1. The acceptable collateral for a mortgage credit are: housing and valuable securities (not including stock).

2. Borrower has no right, during the term of the mortgage, to destroy, sell or put additional financing on the mortgaged property, without the Bank's permission. If the mortgaged property is valuable securities (not including stock), borrower can not report loss of the securities or ask for the return of the securities prior to the end of the mortgage term.

3. The Bank assumes the responsibility of any damage, or loss to the mortgaged property, or valuables, kept by the Bank during the term of the mortgage.

4. When the loan has been paid off, and the mortgaged property is unleveraged, the Bank returns all of the withheld certificates and documents of the mortgaged property to the borrower and informs the relevant authoritative agencies to cancel the registration of the borrower's mortgage.

**Article 12**

Credit secured by third party:

1. The guarantee provided by a third party of a Mortgage Credit is responsible for the full amount of the repayment of the Mortgage Credit and can not be recalled without the Bank's permission. The full amount of repayment referred to is all of the principal and interest of the loan stipulated in the contract for borrowing a Mortgage Credit and all the fees related to the contract. The third party is also liable for any civil liabilities which may be related to the contract, such as lawsuits, etc.
2. The guarantor has the right to take disciplinary action against the mortgagor under the borrowing contract for a Mortgage Credit.

Article 13
The duration of the guarantee is from the date the contract for borrowing a Mortgage Credit is signed, until the debt is paid back in full.

Article 14
When the mortgaged property for a Mortgage Credit is valuable securities (not including stock), the requirement for a third party guarantor (a legal subject) to secure the loan may be exempted.

Article 15
Should the borrower not meet the payments required under the mortgage document, the Bank has the right to dispose of the mortgaged property in accordance with relevant laws and provisions. The gain upon foreclosure of the property is used to repay first the principal, interest and relevant fees of the credit (after deduction of tax and fees of the auction), then the remainder goes to the borrower. In case the gain is not enough to cover the whole principal and interest of the credit, the Bank has the right to continue pursuing the borrower for recovery of the loss.

Chapter 6 Insurance of Mortgaged Property

Article 16
The borrower, using housing as mortgaged property, needs to insure the property according to the stipulations of the insurance company and the requirements of the Bank
before signing a contract with the Bank to borrow a Mortgage Credit. The duration of the insurance contract should exceed the term of mortgage by 6 months. The amount of insurance should not be less than the principal amount of the Mortgage Credit. The Bank should be listed as the first beneficiary of the insurance proceeds without any conditions. The insurance document should not include any conditions limiting or impairing the rights and interests of the Bank. All of the necessary costs relative to the insurance should be absorbed by the borrower. During the term of the mortgage, the insurance documents should be kept by the Bank.

Article 17

During the effective period of the contract of borrowing a Mortgage Credit, the borrower can not suspend or cancel the insurance for any reason; otherwise, the Bank has the right to insure the mortgaged property for the borrower at the borrower's expense.

Chapter 7 Amortization and Recall of Mortgage Credit

Article 18

The borrower must pay the Bank the principal and interest due on the loan in compliance with the contract of borrowing Mortgage Credit. The guarantee for Mortgage Credit urges the borrower to repay the principal and interest of the credit in a timely fashion.

Article 19

The principal and interest of the credit are repaid by using a monthly fixed payment schedule. The formula for calculation this payment is:

\[
\text{Monthly payment} = \frac{P(1+I)^T}{(1+I)^T-1}
\]
Where P is the total principal of the mortgage credit, T is the mortgage term in months, and I is the monthly mortgage interest rate.

**Article 20**

In case the borrower dies or disappears, which fact is identified and/or announced by the Bureau of Public Security, the legal inheritor of the borrower's property should continue carrying out the contract signed by the borrower for borrowing Mortgage Credit.

**Article 21**

If borrower does not repay the principal and interest stipulated in the contract of borrowing the Mortgage Credit on time, the Bank will charge the borrower a fine for the days overdue and the corresponding amount due on the outstanding loan.

**Article 22**

Should borrower break the contract of borrowing Mortgage Credit and lead to Bank being unable to receive the principal and interest of the credit in a timely way, the Bank will have the right to recall the loan.

**Chapter 8 Miscellaneous**

**Article 23**

The Bank manages Mortgage Credit in accordance with the borrowing contract. If, due to the bank's fault, the borrower is unable to use Mortgage Credit, the Bank will give the borrower compensation for its breaking the contract for the days and amount of the affected period.
Article 24
It is the borrower's responsibility to bear the application fee and all fees as for the valuation, appraisal and maintenance of the mortgaged property.

Article 25
In case any one of the parties bound by the borrowing contract asking for a change to or cancellation of the borrowing contract, the party should inform the other parties in the form of a written notices, in advance of the termination date. The original contract will continue being in effect until a new agreement is reached.

Article 26
In case any disputes arising among the parties bound by the borrowing contract, and if no settlement can be reached through consultations, the disputes may be submitted to a local arbitration organization for arbitration or to a local People's Court for trial.

Article 27
These rules are drawn up by the Real Estate Credit Department, Beijing Branch of People's Construction Bank of China who is responsible for the interpretation and modification of these rules.

Article 28
These rules shall take effect upon the day of promulgation.

-- The Real Estate Credit Department, Beijing Branch of People's Construction Bank of China.
Appendix I

THE PLACES OF AGENTS OF CUSTOMER CONSULTATION SERVICE AND BUSINESS OPERATING SYSTEM (OMITTED)

Appendix II

TABLE OF MORTGAGE INTEREST RATE FOR HOUSING OF INDIVIDUALS

<table>
<thead>
<tr>
<th>Mortgage Term</th>
<th>Mortgage Interest Rate</th>
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<tbody>
<tr>
<td></td>
<td>Year</td>
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<td>11-15</td>
<td>132-180</td>
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</tbody>
</table>

Note: in case the State regulates interest rates, the mortgage interest rate is also subject to adjustment accordingly.
BIBLIOGRAPHY


