

# **Housing demand analysis**

**[Summary]**

# **1. Structural Change of Housing Market and Necessity of Grasping Housing Demand**

## **1.1. Current State of Reform of Housing Market in China**

The three players in the housing market in China are purchasers who construct and own (use) housing or consume it in the form of renting, suppliers (constructors) who plan and construct commercial housing and rental housing for the purpose of selling and renting to third parties (purchasers), and agents (information and service providers) who provide services to purchasers and suppliers and connect them from time to time.

Structural change of the purchaser layer is particularly remarkable. This is because of the recent reform of the housing system, or the first housing market economization in China. Typical phenomena representing the result of the reform include increased earnings and savings, and expanding purchasing power in line with the introduction of market economy and rapid economic growth in general; company houses of public enterprises turned into privately owned housing through the disposal system; increased moving from (public) rental housing or disposed housing to new commercial housing that is purchased; and increased input of old privately own houses into the rental market and sublease of public rental housing resulting in increased supply of private rental housing. Demand for housing itself is also changing due to, the rise of new purchaser layers that have never been thought of before. This is because of environmental changes such as increase in total population, the number of households, and the households that own more than one house.

It is quite probable that a filtering (moving to a new house) system will emerge and develop in China. The dwelling standard will be enhanced through moving to a new house (filtering) as stimulated by vigorous activities of all the players in the housing market. The filtering system is already working effectively in Shanghai where the housing market economization is most advanced of all cities in China, and the existing and rental housing market are well formed and used aggressively. In Shanghai, the structure of the demand for housing is experiencing a dramatic change. For example, the ratio of the demand for existing and rental housing to overall demand for housing is increasing.

## **1.2. Necessity of Grasping Housing Demand**

Preferably, an ideal image of the housing market should be shown in China, and measures taken to stimulate economization of housing market systematically and politically, although the process and speed of the economization may vary from one city to another depending on the income level and the characteristics of individual cities. It is important to understand the current status and future of housing market and demand in China, and design a filtering system and establish supportive political and systematical measures.

Grasping the demand for housing that reflects the behavior and the needs of the purchasers is indispensable for designing policy and systems accurately. Among others, demolition of old

housing and replacement with new housing is a very important factor in creating a prediction model for the demand for housing. Unfortunately, housing stock by vintage (age of housing) could not be grasped in the three model cities under investigation, and thus correct reflection on the prediction model was difficult. Basically, elaborate prediction of demand for housing through estimation of loss as a flow is necessary when developing a viable housing scheme, housing policy, and housing fund schedules. Grasping of housing stock by vintage, and the resultant more accurate estimation of loss represent important tasks for China for establishing housing plans, housing construction plans, and also for effectively executing housing policy.

## **2. Result of Prediction of Housing Demand and Housing Fund Demand**

It is important to grasp the rapidly changing market environments in China and then predict the demand for housing and the demand for housing fund. The current case study, covering three model cities of Shanghai, Wuhan, and Chengdu, estimates the demand for housing and the demand for housing fund on a time scale of up to the year 2010 assuming several environmental changes related to the housing market.

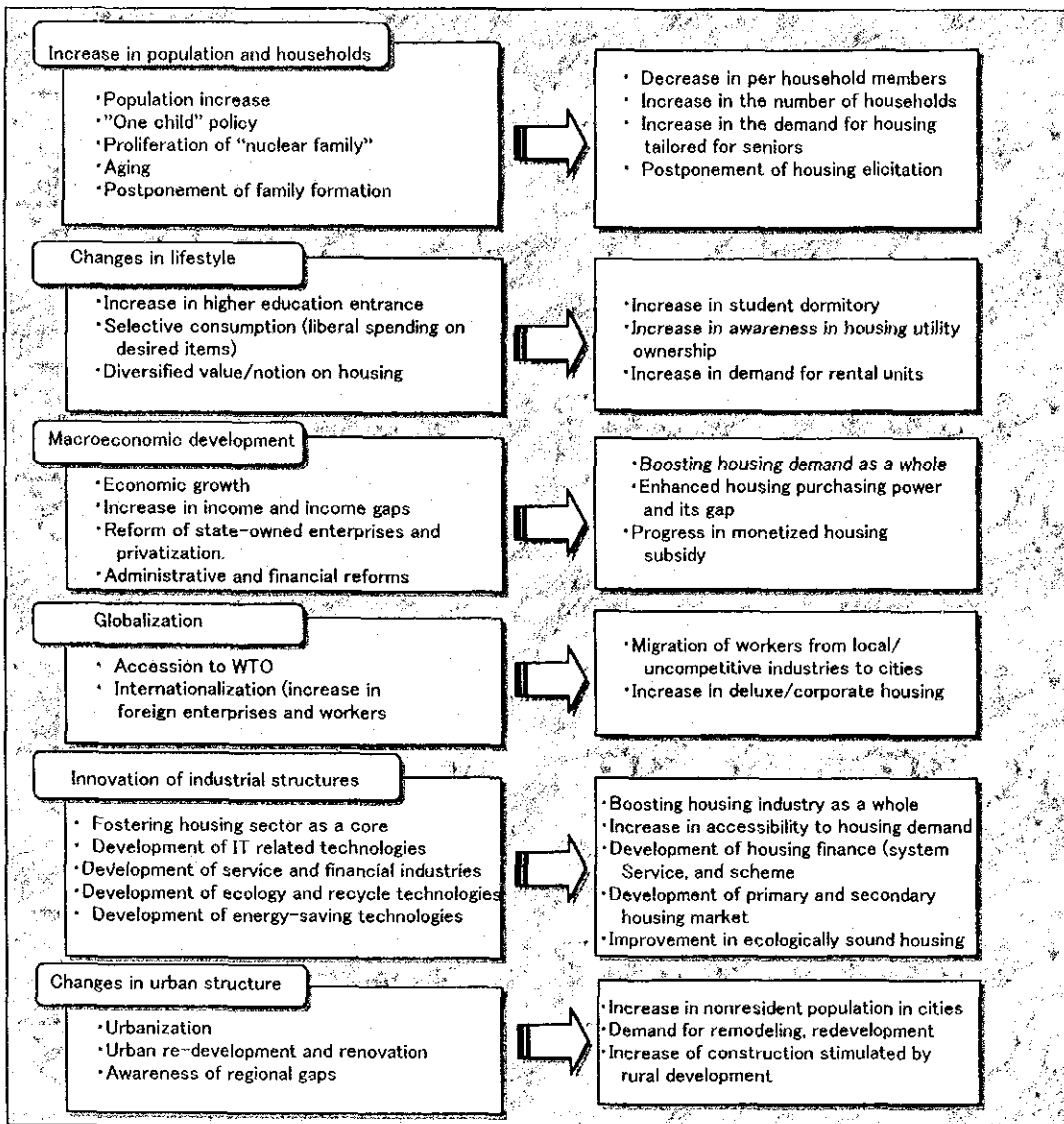
### **2.1. Change in the Housing Demand Environment**

#### **2.1.1. Environmental Change and Its Effect on Housing Demand**

Demand for housing is grasped from three aspects: (1) housing area and the number of houses (quantitative aspect), (2) housing type and grade, shape of use, condition of the ancillary services, and the like (qualitative aspect), and (3) condition of intermediacy and distribution market, and housing purchasing power (affordability) of consumers (accessibility to the demand).

Environmental changes affecting these three aspects are (1) increase in population and the number of households, (2) change in fabric of life, (3) development of macro economy, (4) development of internationalization, (5) enhanced industrial structure, and (6) change in urban structure.

**Figure 2-1 Expected Environmental Changes in China and Their Effect on Housing Demand**



Source: JICA Study Team

### 2.1.2. Increase in Population

The population of China will reportedly increase from 1.29 billion in 2000 to 1.32 billion in 2005 and 1.38 billion in 2010. The annual average increase rate of 1.06% is lower than the world average of 1.52%. This is due to the single child policy of the Chinese government. The single child policy is firmly held up in the Communist Party Central Proposal regarding the Tenth Five-year Plan, which reads, "... the number of population is strictly controlled continuously." When the single child policy is adhered to on a long-term basis, the population in China may peak in 2040 at 1.54 billion, slowly decreasing thereafter.

### 2.1.3. Aging Population

Population of aged people (60 years and above) in China is increasing sharply. According to the definition of World Aging Problem Conference, Vienna, in 1982<sup>1</sup>, China became an old age nation in 1995 with the ratio of aged population to total population of 9.5%. According to the population fluctuation sampling survey held in 1996, one-third of the provinces in China are old age provinces. In Shanghai and other cities, in particular, the ratio of old people 65 years of age and above is more than 7%. The ratio of old people 60 years of age and above is expected to rise from 10.4% (130 million) in 2000 to 12.6% (170 million) and 16.6% (240 million) in 2010 and 2020, respectively.

According to social surveys carried out in China, aging-related social problems include sharp increase in social security burden, generation gap, lack of facilities for old people, and mental solitude. These problems affect the characteristics of housing for old people. It is necessary, for example, to construct large family houses accommodating old family members, nuclear family houses exclusively for old people, and retirement houses for care-needing old people. Concrete countermeasures include design change from a 3 to 4-room house to a 2 + 1 or a 2 + 2 room house, supply of maisonette type houses, and considerations of conveniences for the old people. Supply of housing for old people is essentially increasing. In addition to building new housing, it may be possible to modify company welfare facilities, rebuild dead stock housing, and convert kindergartens and day care centers for children to old people care centers.

### 2.1.4. Tendency for Higher Education

The ratio of students going on to higher education (universities and technical colleges) is rising in China. In line with this, student dormitories (housing and dormitory) are increasingly required. In Shanghai, for example, the dormitories completed by August 1999 cover a total area of 330,000 square meters. This is reportedly equal to approximately one-third of the total areas of dormitories constructed in the past 48 years (980,000 square meters). According to a survey (multiple replies) carried out by the Office for National Statistics in 1999, the purpose of savings is for education expenses for children (44%), provision for old age (38%), and housing purchasing (20%). This indicates that many people set aside funds for educating their children. According to a survey of 61 higher education institutions carried out by Beijing Board of Education in 1998, 40,000 rooms were available in the dormitories and the number of students was approximately 240,000 in total. The average occupancy is four students per room for undergraduate students, three per room for master's students, and two per room for doctoral course students. This means that a total of 140,000 students used the dormitories (approximately 60% of the students at that time). As a result, 20,000 rooms

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<sup>1</sup> In an old age nation, the ratio of aged population 60 years of age and above to the total population is 10% or above, or the ratio of aged population 65 years of age and above to the total population is 7% or above.

(equivalent to 110,000 students) are much needed. Assuming 20 square meters per room, 650,000 square meters are necessary in Beijing as the construction area.

The government is building dormitories as part of the basic educational facility construction policy and necessary funds are dispensed from public finance through issuance of government bonds. The universities find it difficult, however, to construct dormitories due to financial difficulty. Middle and high income layers, on the other hand, strongly wish to have their children dwell in commercial housing rather than dormitories. It is expected that in the next 10 years an increasing number of people will dwell in commercial housing on the basis of one person per room.

The university entry rate in China will increase from 9% in 2000 to 15% in 2010. Those who proceed to higher education will increase from 8.5 million to 13 million.

### **2.1.5. Economic Growth**

Economic growth of China up to the year 2010 is predicted below. The U.S. economy slips down to retard the worldwide economic growth. Economy in China suffers from this worldwide trend and the growth rate will be slightly lower than that for the ninth 5-year plan (1996 - 2000) (average annual real GDP growth rate 8.3%). The central government sets forth annual average growth rate for real GDP at approximately 7% in the tenth 5-year plan (2001 - 2005) (as publicized in March 2001) but this is a very much conservative figure. The report of the Zhuzonli on the tenth 5-year plan reads, "The initial target in a plan must have some margin." However, some local governments set the target for the tenth 5-year plan at a relatively high level, revealing certain contradictions.

Changes in the industrial structure expected in the next ten years are described below. As economy develops, the weight of industry in China will shift from the primary to the tertiary industry. The weight of the secondary industry will remain unchanged until 2010. This is because (1) wage cost may rise in China but it will still be relatively inexpensive in international comparison. The wage level will increase from \$60/person national monthly average in 2000 to approximately \$150/person in 2010. At this wage level, low wage export leverage is still effective to preserve international competitiveness for China. Reduction in customs duties at the destination countries as a result of China's membership to WTO also works favorably to the Chinese goods. Sawn products, footwear, electronic components, and other labor-intensive products will be exported in larger quantity. On the other hand, (2) machinery, automobiles, high-level electronic equipment, and other capital or technology intensive products will face severe competition with foreign goods entering China in quantity with reduced import duties as a result of China's membership to WTO. Domestic production of machinery, automobiles, high-level electronic equipment, and the like may see a temporary, slight decline during the course of development of import replacement industry. The full-scale development as export industry will begin in 2010 when the above international competition on the domestic scene will be successfully won. Regarding the tertiary industry, IT, finance and insurance, and real estate industry, in particular, will enjoy a high growth. The growing

labor-intensive secondary industry and flourishing tertiary industry will both accommodate surplus rural labor, which in turn will contribute to the development of effective demand for housing in the cities.

#### **2.1.6. Advanced Internationalization (WTO Membership)**

The WTO membership affects the Chinese real estate industry and construction industry including housing as follows:

- 1) Reduced import duties will increase import of agricultural products. The uncompetitive cotton and wool producers will discontinue production and flow into cities, increasing demand for rental housing, and supplying labor required in the construction industry. Due to the limited statistical data available, it is impossible to estimate the size of population flowing into three model cities after discontinuing agricultural activities.
- 2) Import duties on construction materials (cement, sheet glass, etc.) are reduced from current 30% to 10%. This is effective for reducing or stabilizing the price of construction materials.
- 3) Land price will rise because of foreign investment in office, hotel, and commercial buildings. In addition, foreign enterprises entering the Chinese market will generate demand for land and thus the land price will increase. This will be particularly true of the port and financial areas in Shanghai.
- 4) Increased demand for high-class housing following advancement of foreign capital.
- 5) Enhanced housing product development capability as a result of advancement of foreign construction companies.
- 6) Reduced import duties on automobiles will decrease the price of automobiles and the automobile diffusion rate will increase. This in turn will accelerate construction of housing in the suburbs.

#### **2.1.7. Development of IT-related Technology and Industry**

Development of IT (information and communications technology) greatly facilitates provision of information satisfying the needs of housing purchasers. Everyone can perhaps get diverse housing information easily. When a person determines on a house to purchase, he or she is most likely to evaluate the site by visiting (environment of the house including the vicinity, educational environment, medical and welfare environment, grade of the area, etc.) in addition to the price (rent, selling price) of the house. Even when the house is purchasable and one wants to buy it, one is often obliged to abandon the scheme because of the unsatisfactory environmental conditions. Housing purchasers would wish to visit the site for evaluation after having obtained a certain amount of information on the environment of the candidate house. In reality, many people are guided to the



site by the broker and then see the environment for the first time that is not described on the flyer, the only source of getting information in advance. As a result, the number of candidate properties and the areas to confirm by visiting in a single day such as on a holiday is limited naturally.

To improve this situation, a service system is currently being studied to enable people to confirm not only the property itself but also its environment over Internet, etc. before visiting a site. With this service, the housing map information is overlapped on the relevant information on the environment.

### **2.1.8. Urbanization and Increase in Non-register Population**

The advancement of urbanization increases not only register population but also non-register population. Non-register population was once called “mangliu,” which means influx of migrant farmers into cities without government permit. They were strictly controlled in the past. Now, in Shanghai, for example, they are renamed “mingongchao” and are accepted as labor contributing to promotion of market economy.

According to the definition of the Chinese Dynamic Statistics of Population, local population is divided into three categories: register population, steady population, and actual population. Steady population is *register population plus long-term inflow population dwelling here for half a year or more without a register*. Actual population is *steady population plus short-term inflow population dwelling here for less than half a year without a register less short-term non-residents with a register here (short-term outflow population)*.

Fluid population is the sum of long- and short-term inflow population less short-term outflow population. From the housing policy perspective in the three model cities, the sum of long- and short-term inflow population, or fluid population, is important because it generates a latent demand for rental housing.

The behavior of the fluid population is summarized below from the report titled “Population Theory and Planned Childbirth,” People’s University of China, February 2001. First, 71% of all fluid population fell in the age bracket of 15 to 34 according to the 1995 nationwide fluid population survey. In Shanghai, 73% of the fluid population was in this age bracket. Back in 1990, 66% of all fluid population fell in the age bracket of 15 to 39. Eighty percent of the fluid population was farmers by original domicile. This shows that juvenile and young farmers are the main body of the fluid population both historically and across the nation. Second, according to a fluid population survey carried out in Jiangsu in 1998, 37% of the surveyed people stayed in the workplace, 20% in a hotel, 16% in rental housing, and 13% on the construction site. Many long-term inflow people were engaged in trading business, staying in rental housing (47%), in a hotel (24%), or in a rented room (13%). Short-term inflow population, on the other hand, was mostly construction workers, staying in the workplace (50%), construction site (13%), or rental housing (8%). This suggests high latent needs for inexpensive rental housing. Third, according to the 1997 nationwide fluid population survey, per capita annual average income of the fluid population was RMB6,630 in the Eastern,

RMB4,454 in the Central, and RMB4,158 in the Western region. Per capita annual average income for the fluid population in the Eastern region is estimated to be approximately 80% of that of the register population in the same region. Assuming per capita annual average income for the register population in the Eastern region to be 100, the per capita annual average income for the fluid population in the Eastern, Central, and Western region is 80, 53, and 50, respectively. The regional income level differences should be considered when constructing rental housing.

According to the Central General Control Committee, the national fluid population would exceed 100 million in 1997, possibly reaching 130 million in 2005, and 160 million in 2010. The fluid population is increasing at the rate of approximately 5 million a year.

## **2.2. Future Housing Demand as Affected by Future Environmental Changes**

### **2.2.1. Definition of Housing Demand and Method of Estimation**

#### **(1) Grasping Housing Demand**

Demand for housing is basically affected by increasing population and the number of households. It is also affected by the change in the division of administrative districts and renewal resulting from rebuild and redevelopment.

##### **1) Population and Number of Households**

Demand for housing is generated when population fluctuates (natural, social, and fluid population fluctuation) and also when a household is split (independence of children, etc.). In the urban areas, increased fluid population from suburbs and provinces generates a large new demand for housing. The study in this section covers the measures to cope with fluid population in the three model cities.

The number of constituent people per household (population per housing) and per capita housing area are the measure of the quality of housing (breadth and spatial allowance). These two factors greatly affect the demand for housing, and must be studied in terms of both current trend and future prospect.

##### **2) Division of Administrative Districts**

The administrative districts in a city are altered from time to time with the growth of the city and development of economic activities. A city grows by absorbing its suburbs as new "city and ward area." Note that this does not necessarily lead to creation of a new demand for housing. It is simply that the area that was not a city and ward area until yesterday is incorporated into the city today as a matter of administrative and statistical procedure. The incorporation itself does not generate a new demand for housing. The increase in population and the number of households in the statistics after incorporation of a new suburban area as a part of execution of city planning seemingly increases housing stock. Actually, however, no new demand for housing is generated.

### 3) Rebuild and Redevelopment

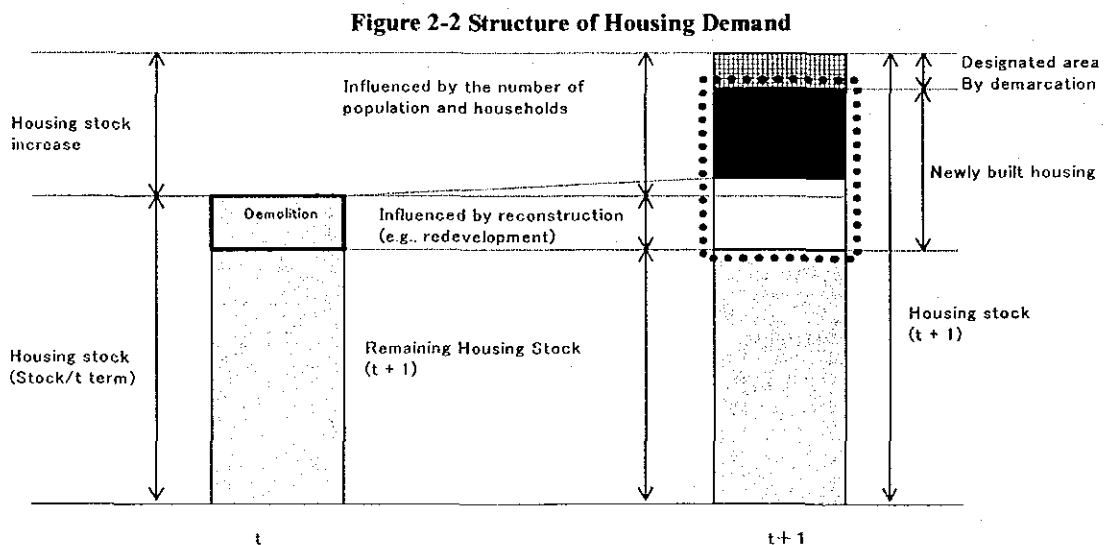
Rebuild and redevelopment are important factors because while they do not contribute to increased housing stock they generate demand for housing.

A new demand for housing is generated when an existing house is demolished due to deterioration or being located in a designated redevelopment area and then a new housing section is constructed. For a redevelopment project in a city area, in particular, the new housing area can be greater than the former one because the land is more efficiently used (floor area ratio) when the housing area promotion ratio is 1.0 or above.

### (2) Estimation of Housing Demand

Based on the above factors affecting the demand for housing, the present study estimates the demand for housing in the three model cities of Shanghai, Wuhan, and Chengdu. Environmental changes that may occur in the future in China are also taken into consideration. The following three important factors are particularly considered in carrying out the study: (1) prediction of future population and the number of households considering fluid population, social fluctuation, and incorporation of suburbs into the city area as a part of city planning execution, (2) demand for rebuild and renewal arising from deterioration of housing stock or urban redevelopment, and (3) moving of people from rental housing to a new house.

Demand for housing = Increase in population and number of households + rebuild and redevelopment  
 Increase in population and number of households = Increase in housing stock – division of administrative districts



Source: JICA Study Team

## 2.2.2. Future Housing Demand in China

### (1) Background of Actualization of Housing Demand

Demand for housing is expected to grow until 2010 in China because of the following factors:

- 1) Urbanization will continue. Demand for housing will increase in the urban areas in particular because of increasing influx of people from farm villages. The increasing population (households) in the city and ward section resulting from urbanization directly leads to increased demand for housing in the urban area. In Shanghai where high-level population growth has already peaked will see a growth rate of only 0.55% during the 1999 through 2010 period, whereas the population growth rate will be as high as 1.22% and 2.22% in Wuhan and Chengdu, respectively.
- 2) The needs for dwelling will increase with the rapidly growing economy. The spatial breadth asked for dwelling will also increase. It is expected that the per capita housing area (actual construction area) will sharply increase during the 2000 to 2010 period in China. The demand expressed in housing area will be actualized more than the demand expressed in the number of houses. Housing area is approximately proportional to the economic power of a city so that the growth rate for per capita housing area is higher in a city with a higher growth rate for economic power. The expected growth rate for per capita housing area in Shanghai, which is an advanced reform, and liberation city, and a rapidly developing international finance center, is 4.38% for the 2001 to 2010 period. The rate is also as high as 4.43% for Chengdu where development is expected by execution of the Big Western Region Development project. In Wuhan where the weight of state enterprises is relatively high, the growth rate for per capita housing area is a low 4.07% for the same period.
- 3) The number of people per house will decrease because of the nuclear family trend and the split of household. This means that even if the population is steady, the demand for housing (dwelling space) will increase. The number of people per house in Shanghai will decrease from 2.79 in 1999 to 2.39 in 2000. The decrease for the same period is from 3.09 to 2.90 in Wuhan, and from 3.38 to 3.10 in Chengdu.
- 4) In the urban areas, old company houses and municipal housing will be re-built, renewed, or redeveloped to generate renewal demand for housing by the people dwelling in the old company houses. In Shanghai, urban modification is rapidly going on in the central area, and old housing stock is demolished and a large renewal demand is expected to emerge. In Shanghai where a large renewal demand exists, a demand of 69,000 houses per year is expected to emerge in 2010. This is larger than the demand of 57,000 houses in 1999 by approximately 12,000 houses.

## (2) Results of Prediction of Housing Demand

### [Housing Demand in Volume]

In the urban area, demand for housing will be actualized until 2010 at a speed higher than the rate of increase in the number of households due to increased population, urbanization, nuclear family trend, and moving to a new house described in paragraph 1).

In Shanghai, demand for housing of approximately 151.79 million m<sup>3</sup> or 1.45 million houses will be generated during the 2001 to 2010 period. In Chengdu, the demand is approximately one-third of Shanghai, or 61.44 million m<sup>3</sup> or 560,000 houses during the same period. In Wuhan, the demand is slightly greater than in Chengdu, or 63.46 million m<sup>2</sup> or 680,000 houses.

### [Housing Demand by Pattern of Ownership]

In the urban area, the demand for moving to a new house (from company house or rental housing to privately owned housing) is sharply increasing. At the same time, company houses and the like are actively rented out. This means that demand for both privately owned housing and rental housing increases considerably through enhancement of dwelling standard realized by moving from rental housing to privately owned housing (filtering). Demand for housing in the urban area thus creates demand for not only privately owned housing but also rental housing for fluid population and urban working households.

In Shanghai, the demand for privately owned housing is estimated at approximately 826,000 houses and the demand for rental housing 938,000 houses in 10 years from 2001 through 2010. According to a questionnaire survey, the ratio for rental housing stock in Shanghai is the lowest of all three model cities. Desire to move from rental housing to privately owned housing is the most obvious in Shanghai of all three model cities. Yet increase in population and households (typical tendency of a growing city) and increase in rental housing resulting from increasing renewal of stock reflecting mounting fluid population and redevelopment more than offset the decrease in stock of houses to let. As a result, the stock of houses to let will increase.

The demand for privately owned housing in Chengdu is approximately 291,000 houses. The demand for rental housing is approximately 557,000 houses. The desire to move from rental to privately owned housing is the lowest in Chengdu of all three model cities. Demand for houses to let by fluid population will be as high as in Shanghai due to the Big Western Region Development project by the government. It is therefore expected that the rental housing stock will increase in the future.

Demand for privately owned housing in Wuhan is approximately 577,000 houses, and the demand for rental housing 265,000 houses. According to a questionnaire survey, the ratio for stock of houses to let is the highest in Wuhan of all three model cities. This is because more company houses constructed by state enterprises remain here than in the other two

cities. Desire to move from rental housing to privately owned housing is strong next to Shanghai. However, increase in population, number of households, and fluid population, and the redevelopment speed are all lower than those for Shanghai. For this reason, the rental housing stock will decrease.

## 2.3. Prediction of Demand for Housing Fund Based on Future Housing Demand

### 2.3.1. Definition of Demand for Housing Fund and Subject

Demand for fund that occurs with activation of housing market and actualization of the demand for housing is classified into demand for fund for purchasing housing (occurring when individuals purchase a house) and the demand for fund for developing housing (occurring when real estate developing companies, or developers, carry out housing development projects).

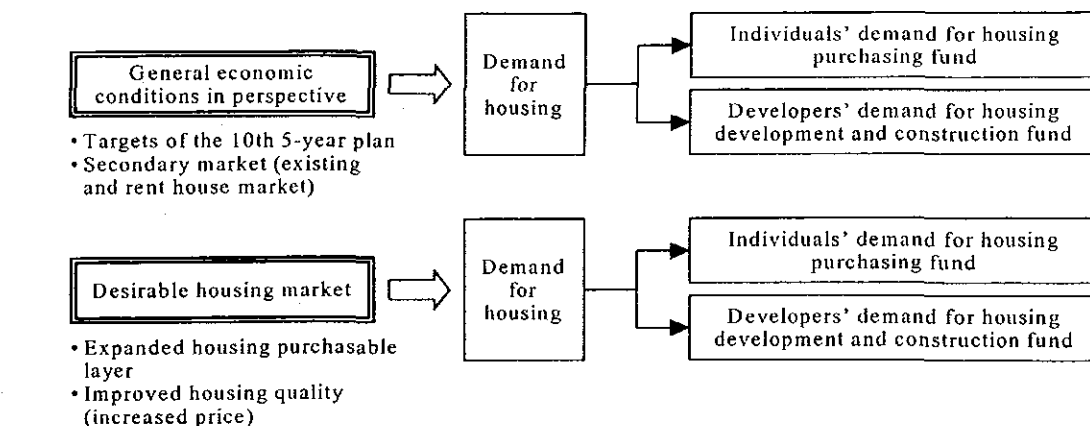
#### (1) Demand for Fund for Purchasing Housing

The demand for fund for purchasing housing occurs with the provident fund and commercial bank loans when individuals purchase a house (new or existing). The actually sold average housing price as revealed in the Study Team's questionnaire survey was used to identify the demand layer who can purchase a house without excessive burden. We assumed that the demand layer thus identified purchase a house at a certain rate every year to estimate the demand for fund occurring each year.

#### (2) Demand for Fund for Developing Housing

The demand for fund for developing housing occurs when developers (real estate developing companies) execute housing development projects (construction of ready-built houses for sale and rental housing). We calculated the demand for fund based on the housing offer price desired by the developers as revealed in the Study Team's questionnaire survey. The demand for developmental fund is assumed to occur at the same time as the demand for fund for purchasing housing by individuals.

Figure 2-3 Concept of Demand for Housing Fund



### 2.3.2. Demand for Housing Fund in the Future in China

#### (1) Background of Actualization of Demand for Housing Fund

Demand for housing fund in China will increase until 2010 in response to rising demand for housing. The relevant background is described below:

- 1) Many users wish to purchase a house according to the Study Team's questionnaire survey. However, only 20 to 40% of citizens are able to purchase a new house of an average price level considering the present annual income. These people are considered the demand layer for fund for purchasing a privately owned house. Approximately 10% of all citizens (with annual income less than approximately RMB5,000) are unable to purchase a house even if they wish to. These people are considered the demand layer for rental housing (and thus affect the demand for fund for construction of rental housing).
- 2) The average unit price of housing will increase with the growing GDP in China. The housing purchase unit price will also increase because per capita housing area is expected to increase. The housing provident fund loans per household will also increase because the annual income level will rise. All in all, the demand for the housing provident fund will sharply increase. Since in many cases the housing provident fund loans are not sufficient, the demand for fund at private commercial banks will also increase considerably.
- 3) In the urban area, demand for rental housing occurs because of increased inflow of people from farm villages and increased number of students. As a result, demand for construction of rental housing occurs at the real estate developing companies, and the demand level will rise year after year.

#### (2) Result of Prediction of Demand for Housing Fund

Demand for housing fund in the urban area in China is expected to grow considerably. This is because the ratio of loans to total purchasing price will rise reflecting rising housing price, and also because the demand for funds for construction of housing will increase to meet the increasing demand for rental housing.

The estimated demand for housing fund in the three model cities of Shanghai, Wuhan, and Chengdu is discussed below.

##### [Demand for Fund for Purchasing Housing]

Approximately 70% of citizens can purchase a new house in all three model cities of Shanghai, Wuhan, and Chengdu assuming the housing loan burden ratio to annual income is 50%.

In Shanghai, where a substantial portion of the housing purchaser layer has already been actualized, demand for fund equivalent to RMB372.96 billion will occur in the next 10 years. In Wuhan and Chengdu, only approximately 10% of the housing purchasable layer considers purchasing a new house. As a result, demand for fund is RMB9.4 billion in Wuhan and RMB4.0 billion in Chengdu, or only 1 to 2% of the Shanghai level.

In Shanghai and Chengdu, where the demand for housing will grow steadily, the demand for housing fund will constantly increase until 2010 in line with the improved housing quality that entails rising unit price of housing and the amount of loan. In Wuhan, where the demand for housing stagnates or decreases, the demand for fund will level off. In Shanghai and Chengdu, it is impossible for the housing provident fund alone to accommodate the mounting demand for personal housing funds. It is expected that the major portion of the demand for fund will be actualized as a demand for commercial loans.

[Demand for Fund for Housing Construction]

Demand for fund for housing construction in 10 years up to 2010 is estimated at RMB345.52 billion in Shanghai, RMB10.26 billion in Wuhan, and RMB25.16 billion in Chengdu. Most of these funds will be actualized as commercial loans.

Future prospects are described below. In Shanghai, demand for new privately owned housing will peak out and the demand for construction will also level off in and after 2005. In Wuhan and Chengdu, where population flows from farm villages and suburbs to the city and ward area, the demand for fund for construction of rental housing will grow. In Wuhan, in particular, demand for rental housing will be actualized sharply in and after 2005 so that the demand for construction fund will increase at an annual average rate of 9.5% during the 2001 to 2010 period.

### **2.3.3. Effect of Policy Implementation on Demand for Housing (Fund)**

The above discussion assumes the layer who can purchase housing without excessive burden considering the current annual income level. If the government would extend the loan period, reduce the loan interest rate, or implement other effective housing finance measures, the purchaser layer for commercial housing (privately owned housing) would further expand and it would become possible to purchase a house of a higher quality.

If, for example, the loan period were extended from 10 to 15 years in Shanghai, the annual income level qualifying for purchasing a house could be lowered by approximately 26%. In like manner, if the loan interest rate were reduced by 1%, the qualifying annual income level could be lowered by approximately 4.8%.

Theoretically, assuming the annual income burden ratio qualifying for a housing loan remains the same, the current dwelling area can be increased by 7% if the loan period is extended from 10 to 15 years, and the dwelling area increased by 5.1% if the loan interest rate is reduced by 1%.



#### **2.3.4. Supply and Demand Balance of Housing Provident Fund**

According to the result of a study assuming one million households each with an average annual income of RMB20,000 participating in a housing provident fund system, and 5% of persons eligible for making a loan using the provident fund, the balance of the provident fund turns in red in the 8<sup>th</sup> year, and the red figure expands thereafter. This is because the more the loan amounts increase, the fewer the depositing persons, with the result that the deposited amounts (financial resources) decrease at an accelerated rate except where the loan amount is extremely small. This reflects the structural problem of the provident fund system.

### **3. Tasks for Housing Finance System as Revealed in the Prediction of Housing Demand and Demand for Housing Fund**

The outcome of prediction of housing demand and demand for housing fund described above shows the following tasks for the provident fund system, commercial loan system, and financial entities:

#### **3.1. Tasks for the Public Finance System (Provident Fund System)**

The current provident fund system may not meet the sharply increasing demand for housing fund resulting from urban development and rising housing standard, because the upper limit of a loan is limited and deposits and loans are interlocked. This may constitute a bottleneck to the economical development of cities and regions since supply of quality housing is hindered. The following problems must be solved in order to supply good (low interest rate and long-term) funds to individuals, enterprises, and developers, materialize and stimulate economic development of cities, and enhance welfare of citizens.

##### **3.1.1. Coordination and Accommodation of Provident Funds among Cities and Regions (Short-term Task)**

As is clear from the simulations described in this paragraph, the number of subscriber households, annual income level of subscribers, and demand for housing fund considerably affect the balance of provident funds. Although the amount of deposits increases with increasing number of subscriber households and the annual income level, the balance turns short if a large demand for funds occurs. According to estimation, when the provident fund system settles (all subscribers are eligible to loans), and a demand for funds occurs from more than 4% of the subscriber households, the balance turns red and chronic short fund persists. It is also made clear that the balance is always black when the system is not settled yet and the loan execution rate is low. The short fund condition experienced by the provident fund system in Shanghai, described above, occurred because the system has already settled and the demand for funds occurred from subscribers exceeding a certain percentage of total subscribers.

To solve this problem temporarily before a permanent measure is taken, two or more provident fund centers, with different levels of economic growth and settlement of the provident fund system (or with different loan occurrence rates), should cooperate and accommodate funds among them while observing the government's strategic local policy. This will enable them to solve the problem of short and excess funds mutually. The necessary organizational change and personnel deployment for materializing wide-area accommodation and integration will be described later.

##### **3.1.2. Raising and Keeping Funds for Extending Loan Period and Increasing Upper Loan Limit**

### **(Short- and Mid-range Tasks)**

Under the current financial system, the annual rate of housing expenses will considerably exceed the average burden rate of a little less than 10% in Japan even if the housing price is held within six times the annual income. To lower the rate of housing expenses to an appropriate level, it is necessary to lighten the annual loan burdens of borrowers by extending the repayment period and raising the upper limit of the existing loans, provident fund loan commodities, in particular.

Viable options for the provident fund system include, for example, keeping funds (allowances) to cope with increasing demand for funds resulting from increased loan limits, and possible short fund due to mismatch between deposit and loan period.

#### **3.1.3. Raising Funds for Construction of Rental Housing and Renewal and Refurbishment of Existing Housing (Short- and Mid-range Tasks)**

In cities, along with expansion of the built-up areas, population will flow from the peripheral areas. In addition, the ratio of students who go on to the next stage of education will increase; aging advance; and households be split into smaller ones. All these suggest increasing demand for rental housing because this has more flexibility than privately owned housing in terms of free selection of dwelling place. It is difficult, however, for private developers to actively construct and offer rental housing because of low profitability. The provident fund system should supply low-cost and low-risk funds to stimulate construction of rental housing.

To enhance the housing purchase ability of urban citizens, it is necessary to increase funds on hand (liquidity on hand) by enhancing the price of the currently owned company houses and promote acquisition of relatively low-priced existing housing. To this end, adequate funds should be supplied for renewing and refurbishing company houses and existing housing.

#### **3.1.4. Separation of Deposits from Loan Business at Provident Fund System, and Establishment of a New Finance System (Long-term Tasks)**

As discussed above, accommodating provident funds across a wide area can temporarily solve the short fund situation currently experienced in Shanghai. Wuhan and Chengdu, with a positive balance at this time, may also suffer from deficits sooner or later as the economy develops. This is because deposits and lending are interlocked and, unless the increase in the number of new subscribers exceeds the speed of lending, the financial resources (funds) will decrease. This is a structural problem of the provident fund system.

To solve this problem permanently, the currently interlocked depositing and lending business should be separated from each other from the long-term perspective, and establish a finance system where loans are not restricted by the amount of deposits. Options include establishment of a public housing loan institution using the nation's savings to provide financial resources as seen in Japan,

unification of deposits of the provident fund system, and effective utilization of funds collected at the post offices.

### **3.2. Problems of Private Finance System (Commercial Bank Loans)**

#### **3.2.1. Demand for Funds for Purchasing Housing of Higher Quality**

According to estimation made in this paragraph, demand for funds for purchasing personal housing occurring at the commercial banks exceeds the demand for funds occurring at the provident fund system. Approximately twice the funds as required for the provident fund system are required for the commercial banks in Shanghai. This is because people demand for higher-quality housing (higher unit selling price and unit construction cost) as economy develops and the annual income level rises in the urban areas. They then rely on commercial banks for loans to cover the increased portion of the purchasing price since funds on hand, and available funds from the provident fund system are limited as discussed above. The role of commercial banks in the loan business will be increasingly important because people are looking for high-quality housing in consideration of advancing social aging, concerns about environmental protection, and advancing information-oriented society.

To cope with these demands for funds, commercial banks should actively offer personal housing loans. To this end, commercial banks should develop financial commodities that improve loan burden rates for the borrowers, and improve personal risk control and examination competence.

#### **3.2.2. Funds Supply Power to Meet Demand for Funds for Development and Construction**

Some say that demand for housing development and construction funds will not much increase because of the effect of improvement in efficiency of developer business and early recovery of funds by advance sale. However, external fund procurement is as important as ever before because of consumer liking for more information-oriented and environmentally compatible housing and this will surely boost the housing development cost. According to our estimation, demand for funds equivalent to the demand for funds for purchasing personally owned housing or more is expected to occur. The demand for construction funds must mostly rely on commercial loans because of the institutional restriction of the provident fund system that considers personal loans in the first place. Considering the current commercial loan execution level, the loan funds may possibly fail to fill the demand for development funds required for projects in the city and ward area in the future.

Commercial banks are required to strengthen fund supply power to meet the demand for funds for development and construction. It is important to actively procure funds in the market. Importantly, China Construction Bank and other commercial banks are aggressively studying direct procurement of financial resources in the market such as by means of conversion of housing loans into securities.

### **3.3. Tasks of Political Loans (Treasury Funds)**

#### **3.3.1. Treasury Funds to Be Used for Expanding Purchasing Power of Middle and Low Earners**

It is impossible for most of the middle and low earners to purchase desirable housing without excessive burden if the selling price of commercial housing remains at the current level. It is necessary to lower the housing price through subsidies to developers or provision of housing subsidies to purchasers that were once done by enterprises. This requires prior raising of the relevant financial funds.

#### **3.3.2. Interest Subsidies Contribute to Reduced Rate of Housing Expenses**

To decrease the rate of housing expenses (ratio of housing loans to annual income) that is considerably high at present, the housing loan interest rate should be reduced to an appropriate level. This is necessary in addition to institutional measures such as extension of loan period and increase of upper loan limit.

To this end, a scheme should be instituted to compensate interest differences using public funds so that the provident fund system and commercial banks are able to offer housing loans at a reduced interest rate without sacrificing business margins (interest rate spread). This in turn requires that the public entities be ready with funds equivalent to the interest difference.

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