III-3.

Estimation of Demand for Housing Fund

3. Estimation of Demand for Housing Fund

3.1. Estimation of Demand for Housing Fund

The demand for fund that would occur when individuals purchase housing and developers carry out housing development projects has been estimated according to the economy scenario and housing market development scenario envisaged in the 10th 5-year plan in the three model cities of Shanghai, Wuhan, and Chengdu.

3.1.1. Basic Concepts of Demand for Fund

(1) Demand for Housing Fund to Be Estimated

The demand for housing fund estimated in this section is the demand for housing purchasing fund for individuals and the demand for housing development fund for real estate development enterprises to carry out housing development projects.

1) Demand for Housing Purchasing Fund

   The demand for new or existing housing purchasing fund is directed to the Housing Provident Fund and the commercial loans.

   First the actual average house-selling price is derived from the JICA Study Team questionnaire survey and used to identify who can purchase a house without excessive burden. These purchases are estimated at an annual rate.

2) Demand for Housing Development Fund

   The demand for housing development fund occurs when the developers (real estate developing enterprises) carry out housing development projects (construction of housing for sale and rent).

   The demand for fund is based on the house-offering price of the developers according the JICA Study Team questionnaire survey. It assumed that the demand for development fund occurs in the same time span of the individuals' demand for housing purchasing fund.

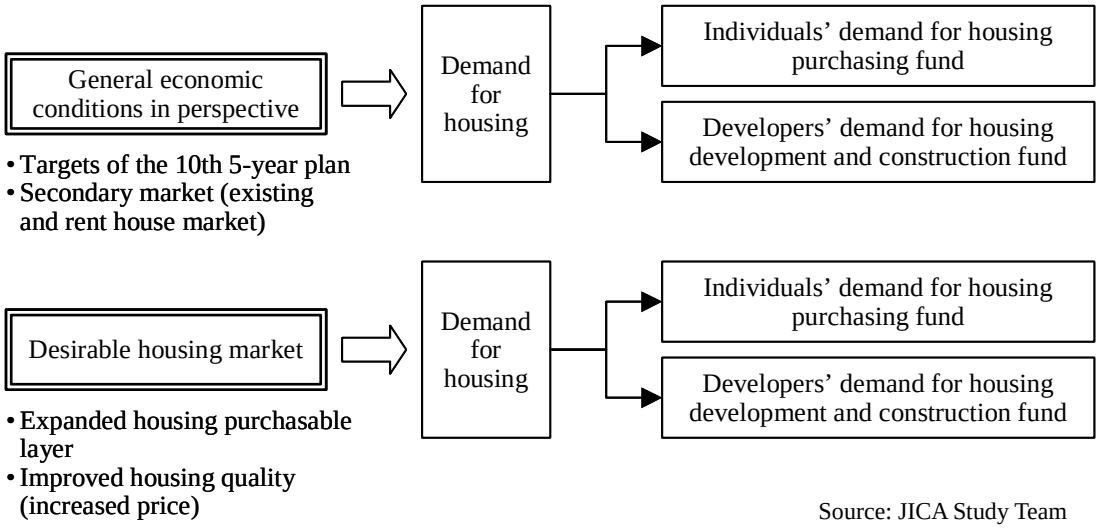
(2) Subject Areas of Demand for Fund

Population is increasingly moving from suburbs to city centers and housing development projects are actively carried out at the center of a city. It is therefore expected that demand for housing would occur in the future mainly at the city center. The demand occurring in the city center was converted into that for the entire city area to facilitate comparison and verification with actual loan amounts.

(3) Years Estimated for Demand for Fund

The demand for housing fund was estimated as expected from 2000 to 2010.

Figure 3-1 Concept of Demand for Housing Fund



Source: JICA Study Team

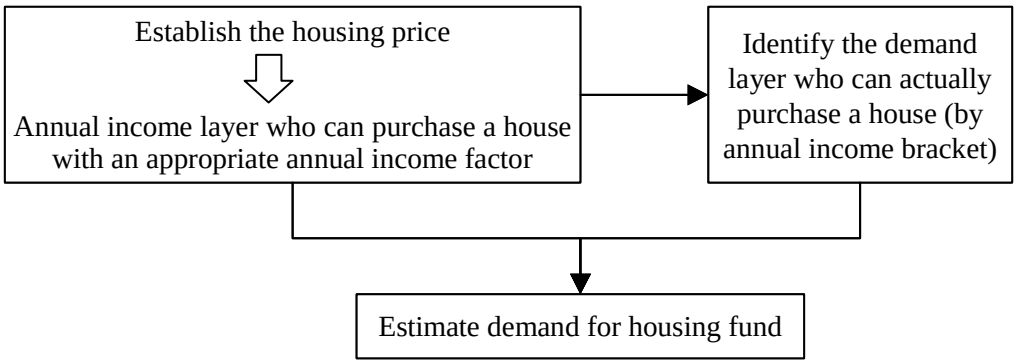
3.1.2. Estimation of Individuals' Demand for Housing Purchasing Fund

(1) Concept and Flow of Demand Estimation

Housing unit price must be determined to convert demand for housing into demand for housing fund. Housing unit price and demand for housing are trade-off items. For example, the demand for privately owned houses by low to middle earners with low purchasing ability will increase with decreasing housing unit price. Housing unit price and demand for housing must be determined simultaneously.

The demand for housing fund was estimated according the following procedure: (1) set the housing selling price, (2) identify the who can purchase a house without excessive burden (in terms of annual income and funds on hand), and (3) estimate the required funds raising amount for purchasing the said housing (borrowings from the Housing Provident Fund and/or commercial loans) based on the questionnaire survey result or the data from the Housing Provident Fund system.

Figure 3-2 Flow of Demand for Housing Purchasing Fund



The demand for housing purchasing fund is calculated in the following equation:

Source: JICA Study Team

[Equation]

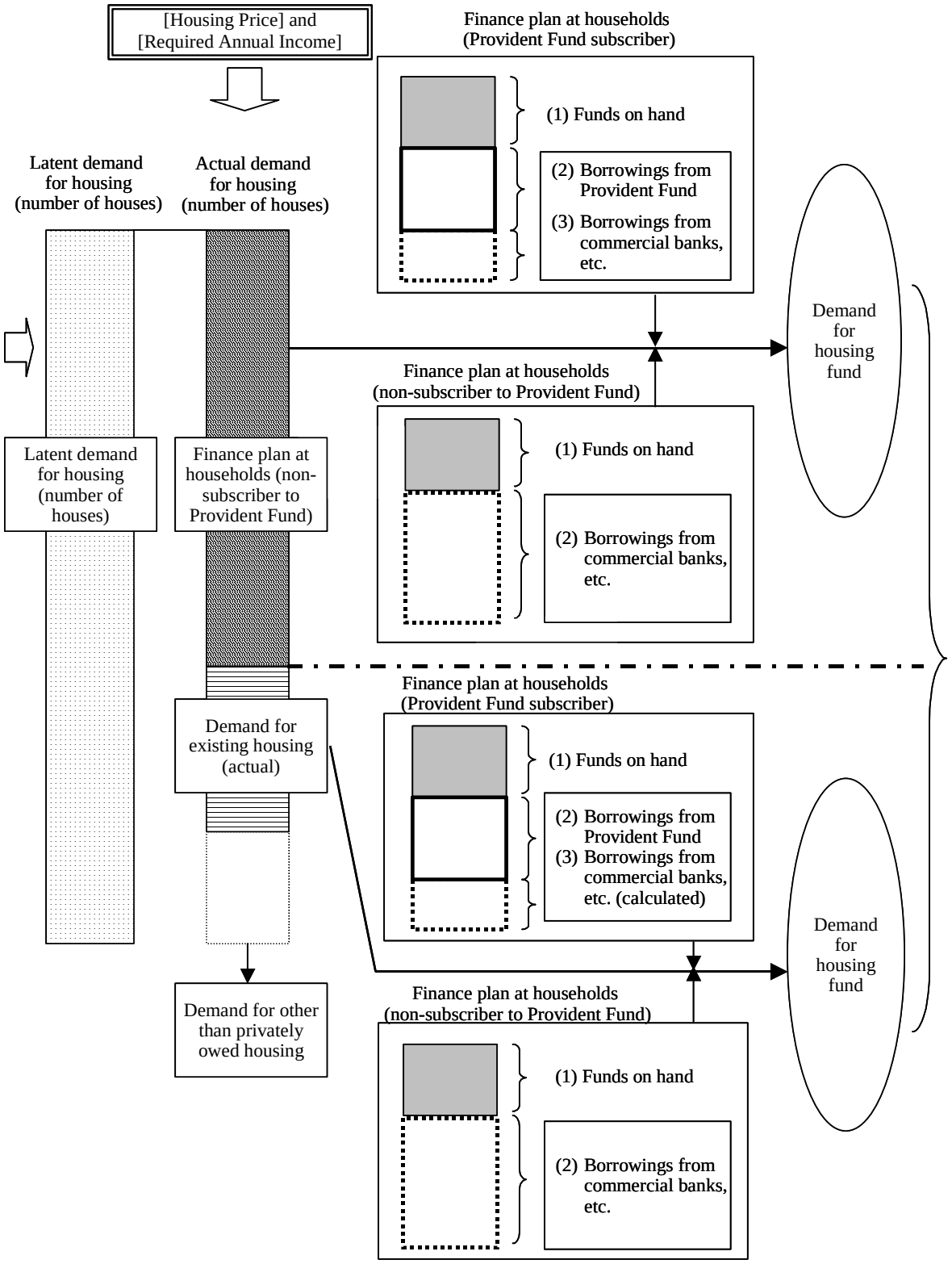
Demand for housing fund

= Demand for housing (number of houses) × actualization rate × individuals' (households') housing purchasing funds to be raised (by new and existing housing)

1) Those people who can actually purchase a house are identified with consideration to the down payment available, the rate of payable housing expenses to overall income, and the actual housing selling price of the developers. The rate of people purchasing out of the total, represents the actualization rate. The latent demand for housing (number of houses) is multiplied by the actualization rate to derive the actual demand for housing (number of houses). The annual income distribution used was derived from the survey of the JICA Study Team questionnaire.
2) Average annual income, down payment available, and estimated years of saving per purchasing household are assumed from the questionnaire survey, etc. to calculate the maximum available loan from the current Housing Provident Fund system. The Housing Provident Fund loans and average down payment available are subtracted from the housing selling price determined in paragraph (1) to derive the amount of commercial loans.
3) The actual demand for housing (number of houses) calculated in paragraph (1) is multiplied by the amount of housing loan demand per household determined in paragraph (2) to derive the demand for housing purchasing fund. To calculate the

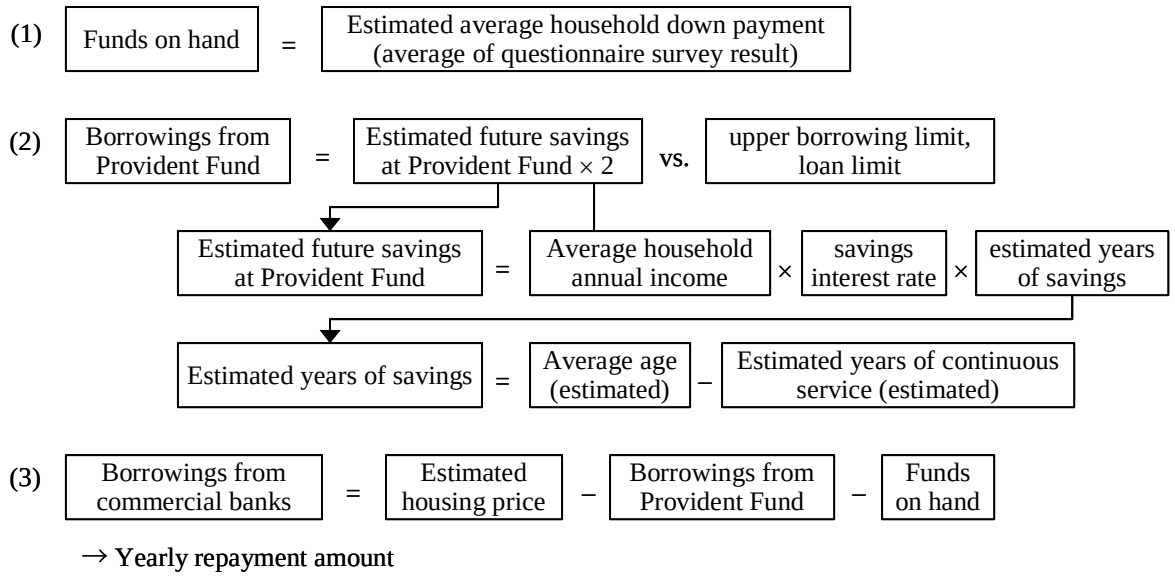
demand for Housing Provident Fund loans, it was multiplied by the Housing Provident Fund system usable rate, and the rate of users who have saved two or more years among the total loan users (qualified persons rate).

Figure 3-3 Calculation of Demand for Housing Purchasing Funds



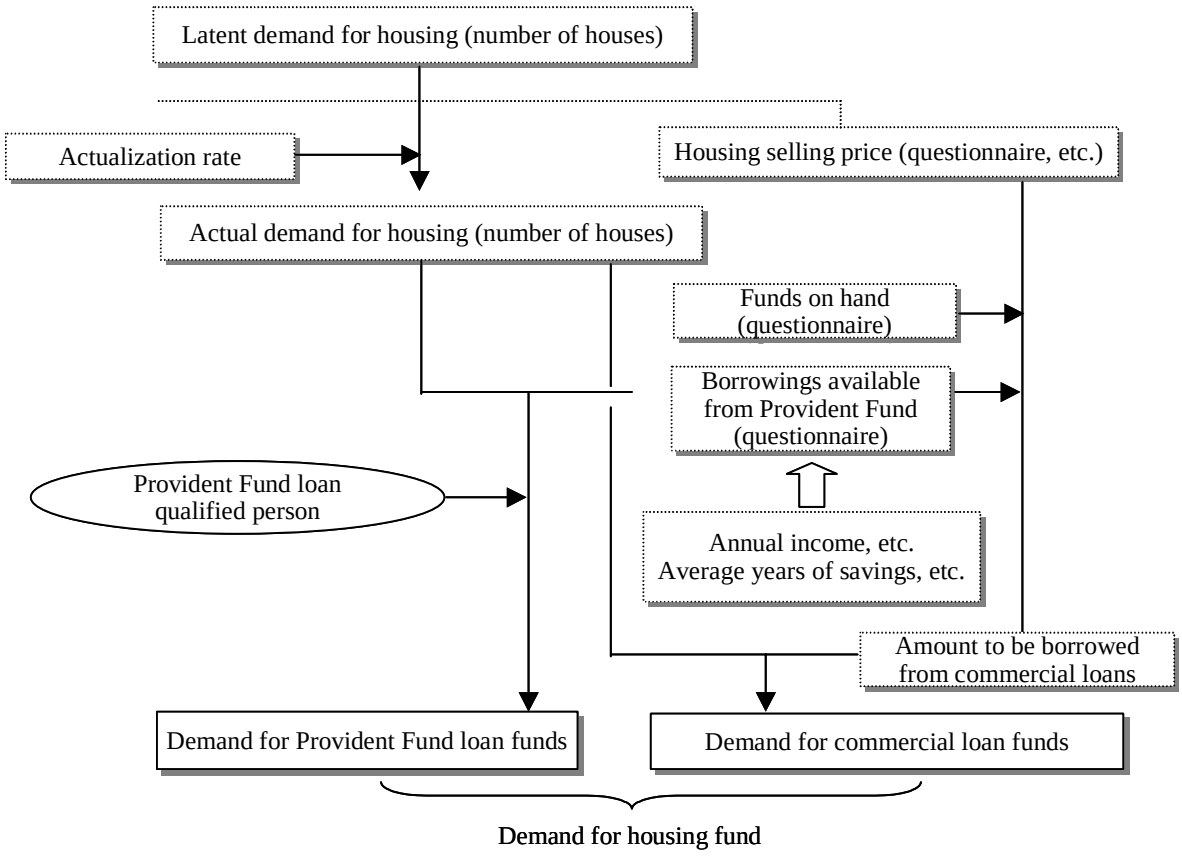
Source: JICA Study Team

Figure 3-4 Calculation of household loan plan]



Source: JICA Study Team

Figure 3-5 Calculation of Demand for Housing Fund



Source: JICA Study Team

(2) Housing Price and Annual Income

1) Housing Price

The housing price in the three model cities was set as shown in the table below. The data used were developers' sales results (unit price per square meter, area) revealed in the questionnaire survey and the results of hearings in these cities.

The average new commercial housing sells for 382 thousand RMB in Shanghai (where the commercial housing market has been established), and 147 thousand RMB and 161 thousand RMB in Wuhan and Chengdu, respectively (where the ratio of economical to commercial housing is high). The price level in Shanghai is approximately twice that of that in Wuhan1. The lowest price level for commercial housing is 110 thousand RMB in Shanghai, 75 thousand RMB in Wuhan, and 65 thousand RMB in Chengdu.

The price of existing housing was uniformly assumed to be 40% of the price of new housing in all three cities2.

Future housing prices were determined by considering the expected increase in incomes due to economic growth and general price hike. Specifically, the expected nominal GDP growth until 2010 was multiplied for the elastic values of the past nominal GDP, housing price, income, etc.

Table 3-1 Calculated Housing Price in Three Model Cities (New and Existing Houses)

					Shanghai	Wuhan	Chengdu
New housing	Average	Unit price (m^2)	①	RMB/m^2	3937.5	1510.9	1615.2
		Housing area	②	m^2	97.0	97.5	99.8
		Housing price	③=①*②	RMB10,000	38.2	14.7	16.1
	Minimum	Unit price (m^2)	①	RMB/m^2	2000.0	1000.0	1000.0
		Housing area	②	m^2	55.0	75.0	65.0
		Housing price	③=①*②	RMB10,000	11.0	7.5	6.5
Existing housing	Average	Housing price	③=①*②	RMB10,000	1.5	0.6	0.6
	Minimum	Housing price	③=①*②	RMB10,000	0.4	0.3	0.3
			New・existing ratio		40%		

[1] The price of housing determined from the questionnaire survey is the actual price and area of commercial housing marketed by the developers. To include, therefore, economical housing that constitutes an important portion of the demand in Wuhan and Chengdu, the selling price is given as the weighted average of the unit price of commercial housing determined in the questionnaire survey and that of economical housing (RMB1,400/m^2 according to hearings) where the market distribution ratio (20% commercial housing and 80% economy housing) is used as the weight.

[2] The questionnaire survey failed to reveal sales data on existing housing. It was therefore used the ratio of selling unit price of new and existing housing in Wuhan and Chengdu where existing statistical data are available. The selling unit price varies considerably depending on years. The data refer for the most recent two years of fiscal 1998 and 1999, and set the ratio at 40%. The actual selling price of existing housing is 40% of the price of new housing.

Note: Housing area is determined from the year 2000 marketing trend of the developers as indicated in the questionnaire survey.

Note: Unit price (m^2) is derived from the actual condition in cities as follows:
Shanghai: Developers' offer price as revealed in the questionnaire supply. Wuhan and Chengdu: Developers' offer price for commercial housing, and the government guidance price (1,400 RMB/m^2) for economical housing. The actual unit price is a weighted average of 80% economical housing and 20% commercial housing (hearings).

Note: The price of existing house is set at 40% of the price of new housing.

Source: JICA Study Team

Table 3-2 New and Existing Housing Unit Price in Wuhan and Chengdu

(Unit: RMB/m^2)

	Wuhan			Chengdu		
	New housing ①	Existing housing ②	Existing/new ②/①*100	New housing ③	Existing housing ④	Existing/new ③/④*100
1990				78	34	43.5
1991	282.0	333.3	118.2	800	4,600	575.0
1992	428.4	439.6	102.6	700	130	18.6
1993	202.0	631.1	312.4	1,400	55	3.9
1994	129.7	665.6	513.2	2,185	1,221	55.9
1995	239.3	574.1	239.9	2,033	-	-
1996	1338.2	1073.0	80.2	1,554	468	30.1
1997	1561.6	798.4	51.1	961	355	36.9
1998	1790.0	745.2	41.6	1,057	378	35.8
1999				1,309	367	28.1

Source: Wuhan Statistics Almanac and Chengdu Statistics Almanac

Table 3-3 Estimated Future Housing Price in Shanghai

		Commercial housing			Existing housing	Nominal city GDP (RMB100 million)
		Unite price (RMB/m^2) ①	Area	Price	Price	
Original values (current status)	1992					1114.3
	1993					1511.6
	1994					1971.9
	1995	2476.7				2462.6
	1996	2968.4				2902.2
	1997	2890.5				3360.2
	1998	3095.4				3688.2
	1999					4035.0
(Estimation)	2000	3937.5	97.0	38.2	15.3	4551.0
	2001	4182.3	97.0	40.6	16.2	5097.0
	2002	4442.4	97.0	43.1	17.2	5709.0
	2003	4718.6	97.0	45.8	18.3	6394.0
	2004	5012.0	97.0	48.6	19.4	7161.0
	2005	5323.6	97.0	51.6	20.7	8020.0
	2006	5654.6	97.0	54.8	21.9	8903.0
	2007	6006.2	97.0	58.3	23.3	9882.0
	2008	6379.7	97.0	61.9	24.8	10969.0
	2009	6776.4	97.0	65.7	26.3	12176.0
	2010	7197.7	97.0	69.8	27.9	13515.0
Average annual growth rate	95～98	7.72				14.4
	2000～10	*6.22*				*11.6*
	Elastic values	0.54				

Source: JICA Study Team

Table 3-4 Estimated Future Housing Price in Wuhan

		Commercial housing			Existing housing	Nominal city GDP (RMB100 million)
		Unite price (RMB/m²) ①	Area	Price	Price	
Original values (current status)	1992					255.4
	1993					357.2
	1994					485.8
	1995					606.9
	1996	1302.8				782.1
	1997	1549.1				912.3
	1998	1536.1				1015.9
	1999					1107.9
(Estimation)	2000	1510.9	97.5	14.7	3.8	1207.0
	2001	1577.9	97.5	15.4	4.0	1328.0
	2002	1647.9	97.5	16.1	4.2	1460.0
	2003	1721.0	97.5	16.8	4.3	1607.0
	2004	1797.3	97.5	17.5	4.5	1767.0
	2005	1877.0	97.5	18.3	4.7	1944.0
	2006	1960.2	97.5	19.1	4.9	2129.0
	2007	2047.1	97.5	20.0	5.2	2331.0
	2008	2137.9	97.5	20.8	5.4	2552.0
	2009	2232.7	97.5	21.8	5.6	2795.0
	2010	2331.7	97.5	22.7	5.9	3060.0
Average annual growth rate	95～98	8.59				18.7
	2000～10	*4.43*				*9.7*
	Elastic values	0.46				

Source: JICA Study Team

Table 3-5 Estimated Future Housing Price in Chengdu

		Commercial housing			Existing housing	Nominal city GDP (RMB100 million)
		Unite price (RMB/m²) ①	Area	Price	Price	
Original values (current status)	1992	700.0				300.7
	1993	1400.0				418.6
	1994	2184.6				558.4
	1995	2033.3				713.7
	1996	1553.6				869.3
	1997	960.7				1007.0
	1998	1057.1				1102.6
	1999	1309.1				1190.0
(Estimation)	2000	1615.2	99.8	16.1	6.4	1310.0
	2001	1709.9	99.8	17.1	6.8	1441.0
	2002	1810.2	99.8	18.1	7.2	1585.0
	2003	1916.3	99.8	19.1	7.6	1744.0
	2004	2028.7	99.8	20.2	8.1	1918.0
	2005	2147.6	99.8	21.4	8.6	2110.0
	2006	2273.6	99.8	22.7	9.1	2310.0
	2007	2406.9	99.8	24.0	9.6	2530.0
	2008	2548.0	99.8	25.4	10.2	2770.0
	2009	2697.4	99.8	26.9	10.8	3033.0
	2010	2855.5	99.8	28.5	11.4	3321.0
Average annual growth rate	95～98	9.36				15.6
	2000～10	*5.86*				*9.8*
	Elastic values	0.60				

Source: JICA Study Team

2) Annual Income Level

The annual income levels for purchasing an average commercial house should be determined in order to estimate the loan amount, and indicate the level where one can purchase a house without extreme burden.

The concept of annual income in China is different from other foreign countries including Japan, because it is impossible to judge the purchasing possibility given the magnitude of the annual income factor. Annual income in China includes rent revenues from the disposed housing in addition to the earned income. Often, the actual annual income is greater than the income declared in the income tax return.

Therefore, it was used, in place of the conventional annual income factor. The annual income level was determined assuming that the ratio of housing loan to annual income (or housing loan burden ratio) is at a one-determined constant level. The specific procedures are described below3.

- Funds on hand available for payment for the housing price was determined based on the ratio of funds on hand.
- Yearly repayment is determined based on the balance between housing price and funds on hand (or loan amount). To calculate the yearly repayment, it is assumed that the average loan period is approximately 10 to 12 years (as revealed in the questionnaire survey), the current Housing Provident Fund interest rate is (4.56%), and there are equal repayment of principal and interest.
- Re-calculation of the annual income level where the yearly housing loan repayment is 50% of the annual income (50% annual income limit is generally used in the loan examination at commercial banks).

a. Annual Income Level for Purchasing a New House

The annual income level for purchasing an average new house in the market is approximately 51 thousand RMB in Shanghai, 24 thousand RMB in Wuhan, and 34 thousand RMB in Chengdu. The annual income level to purchase a new house at the lowest price range is approximately 15 thousand RMB in Shanghai, and 9 thousand RMB in Wuhan and Chengdu.

[3] The annual income factor for the housing price defined in this way is more than 7 times in all three model cities.

b. Annual Income Level for Purchasing an Existing House

The annual income level for purchasing an average existing house in the market is approximately 20 thousand RMB in Shanghai, 10 thousand RMB in Wuhan, and 13 thousand RMB in Chengdu. This level is slightly higher than purchasing a new house in the lowest price range. The annual income level to purchase an existing house in the lowest price range is approximately 6 thousand RMB in Shanghai, and 4 thousand RMB in Wuhan and Chengdu. It is possible to purchase an existing house even with an annual income level that is considerably lower than the 10 thousand RMB level.

Table 3-6 Housing Selling Price (New House) and Purchasable Annual Income <Year 2000 standard>

(contribution percentage of repayment of a housing loan 50%)

(Unit: RMB10,000)

			Shanghai	Wuhan	Chengdu
Housing price	New	Average	38.2	14.7	16.1
		Minimum	11.0	7.5	6.5
	Existing	Average	1.5	0.6	0.6
		Minimum	0.4	0.3	0.3
Purchasable annual income	New	Average	5.1	2.0	1.9
		Minimum	1.5	1.0	0.8
	Existing	Average	0.2	0.1	0.1
		Minimum	0.1	0.0	0.0

Note: Unit price (m2) and housing area are determined from the year 2000 marketing trend of developers as revealed in the questionnaire survey.

(Reference)The yearly income rebated in the yearly income magnification of six times

New	Average		38.2	14.7	16.1
	Minimum		11.0	7.5	6.5
Existing	Average		1.5	0.6	0.6
	Minimum		0.4	0.3	0.3

Source: JICA Study Team questionnaire survey

Figure 3-6 Housing Purchasing Ratio by Annual Income (top) and Annual Income Used as Reference in Setting the Ratio (Bottom)

(contribution percentage of repayment of a housing loan 20%)

Annual income level		Shanghai	Wuhan	Chengdu
1. Less than RMB10,000		15.1	26.8	26.5
2. RMB10,000, less than RMB20,000		15.1	26.8	26.5
3. RMB20,000, less than RMB30,000		26.1	24.9	24.5
4. RMB30,000, less than RMB50,000		23.6	12.6	13.8
5. RMB50,000, less than RMB70,000		10.5	3.8	4.7
6. RMB70,000, less than RMB100,000		6.8	2.5	2.4
7. RMB100,000, less than RMB200,000		1.9	1.3	1.0
8. RMB200,000 or more		0.8	1.1	0.6
Total		100.0	100.0	100.0
Purchasable ratio (%)	New housing	36.6	33.9	47.0
	Existing housing	77.3	73.2	78.8

Purchase wishing ratio

Annual income (RMB10,000/year)

		Shanghai	Wuhan	Chengdu
Housing purchasable average annual income	New housing	12.8	4.9	4.7
	Existing housing	5.1	2.0	1.9
Housing purchasable lowest annual income	New housing	3.7	2.5	1.9
	Existing housing	1.5	1.0	0.8

(3) Calculation of Actual Demand for Housing

1) Identification of Housing Potential-purchaser

The demand for privately owned housing is determined by calculating the ratio of purchasable annual income group to the total with respect to the above calculated latent demand for housing (number of houses).

Those who can purchase a new house without excessive burden have an annual income level that allows them to purchase a commercial house at the lowest price range. The ratio of so-called New Commercial Housing Potential-Purchaser group to the total is 77.3% in Shanghai, 73.2% in Wuhan, and 78.8% in Chengdu. For the existing housing, the potential-purchaser-group ratio increases slightly in all three cities, or 90.9% in Shanghai, 89.3% in Wuhan, and 92.1% in Chengdu. Taken together, the ratio is close to 90%.

The remaining approximately 10% (annual income is less than approximately 5 thousand RMB) is considered unable to purchase a privately owned house. This group, however, may become an actual demand for rental housing.

Figure 3-7 Housing Purchasing Ratio by Annual Income (top) and Annual Income Used as Reference in Setting the Ratio (Bottom)

(contribution percentage of repayment of a housing loan 50%)

Annual income level		Shanghai	Wuhan	Chengdu
1. Less than RMB10,000		15.1	26.8	26.5
2. RMB10,000, less than RMB20,000		15.1	26.8	26.5
3. RMB20,000, less than RMB30,000		26.1	24.9	24.5
4. RMB30,000, less than RMB50,000		23.6	12.6	13.8
5. RMB50,000, less than RMB70,000		10.5	3.8	4.7
6. RMB70,000, less than RMB100,000		6.8	2.5	2.4
7. RMB100,000, less than RMB200,000		1.9	1.3	1.0
8. RMB200,000 or more		0.8	1.1	0.6
Total		100.0	100.0	100.0
Purchasable ratio (%)	New housing	77.3	73.2	78.8
	Existing housing	90.9	89.3	92.1

Purchase wishing ratio

⇧

Annual income (RMB10,000/year)

		Shanghai	Wuhan	Chengdu
Housing purchasable average annual income	New housing	5.1	2.0	1.9
	Existing housing	2.0	0.8	0.8
Housing purchasable lowest annual income	New housing	1.5	1.0	0.8
	Existing housing	0.6	0.4	0.3

Source: JICA Study Team

Figure 3-8 Housing Purchasing Ratio by Annual Income (top) and Annual Income Used as Reference in Setting the Ratio (Bottom)

(contribution percentage of repayment of a housing loan 20%)

Annual income level	Shanghai	Wuhan	Chengdu
1. Less than RMB10,000	15.1	26.8	26.5
2. RMB10,000, less than RMB20,000	15.1	26.8	26.5
3. RMB20,000, less than RMB30,000	26.1	24.9	24.5
4. RMB30,000, less than RMB50,000	23.6	12.6	13.8
5. RMB50,000, less than RMB70,000	10.5	3.8	4.7
6. RMB70,000, less than RMB100,000	6.8	2.5	2.4
7. RMB100,000, less than RMB200,000	1.9	1.3	1.0
8. RMB200,000 or more	0.8	1.1	0.6
Total	100.0	100.0	100.0
Purchasable ra New housing	36.6	33.9	47.0
(%) Existing housing	77.3	73.2	78.8

Purchase wishing ratio

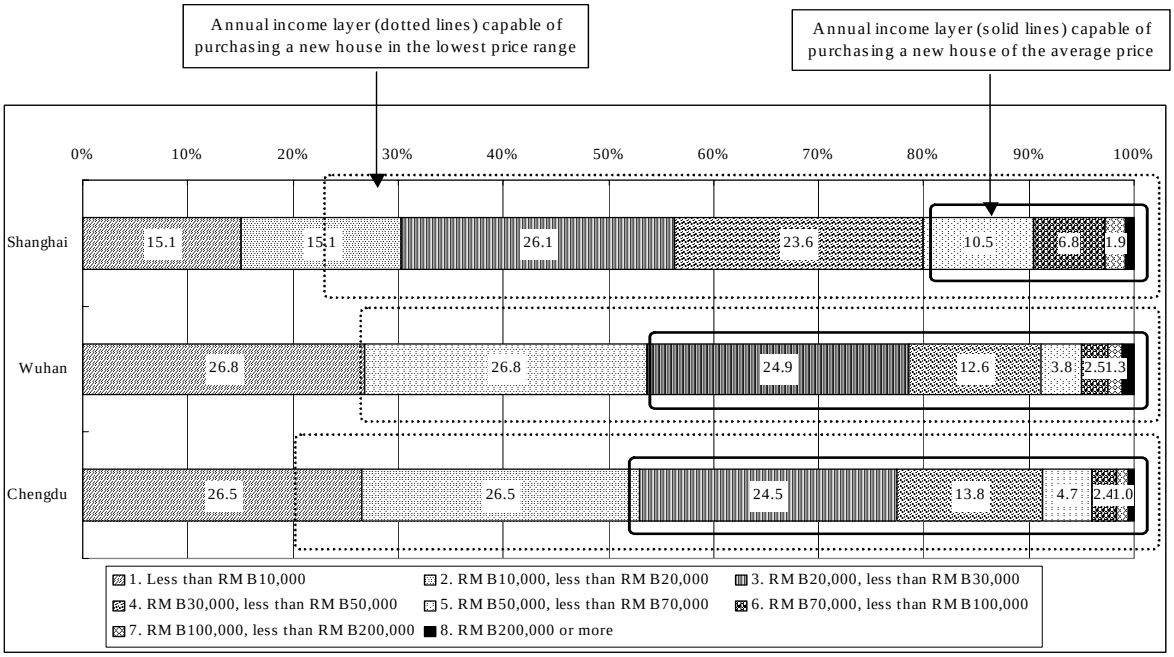
Annual income (RMB10,000/year)

		Shanghai	Wuhan	Chengdu
Housing purch	New housing	12.8	4.9	4.7
average annua	Existing housing	5.1	2.0	1.9
Housing purch	New housing	3.7	2.5	1.9
lowest annual	Existing housing	1.5	1.0	0.8

Source: JICA Study Team

Figure 3-9 Potential-purchase Group by Annual Income

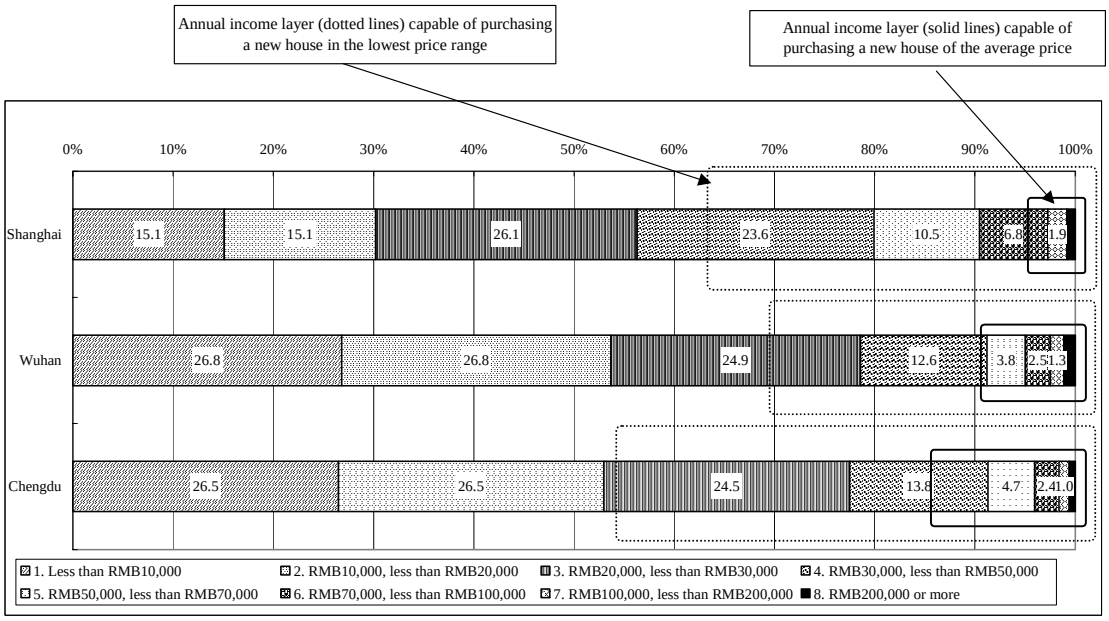
(contribution percentage of repayment of a housing loan 50%)



Source: JICA Study Team

Figure 3-10 Potential-purchase Group by Annual Income

(contribution percentage of repayment of a housing loan 20%)



Source: JICA Study Team

According to the questionnaire survey, those who are actually considering the purchase of a house are approximately 10% of all households in the three cities. For Wuhan and Chengdu, the above narrowed-down demand group is multiplied for the ratio of intention of purchase by annual income to derive the actualization rate. For Shanghai, the potential-purchase demand group is assumed to buy a house 100% because of high sense of housing purchasing, and the ample funds on hand through liquidation of assets.

Table 3-7 Actualization Rate

Annual income level		Shanghai	Wuhan	Chengdu
1. Less than RMB10,000		15.1	1.8	0.8
2. RMB10,000, less than RMB20,000		15.1	1.8	1.3
3. RMB20,000, less than RMB30,000		26.1	2.7	1.1
4. RMB30,000, less than RMB50,000		23.6	1.5	1.6
5. RMB50,000, less than RMB70,000		10.5	1.0	0.8
6. RMB70,000, less than RMB100,000		6.8	0.9	0.3
7. RMB100,000, less than RMB200,000		1.9	0.3	0.3
8. RMB200,000 or more		0.8	0.1	0.1
Purchasable ratio	New housing	77.3	8.4	5.6
(%)	Existing housing	90.9	9.5	6.2

Source: JICA Study Team

2) Users of the Housing Provident Fund Loans

The Housing Provident Fund system is applicable to the employees of state enterprises. The private sector and private businesses are not qualified in principle. Not all subscribers to the Housing Provident Fund system are eligible to make loans unless they have saved for at least two years with the system.

The rate of those persons who can rely on the loans from the Housing Provident Fund system in their finance plan must be determined to calculate the demand for the Housing Provident funds. The rate of persons who can actually use the Housing Provident Fund loans among those who have the above-specified purchase demand was calculated using the rate of persons eligible for the Housing Provident Fund, and the rate of persons qualified for the Housing Provident Fund loans.

a. Rate of Persons Qualified to the Housing Provident Fund

According to the State Council Ordinance on Control of the Housing Provident Fund, those eligible for the Housing Provident Fund system are state organs and businesses, urban conglomerates, foreign companies, urban private sector business, urban businesses and bodies, and their employees.

The rate of persons qualified for the Housing Provident Fund in the three model cities were determined as shown in the table below using the rate of employees of the above eligible organs and businesses to the total surveyed. Note that Wuhan and Chengdu did not consider all of the above businesses and employees to be qualified (private sector businesses and foreign companies are excluded) because only the state and public enterprises and public servants were counted.

It was assumed that the rate of persons qualified for the Housing Provident Fund remains constant until 2010.

Table 3-8 Rate of Persons Eligible to the Housing Provident Fund

	Shanghai	Wuhan	Chengdu
1. State and public business employees (non-managerial staff)	31.40	28.57	24.80
2. State and public business employees (managerial staff)	22.40	20.68	14.78
3. Private-sector business employees (non-managerial staff)	5.10	5.01	4.25
4. Private-sector business employees (managerial staff)	4.10	4.69	4.35
5. Foreign company employees (non-managerial staff)	5.60	0.96	1.32
6. Foreign company employees (managerial staff)	8.30	2.45	5.67
7. Self-employed commercial and industrial businesses	5.30	4.37	13.26
8. Public servants	3.50	9.91	4.66
9. Doctors, lawyers and other specialists	2.20	4.16	1.92
10. Full-time housewives	2.50	2.56	2.73
11. Jobless	9.60	4.69	15.38
12. Others	0.00	11.94	6.88
Rate of Persons Applicable to the Provident Fund (as of this writing)	80.4	59.2	44.2

Note: 1 through 6 and 8 apply in Shanghai, and 1, 2, and 8 apply in Wuhan and Chengdu.
Source: JICA Study Team questionnaire survey

b. Rate of Persons Qualified for the Housing Provident Fund Loans

The rate of persons qualified for the Housing Provident Fund loans is dependent on the participation rate of the Housing Provident Fund.

Currently, no exact data are available in any of the three cities to show the rate of subscription to the Housing Provident Fund (subscription rate: rate of users of the Housing Provident Fund to all employees). Therefore the subscription rate was estimated based on statistical data made available.

According to the statistical data, Shanghai and Wuhan started the Housing Provident Fund system in 1992. The Housing Provident Fund system started in Chengdu in 1996. The new deposits index was 9.1 times in the ninth year of the system in both Shanghai and Wuhan, indicating that the indexes also show the transition of the subscribers.

According to the hearings and statistical data, the Housing Provident Fund subscription rate is 98% in Shanghai. The conversion rate was set at 98% for the index of 9.1 times of 1999, and calculated the dissemination rate from the deposit indexes for each year and

for each city. The 2000 and following years level for Wuhan and Chengdu was corrected referring to the dissemination rate in Shanghai and the result of the most recent hearing.

The rate for persons qualified for the Housing Provident Fund loans was set such that the above-defined subscription rate would be actualized within two years after the start of the system because a minimum of two years' deposits is required to use the Housing Provident Fund.

Table 3-9 New Deposits in Amount and Indices in Three Cities

	New Deposits (RMB100 million)			Index (initial year = 1)			Dissemination rate conversion		
	Shanghai	Wuhan	Chengdu	Shanghai	Wuhan	Chengdu	Shanghai	Wuhan	Chengdu
1992	7.51	0.44		1.0	1.0		11.0	10.8	
1993	12.60	1.10		1.7	2.5		18.5	26.8	
1994	22.04	1.17		2.9	2.6		32.3	28.4	
1995	29.91	1.37		4.0	3.1		43.8	33.3	
1996	37.65	2.56	0.91	5.0	5.8	1.0	55.2	62.4	10.8
1997	49.29	3.10	1.69	6.6	7.0	1.9	72.2	75.4	20.1
1998	62.24	3.35	2.69	8.3	7.6	3.0	91.2	81.6	31.8
1999	68.24	4.02	3.03	9.1	9.1	3.3	100.0	97.8	35.9

Conversion rate	0.09

Source: JICA Study Team

Table 3-10 Rate of Persons Qualified for the Housing Provident Fund Loans

	Shanghai		Wuhan		Chengdu	
	Subscription rate	Rate of qualified persons	Subscription rate	Rate of qualified persons	Subscription rate	Rate of qualified persons
1992	11.0		10.8			
1993	18.5		26.8			
1994	32.3	11.0	28.4	10.8		
1995	43.8	18.5	33.3	26.8		
1996	55.2	32.3	62.4	28.4	10.8	
1997	72.2	43.8	75.4	33.3	20.1	
1998	91.2	55.2	81.6	62.4	75.0	10.8
1999	98.0	72.2	86.8	75.4	90.0	20.1
2000	100.0	91.2	92.0	81.6	98.0	75.0
2001	100.0	98.0	100.0	86.8	100.0	90.0
2002	100.0	100.0	100.0	92.0	100.0	98.0
2003	100.0	100.0	100.0	100.0	100.0	100.0
2004	100.0	100.0	100.0	100.0	100.0	100.0
2005	100.0	100.0	100.0	100.0	100.0	100.0
2006	100.0	100.0	100.0	100.0	100.0	100.0
2007	100.0	100.0	100.0	100.0	100.0	100.0
2008	100.0	100.0	100.0	100.0	100.0	100.0
2009	100.0	100.0	100.0	100.0	100.0	100.0
2010	100.0	100.0	100.0	100.0	100.0	100.0

Source: Prepared from variable materials

(4) Standard Finance (Loan) Plan by Household

1) Loans Available from the Housing Provident Fund and Commercial Loan Requirements

Borrowing has two different patterns. One pattern covers those who participate in the Housing Provident Fund system and use funds on hand and loans from the Housing Provident Fund as well as commercial loans when necessary to cover the shortage (borrowing pattern A in the chart). The other covers those who do not participate or have not yet participated in the Housing Provident Fund and use funds on hand and commercial loans (pattern B).

a. Loans from the Housing Provident Fund

The price of new housing is high in Shanghai. The estimated funds required for satisfying the average borrowing demand for the Housing Provident Fund (approximately 35%) well exceed the current loan limit of the Housing Provident Fund. Hence, borrowing was limited to 100 thousand RMB for new housing. The limit for Wuhan is 85 thousand RMB and 101 thousand RMB for Chengdu.

b. Commercial Loans

In Shanghai and other cities where the annual income and housing selling price are high, loans from the Housing Provident Fund alone are insufficient for setting a financial plan given that the housing fund is highly depend on commercial loans. In Wuhan and Chengdu, on the other hand, a large demand exists for commercial loans mostly due to the rich groups of people who do not participate in the Housing Provident Fund system. The demand for commercial loans is 136 thousand RMB to 236 thousand RMB in Shanghai, 85 thousand RMB in Wuhan, and 101 thousand RMB in Chengdu.

Table 3-11 Average Housing Purchasing Financial Plan (Top) and Loans Available from the Housing Provident Fund (Bottom) per Household

					Shanghai	Wuhan	Chengdu
New housing	Borrowing pattern A	Average housing price		RMB10,000	38.2	14.7	16.1
		Breakdown	Down payment	RMB10,000	14.6	6.2	6.0
			Loans from the Provident Fund	RMB10,000	10.0	8.5	10.1
			Commercial loans	RMB10,000	13.6	0.0	0.0
	Borrowing pattern B	Average housing price		RMB10,000	38.2	14.7	16.1
		Breakdown	Down payment	RMB10,000	14.6	6.2	6.0
			Commercial loans	RMB10,000	23.6	8.5	10.1
Existing housing	Borrowing pattern A	Average housing price		RMB10,000	15.3	5.9	6.4
		Breakdown	Down payment	RMB10,000	5.9	2.5	2.4
			Loans from the Provident Fund	RMB10,000	9.4	3.4	4.0
			Commercial loans	RMB10,000	0.0	0.0	0.0
	Borrowing pattern B	Average housing price		RMB10,000	15.3	5.9	6.4
		Breakdown	Down payment	RMB10,000	5.9	2.5	2.4
			Commercial loans	RMB10,000	9.4	3.4	4.0

Source: Prepared from the Housing Provident Fund system and JICA Study Team questionnaire survey

				Shanghai	Wuhan	Chengdu	
New	Housing price			38.2	14.7	16.1	
	Average annual income of purchaser	RMB10,000	①	5.1	2.0	1.9	Calculated back from the housing loan burden rate
	Average age at start of loan	Age		40	40	40	Questionnaire survey
	Estimated years of savings before retirement	Years	②	20	20	20	Set
	Savings rate	%	③	14.0	14.0	14.0	Compliant with the system
	Loan upper limit	RMB10,000		10.0	15.0	15.0	Compliant with the system
	Price x 80%			30.6	11.8	12.9	Compliant with the system
	Available loans from the Provident Fund	RMB10,000	④=①*③*②*2	10.0	11.0	10.5	Estimation
Existing	Housing price			15.3	5.9	6.4	
	Average annual income of purchaser	RMB10,000	①	2.0	0.8	0.8	Calculated back from the housing loan burden rate
	Average age at start of loan	Age		40	40	40	Questionnaire survey
	Estimated years of savings before retirement	Years	②	20	20	20	Set
	Savings rate	%	③	14.0	14.0	14.0	Compliant with the system
	Loan upper limit	RMB10,000		10.0	15.0	15.0	Compliant with the system
	Price x 80%			10.7	4.1	4.5	Compliant with the system
	Available loans from the Provident Fund	RMB10,000	④=①*③*②*2	10.0	4.1	4.2	Estimation

Note: All data are estimated ones in 2000.

Note: The down payment is set referring to the estimated down payment by annual income indicated in the questionnaire survey.

Source: JICA Study Team questionnaire survey

The future financial plan is based on the funds raising ability determined by the estimated future annual income and housing price. It was also assumed that the housing price and annual income would increase as GDP increases in the three cities (the elastic value of the past GDP, housing price, and annual income is calculated and the estimated nominal GDP growth rate up to 2010 is multiplied for the elastic value). The housing area and intention of funds raising are assumed to remain constant on the year 2000 level[4].

Estimated future financial plans for new and existing housing in the three cities are shown below.

[4] The loans include those for the interior finish cost. The ratio of the interior finish cost was set at 20% of the price. The housing price applicable to a loan was set at approximately 1.2 times the cost.

Table 3-12 Estimation of Future Housing Purchasing Financial Plan in Shanghai (New Housing)

		Borrowing pattern A							Borrowing pattern B				
		Outline of housing price			Outline of Provident Fund loan		Expected down payment	Commercial loans required	Outline of housing price			Expected down payment	Commercial loans required
		m^2 unit price RMB/m^2 ①	Average area m^2 ②	Housing price RMB10,000 ③=①*② *1.2	Annual income RMB10,000 ④	Available loans RMB10,000 (5) = Calculation	RMB10,000 ⑥	RMB10,000 ③-⑤-⑥	m^2 unit price RMB/m^2 ①	Average area m^2 ②	Housing price RMB10,000 ③=①∗②	RMB10,000 ⑥	RMB10,000 ③-⑤-⑥
Actual	1990												
	1991												
	1992					1.2							
	1993					1.9							
	1994					2.8							
	1995	2476.7				3.9			2476.7				
	1996	2968.4				7.9			2968.4				
	1997	2890.5				11.1			2890.5				
	1998	3095.4				13.6			3095.4				
	1999	–				16.5			–				
Estimated	2000	3937.5	97.0	45.8	5.1	10.0	15.6	20.2	3937.5	97.0	38.2	15.6	22.6
	2001	4182.3	97.0	48.7	5.6	10.0	16.6	22.1	4182.3	97.0	40.6	8.1	32.5
	2002	4442.4	97.0	51.7	6.2	10.0	17.6	24.1	4442.4	97.0	43.1	8.6	34.5
	2003	4718.6	97.0	54.9	6.9	10.0	18.7	26.2	4718.6	97.0	45.8	9.2	36.6
	2004	5012.0	97.0	58.3	7.6	10.0	19.9	28.4	5012.0	97.0	48.6	9.7	38.9
	2005	5323.6	97.0	62.0	8.4	10.0	21.1	30.8	5323.6	97.0	51.6	10.3	41.3
	2006	5654.6	97.0	65.8	9.3	10.0	22.5	33.4	5654.6	97.0	54.8	11.0	43.9
	2007	6006.2	97.0	69.9	10.3	10.0	23.9	36.1	6006.2	97.0	58.3	11.7	46.6
	2008	6379.7	97.0	74.3	11.3	10.0	25.3	38.9	6379.7	97.0	61.9	12.4	49.5
	2009	6776.4	97.0	78.9	12.5	10.0	26.9	42.0	6776.4	97.0	65.7	13.1	52.6
	2010	7197.7	97.0	83.8	13.8	10.0	28.6	45.2	7197.7	97.0	69.8	14.0	55.9
		Questionnaire	Questionnaire		Questionnaire	System	Questionnaire	Questionnaire	Questionnaire	Questionnaire		Questionnaire	Questionnaire

Source: JICA Study Team

Table 3-13 Estimation of Future Housing Purchasing Financial Plan in Shanghai (Existing Housing)

		Borrowing pattern A							Borrowing pattern B				
		Outline of housing price			Outline of Provident Fund loan		Expected down payment	Commercial loans required	Outline of housing price			Expected down payment	Commercial loans required
		m^2 unit price RMB/m^2 ①	Average area m^2 ②	Housing price RMB10,000 ③=①*② *1.2	Annual income RMB10,000 ④	Available loans RMB10,000 (5) = Calculation	RMB10,000 ⑥	RMB10,000 ③-⑤-⑥	m^2 unit price RMB/m^2 ①	Average area m^2 ②	Housing price RMB10,000 ③=①∗②	RMB10,000 ⑥	RMB10,000 ③-⑤-⑥
Actual	1990												
	1991												
	1992					1.2							
	1993					1.9							
	1994					2.8							
	1995					3.9							
	1996					7.9							
	1997					11.1							
	1998					13.6							
	1999					16.5							
Estimated	2000	-	-	15.3	2.0	10.0	5.2	0.1	-	-	15.3	5.2	10.1
	2001	-	-	16.2	2.2	10.0	5.5	0.7	-	-	16.2	3.2	13.0
	2002	-	-	17.2	2.3	10.0	5.9	1.4	-	-	17.2	3.4	13.8
	2003	-	-	18.3	2.5	10.0	6.2	2.1	-	-	18.3	3.7	14.6
	2004	-	-	19.4	2.6	10.0	6.6	2.8	-	-	19.4	3.9	15.6
	2005	-	-	20.7	2.8	10.0	7.0	3.6	-	-	20.7	4.1	16.5
	2006	-	-	21.9	2.9	10.0	7.5	4.5	-	-	21.9	4.4	17.6
	2007	-	-	23.3	3.1	10.0	8.0	5.4	-	-	23.3	4.7	18.6
	2008	-	-	24.8	3.3	10.0	8.4	6.3	-	-	24.8	5.0	19.8
	2009	-	-	26.3	3.5	10.0	9.0	7.3	-	-	26.3	5.3	21.0
	2010	-	-	27.9	3.7	10.0	9.5	8.4	-	-	27.9	5.6	22.3
		Questionnaire	Questionnaire		Questionnaire	System	Questionnaire	Questionnaire	Questionnaire	Questionnaire		Questionnaire	Questionnaire

Source: JICA Study Team

Table 3-14 Estimation of Future Housing Purchasing Financial Plan in Wuhan (New Housing)

		Borrowing pattern A							Borrowing pattern B				
		Outline of housing price			Outline of Provident Fund loan		Expected down payment	Commercial loans required	Outline of housing price			Expected down payment	Commercial loans required
		m^2 unit price RMB/m^2 ①	Average area m^2 ②	Housing price RMB10,000 ③=①*② *1.2	Annual income RMB10,000 ④	Available loans RMB10,000 (5) = Calculation	RMB10,000 ⑥	RMB10,000 ③-⑤-⑥	m^2 unit price RMB/m^2 ①	Average area m^2 ②	Housing price RMB10,000 ③=①*②	RMB10,000 ⑥	RMB10,000 ③-⑤-⑥
Actual	1990												
	1991												
	1992												
	1993												
	1994												
	1995												
	1996	1302.8							1302.8				
	1997	1549.1							1549.1				
	1998	1536.1							1536.1				
	1999	0							–				
Estimated	2000	1510.9	97.5	14.7	1.9	9.5	5.2	0.0	1510.9	97.5	14.7	5.2	9.5
	2001	1577.9	97.5	15.4	2.0	9.9	5.4	0.0	1577.9	97.5	15.4	3.1	12.3
	2002	1647.9	97.5	16.1	2.2	10.4	5.7	0.0	1647.9	97.5	16.1	3.2	12.9
	2003	1721.0	97.5	16.8	2.4	10.8	5.9	0.0	1721.0	97.5	16.8	3.4	13.4
	2004	1797.3	97.5	17.5	2.6	11.3	6.2	0.0	1797.3	97.5	17.5	3.5	14.0
	2005	1877.0	97.5	18.3	2.8	11.8	6.5	0.0	1877.0	97.5	18.3	3.7	14.6
	2006	1960.2	97.5	19.1	3.0	12.4	6.8	0.0	1960.2	97.5	19.1	3.8	15.3
	2007	2047.1	97.5	20.0	3.3	12.9	7.1	0.0	2047.1	97.5	20.0	4.0	16.0
	2008	2137.9	97.5	20.8	3.6	13.5	7.4	0.0	2137.9	97.5	20.8	4.2	16.7
	2009	2232.7	97.5	21.8	3.9	14.1	7.7	0.0	2232.7	97.5	21.8	4.4	17.4
	2010	2331.7	97.5	22.7	4.2	14.7	8.0	0.0	2331.7	97.5	22.7	4.5	18.2
		Questionnaire	Questionnaire		Questionnaire	System	Questionnaire	Questionnaire	Questionnaire	Questionnaire		Questionnaire	Questionnaire

Source: JICA Study Team

Table 3-15 Estimation of Future Housing Purchasing Financial Plan in Wuhan (Existing Housing)

		Borrowing pattern A							Borrowing pattern B				
		Outline of housing price			Outline of Provident Fund loan		Expected down payment	Commercial loans required	Outline of housing price			Expected down payment	Commercial loans required
		m^2 unit price RMB/m^2 ①	Average area m^2 ②	Housing price RMB10,000 ③=①*② *1.2	Annual income RMB10,000 ④	Available loans RMB10,000 (5) = Calculation	RMB10,000 ⑥	RMB10,000 ③-⑤-⑥	m^2 unit price RMB/m^2 ①	Average area m^2 ②	Housing price RMB10,000 ③=①*②	RMB10,000 ⑥	RMB10,000 ③-⑤-⑥
Actual	1990												
	1991												
	1992												
	1993												
	1994												
	1995												
	1996												
	1997												
	1998												
	1999												
Estimated	2000	-	-	3.8	1.0	2.5	1.3	0.0	-	-	3.8	1.3	2.5
	2001	-	-	4.0	1.0	2.6	1.4	0.0	-	-	4.0	0.8	3.2
	2002	-	-	4.2	1.1	2.7	1.5	0.0	-	-	4.2	0.8	3.3
	2003	-	-	4.3	1.2	2.8	1.5	0.0	-	-	4.3	0.9	3.5
	2004	-	-	4.5	1.3	2.9	1.6	0.0	-	-	4.5	0.9	3.6
	2005	-	-	4.7	1.4	3.1	1.7	0.0	-	-	4.7	0.9	3.8
	2006	-	-	4.9	1.6	3.2	1.7	0.0	-	-	4.9	1.0	4.0
	2007	-	-	5.2	1.7	3.3	1.8	0.0	-	-	5.2	1.0	4.1
	2008	-	-	5.4	1.8	3.5	1.9	0.0	-	-	5.4	1.1	4.3
	2009	-	-	5.6	2.0	3.6	2.0	0.0	-	-	5.6	1.1	4.5
	2010	-	-	5.9	2.2	3.8	2.1	0.0	-	-	5.9	1.2	4.7
		Questionnaire	Questionnaire		Questionnaire	System	Questionnaire	Questionnaire	Questionnaire	Questionnaire		Questionnaire	Questionnaire

Source: JICA Study Team

Table 3-16 Estimation of Future Housing Purchasing Financial Plan in Chengdu (New Housing)

		Borrowing pattern A							Borrowing pattern B				
		Outline of housing price			Outline of Provident Fund loan		Expected down payment	Commercial loans required	Outline of housing price			Expected down payment	Commercial loans required
		m^2 unit price RMB/m^2 ①	Average area m^2 ②	Housing price RMB10,000 ③=①*② *1.2	Annual income RMB10,000 ④	Available loans RMB10,000 (5) = Calculation	RMB10,000 ⑥	RMB10,000 ③-⑤-⑥	m^2 unit price RMB/m^2 ①	Average area m^2 ②	Housing price RMB10,000 ③=①*②	RMB10,000 ⑥	RMB10,000 ③-⑤-⑥
Actual	1990												
	1991												
	1992	700.0							700.0				
	1993	1400.0							1400.0				
	1994	2184.6							2184.6				
	1995	2033.3							2033.3				
	1996	1553.6							1553.6				
	1997	960.7							960.7				
	1998	1057.1							1057.1				
	1999	**1309.134**							**1309.134**				
Estimated	2000	1615.2	99.8	16.1	2.2	11.3	4.9	0.0	1615.2	99.8	16.1	4.9	11.3
	2001	1709.9	99.8	17.1	2.4	11.9	5.1	0.0	1709.9	99.8	17.1	3.4	13.6
	2002	1810.2	99.8	18.1	2.6	12.6	5.4	0.0	1810.2	99.8	18.1	3.6	14.4
	2003	1916.3	99.8	19.1	2.8	13.4	5.8	0.0	1916.3	99.8	19.1	3.8	15.3
	2004	2028.7	99.8	20.2	3.0	14.1	6.1	0.0	2028.7	99.8	20.2	4.0	16.2
	2005	2147.6	99.8	21.4	3.3	15.0	6.5	0.0	2147.6	99.8	21.4	4.3	17.1
	2006	2273.6	99.8	22.7	3.6	15.0	6.8	0.8	2273.6	99.8	22.7	4.5	18.1
	2007	2406.9	99.8	24.0	3.8	15.0	7.2	1.8	2406.9	99.8	24.0	4.8	19.2
	2008	2548.0	99.8	25.4	4.2	15.0	7.7	2.8	2548.0	99.8	25.4	5.1	20.3
	2009	2697.4	99.8	26.9	4.5	15.0	8.1	3.8	2697.4	99.8	26.9	5.4	21.5
	2010	2855.5	99.8	28.5	4.9	15.0	8.6	4.9	2855.5	99.8	28.5	5.7	22.8
		Questionnaire	Questionnaire		Questionnaire	System	Questionnaire	Questionnaire	Questionnaire	Questionnaire		Questionnaire	Questionnaire

Source: JICA Study Team

Table 3-17 Estimation of Future Housing Purchasing Financial Plan in Chengdu (Existing Housing)

		Borrowing pattern A							Borrowing pattern B				
		Outline of housing price			Outline of Provident Fund loan		Expected down payment	Commercial loans required	Outline of housing price			Expected down payment	Commercial loans required
		m^2 unit price RMB/m^2 ①	Average area m^2 ②	Housing price RMB10,000 ③=①*② *1.2	Annual income RMB10,000 ④	Available loans RMB10,000 (5) = Calculation	RMB10,000 ⑥	RMB10,000 ③-⑤-⑥	m^2 unit price RMB/m^2 ①	Average area m^2 ②	Housing price RMB10,000 ③=①*②	RMB10,000 ⑥	RMB10,000 ③-⑤-⑥
Actual	1990												
	1991												
	1992												
	1993												
	1994												
	1995												
	1996												
	1997												
	1998												
	1999												
Estimated	2000	-	-	6.4	1.3	4.2	2.3	0.0	-	-	6.4	2.3	4.2
	2001	-	-	6.8	1.5	4.4	2.4	0.0	-	-	6.8	1.4	5.5
	2002	-	-	7.2	1.6	4.7	2.6	0.0	-	-	7.2	1.4	5.8
	2003	-	-	7.6	1.7	4.9	2.7	0.0	-	-	7.6	1.5	6.1
	2004	-	-	8.1	1.9	5.2	2.9	0.0	-	-	8.1	1.6	6.5
	2005	-	-	8.6	2.0	5.5	3.0	0.0	-	-	8.6	1.7	6.9
	2006	-	-	9.1	2.2	5.9	3.2	0.0	-	-	9.1	1.8	7.3
	2007	-	-	9.6	2.4	6.2	3.4	0.0	-	-	9.6	1.9	7.7
	2008	-	-	10.2	2.6	6.6	3.6	0.0	-	-	10.2	2.0	8.1
	2009	-	-	10.8	2.8	7.0	3.8	0.0	-	-	10.8	2.2	8.6
	2010	-	-	11.4	3.0	7.4	4.0	0.0	-	-	11.4	2.3	9.1
		Questionnaire	Questionnaire		Questionnaire	System	Questionnaire	Questionnaire	Questionnaire	Questionnaire		Questionnaire	Questionnaire

Source: JICA Study Team

(5) Estimation of Demand for Housing Purchasing Funds

1) Shanghai

The demand for Housing Provident Fund loans in Shanghai (central area) is 7.27 billion RMB in 2000. It will increase at an annual rate of approximately 1.4% until it reaches approximately 8.36 billion RMB in 2010. The total demand for Housing Provident Fund loans for 2000 through 2010 is 87.58 billion RMB. Growth of the Housing Provident Fund loan amounts is low compared with the increase in the number of households, and economic growth rate, because the upper limit of the Housing Provident Fund loans is set at 100 thousand RMB. If this limit is set higher, the demand for the Housing Provident Fund loans will significantly increase.

Demand for commercial loans is high. It is 18.71 billion RMB in 2000 or about three times that for the Housing Provident Fund loans. The demand for fund will grow at an annual rate of 9.3%, reaching 45.34 billion RMB in 2010. The total for 2000-2010 is 339.04billion RMB.

In Shanghai, the demand for commercial housing will increase with general economic growth and increasing annual income. The demand of existing housing will also increase with the increasing disposal of housing and activation of the distribution market. Commercial loans will be heavily used to cope with this tremendous increase in housing fund requirements arising from the above demand.

Figure 3-11 Demand for Housing Purchasing Funds in Shanghai (100 million RMB)

	Provident Fund loans				Commercial loans			
	New housing ①	Existing housing ②	Total for central area ③=①+②	Converted to city area (reference)	New housing ①	Existing housing ②	Total for central area ③=①+②	Converted to city area (reference)
1990								
1991								
1992								
1993				0.2				
1994				0.5				
1995				1.4				0.05
1996				5.8				7.0
1997				17.7				31.2
1998				40.9				77.5
1999				84.8				159.3
2000	56.4	7.5	63.9	77.6	160.2	2.9	163.1	197.8
2001	60.4	8.0	68.4	82.7	186.0	3.4	189.4	229.1
2002	61.5	8.1	69.6	83.9	199.8	3.9	203.6	245.5
2003	61.6	8.0	69.6	83.6	216.2	4.6	220.8	265.3
2004	61.8	8.0	69.7	83.5	234.1	5.3	239.5	286.9
2005	62.0	8.0	70.0	83.6	253.7	6.2	259.8	310.3
2006	62.5	8.0	70.5	83.9	275.5	7.0	282.5	336.3
2007	63.1	8.0	71.1	84.4	299.2	8.0	307.1	364.5
2008	63.7	8.0	71.7	84.9	324.9	9.0	334.0	395.1
2009	64.5	8.1	72.5	85.6	353.2	10.1	363.4	428.6
2010	65.4	8.1	73.5	86.5	384.5	11.4	395.9	465.7
2000～10			770.5	920.0			2959.1	3525.1
Annual average growth			1.40	1.10			9.3	8.9

Note: The estimates for the city area are reference values that are calculated back using the central area to city area ratio in Shanghai.

Source: JICA Study Team

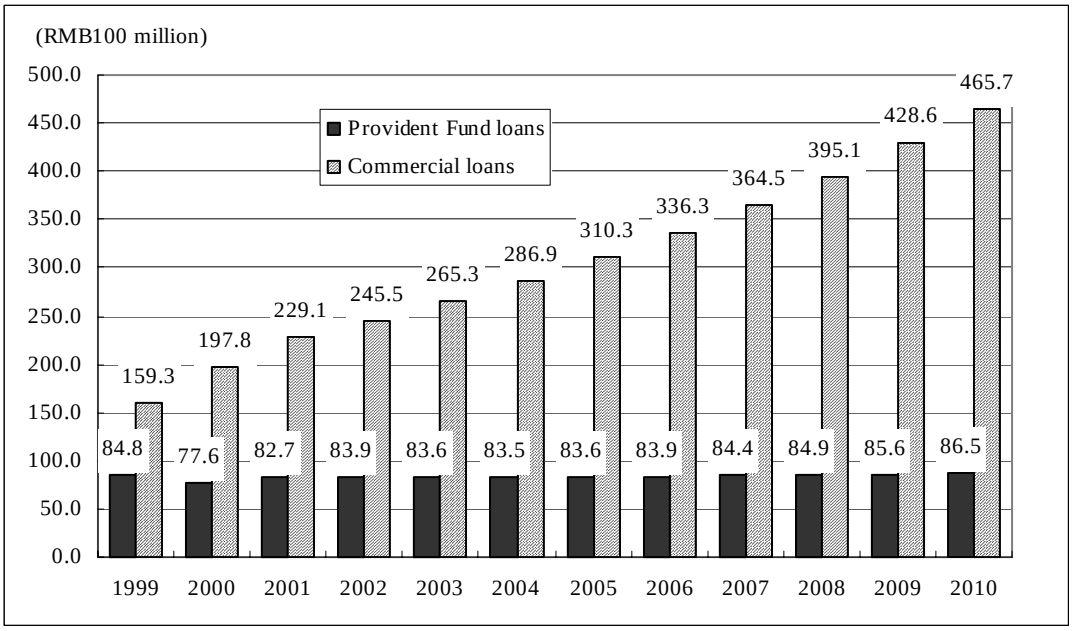


Table 3-18 Demand for Housing Purchasing Funds in Shanghai (New Housing)

	Borrowing pattern 1							Borrowing pattern 2				
				Provident Fund loans		Commercial loans					Commercial loans	
	Latent demand for housing (new)	Actualization rate	Actual demand for housing	Loans available from Provident Fund	Demand for Provident Fund loans	Commercial loans per household	Demand for commercial loan funds	Latent demand for housing (new)	Actualization rate	Actual demand for housing	Commercial loans per household	Demand for commercial loan funds
	10,000 houses ①	% ②	10,000 houses ③=①*②	RMB10,000 ⑤	RMB100 mil. ③*④*⑤	RMB10,000 ⑥	RMB100 mil. ③*⑥	10,000 houses ⑦	% ⑧	10,000 houses ⑨=⑦*⑧-③	RMB10,000 ⑫	RMB100 mil. ⑨*⑫
1990												
1991												
1992				1.2								
1993				1.9								
1994				2.8								
1995				3.9								
1996				7.9								
1997				11.1								
1998				13.6								
1999				16.5								
2000	10.0	56.7	5.6	10.0	56.4	20.2	113.9	10.0	20.6	2.1	22.6	46.3
2001	9.9	60.9	6.0	10.0	60.4	22.1	133.3	9.9	16.4	1.6	32.5	52.8
2002	9.9	62.2	6.2	10.0	61.5	24.1	148.1	9.9	15.2	1.5	34.5	51.7
2003	9.9	62.2	6.2	10.0	61.6	26.2	161.2	9.9	15.2	1.5	36.6	55.0
2004	9.9	62.2	6.2	10.0	61.8	28.4	175.6	9.9	15.2	1.5	38.9	58.5
2005	10.0	62.2	6.2	10.0	62.0	30.8	191.2	10.0	15.2	1.5	41.3	62.5
2006	10.1	62.2	6.3	10.0	62.5	33.4	208.6	10.1	15.2	1.5	43.9	66.9
2007	10.1	62.2	6.3	10.0	63.1	36.1	227.5	10.1	15.2	1.5	46.6	71.7
2008	10.2	62.2	6.4	10.0	63.7	38.9	248.0	10.2	15.2	1.6	49.5	76.9
2009	10.4	62.2	6.4	10.0	64.5	42.0	270.6	10.4	15.2	1.6	52.6	82.7
2010	10.5	62.2	6.5	10.0	65.4	45.2	295.5	10.5	15.2	1.6	55.9	89.0
2000～2010	110.9		68.3		682.9		2,173.4	110.9		17.5		713.9

Source: JICA Study Team

Table 3-19 Demand for Housing Purchasing Funds in Shanghai (Existing Housing)

	Borrowing pattern 1							Borrowing pattern 2				
				Provident Fund loans		Commercial loans					Commercial loans	
	Latent demand for housing (new)	Actualization rate	Actual demand for housing	Loans available from Provident Fund	Demand for Provident Fund loans	Commercial loans per household	Demand for commercial loan funds	Latent demand for housing (Existing)	Actualization rate	Actual demand for housing	Commercial loans per household	Demand for commercial loan funds
	10,000 houses ①	% ②	10,000 houses ③=①*②	RMB10,000 ⑤	RMB100 mil. ③*④*⑤	RMB10,000 ⑥	RMB100 mil. ③*⑥	10,000 houses ⑦	% ⑧	10,000 houses ⑨=⑦*⑧-③	RMB10,000 ⑫	RMB100 mil. ⑨*⑫
1990												
1991												
1992				1.2								
1993				1.9								
1994				2.8								
1995				3.9								
1996				7.9								
1997				11.1								
1998				13.6								
1999				16.5								
2000	1.2	61.9	0.8	10.0	7.5	0.1	0.0	1.2	22.9	0.3	10.1	2.8
2001	1.2	66.6	0.8	10.0	8.0	0.7	0.6	1.2	18.3	0.2	13.0	2.9
2002	1.2	67.9	0.8	10.0	8.1	1.4	1.1	1.2	17.0	0.2	13.8	2.8
2003	1.2	67.9	0.8	10.0	8.0	2.1	1.6	1.2	17.0	0.2	14.6	2.9
2004	1.2	67.9	0.8	10.0	8.0	2.8	2.2	1.2	17.0	0.2	15.6	3.1
2005	1.2	67.9	0.8	10.0	8.0	3.6	2.9	1.2	17.0	0.2	16.5	3.3
2006	1.2	67.9	0.8	10.0	8.0	4.5	3.5	1.2	17.0	0.2	17.6	3.5
2007	1.2	67.9	0.8	10.0	8.0	5.4	4.3	1.2	17.0	0.2	18.6	3.7
2008	1.2	67.9	0.8	10.0	8.0	6.3	5.1	1.2	17.0	0.2	19.8	4.0
2009	1.2	67.9	0.8	10.0	8.1	7.3	5.9	1.2	17.0	0.2	21.0	4.2
2010	1.2	67.9	0.8	10.0	8.1	8.4	6.8	1.2	17.0	0.2	22.3	4.5
2000～2010	13.0		8.8		87.6		34.1	13.0		2.3		37.7

Source: JICA Study Team

2) Wuhan

The demand for Housing Provident Fund loans in Wuhan (central area) is 380 million RMB in 2000. It will increase at an annual rate of approximately 2.6% until it reaches approximately 490 million RMB in 2010. The total demand for Housing Provident Fund loans for 2000-2010 is 4.91 billion RMB. The growth rate of the Housing Provident Fund loans is higher than that of Shanghai.

Demand for commercial loans is nearly constant. It is 410 million RMB in 2000 and 420 million RMB in 2010. The total loans for 2000-2010 are 4.48 billion RMB, or approximately equal to the total Housing Provident Fund loans.

According to the questionnaire survey, many people in Wuhan are considering purchasing a house depending on some conditions. If the policy were to sustain these people to actually buy, the demand for both Housing Provident Fund and commercial loans will increase significantly.

Figure 3-12 Demand for Housing Purchasing Funds in Wuhan (100 million RMB)

	Provident Fund loans				Commercial loans			
	New housing ①	Existing housing ②	Total for central area ③=①+②	Converted to city area (reference)	New housing ①	Existing housing ②	Total for central area ③=①+②	Converted to city area (reference)
1993				0.2				0.3638
1994				0.5				0.3331
1995				0.5				0.12
1996				0.8				0.2
1997				1.6				0.7
1998				2.7				1.8
1999				3.2				3.2
2000	3.8	0.1	3.8	5.2	4.0	0.1	4.1	5.6
2001	3.9	0.1	4.0	5.5	4.6	0.1	4.7	6.4
2002	4.1	0.1	4.2	5.7	4.3	0.1	4.3	5.9
2003	4.5	0.1	4.5	6.2	3.8	0.1	3.9	5.3
2004	4.4	0.1	4.5	6.1	3.8	0.1	3.9	5.2
2005	4.5	0.1	4.5	6.1	3.8	0.1	3.9	5.2
2006	4.5	0.1	4.6	6.2	3.8	0.1	3.9	5.3
2007	4.6	0.1	4.6	6.2	3.9	0.1	3.9	5.3
2008	4.6	0.1	4.7	6.3	4.0	0.1	4.0	5.4
2009	4.7	0.1	4.8	6.4	4.0	0.1	4.1	5.5
2010	4.8	0.1	4.9	6.5	4.1	0.1	4.2	5.6
2000～10			49.1	66.4			44.8	60.6
Annual average growth			2.55	2.25			0.2	-0.1

Note: The estimates for the city area are reference values that are calculated back using the central area to city area ratio in Wuhan.

Source: JICA Study Team

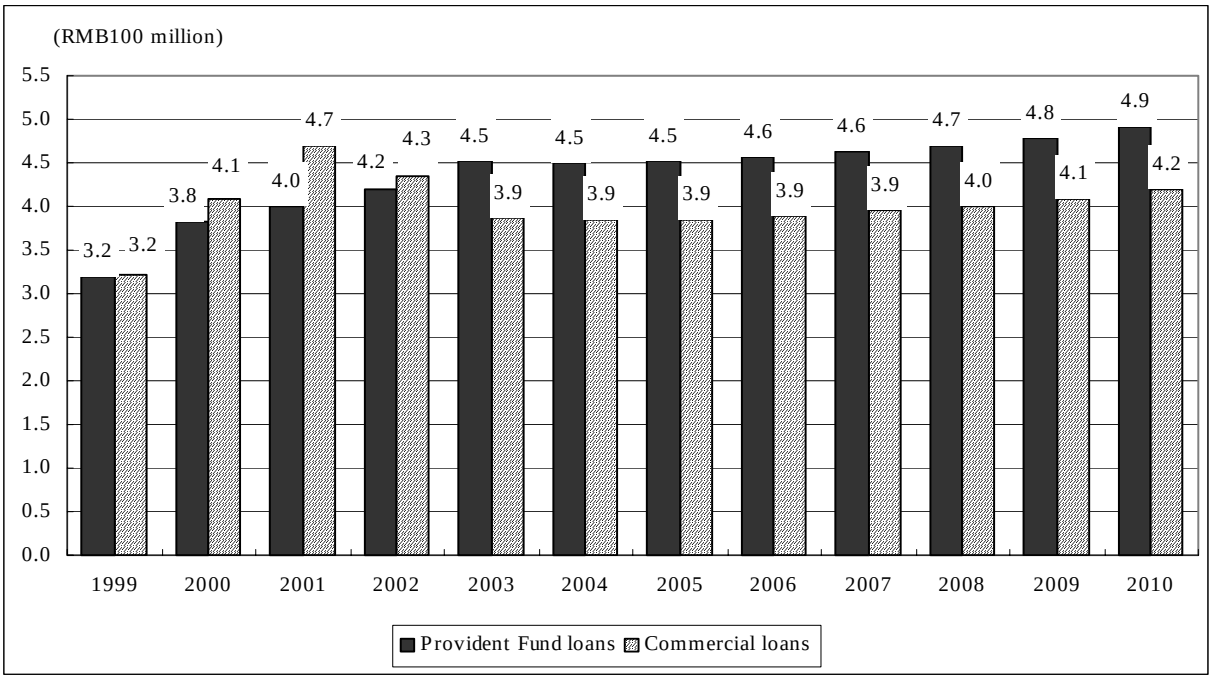


Table 3-20 Demand for Housing Purchasing Funds in Wuhan (New Housing)

	Borrowing pattern 1							Borrowing pattern 2				
				Provident Fund loans		Commercial loans					Commercial loans	
	Latent demand for housing (new)	Actualization rate	Actual demand for housing	Loans available from Provident Fund	Demand for Provident Fund loans	Commercial loans per household	Demand for commercial loan funds	Latent demand for housing (New)	Actualization rate	Actual demand for housing	Commercial loans per household	Demand for commercial loan funds
	10,000 houses ①	% ②	10,000 houses ③=①*②	RMB10,000 ⑤	RMB100 mil. ③*④*⑤	RMB10,000 ⑥	RMB100 mil. ③*⑥	10,000 houses ⑦	% ⑧	10,000 houses ⑨=⑦*⑧-③	RMB10,000 ⑫	RMB100 mil. ⑨*⑫
1990												
1991												
1992				0.0								
1993				0.0								
1994				0.0								
1995				0.0								
1996				0.0								
1997				0.0								
1998				0.0								
1999				0.0								
2000	9.7	4.0	0.4	9.5	3.8	0.0	0.0	9.7	4.3	0.4	9.5	4.0
2001	9.2	4.3	0.4	9.9	3.9	0.0	0.0	9.2	4.1	0.4	12.3	4.6
2002	8.7	4.6	0.4	10.4	4.1	0.0	0.0	8.7	3.8	0.3	12.9	4.3
2003	8.3	5.0	0.4	10.8	4.5	0.0	0.0	8.3	3.4	0.3	13.4	3.8
2004	7.9	5.0	0.4	11.3	4.4	0.0	0.0	7.9	3.4	0.3	14.0	3.8
2005	7.6	5.0	0.4	11.8	4.5	0.0	0.0	7.6	3.4	0.3	14.6	3.8
2006	7.3	5.0	0.4	12.4	4.5	0.0	0.0	7.3	3.4	0.3	15.3	3.8
2007	7.1	5.0	0.4	12.9	4.6	0.0	0.0	7.1	3.4	0.2	16.0	3.9
2008	6.9	5.0	0.3	13.5	4.6	0.0	0.0	6.9	3.4	0.2	16.7	4.0
2009	6.8	5.0	0.3	14.1	4.7	0.0	0.0	6.8	3.4	0.2	17.4	4.0
2010	6.6	5.0	0.3	14.7	4.8	0.0	0.0	6.6	3.4	0.2	18.2	4.1
2000～2010	86.2		4.1		48.5		0.0	86.2		3.1		44.2

Source: JICA Study Team

Table 3-21 Demand for Housing Purchasing Funds in Wuhan (Existing Housing)

	Borrowing pattern 1							Borrowing pattern 2				
				Provident Fund loans		Commercial loans					Commercial loans	
	Latent demand for housing (new)	Actualization rate	Actual demand for housing	Loans available from Provident Fund	Demand for Provident Fund loans	Commercial loans per household	Demand for commercial loan funds	Latent demand for housing (Existing)	Actualization rate	Actual demand for housing	Commercial loans per household	Demand for commercial loan funds
	10,000 houses ①	% ②	10,000 houses ③=①*②	RMB10,000 ⑤	RMB100 mil. ③*④*⑤	RMB10,000 ⑥	RMB100 mil. ③*⑥	10,000 houses ⑦	% ⑧	10,000 houses ⑨=⑦*⑧-③	RMB10,000 ⑫	RMB100 mil. ⑨*⑫
1990												
1991												
1992				0.0								
1993				0.0								
1994				0.0								
1995				0.0								
1996				0.0								
1997				0.0								
1998				0.0								
1999				0.0								
2000	0.5	4.6	0.0	2.5	0.1	0.0	0.0	0.5	4.9	0.0	2.5	0.1
2001	0.5	4.9	0.0	2.6	0.1	0.0	0.0	0.5	4.6	0.0	3.2	0.1
2002	0.4	5.2	0.0	2.7	0.1	0.0	0.0	0.4	4.3	0.0	3.3	0.1
2003	0.4	5.6	0.0	2.8	0.1	0.0	0.0	0.4	3.9	0.0	3.5	0.1
2004	0.4	5.6	0.0	2.9	0.1	0.0	0.0	0.4	3.9	0.0	3.6	0.1
2005	0.4	5.6	0.0	3.1	0.1	0.0	0.0	0.4	3.9	0.0	3.8	0.1
2006	0.3	5.6	0.0	3.2	0.1	0.0	0.0	0.3	3.9	0.0	4.0	0.1
2007	0.3	5.6	0.0	3.3	0.1	0.0	0.0	0.3	3.9	0.0	4.1	0.1
2008	0.3	5.6	0.0	3.5	0.1	0.0	0.0	0.3	3.9	0.0	4.3	0.1
2009	0.3	5.6	0.0	3.6	0.1	0.0	0.0	0.3	3.9	0.0	4.5	0.1
2010	0.3	5.6	0.0	3.8	0.1	0.0	0.0	0.3	3.9	0.0	4.7	0.1
2000～2010	4.2		0.2		0.7		0.0	4.2		0.2		0.6

Source: JICA Study Team

3) Chengdu

The demand for Housing Provident Fund loans in Chengdu (central area) is 80 million RMB in 2000. The Housing Provident Fund system started just recently, and the people eligible are very few. They will increase rapidly in the future provoking a remarkable increase in the demand for the Housing Provident Fund loans. According to an estimate, the demand for Housing Provident Fund loans will sharply increase at an annual rate of approximately 7.5% until 2010.

For several years, the demand for commercial loans is expected to be about twice the Housing Provident Fund loans in order to fill the shortage of the Housing Provident Fund. This trend may also prevail in 2010, when the demand for commercial loans would be approximately 2.64 billion RMB or approximately twice the Housing Provident Fund loans.

The commercial housing market is expected to grow rapidly in Chengdu in the future. The large latent demand for housing would be actualized if there is an increase in the demand for commercial loans.

Figure 3-13 Demand for Housing Purchasing Funds in Chengdu (100 million RMB)

	Provident Fund loans				Commercial loans			
	New housing ①	Existing housing ②	Total for central area ③=①+②	Converted to city area (reference)	New housing ①	Existing housing ②	Total for central area ③=①+②	Converted to city area (reference)
1996				0.1				2.0
1997				0.3				1.9
1998				0.7				7.6
1999				-				3.2
2000	0.8	0.0	0.8	2.4	1.6	0.0	1.6	4.8
2001	1.0	0.0	1.0	2.9	1.7	0.0	1.7	5.1
2002	1.1	0.0	1.2	3.3	1.7	0.0	1.7	4.9
2003	1.3	0.0	1.3	3.5	1.8	0.0	1.8	5.0
2004	1.4	0.0	1.4	3.6	2.0	0.0	2.0	5.3
2005	1.4	0.0	1.5	3.7	2.1	0.0	2.1	5.4
2006	1.5	0.0	1.5	3.6	2.3	0.0	2.3	5.8
2007	1.5	0.0	1.5	3.6	2.6	0.0	2.6	6.2
2008	1.5	0.0	1.5	3.5	2.9	0.0	2.9	6.7
2009	1.6	0.0	1.6	3.5	3.2	0.0	3.2	7.1
2010	1.6	0.0	1.6	3.4	3.6	0.0	3.6	7.7
2000～10			14.8	37.1			25.7	63.8
Annual average growth			7.5	3.7			8.6	4.8

Note: The estimates for the city area are reference values that are calculated back using the central area to city area ratio in Chengdu.

Source: JICA Study Team

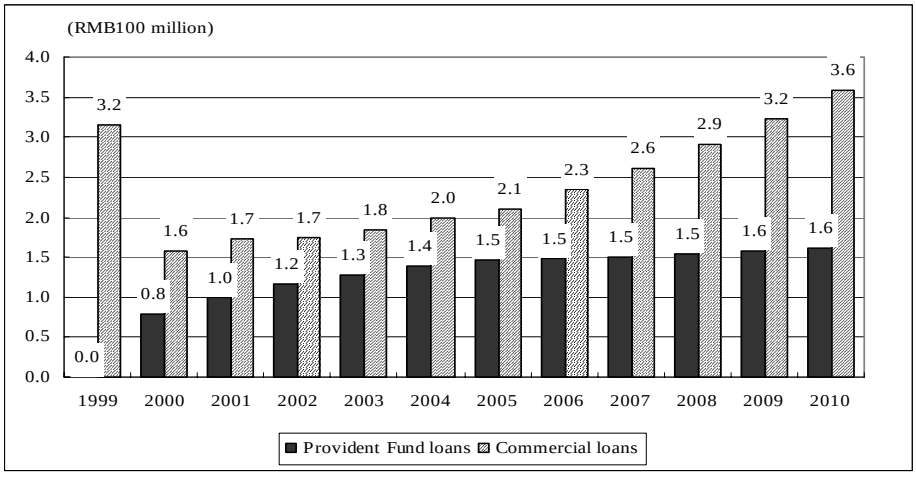


Table 3-22 Demand for Housing Purchasing Funds in Chengdu (New Housing)

	Borrowing pattern 1							Borrowing pattern 2				
				Provident Fund loans		Commercial loans					Commercial loans	
	Latent demand for housing (new)	Actualization rate	Actual demand for housing	Loans available from Provident Fund	Demand for Provident Fund loans	Commercial loans per household	Demand for commercial loan funds	Latent demand for housing (New)	Actualization rate	Actual demand for housing	Commercial loans per household	Demand for commercial loan funds
	10,000 houses ①	% ②	10,000 houses ③=①*②	RMB10,000 ⑤	RMB100 mil. ③*④*⑤	RMB10,000 ⑥	RMB100 mil. ③*⑥	10,000 houses ⑦	% ⑧	10,000 houses ⑨=⑦*⑧-③	RMB10,000 ⑫	RMB100 mil. ⑨*⑫
1990												
1991												
1992				0.0								
1993				0.0								
1994				0.0								
1995				0.0								
1996				0.0								
1997				0.0								
1998				0.0								
1999				0.0								
2000	3.7	1.9	0.1	11.3	0.8	0.0	0.0	3.7	3.8	0.1	11.3	1.6
2001	3.7	2.2	0.1	11.9	1.0	0.0	0.0	3.7	3.4	0.1	13.6	1.7
2002	3.7	2.4	0.1	12.6	1.1	0.0	0.0	3.7	3.2	0.1	14.4	1.7
2003	3.8	2.5	0.1	13.4	1.3	0.0	0.0	3.8	3.1	0.1	15.3	1.8
2004	3.9	2.5	0.1	14.1	1.4	0.0	0.0	3.9	3.1	0.1	16.2	2.0
2005	3.9	2.5	0.1	15.0	1.4	0.0	0.0	3.9	3.1	0.1	17.1	2.1
2006	3.9	2.5	0.1	15.0	1.5	0.8	0.1	3.9	3.1	0.1	18.1	2.2
2007	4.0	2.5	0.1	15.0	1.5	1.8	0.2	4.0	3.1	0.1	19.2	2.4
2008	4.1	2.5	0.1	15.0	1.5	2.8	0.3	4.1	3.1	0.1	20.3	2.6
2009	4.2	2.5	0.1	15.0	1.6	3.8	0.4	4.2	3.1	0.1	21.5	2.8
2010	4.2	2.5	0.1	15.0	1.6	4.9	0.5	4.2	3.1	0.1	22.8	3.0
2000～2010	43.1		1.0		14.6		1.4	43.1		1.4		23.9

Source: JICA Study Team

Table 3-23 Demand for Housing Purchasing Funds in Chengdu (Existing Housing)

	Borrowing pattern 1							Borrowing pattern 2				
				Provident Fund loans		Commercial loans					Commercial loans	
	Latent demand for housing (new)	Actualization rate	Actual demand for housing	Loans available from Provident Fund	Demand for Provident Fund loans	Commercial loans per household	Demand for commercial loan funds	Latent demand for housing (Existing)	Actualization rate	Actual demand for housing	Commercial loans per household	Demand for commercial loan funds
	10,000 houses ①	% ②	10,000 houses ③=①*②	RMB10,000 ⑤	RMB100 mil. ③*④*⑤	RMB10,000 ⑥	RMB100 mil. ③*⑥	10,000 houses ⑦	% ⑧	10,000 houses ⑨=⑦*⑧-③	RMB10,000 ⑫	RMB100 mil. ⑨*⑫
1990												
1991												
1992				0.0								
1993				0.0								
1994				0.0								
1995				0.0								
1996				0.0								
1997				0.0								
1998				0.0								
1999				0.0								
2000	0.1	2.0	0.0	4.2	0.0	0.0	0.0	0.1	4.1	0.0	4.2	0.0
2001	0.1	2.5	0.0	4.4	0.0	0.0	0.0	0.1	3.7	0.0	5.5	0.0
2002	0.1	2.7	0.0	4.7	0.0	0.0	0.0	0.1	3.5	0.0	5.8	0.0
2003	0.1	2.7	0.0	4.9	0.0	0.0	0.0	0.1	3.4	0.0	6.1	0.0
2004	0.1	2.7	0.0	5.2	0.0	0.0	0.0	0.1	3.4	0.0	6.5	0.0
2005	0.1	2.7	0.0	5.5	0.0	0.0	0.0	0.1	3.4	0.0	6.9	0.0
2006	0.1	2.7	0.0	5.9	0.0	0.0	0.0	0.1	3.4	0.0	7.3	0.0
2007	0.1	2.7	0.0	6.2	0.0	0.0	0.0	0.1	3.4	0.0	7.7	0.0
2008	0.1	2.7	0.0	6.6	0.0	0.0	0.0	0.1	3.4	0.0	8.1	0.0
2009	0.1	2.7	0.0	7.0	0.0	0.0	0.0	0.1	3.4	0.0	8.6	0.0
2010	0.1	2.7	0.0	7.4	0.0	0.0	0.0	0.1	3.4	0.0	9.1	0.0
2000～2010	1.3		0.0		0.2		0.0	1.3		0.0		0.3

Source: JICA Study Team

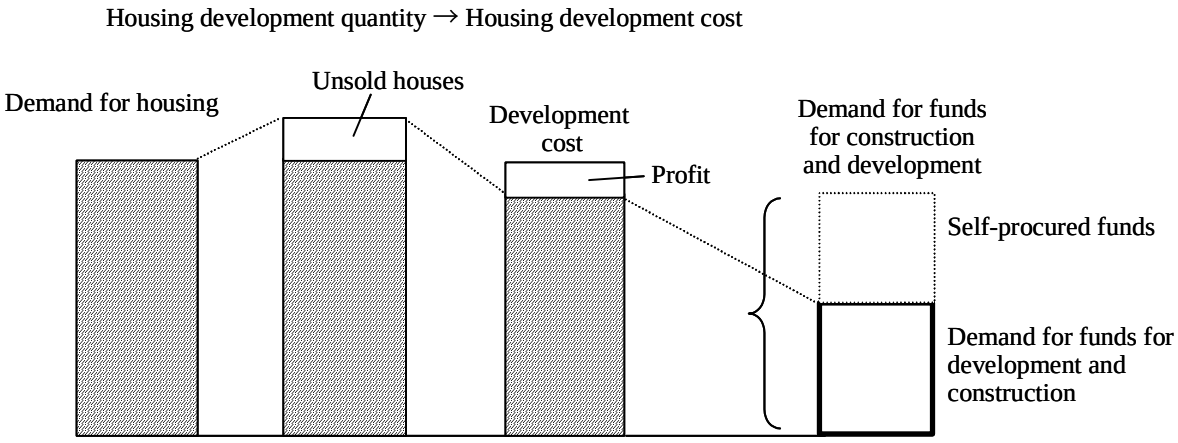
3.1.3. Estimation of Demand for Housing Construction and Development by Real Estate Developing Companies (Developers)

(1) Demand Estimation – Its Concept and Flow

Demand for funds directed to housing construction and development of ready-built and rental houses should be kept available to real estate companies to comply with the demand for housing. The calculation procedure is described below.

1) Demand for housing (number of houses) is divided by the selling rate to derive the total development quantity (number of houses).
2) The total development quantity is multiplied for selling price (unit price per house) and the profit rate is subtracted to derive the cost of development.
3) Total cost is multiplied for loan borrowing ratio (derived from the questionnaire survey) to calculate the demand for funds.

Figure 3-14 Basic concept of Estimation of Demand for Housing Construction and Development



Housing development quantity

= Demand for housing / selling rate (by housing type)

Housing development cost

= Housing development quantity

× construction unit price per m^2 (selling price is used for simplicity purpose)

Development cost

= Housing development total sales × (1 - profit rate)

Demand for funds for housing development and construction

= Development cost

× rate of borrowings to the total development funds (derived from the questionnaire survey)

Source: JICA Study Team

(2) Selling Rate

According to the most recent questionnaire survey, the developers' housing selling rate is 79.1% in Shanghai where housing supply extremely expanded, and demand for housing and supply is relaxed in the recent two or three years. The housing selling rate is 85.1% in Chengdu where vigorous demand for housing exists. This is the highest rate of all three cities. The selling rate in Wuhan recorded the lowest 73% due to sluggish business performance of state enterprises, low consumption by employees, and inaccurate understanding of the market trend by developers.

Estimating selling rate is difficult because it fluctuates considerably with the market trend. The following selling rates for high-class apartment houses and ordinary housing used were based on the result of the questionnaire survey of developers. It was assumed that this level continues until 2010.

Table 3-24 Selling Rate (%)

	Shanghai	Wuhan	Chengdu
High-class apartment house	80.6	76.1	85.3
Ordinary housing	80.5	70.5	83.9

Source: JICA Study Team

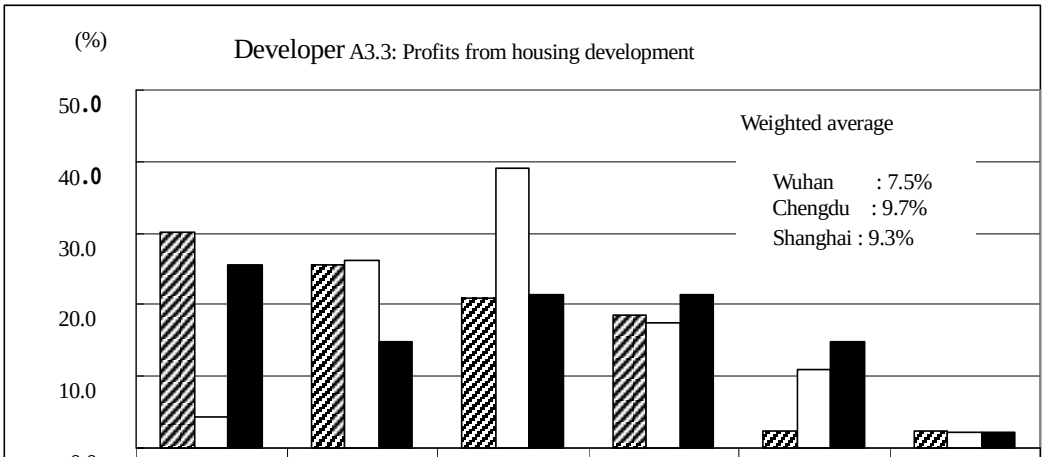
(3) Housing Selling Price and Profit Rate

The housing selling price declared by developers is too far from the purchasing price desired by individuals, and the average selling price as well. It is inappropriate to use the developers' selling price to calculate the development cost. To determine the selling price in this section, the original unit of housing price and housing area was used to calculate the individuals' demand for funds for purchasing housing. For the demand for development of economical housing in Wuhan, the standard development unit price (cost) was used as specified by the Ministry of Construction.

The developers' average development profits were calculated in connection with the demand for housing development. The result of the questionnaire survey was used without any correction. The level is approximately 9% in Shanghai and Chengdu, and 7.5% in Wuhan where the state developers are suffering from poor business results. The fluctuation in profit rates due to the economic conditions in each city and the performance of businesses make prediction difficult. It was assumed that the present profit rates remain constant until 2010.

Shanghai: 9.3%; Wuhan: 7.5%; Chengdu: 9.7%

Figure 3-15 Developers' Profits from Housing Development (Profit Rate)



	1. Less than 5%	2. 5%, less than 7%	3. 7%, less than 10%	4. 10%, less than 15%	5. 15%, less than 20%	6. 20% or more
Wuhan	30.2	25.6	20.9	18.6	2.3	2.3
Chengdu	4.3	26.1	39.1	17.4	10.9	2.2
Shanghai	25.5	14.9	21.3	21.3	14.9	2.1

Source: JICA Study Team

(4) Rate of Borrowings (Commercial Loans) to Total Development Funds

According to the questionnaire survey, the borrowing (from external organs) dependency rate for the developers' housing development funds is 50.5% in Shanghai, 41.1% in Wuhan, and 48.1% in Chengdu. The figure for Wuhan is considering the low revenue conditions and the borrowing ability. Generally, the developers borrow approximately 50% of funds from financial institutions. Of these borrowings, commercial loans account for approximately 30% in Shanghai and Chengdu, and 24% in Wuhan. The ratio for commercial loans will increase in the future because Housing Provident Fund loans will no longer be allowed to be used as development fund.

To calculate the demand for development funds, the ratio of borrowings (including Housing Provident Fund and commercial loans) were used assuming it would not change until 2010.

Shanghai: 54.4%, Wuhan: 41.1%, Chengdu: 47.1%

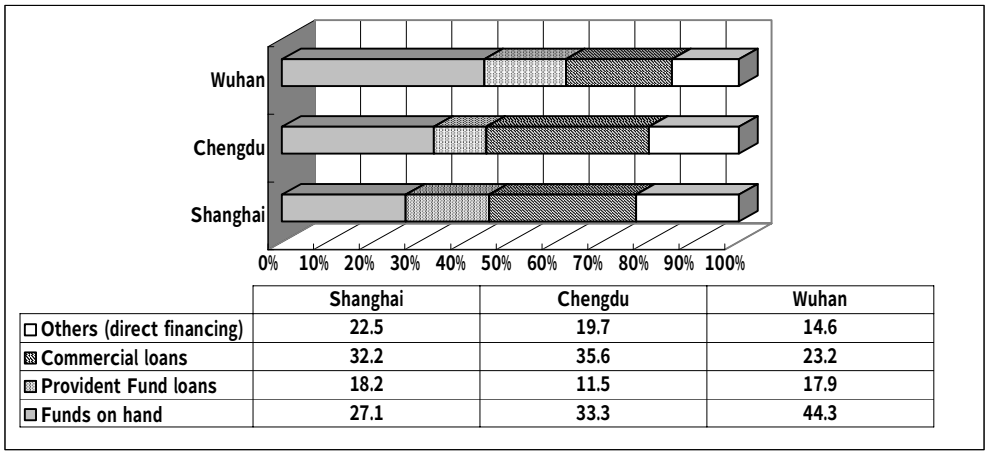
Figure 3-16 Borrowings in Total Development Funds

(%)

	Wuhan	Chengdu	Shanghai
Funds on hand	44.3	33.3	27.1
Total loan	**41.1**	**47.1**	**50.4**
Provident Fund loans	17.9	11.5	18.2
Commercial loans	23.2	35.6	32.2
Others (direct financing)	14.6	19.7	22.5
Total	100.0	100.0	100.0

Note : Values indicated for questionnaire items are averaged by weighting and the totals adjusted by item.

Source: Questionnaire survey



	Shanghai	Chengdu	Wuhan
Others (direct financing)	22.5	19.7	14.6
Commercial loans	32.2	35.6	23.2
Provident Fund loans	18.2	11.5	17.9
Funds on hand	27.1	33.3	44.3

Source: JICA Study Team

(5) Estimation of Demand for Housing Construction Fund

1) Shanghai

The demand for housing construction fund in the central area is 25.02 billion RMB in 2000. The amount is approximately 60% of the fiscal 1998 housing investments of 38.3 billion RMB. It is therefore reasonably appropriate because it was assumed that the ratio of borrowings to investment was 50%.

The demand for housing construction fund will increase by 5.03% annually with increasing demand for construction of privately owned housing reflecting the increasing number of households and annual income per household. Demand for construction of rental housing will also increase reflecting increasing influx of population. The estimated demand for construction fund in 2010 is 40.86 billion RMB. Total demand for funds in 2000 through 2010 is 383.59 billion RMB. The demand for development funds will slightly decline in 2008 and after reflecting diminishing demand for housing.

The Housing Provident Fund loans may not be used for housing construction (development) by the developers in the future. Most part of the increasing demand for funds in the future will be filled by the existing commercial banks. The commercial banks must be ready with funds more than twice the present (1999) level to meet the needs of loans for housing construction alone in each fiscal year from now on.

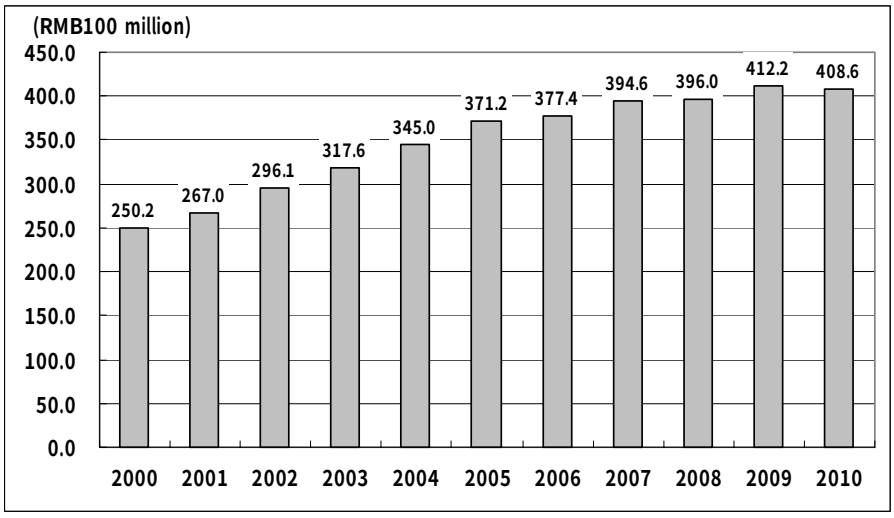
Figure 3-17 Estimated Demand for Housing Construction Fund in Shanghai

	Commercial housing				Rental housing			Total cost	Profit rate	Develop-ment cost	Loan borrowing ratio	**Total demand for funds**	Converted to entire city
	Flow of demand for housing ①	Selling rate ②	Selling price ③	Assumed cost RMB 100million B=①/②*③	Flow of demand for housing ①	Selling price ②	Assumed cost RMB 100million C=①*②	RMB 100million ④=A+B+C	% ⑤	RMB 100million ⑥=④*(1-⑤)	% ⑦	**RMB 100million ⑧=⑥*⑦**	**RMB 100million**
1998													143.82
1999													158.94
2000	8.8	80.5	38.2	419.1	6.7	19.1	128.5	547.5	9.3	496.7	50.4	**250.2**	*303.4*
2001	8.8	80.5	40.6	443.4	6.9	20.3	141.0	584.3	9.3	530.1	50.4	**267.0**	*322.8*
2002	8.8	80.5	43.1	470.2	8.2	21.5	177.7	647.9	9.3	587.8	50.4	**296.1**	*356.9*
2003	8.8	80.5	45.8	499.9	8.5	22.9	195.3	695.2	9.3	630.7	50.4	**317.6**	*381.7*
2004	8.8	80.5	48.6	532.4	9.2	24.3	222.6	755.0	9.3	684.9	50.4	**345.0**	*413.3*
2005	8.8	80.5	51.6	568.2	9.5	25.8	244.1	812.3	9.3	736.9	50.4	**371.2**	*443.3*
2006	8.8	80.5	54.8	608.2	7.9	27.4	217.7	825.9	9.3	749.2	50.4	**377.4**	*449.3*
2007	8.8	80.5	58.3	651.9	7.3	29.1	211.7	863.6	9.3	783.5	50.4	**394.6**	*468.4*
2008	8.8	80.5	61.9	699.4	5.4	30.9	167.2	866.6	9.3	786.2	50.4	**396.0**	*468.5*
2009	8.8	80.5	65.7	751.6	4.6	32.9	150.5	902.2	9.3	818.5	50.4	**412.2**	*486.3*
2010	8.8	80.5	69.8	809.6	2.4	34.9	84.7	894.3	9.3	811.3	50.4	**408.6**	*480.7*
2000～2010								8394.7	—	7616.0	—	**3835.9**	*4574.5*
Annual average growth rate												5.03	

Note: Development demand for the entire city is a reference value calculated with the ratio of population in central area to total city population predicted in each year.

Note: Assumed selling price for the rental housing is fixed at 50% of commercial housing according to experience.

Source: JICA Study Team



2) Wuhan

The demand for housing construction fund in the central area of Wuhan is 650 million RMB in 2000. The demand for housing construction fund will increase approximately 9.5% annually until 2050. The estimated demand for construction fund in 2010 is 1.61 billion RMB. One of the features of Wuhan is the high ratio for funds for construction of rental housing. This reflects the result of the demand prediction that the demand for construction of rental housing will increase to accommodate people coming from the peripheral areas in 2005 and after.

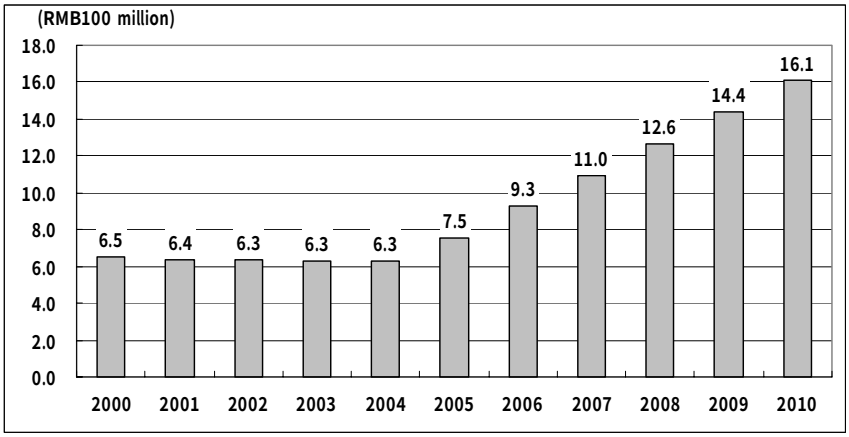
Figure 3-18 Estimated Demand for Funds for Construction and Development of Ready-built Housing in Wuhan

	Commercial housing				Rental housing			Total cost	Profit rate	Develop-ment cost	Loan borrowing ratio	**Total demand for funds**	Converted to entire city
	Flow of demand for housing (number ①	Selling rate ②	Selling price ③	Assumed cost RMB 100 million B=①/②*③	Flow of demand for housing (number ①	Assumed selling price ②	Assumed cost RMB 100 million C=①*②	RMB 100 million ④=A+B+C	% ⑤	RMB 100 million ⑥=④*(1-⑤)	% ⑦	**RMB 100 million ⑧=⑥*⑦**	**RMB 100 million**
1992													3.6
1993													9.4
1994													14.4
1995													16.4
1996													22.6
1997													27.0
1998													41.8
1999													26.5
2000	0.8	70.5	14.7	17.1	0.0	7.4	0.0	17.1	7.5	15.8	41.1	**6.5**	*8.9*
2001	0.8	70.5	15.4	16.8	0.0	7.7	0.0	16.8	7.5	15.6	41.1	**6.4**	*8.8*
2002	0.7	70.5	16.1	16.6	0.0	8.0	0.0	16.6	7.5	15.4	41.1	**6.3**	*8.6*
2003	0.7	70.5	16.8	16.5	0.0	8.4	0.0	16.5	7.5	15.3	41.1	**6.3**	*8.6*
2004	0.7	70.5	17.5	16.5	0.0	8.8	0.0	16.5	7.5	15.3	41.1	**6.3**	*8.5*
2005	0.6	70.5	18.3	16.5	0.4	9.2	3.3	19.8	7.5	18.3	41.1	**7.5**	*10.2*
2006	0.6	70.5	19.1	16.7	0.8	9.6	7.7	24.4	7.5	22.6	41.1	**9.3**	*12.5*
2007	0.6	70.5	20.0	16.9	1.2	10.0	11.9	28.8	7.5	26.6	41.1	**11.0**	*14.7*
2008	0.6	70.5	20.8	17.2	1.5	10.4	16.0	33.2	7.5	30.7	41.1	**12.6**	*16.9*
2009	0.6	70.5	21.8	17.6	1.9	10.9	20.2	37.7	7.5	34.9	41.1	**14.4**	*19.2*
2010	0.6	70.5	22.7	18.0	2.1	11.4	24.3	42.3	7.5	39.2	41.1	**16.1**	*21.5*
2000～2010＊								269.9	—	249.7	—	**102.6**	*138.4*
Annual average growth rate												9.49	

Note: Development demand for the entire city is a reference value calculated with the ratio of population in central area to total city population predicted in each year.

Note: Assumed selling price for the rental housing is fixed at 50% of commercial housing according to experience.

Source: JICA Study Team



3) Chengdu

The estimated demand for housing construction fund in the central area of Chengdu is 1.48 billion RMB in 2000.

Annual income will rise, and the high-level real estate development boom (great development of the Western area) will continue. With these favorable factors, the demand for housing construction fund will increase approximately 8.2% annually until 2050. The estimated actualized demand for construction fund in 2010 is 3.26 billion RMB. The total demand for construction fund for 2000 through 2010 is 25.24billion RMB.

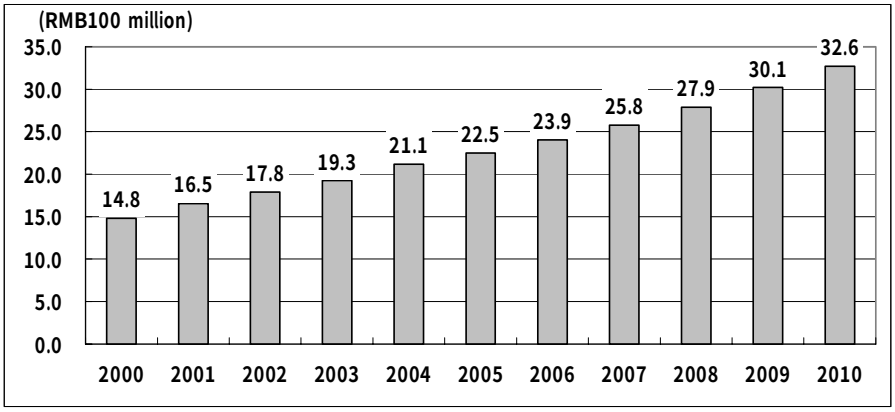
Figure 3-19 Estimated Demand for Funds for Construction and Development of Ready-built Housing in Chengdu

	Commercial housing				Rental housing			Total cost	Profit rate	Develop-ment cost	Loan borrowing ratio	**Total demand for funds**	Converted to entire city
	Flow of demand for housing (number ㎡ ①	Selling rate ②	Desired offer price ③	Assumed cost RMB 100 million B=①/②*③	Flow of demand for housing (number ㎡ ①	Assumed selling price ②	Assumed cost RMB 100 million C=①*②	RMB 100 million ④= A+B+C	% ⑤	RMB 100 million ⑥=④* (1-⑤)	% ⑦	**RMB 100 million ⑧=⑥*⑦**	**RMB 100 million**
2000	0.2	83.9	16.1	4.1	3.8	8.1	30.8	34.9	9.7	31.5	47.1	**14.8**	*45.0*
2001	0.2	83.9	17.1	4.4	4.0	8.5	34.4	38.8	9.7	35.0	47.1	**16.5**	*48.3*
2002	0.2	83.9	18.1	4.7	4.1	9.0	37.3	42.0	9.7	37.9	47.1	**17.8**	*50.4*
2003	0.2	83.9	19.1	5.0	4.2	9.6	40.4	45.4	9.7	41.0	47.1	**19.3**	*52.6*
2004	0.2	83.9	20.2	5.4	4.4	10.1	44.3	49.7	9.7	44.9	47.1	**21.1**	*55.6*
2005	0.2	83.9	21.4	5.7	4.4	10.7	47.2	52.9	9.7	47.8	47.1	**22.5**	*57.1*
2006	0.2	83.9	22.7	6.1	4.4	11.3	50.2	56.3	9.7	50.9	47.1	**23.9**	*58.7*
2007	0.2	83.9	24.0	6.6	4.5	12.0	54.2	60.8	9.7	54.9	47.1	**25.8**	*61.2*
2008	0.2	83.9	25.4	7.1	4.6	12.7	58.6	65.7	9.7	59.3	47.1	**27.9**	*63.9*
2009	0.2	83.9	26.9	7.7	4.7	13.5	63.2	70.9	9.7	64.1	47.1	**30.1**	*66.6*
2010	0.2	83.9	28.5	8.3	4.8	14.2	68.3	76.6	9.7	69.2	47.1	**32.6**	*69.4*
Total for 2000 through 2010								594.0	–	536.4	–	**252.4**	*628.8*
Annual average growth rate												**8.2**	

Note: Development demand for the entire city is a reference value calculated with the ratio of population in central area to total city population predicted in each year.

Note: Assumed selling price for the rental housing is fixed at 50% of commercial housing according to experience.

Source: JICA Study Team



3.1.4. Summary of Demand for Housing Fund

The chart below shows the demand for housing fund (individuals and developers) in the three model cities when the economic conditions envisaged in the 10th 5-year plan will be successfully achieved, and the desirable housing market realized to offer new, existing, and rental housing according to the individuals' needs.

Figure 3-20 Summary of Demand for Housing Fund in Shanghai

(Unit: RMB100 million)

	Provident Fund purchase ①	Commercial			Total		
		Individuals ②	Developers ③	Total ④=②+③	Individuals ①+②	Developers ③	Total ①+④
1993	0.2						
1994	0.5						
1995	1.4	0.0			1.5		
1996	5.8	7.0			12.8		
1997	17.7	31.2			48.9		
1998	40.9	77.5	143.8	221.3	118.4	143.8	262.2
1999	84.8	159.3	158.9	318.3	244.1	158.9	403.0
2000	72.7	187.0	250.2	437.1	259.6	250.2	509.8
2001	77.7	217.2	267.0	484.2	294.9	267.0	561.9
2002	79.1	233.4	296.1	529.5	312.5	296.1	608.6
2003	79.1	253.0	317.6	570.7	332.1	317.6	649.8
2004	79.2	274.4	345.0	619.4	353.7	345.0	698.6
2005	79.6	297.7	371.2	668.9	377.3	371.2	748.5
2006	80.1	323.7	377.4	701.0	403.8	377.4	781.1
2007	80.8	351.9	394.6	746.5	432.7	394.6	827.3
2008	81.6	382.5	396.0	778.5	464.1	396.0	860.1
2009	82.5	416.2	412.2	828.4	498.7	412.2	910.9
2010	83.6	453.4	408.6	862.0	573.0	408.6	945.6
2000～10	875.8	3390.4	3835.9	7226.3	4266.2	3835.9	8102.2
Annual average growth rate	1.41	9.26	5.03	7.03	7.54	5.03	6.37

Note: Actual values represent city data, and estimates represent central area data.
Source: JICA Study Team

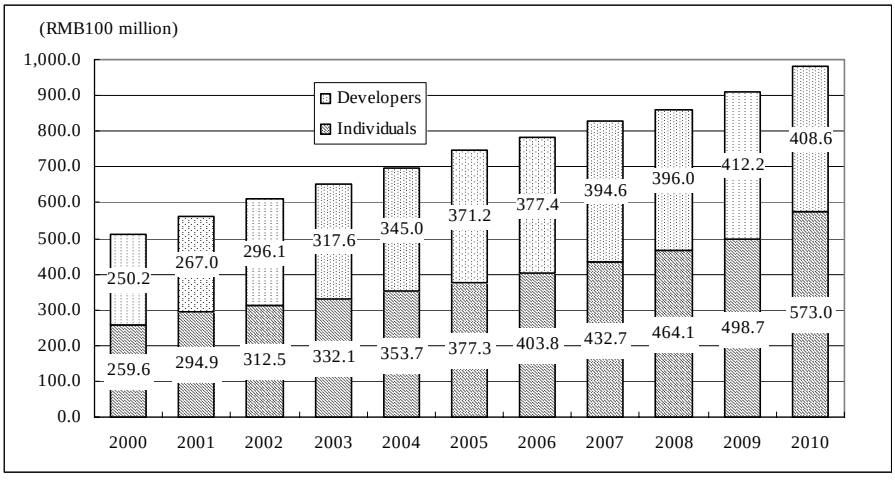


Figure 3-21 Summary of Demand for Housing Fund in Wuhan

(Unit: RMB100 million)

	Provident Fund purchase ①	Commercial			合計		
		Purchase ②	Development ③	Total ④=②＋③	Purchase ①+②	Development ③	Total ①+④
1993	0.0	0.4	9.4	9.7	0.4	9.4	9.7
1994	0.0	0.3	14.4	14.7	0.3	14.4	14.7
1995	0.0	0.1	16.4	16.5	0.1	16.4	16.5
1996	0.0	0.2	22.6	22.8	0.2	22.6	22.8
1997	0.0	0.7	27	27.7	0.7	27	27.7
1998	0.0	1.8	41.8	43.6	1.8	41.8	43.6
1999	0.0	3.2	26.5	29.7	3.2	26.5	29.7
2000	3.8	4.1	6.5	10.6	7.9	6.5	14.4
2001	4.0	4.7	6.4	11.1	8.7	6.4	15.1
2002	4.2	4.3	6.3	10.7	8.5	6.3	14.9
2003	4.5	3.9	6.3	10.1	8.4	6.3	14.7
2004	4.5	3.9	6.3	10.1	8.4	6.3	14.6
2005	4.5	3.9	7.5	11.4	8.4	7.5	15.9
2006	4.6	3.9	9.3	13.2	8.5	9.3	17.7
2007	4.6	3.9	11.0	14.9	8.6	11.0	19.5
2008	4.7	4.0	12.6	16.6	8.7	12.6	21.3
2009	4.8	4.1	14.4	18.4	8.9	14.4	23.2
2010	4.9	4.2	16.1	20.3	9.1	16.1	25.2
2000～10	49.1	44.8	102.6	147.5	94.0	102.6	196.6
Annual average growth rate	2.55	0.24	9.49	6.71	1.41	9.49	5.74

Note: Actual values represent city data, and estimates represent central area data.
Source: JICA Study Team

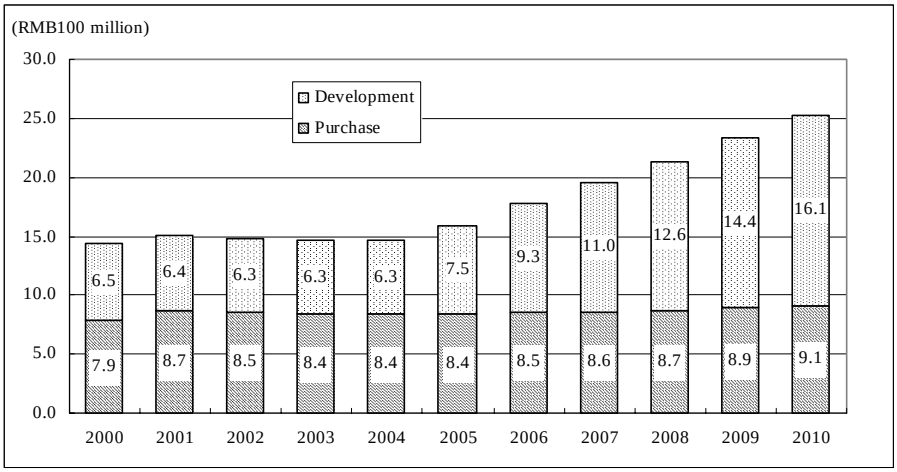
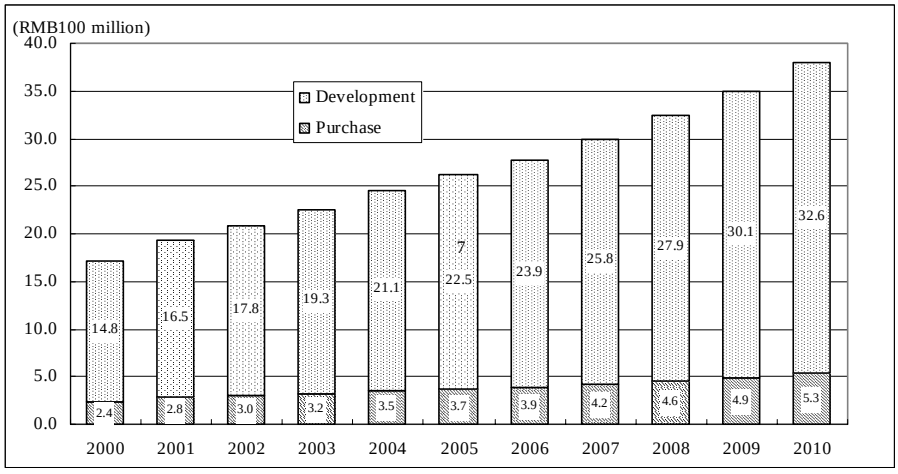


Figure 3-22 Summary of Demand for Housing Fund in Chengdu

(Unit: RMB100 million)

	Provident Fund purchase ①	Commercial			Total		
		Purchase ②	Development ③	Total ④=②+③	Purchase ①+②	Development ③	Total ①+④
1996	0.1	2.0					
1997	0.3	1.9					
1998	0.7	7.6					
1999		3.2					
2000	0.8	1.6	14.8	16.5	2.4	14.8	17.3
2001	1.0	1.8	16.5	18.3	2.8	16.5	19.3
2002	1.2	1.8	17.8	19.6	3.0	17.8	20.8
2003	1.3	1.9	19.3	21.2	3.2	19.3	22.5
2004	1.4	2.1	21.1	23.2	3.5	21.1	24.6
2005	1.5	2.2	22.5	24.6	3.7	22.5	26.1
2006	1.5	2.4	23.9	26.3	3.9	23.9	27.9
2007	1.6	2.7	25.8	28.5	4.2	25.8	30.1
2008	1.6	3.0	27.9	30.9	4.6	27.9	32.5
2009	1.6	3.3	30.1	33.5	4.9	30.1	35.1
2010	1.7	3.7	32.6	36.3	5.3	32.6	37.9
2000～10	15.2	26.4	252.4	278.8	41.6	252.4	294.0
Annual average growth rate	7.47	8.58	8.17	8.21	8.22	8.17	8.18

Note: Actual values represent city data, and estimates represent central area data.
Source: JICA Study Team



3.2. Effect of Policy Implementation on Demand for Funds

3.2.1. Political Demand for Funds and Its Coverage

Many quality commercial houses are currently constructed and offered in most big cities in China in line with the accelerated monetization of housing (conversion from payment in kind to cash payment). Considering the national income level, however, not all people can purchase the desired house. Furthermore, the employee households in cities with stable annual income are not offered quality housing to enjoy a rich life in spite of their housing loan paying

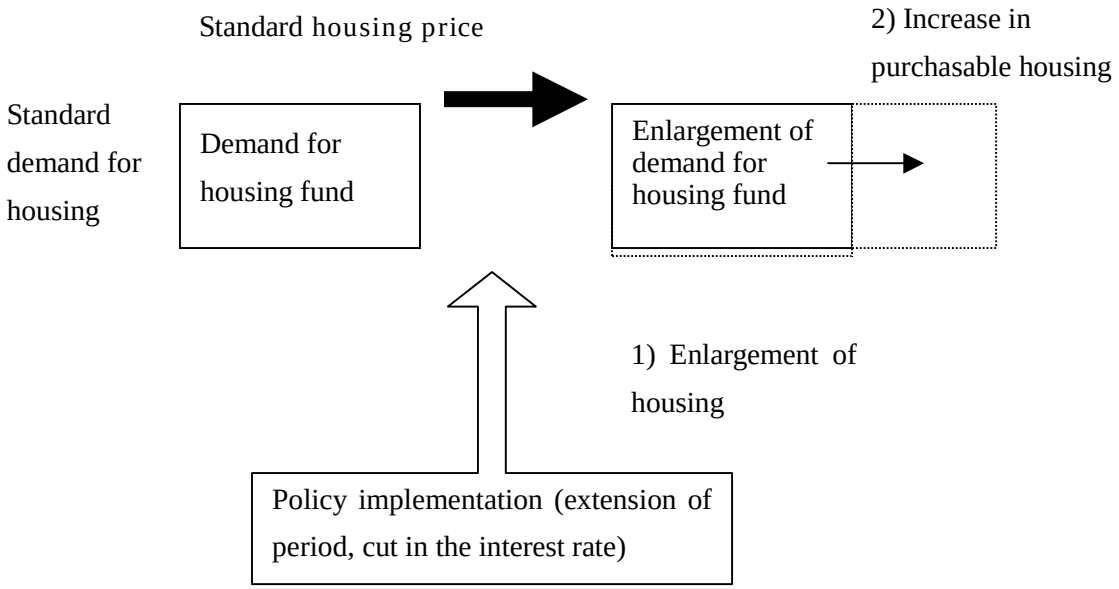
ability.

To solve these problems, the government and public bodies should implement suitable financial and monetary policies to enhance national housing purchasing ability. This requires a prior estimation of the size of funds.

The political demand for funds indicates the funds that should be provided by the government as a financial policy for realizing the desirable housing market, and housing financial system in China as discussed above. The report further calculates the demand for funds additionally required to realize the following two political targets:

1) Effect of expanded housing purchasing group (enhanced purchasing ability of the middle and high income group), and
2) Effect of purchase of higher-quality housing.

Figure 3-23 Effect of Policy Implementation on Demand for Funds



Source: JICA Study Team

3.2.2. Effect of Housing Finance Policy (Sensitivity Analysis)

(1) Effect of Implementation of the Policy on Expansion of Housing Purchasable Group (Expanded Demand)

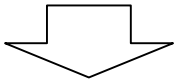
Assuming the housing price is viable in the market, a sensitivity analysis was conducted to define how far the required annual income level may be lowered under the present annual income burden rate when the loan period is extended and the interest rate lowered. The extent a new demand is created implementing the policy was likewise analyzed.

The lowest price for a new house currently marketed in Shanghai is 110 thousand RMB (according to the questionnaire survey). Assuming 30% down payment and a 10-year Housing Provident Fund loan at 4.59% annual interest rate, the annual income level required for the annual income burden rate of 50% is approximately 68 thousand RMB. Assuming that the loan period is extended from 10 to 15 years, those with an annual income of 50 thousand RMB can purchase a house without excessive burden. A 5-year extension of the loan period lowers the required annual income level by approximately 26%. Lowering the loan interest rate by 1% will lower the annual income requirement from 68 thousand RMB to 65 thousand RMB, or approximately 4.8%. This will positively contribute to the lowering of the minimum demand group eligible for purchasing a house.

Extended loan period (increased loan amount) and lowered interest rate (lowered burden rate) reinforce the purchasing ability for certain housing and increase the housing potential-purchase group. Generally, extending loan period is more effective than lowering interest rate in increasing the demand. The impact of extending the loan period, however, tends to be at its limits at the present time since the loan period has already been lengthened. On the other hand, the more the citizens borrow for a long period at a low interest rate, the more intensified the impact on the lowered interest rate. Lowering of interest rate can surely be an effective political means the more extended is the loan period from now on.

Figure 3-24 Result of Sensitivity Analysis (Cases of using only Housing Provident Fund loans; 10 years term)

Assumptions:	Housing price	RMB110,000
	Loan interest rate	4.59%
	Rate of funds on hand	30%
	Borrowings	RMB77,000
	Housing loan period	10.0 years
	Yearly repayment	RMB10,000
	Burden rate	50%



		Purchasable annual income group	Change rate
Base case (10 years; 4.59%)		RMB 20,000	
Sensitivity (period)	15 years (5 years extension)	RMB 14,000	-26.2%
	20 years (10 years extension)	RMB 12,000	-39.0%
	25 years (15 years extension)	RMB 10,000	-46.4%
Sensitivity (interest rate)	1% lowered	RMB 19,000	-4.8%
	2% lowered	RMB 18,000	-9.6%
	3% lowered	RMB 17,000	-14.2%

Source: JICA Study Team

Figure 3-25 Result of Sensitivity Analysis (Cases of using only commercial loans; 10 years term)

Assumptions:	Housing price	RMB110,000
	Loan interest rate	5.58%
	Rate of funds on hand	30%
	Borrowings	RMB77,000
	Housing loan period	10.0 years
	Yearly repayment	RMB10,000
	Burden rate	50%

		Purchasable annual income group	Change rate
Base case (10 years; 5.58%)		RMB 21,000	
Sensitivity (period)	15 years (5 years extension)	RMB 15,000	-24.8%
	20 years (10 years extension)	RMB 13,000	-36.7%
	25 years (15 years extension)	RMB 12,000	-43.6%
Sensitivity (interest rate)	1% lowered	RMB 20,000	-4.7%
	2% lowered	RMB 19,000	-9.3%
	3% lowered	RMB 18,000	-13.9%

Source: JICA Study Team

Figure 3-26 Result of Sensitivity Analysis (Cases of using only Housing Provident Fund loans; 20 years term)

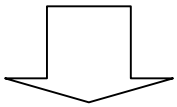
Assumptions:	Housing price	RMB110,000
	Loan interest rate	4.59%
	Rate of funds on hand	30%
	Borrowings	RMB77,000
	Housing loan period	20.0 years
	Yearly repayment	RMB6,000
	Burden rate	50%

		Purchasable annual income group	Change rate
Base case (20 years; 4.59%)		RMB 12,000	
Sensitivity (period)	25 years (5 years extension)	RMB 10,000	-12.1%
	30 years (10 years extension)	RMB 10,000	-19.9%
Sensitivity (interest rate)	1% lowered	RMB 11,000	-8.4%
	2% lowered	RMB 10,000	-16.5%
	3% lowered	RMB 0.9,000	-24.2%

Source: JICA Study Team

Figure 3-27 Result of Sensitivity Analysis (Cases of using only commercial loans; 20 years term)

Assumptions:	Housing price	RMB110,000
	Loan interest rate	5.58%
	Rate of funds on hand	30%
	Borrowings	RMB77,000
	Housing finance period	20.0 years
	Yearly repayment	RMB6,000
	Burden rate	50%



		Purchasable average annual income group	Change rate
Base case (20 years; 5.58%)		RMB 13,000	
Sensitivity (period)	25 years (5 years extension)	RMB 12,000	-10.8%
	30 years (10 years extension)	RMB 11,000	-17.6%
Sensitivity (interest rate)	1% lowered	RMB 12,000	-8.1%
	2% lowered	RMB 11,000	-15.9%
	3% lowered	RMB 10,000	-23.3%

Source: JICA Study Team

(2) Effect of Implementation of the Policy on Improvement of Housing Quality (Improved Quality)

The policy was analyzed to be effective for those households that are expected to have an actual demand for funds to keep the appropriate annual burden rate.

The analysis was based on the same annual income and age bracket, ratio of funds on hand, annual repayment of housing loan (Housing Provident Fund loan), and annual income burden rate as those used in the calculation of the demand for funds for purchasing housing. The purpose of the sensitivity analysis was to find how larger housing people can live without

increasing the current annual income burden rate if the government politically extends the loan period, raise the loan limit, and lower the interest rate.

The price of a house purchasable with an average annual income of 51 thousand RMB (the annual income level capable of purchasing a new house in the lowest price range in Shanghai) with a 10-year housing loan is approximately 274 thousand RMB converted into 73.1 m^2 housing area.

If the loan period is extended from 10 to 15 years, the price of a house purchasable without excessive burden (housing loan burden rate 50%) increases to 390 thousand RMB. This is converted into 99 m^2 housing area if the unit price remains unchanged. By politically extending the loan period to five years, the housing area can be theoretically increased by an average of approximately 7%.

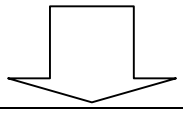
If the loan interest rate is lowered by 1 % from the current 4.59% (Housing Provident Fund loan), the price of a house purchasable without excessive burden (housing loan burden rate 50%) is 93 thousand RMB with a housing area of 46.5 m^2.

If the similar calculation is made assuming an interest rate of 5.56% (commercial loan), the rate of increase in the price and area of the purchasable housing is slightly smaller when a 4.56% interest rate is adopted.

Extending the loan period and lowering the interest rate can positively contribute to the enhancement of the ability to purchase a higher-quality house. The effect of extending the loan period is greater than the lowering of the interest rate. The effect is slightly higher when adopting the low interest bearing Housing Provident Fund loans compared to adopting the high interest bearing commercial loans.

Figure 3-28 Result of Sensitivity Analysis (Cases of using only Housing Provident Fund loans; 10 years term)

Assumptions:	Average annual income	RMB51,000
	Loan interest rate	4.59%
	Burden rate	50%
	Rate of funds on hand	30%
	Housing finance period	10.0 years
	Yearly repayment	RMB26,000



		Purchasable housing price	Converted into area	Change rate
Base case (10 years; 4.59%)		RMB 288,000	73.1 m2	
Sensitivity (period)	15 years (5 years extension)	RMB 390,000	99.0 m2	35.5%
	20 years (10 years extension)	RMB 471,000	119.7 m2	63.8%
	25 years (15 years extension)	RMB 537,000	136.3 m2	86.5%
Sensitivity (interest rate)	1% lowered	RMB 302,000	76.8 m2	5.1%
	2% lowered	RMB 318,000	80.8 m2	10.6%
	3% lowered	RMB 335,000	85.1 m2	16.5%

Note: The unit price used in area conversion is RMB3,938/m^2.

Source: JICA Study Team

Figure 3-29 Result of Sensitivity Analysis (Cases of using only commercial loans; 10 years term)

Assumptions:	Average annual income	RMB51,000
	Loan interest rate	5.58%
	Burden rate	50%
	Rate of funds on hand	30%
	Housing finance period	10.0 years
	Yearly repayment	RMB26,000

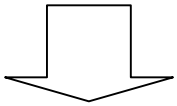
		Purchasable housing price	Converted into area	Change rate
Base case (10 years; 5.58%)		RMB 374,000	69.61 m2	
Sensitivity (period)	15 years (5 years extension)	RMB 365,000	92.6 m2	33.0%
	20 years (10 years extension)	RMB 434,000	110.1 m2	58.1%
	25 years (15 years extension)	RMB 486,000	123.5 m2	77.3%
Sensitivity (interest rate)	1% lowered	RMB 288,000	73.1 m2	5.0%
	2% lowered	RMB 303,000	76.8 m2	10.3%
	3% lowered	RMB 318,000	80.8 m2	16.1%

Note: The unit price used in area conversion is RMB3,938/m^2.

Source: JICA Study Team

Figure 3-30 Result of Sensitivity Analysis (Cases of using only Housing Provident Fund loans; 20 years term)

Assumptions:	Average annual income	RMB51,000
	Loan interest rate	4.59%
	Burden rate	50%
	Rate of funds on hand	30%
	Housing finance period	20.0 years
	Yearly repayment	RMB26,000



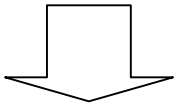
		Purchasable housing price	Converted into area	Change rate
Base case (20 years; 4.59%)		RMB 471,000	110.1 m2	
Sensitivity (period)	25 years (5 years extension)	RMB 537,000	123.5 m2	13.8%
	30 years (10 years extension)	RMB 589,000	133.6 m2	24.9%
Sensitivity (interest rate)	1% lowered	RMB 515,000	119.8 m2	78.9%
	2% lowered	RMB 565,000	130.9 m2	96.2%
	3% lowered	RMB 622,000	143.5 m2	116.0%

Note: The unit price used in area conversion is RMB3,938/m^2.

Source: JICA Study Team

Figure 3-31 Result of Sensitivity Analysis (Cases of using only commercial loans; 20 years term)

Assumptions:	Average annual income	RMB51,000
	Loan interest rate	5.58%
	Burden rate	50%
	Rate of funds on hand	30%
	Housing finance period	20.0 years
	Yearly repayment	RMB26,000



		Purchasable housing price	Converted into area	Change rate
Base case (20 years; 5.58%)		RMB 434,000	110.1 m2	
Sensitivity (period)	25 years (5 years extension)	RMB 486,000	123.5 m2	12.1%
	30 years (10 years extension)	RMB 526,000	133.6 m2	21.4%
Sensitivity (interest rate)	1% lowered	RMB 472,000	119.8 m2	72.0%
	2% lowered	RMB 515,000	130.9 m2	87.9%
	3% lowered	RMB 565,000	143.5 m2	106.1%

Note: The unit price used in area conversion is RMB3,938/m^2.

Source: JICA Study Team

3.2.3. Estimation of Demand for Housing Fund Occurring in the Desirable Housing Market

The extent by which the demand for funds (individuals and construction) would increase was studied when the financial policies (extended loan period and lower interest rate to expand purchase demand groups and improve housing quality) discussed in paragraph 4-2-2 are implemented.

(1) Shanghai

1) Effect of Expanded Housing Purchasing Group on Demand for Funds

The potential-purchase group would expand from 77.3% to 81.9% when the loan period is extended five years on the average. The resultant demand for funds would be 53.97 billion RMB in 2000. This is 2.99 billion RMB greater than the demand for funds for average loan period of 12.2 years which was calculated from the questionnaire survey,

etc. The demand would increase by 5.98 billion RMB to 56.96 billion RMB if the loan period is extended by a maximum of 15 years.

By lowering the interest rate by 1% from the standard interest rate of 4.56%, the potential-purchase group expands approximately 1.6%. This means that the demand for funds in 2000 would increase by 1 billion RMB to 51.98 billion RMB. Similarly, by lowering the interest rate by 3%, the potential-purchase group would expand approximately 4.9%, thus, increasing the demand for funds in 2000 to 53.97 billion RMB. (Treasury) funds required to lower the interest rate by 1% and 3% would be 520 million RMB and 1.62 billion RMB, respectively.

2) Effect of Improved Housing Quality on Demand for Funds

The average area would increase 27.4% from the standard case of average 12.2 years borrowing period when the loan period is extended five years on the average. The resultant demand for funds would be 64.97 billion RMB in 2000. This increases the standard case by 13.99 billion RMB. The demand would increase 66.8% or 85.07 billion RMB if the loan period is extended by a maximum of 15 years.

On lowering the interest rate by 1% from the standard interest rate of 4.56%, the housing area would increase approximately 6.1%. This means that the demand for funds in 2000 would increase to 54.07 billion RMB. Similarly, in lowering the interest rate by 3%, the area would increase approximately 19.9%, increasing the demand for the funds to 61.15 billion RMB. (Treasury) funds required to lower interest rate by 1% and 3% would be 540 million RMB and 1.83 billion RMB, respectively.

Table 3-25 Effect of Financial Policy on Demand for Funds - Shanghai

【Expanded demand】

		Lowest annual income (in 2000) (RMB10,000/year)	Actualization rate (%)	Rate of increase	Effect on demand for funds (RMB100 million) 2000	Difference	10 years cumulative	Difference	(Reference) Treasury demand 2000	For 10 years
Base		1.5	77.3		452.5		7184.7			
Loan period	5-year extension	1.2	81.9	5.9%	479.0	26.5	7605.9	421.2		
	10-year extension	1.0	84.9	9.8%	496.7	44.2	7886.7	702.0		
	20-year extension	0.9	86.4	11.7%	505.5	53.1	8027.1	842.4		
Interest rate	1% lowering	1.4	78.8	2.0%	461.3	8.8	7325.1	140.4	4.6	73.3
	2% lowering	1.3	80.4	3.9%	470.2	17.7	7465.5	280.8	9.4	149.3
	3% lowering	1.2	81.9	5.9%	479.0	26.5	7605.9	421.2	14.4	228.2

【Raised purchasing price】

		Average purchase price (in 2000) (RMB10,000/house)	Area (㎡)	Rate of increase	Effect on demand for funds (RMB100 million) 2000	Difference	10 years cumulative (RMB100 million)	Difference	(Reference) Treasury demand 2000	For 10 years
Base		38.2	97.0		452.5		7184.7			
Loan period	5-year extension	48.7	123.6	27.4%	576.6	124.1	9155.8	1971.1		
	10-year extension	57.0	144.9	49.4%	675.8	223.3	10730.7	3545.9		
	15-year extension	63.7	161.8	66.9%	755.0	302.6	11989.0	4804.3		
Interest rate	1% lowering	40.5	102.9	6.1%	479.9	27.4	7620.4	435.7	4.8	76.2
	2% lowering	43.0	109.3	12.7%	509.9	57.4	8096.5	911.8	10.2	161.9
	3% lowering	45.8	116.3	19.9%	542.7	90.2	8617.6	1432.9	16.3	258.5

Note: The base case was calculated with 4.59% interest rate, 12 loan years, and 38.8% down payment.
Source: JICA Study Team

(2) Wuhan

1) Effect of Expanded Housing Purchasing Group on Demand for Funds

The latent potential-purchase group would expand from 77.3% to 78.5% when the average loan period is extended to five years. The resultant demand for funds (when a part of the group with a high intention of purchasing a house actually buys a house) would be 1.55 billion RMB in 2000. This results to 110 million RMB greater than the demand for funds for an average loan period of 11.4 years calculated from the questionnaire survey, etc. The demand would increase to 1.65 billion RMB if the loan period were extended by a maximum of 15 years.

By lowering the interest rate by 1% from the standard interest rate of 4.56%, the purchasing group expands approximately 3.7%. This means that the demand for funds in 2000 would increase (by 50 million RMB) to 1.49 billion RMB. Similarly, in lowering the interest rate by 3%, the demand for funds would increase to 1.51 billion RMB. The (treasury) funds required to lower the interest rate by 1% and 3% would be 10 million RMB and 50 million RMB, respectively.

Although the absolute value is small, the effect of implementation of financial policy on expansion of the demand is greater than in Shanghai.

2) Effect of Improved Housing Quality on Demand for Funds

The average area would increase 30.2% from the standard case when the loan period is extended five years on the average. The resultant demand for funds in 2000 would be 1.98 billion RMB. This is greater than the standard case by 440 million RMB. The demand would increase by 1.08 billion RMB to 2.5 billion RMB if the loan period is extended by a maximum of 15 years.

In lowering the interest rate by 1% from the standard interest rate of 4.56%, the housing area would increase approximately 5.3%. This means that the demand for funds in 2000 would increase to 1.52 billion RMB. Similarly, in lowering the interest rate by 3%, the area would increase approximately 18.6%, increasing the demand for funds to 1.71 billion RMB. (Treasury) funds required to lower interest rate by 1% and 3% would be 20 million RMB and 50 million RMB, respectively. This means that almost the same amount as with the case of expanded demand is required.

The effect of improved housing quality on the demand for funds is slightly smaller than in Shanghai.

Table 3-26 Effect of Financial Policy on Demand for Funds - Wuhan

【Expanded demand】

		Lowest annual income (in 2000) (RMB10,000/year)	Actualization rate (%)	Rate of increase	Effect on demand for funds (RMB100 million) 2000	Difference	10 years cumulative	Difference	(Reference) Treasury demand 2000	10 years cumulative
Base		1.0	73.2		14.4		196.6			
Loan period	5-year extension	0.8	78.5	7.3%	15.5	1.1	211.0	14.4		
	10-year extension	0.6	83.9	14.7%	16.5	2.1	225.4	28.8		
	20-year extension	0.6	83.9	14.7%	16.5	2.1	225.4	28.8		
Interest rate	1% lowering	0.9	75.8	3.7%	14.9	0.5	203.8	7.2	0.1	2.0
	2% lowering	0.9	75.8	3.7%	14.9	0.5	203.8	7.2	0.3	4.1
	3% lowering	0.8	78.5	7.3%	15.5	1.1	211.0	14.4	0.5	6.3

【Raised purchasing price】

		Average purchase price (in 2000) (RMB10,000/house)	Area (m²)	Rate of increase	Effect on demand for funds (RMB100 million) 2000	Difference	10 years cumulative	Difference	(Reference) Treasury demand 2000	10 years cumulative
Base		14.7	97.5		14.4		196.6			
Loan period	5-year extension	19.2	127.0	30.2%	18.8	4.4	256.0	59.4		
	10-year extension	22.7	150.5	54.4%	22.2	7.8	303.5	106.9		
	15-year extension	25.6	169.3	73.7%	25.0	10.6	341.4	144.8		
Interest rate	1% lowering	15.6	103.0	5.7%	15.2	0.8	207.8	11.2	0.2	2.1
	2% lowering	16.5	109.1	11.9%	16.1	1.7	219.9	23.3	0.3	4.4
	3% lowering	17.5	115.6	18.6%	17.1	2.7	233.1	36.5	0.5	7.0

Note: The base case was calculated with 4.59% interest rate, 11.4 loan years, and 42.0% down payment ratio.
Source: JICA Study Team

(3) Chengdu

1) Effect of Expanded Housing Purchasing Group on Demand for Funds

The latent potential-purchase group would expand from 78.8% to 84.1% when the average loan period is extended to five years. The resultant demand for funds (when a part of the group with a high intention of purchasing a house actually buys a house) would be 1.84 billion RMB in 2000. This is 120 million RMB greater than the demand for funds for average loan period of 15.2 years calculated from the questionnaire survey, etc.

In lowering the interest rate by 1% from the standard interest rate of 4.56%, the purchasing group expands approximately 3.4%. This means that the demand for funds in 2000 would increase by 60 million RMB to 1.78 billion RMB. Similarly, in lowering the interest rate by 3%, the demand for funds would increase to 1.84 billion RMB. The (treasury) funds required to lower the interest rate by 1% and 3% would be 20 million RMB and 60 million RMB, respectively.

The effect of extension of loan period and lowering of interest rate on expansion of the demand is smaller than in Shanghai and Wuhan.

2) Effect of Improved Housing Quality on Demand for Funds

The average housing area would increase 20.6% from the standard case if the average loan period is extended to five years. The resultant demand for funds in 2000 would increase 360 million RMB above the standard level to 2.08 billion RMB. The demand would increase by 870 million RMB to 2.59 billion RMB if the loan period is extended by a maximum of 15 years.

In lowering the interest rate by 1% from the standard interest rate of 4.56%, the housing area would increase approximately 7.3%. This means that the demand for funds in 2000 would increase to 1.85 billion RMB. Similarly, in lowering the interest rate by 3%, the housing area would increase approximately 24.4% and increase the demand for funds to 2.15 billion RMB. (Treasury) funds required to lower interest rate by 1% would be 20 million RMB and 60 million RMB for a 3%. Nearly the same amount as with the case of expanded demand is required in Chengdu.

The effect of improved housing quality due to lowered interest rate on the demand for funds is greater than in the two other cities. This is because the average loan period of purchasers is already longer than in other cities.

Table 3-27 Effect of Financial Policy on Demand for Funds - Chengdu

[Expanded demand]

		Lowest annual income (in 2000) (RMB10,000/year)	Actualization rate (%)	Rate of increase	Effect on demand for funds (RMB100 million) 2000	Difference	10 years cumulative	Difference	(Reference) Treasury demand 2000	For 10 years
Base		0.8	78.8		17.2		292.1			
Loan period	5-year extension	0.6	84.1	6.7%	18.3	1.2	311.8	19.6		
	10-year extension	0.6	84.1	6.7%	18.3	1.2	311.8	19.6		
	20-year extension	0.5	86.8	10.1%	18.9	1.7	321.6	29.5		
Interest	1% lowering	0.7	81.5	3.4%	17.7	0.6	301.9	9.8	0.2	3.0
rate	2% lowering	0.7	81.5	3.4%	17.7	0.6	301.9	9.8	0.4	6.0
	3% lowering	0.6	84.1	6.7%	18.3	1.2	311.8	19.6	0.5	9.4

[Raised purchasing price]

		Average purchase price (in 2000) (RMB10,000/house)	Area (m^2)	Rate of increase	Effect on demand for funds (RMB100 million) 2000	Difference	10 years cumulative	Difference	(Reference) Treasury demand 2000	For 10 years
Base		16.1	99.8		17.2		292.1			
Loan period	5-year extension	19.4	120.4	20.6%	20.7	3.5	352.4	60.3		
	10-year extension	22.1	136.8	37.1%	23.5	6.4	400.5	108.4		
	15-year extension	24.2	149.9	50.3%	25.8	8.6	439.0	146.9		
Interest	1% lowering	17.3	107.0	7.3%	18.4	1.2	313.4	21.3	0.2	3.1
rate	2% lowering	18.6	115.1	15.4%	19.8	2.6	337.0	44.9	0.4	6.7
	3% lowering	20.0	124.1	24.4%	21.3	4.2	363.4	71.3	0.6	10.9

Note: The base case was calculated with 4.59% interest rate, 15.2 loan years, and 37.2% down payment ratio.
Source: JICA Study Team

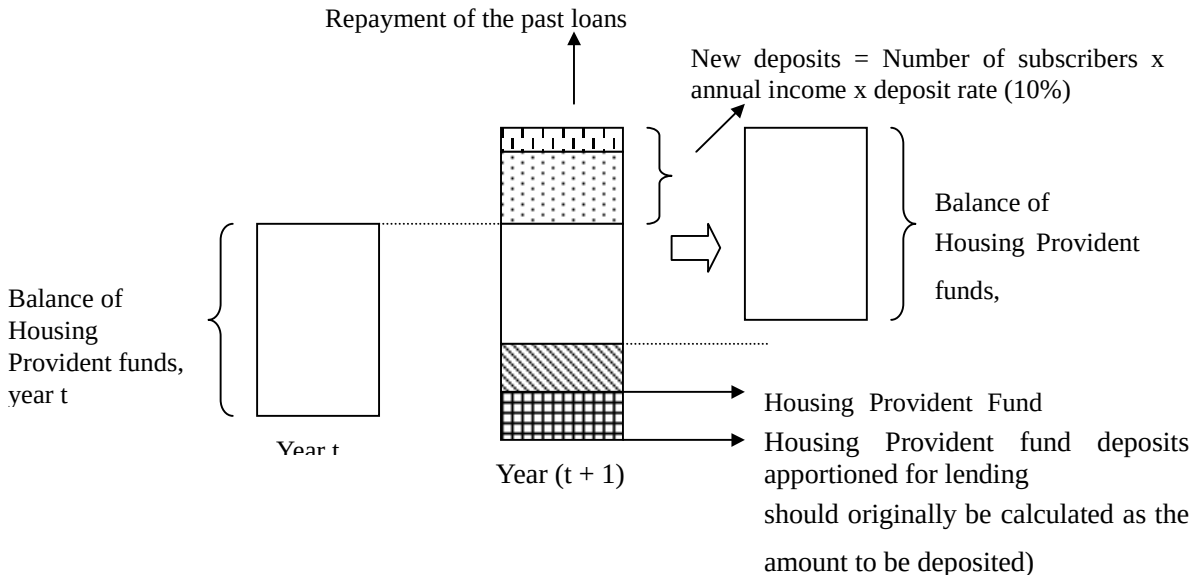
3.3. A Study of Demand and Supply Balance of Housing Provident Fund

3.3.1. Housing Provident Fund Flow and Study

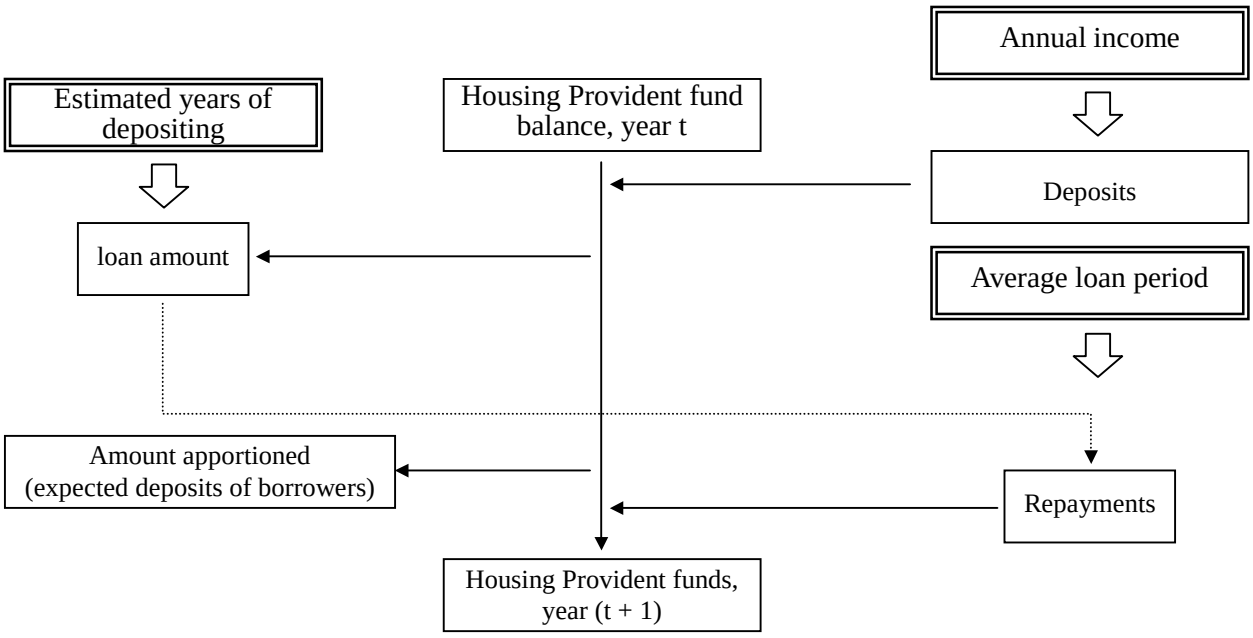
Balance of the Housing Provident funds (funds available for lending) in a given year is the sum of the balance brought forward from the preceding year and the new Housing Provident funds deposited in the relevant year minus the apportioned amount for the year. The incremental deposits and apportioned amount are estimated in this section.

It is important to note that the deposits increasing each year are dependent on the execution of housing loans. This means that the borrowers must be deleted from the future depositors' list. Based on this concept, the balance of Housing Provident funds was calculated.

Figure 3-32 Flow of Housing Provident Funds (Assuming 100% Subscription)



[Balance of Housing Provident funds, year t] + [Housing Provident funds deposits, year t] – [loan amount, year t] – [withdrawal from deposited funds] + [repayment of the past loans]



Source: JICA Study Team

3.3.2. Calculation with Model Cases

(1) Assumptions

A series of model simulations were conducted to identify the change of Housing Provident funds in relation to the trend of the Housing Provident Fund deposits and loaning. The assumptions and the result of the model simulation are described below.

○ Subscribers to the Housing Provident Fund system :1,000,000 households
○ Deposit rate :5% for both employees and enterprises
○ Loan size :5% of the loan qualified persons in each relevant year
○ Average annual income of subscribers :RMB20,000
○ Average loan period :15 years

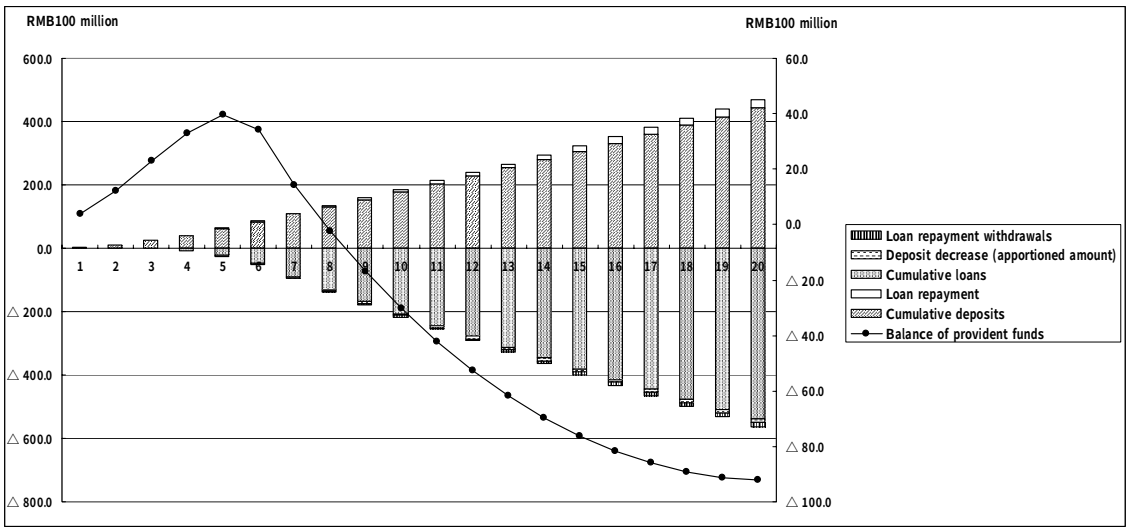
[Result of Model Simulation]

1) The deposits in amount are assumed to sharply increase up to the fifth year of the start of the Housing Provident Fund system. After this period, the deposits are expected to increase in proportion to the increasing number of households.
2) Loaning is assumed to occur in and after the second year of the start of the Housing Provident Fund system, and increase in the same rate as the growth of the deposits in amount because it was assumed that a certain percentage of subscribers would always apply for and obtain a loan.
3) As a result, the balance of the Housing Provident Funds will sharply drop after the fifth year when the rate of loan qualified persons approaches 100%. The balance would be in passive, or the funds will run short after the eighth year of system foundation. The deficits would increase over time because the borrowers are no longer required to deposit and the Housing Provident funds start to shrink. This means that demand for fund directly leads to a decrease in deposits.

Figure 3-33 Result of Model Simulation of Housing Provident Funds

Years of system operation				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Deposits	Eligible households	Households	①	100.0	102.0	104.0	106.1	108.2	110.4	112.6	114.9	117.2	119.5	121.9	124.3	126.8	129.4	131.9	134.6	137.3	140.0	142.8	145.7
	Subscription rate	%	②	20%	40%	60%	80%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Number of subscribers	Households	③ = ① * ②	20	40.8	62.4	84.9	108.2	110.4	112.6	114.9	117.2	119.5	121.9	124.3	126.8	129.4	131.9	134.6	137.3	140.0	142.8	145.7
	Subscriber average income	RMB 10,000	④	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
	Average deposits	RMB 100 million	③ * ④ * A	4.0	8.2	12.5	17.0	21.6	22.1	22.5	23.0	23.4	23.9	24.4	24.9	25.4	25.9	26.4	26.9	27.5	28.0	28.6	29.1
	Cumulative deposits	RMB 100 million	⑥	4.0	12.2	24.6	41.6	63.3	85.4	107.9	130.9	154.3	178.2	202.6	227.4	252.8	278.7	305.1	332.0	359.4	387.4	416.0	445.1
Loans	Loan qualified persons	Households	⑦			20.0	40.6	61.4	82.0	102.1	99.2	96.4	93.8	91.5	89.2	87.2	85.2	83.5	81.8	80.3	78.9	77.7	76.5
	Loanees	Households	⑧ = ⑤ * B			0.2	0.8	1.8	3.3	5.1	5.0	4.8	4.7	4.6	4.5	4.4	4.3	4.2	4.1	4.0	3.9	3.9	3.8
	Subscribers who already obtained a loan	Households	⑨			0.2	1.0	2.9	6.1	11.2	16.2	21.0	25.7	30.3	34.7	39.1	43.4	47.5	51.6	55.6	59.6	63.5	67.3
	Ratio of cumulative loans	%				0.3%	1.2%	2.6%	5.6%	10.0%	14.1%	17.9%	21.5%	24.8%	27.9%	30.8%	33.5%	36.0%	38.4%	40.5%	42.6%	44.4%	46.2%
	Expected deposits before retirement	RMB 10,000				8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
	Average loan	RMB 10,000				8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
	Annual total loans	RMB 100 million				1.6	6.5	14.7	26.3	40.8	39.7	38.6	37.5	36.6	35.7	34.9	34.1	33.4	32.7	32.1	31.6	31.1	30.6
	Cumulative loans	RMB 100 million	⑩			1.6	8.1	22.8	49.1	89.9	129.6	168.2	205.7	242.3	278.0	312.8	346.9	380.3	413.0	445.2	476.7	507.8	538.4
	Loan repayment withdrawal	RMB 100 million	⑪ = ⑥ * ⑧ / ③			0.1	0.4	1.1	2.5	4.9	5.6	6.3	7.0	7.6	8.2	8.7	9.2	9.6	10.1	10.5	10.9	11.3	11.7
	Loan repayment	RMB 100 million	⑫ = ⑨ / C				0.1	0.4	1.1	2.5	4.5	6.5	8.4	10.3	12.1	13.9	15.6	17.3	19.0	20.7	22.3	23.8	25.4
	Deposit decrease	RMB 100 million	⑬ = ⑨ * ④ * A				0.0	0.2	0.6	1.2	2.2	3.2	4.2	5.1	6.1	6.9	7.8	8.7	9.5	10.3	11.1	11.9	12.7
Balance	Balance of deposits	RMB 100 million	⑥ - ⑩ - ⑪ - ⑬ + ⑫	4.0	12.2	23.0	33.2	39.6	34.3	14.3	△ 2.1	△ 17.0	△ 30.3	△ 42.2	△ 52.6	△ 61.8	△ 69.6	△ 76.2	△ 81.6	△ 85.9	△ 89.1	△ 91.2	△ 92.3

Note: Loan repayment means yearly repayment of loans



Source: JICA Study Team

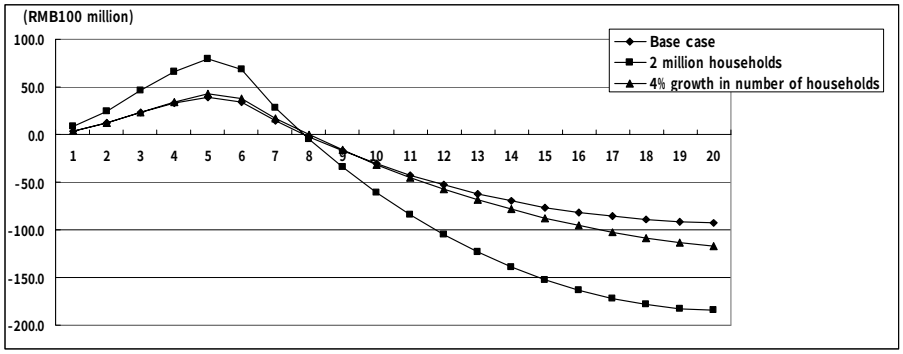
(2) Result of Sensitivity Analysis by Case

Sensitivity analyses were conducted to understand the effect of annual income of the employee households and loan execution rate (i.e. demand for funds), the two major factors affecting the balance of the Housing Provident funds.

1) Varying the Number of Households [Sensitivity Analysis of Entrance Portion]

Doubling the number of households subscribing to the Housing Provident Fund system from one million to two million will increase the balance of Housing Provident funds two-fold. The balance increases considerably at the initial period of the Housing Provident Fund system operation. However, this will be followed by an increasingly large negative figure. If, instead, the growth of the number of households is corrected from 2% to 4%, the deficit increases in the 12th year and after compared with the base case. Even if the growth of the number of households improves, the structural tendency of deficit occurrence is unavoidable.

Figure 3-34 Result of Sensitivity Analysis (Varying the Number of Households)

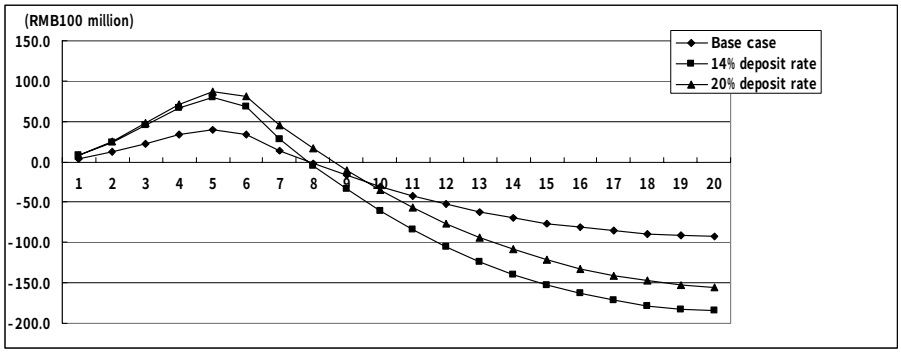


Source: JICA Study Team

2) Varying the Annual Income of Subscribers [Sensitivity Analysis of Entrance Portion]

The Housing Provident fund deposit rate was changed from 10% to 14% and 20%. When the deposit rate is increased, the deficit occurs some years later (nine years for 20% deposit rate), but the structural tendency of deficit occurrence cannot be eliminated. On the contrary, the deficit increases with the increasing deposit rate.

Figure 3-35 Result of Sensitivity Analysis (Varying Deposit Rate)

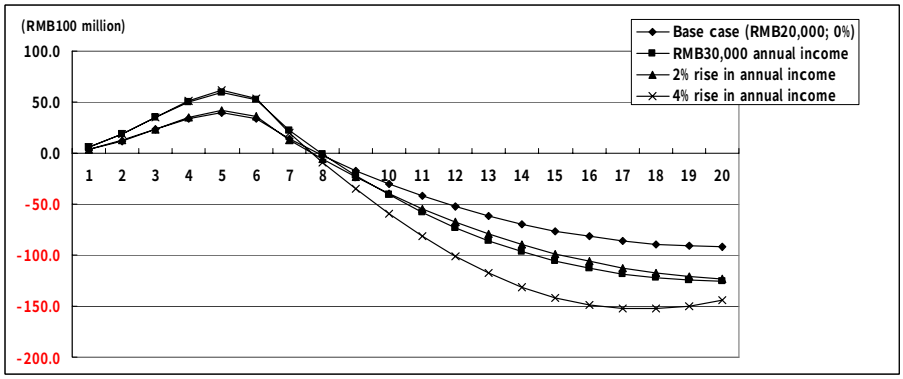


Source: JICA Study Team

3) Varying Annual Income of Subscribers [Sensitivity Analysis of Entrance Portion]

The period of balance in deficit remains unchanged even when the annual income of the Housing Provident Fund subscribers or the annual income growth rate is changed. The Housing Provident fund balance increases 1.5 times if the annual income level of the subscribers is increased from 20 thousand RMB to 30 thousand RMB. When the annual income increases 4% or more, the balance in deficit start to diminish in the 18th year of operation of the Housing Provident Fund system. This is because deposits received are greater than loans given.

Figure 3-36 Result of Sensitivity Analysis (Varying Annual Income)



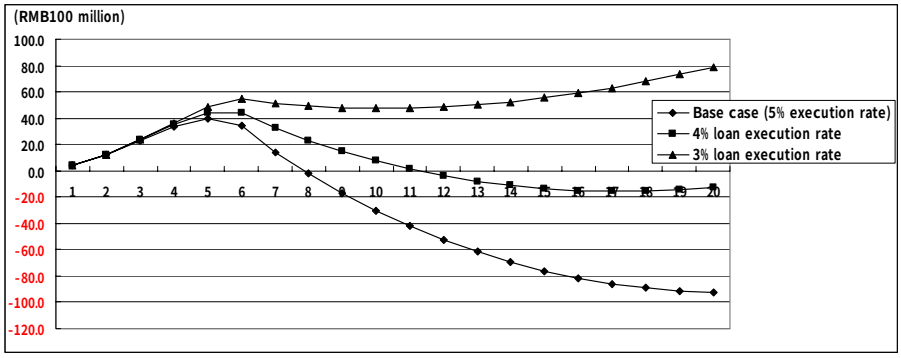
Source: JICA Study Team

4) Varying Loan Execution Rate [Sensitivity Analysis of Exit Portion]

When the loan execution rate (borrowers to total subscribers) is decreased from the current 5% to 4%, the Housing Provident fund balance turns passive 4 years later than in the base case or in the 12th year of the system operation. If the loan execution rate is lowered to 3% the balance will not turn passive.

This means that the Housing Provident funds balance is greatly affected by the loan execution rate, or the size of demand for funds.

Figure 3-37 Result of Sensitivity Analysis (Varying Annual Income)



Source: JICA Study Team

(3) Findings of Simulation Study

In Shanghai where the households increase rate, annual income level, and loan execution rate (demand for funds) are already high, the Housing Provident fund balance may easily turn passive chronically. In Wuhan and Chengdu, where the Housing Provident Fund system started relatively recently and not many people are qualified for loans (low loan execution rate), the Housing Provident fund is inactive. It can turn passive, however, in the future when the system matures and the loan qualified persons increase sharply.

3.4. Problems of Supply of Fund to Demand for Housing Fund

Based on the result of the study of the demand for housing fund, the following problems exist with the Housing Provident Fund system, commercial loan system, and the financial bodies:

3.4.1. Problems of Housing Provident Fund System

The current Housing Provident Fund system has the funding limit because the upper loan limits are set and loans are interlocked with deposit. It is possible that the system cannot accommodate the demand for housing fund that sharply increase as cities develop and the housing level is enhanced. The current Housing Provident Fund system may turn into a bottleneck in the sense that it does not support urban and regional economic development through supply of quality housing. The following problems must be solved for the system to supply quality funds (low interest rate and long-term loan) to individuals, enterprises, and developers, and realize and guide economic development in cities and enhancement of welfare:

(1) Liaison and Cooperation among Cities and Regions

As the result of the simulation study suggests, the Housing Provident fund balance depends on the number of subscriber households, annual income level of subscribers, and the demand for housing fund. This means that the Housing Provident Fund deposits increase with the number of subscriber households and annual income level but the balance can turn passive if a large demand for funds occurs. According to a trial calculation, a deficit balance will be recorded and chronic fund shortage occurs as soon as the Housing Provident Fund system matures (all subscribers are eligible for loans), and a demand for funds exceeding 4% of the subscriber households is generated. It is also clear that the Housing Provident Fund system is always in the active when the system is not mature and the loan execution rate is extremely low. The reasons of fund shortage reported in Shanghai are that the system is mature and the above level of demand for fund has occurred with more than a certain ratio of subscribers.

To overcome the problem from a short-term perspective, the Housing Provident Fund systems at the different economic development stages and system maturity (i.e. different loan occurring rates) should tie up and cooperate, while respecting the government's regional strategic policy, in order to mutually cover the fund shortage. The organization and personnel affairs required for facilitating the wide-area cooperation and integration are discussed in the sections that follow.

(2) Retention of Funds for Extension of Loan Period and Raising of Loan Upper Limit (Short- and Middle-term Tasks)

Under the current monetary system in China, the annual housing cost burden rate exceeds the average burden rate of 10% prevailing in Japan to a great extent even if the housing price is held within six times the annual income. To keep the housing cost burden rate within an appropriate limit and enlighten the annual loan burden of the borrowers, the loan period and loan upper limit for the existing loans, Housing Provident Fund loans in particular, should be improved.

The Housing Provident Fund system should keep available funds (margins) to prepare itself for the increased demand for fund due to enlarged loan limit and the possible fund shortage due to mismatch between deposit period and loan period.

(3) Raising of Funds for Construction of Rental Houses and Renewal and Modification of Housing (Short- and Middle-term Tasks)

In line with the expansion of the urban area, many people in the surrounding areas will flow into the city. In addition, an increasing number of students will wish to enter a school of higher grade located in the city and a number of households will be divided into smaller units as the aged population advances. Because of all these reasons, the demand for rental housing with a greater freedom of selection of dwelling than owned houses would increase in the future. It is difficult for private-sector developers to actively construct and offer rental housing for reasons of profitability. The Housing Provident Fund system is instead required to supply low-cost, low-risk funds for construction of rental housing.

To enhance the urban inhabitants' housing purchasing ability, it is necessary to enhance the value of the presently owned dormitory, increase funds on hand (liquidity on hand), and promote purchase of existing housing of a relatively low unit price. To realize this, adequate funds must be supplied for renewal and modification of dormitories and existing housing.

(4) Separation of Deposits and Loans of the Housing Provident Fund System, and Establishment of a New Monetary System (Long-term Tasks)

As discussed above, fund shortage in Shanghai can be solved, from the short-term perspective, by wide-area utilization of the Housing Provident funds. The currently viable Housing Provident Fund system in Wuhan and Chengdu, where the Housing Provident fund balance is in the active, will sooner or later turn passive and fund shortage occur as economy develops. This is because fund deposits and loans are interlocked. Unless the increase of new subscribers exceeds the speed of loans, fund resources would diminish with each loan given. This is a structural problem of the Housing Provident Fund system.

To solve this problem flatly, deposits and loans, currently interlocked with each other, should be separated from the long-term perspective, and a new monetary system free from restriction forced by the size of deposits should be established. Options include establishment of a public housing loan institution using the nation's savings as the resource as seen in Japan, unification of the deposits of all Housing Provident Fund systems, and utilization of funds collected at the post offices.

3.4.2. Problems Related to Commercial Bank Loans

(1) Demand for Housing Purchasing Funds That Are Required in Relation to Improved Quality

According to the trial calculation conducted in this section, individuals' demand for housing purchasing funds for commercial banks is greater than that for the Housing Provident Fund system, or approximately two times in Shanghai. This is because as urban economy

develops and the annual income level is raised people are more inclined to purchase a higher-quality house (higher selling unit price and construction unit cost). They must rely on commercial banks for funds required for the portion of the housing equivalent to the increment of unit price because their funds on hand are limited and the Housing Provident Fund system rules the structural upper limit as discussed above. Housing quality will be further improved in the future in line with the development of aged population, environmental considerations, and development of high-level information system. The role of commercial banks in financing is more and more important.

To cope with these needs for funds, commercial banks must seriously consider offering housing loans for individuals. This in turn requires for commercial banks to develop and sell financial products that aid in improved loan burden rate for the borrowers. It is also necessary for them to conduct individuals' risk control and improve examination ability.

(2) Increased Supply of Funds for Development and Construction

Demand for housing development and construction fund may not necessarily increase too much because development projects will be carried out more efficiently than before and the investment will be recovered earlier than expected by employing the reservation marketing method. However, the housing development cost inevitably increases in the future because of the consumers' demand for information equipment and systems in housing and more environmentally compatible living space. It is still necessary to externally raise funds in the future. The result of trial calculation also shows that the demand for funds by developers is at least as high as the demand for funds by individuals for purchasing housing. Developers must rely on commercial banks for almost all of their demand for construction fund because the Housing Provident Fund system by nature grants priority to individuals for loaning. Considering the current level of commercial loans, developers may find it difficult to borrow from banks sufficiently to satisfy their brisk demand for funds for construction projects in the city center.

Commercial banks are required to improve their financing ability to meet the development and construction needs. The People's Construction Bank of China and commercial banks are currently studying direct raising of resources, or conversion of housing loans into securities. This type of fund raising in the market should be actively pursued.

3.4.3. Problems with Political Loans

(1) Raising of Financial Funds for Expansion of Purchasing Power of Low and Middle Earners

The current commercial housing selling price level does not allow most of the low and

middle earners to purchase a house without an extreme burden. It is necessary to lower the housing price through financial assistance to developers and offer housing purchasing assistance that has been mainly applied to enterprises. Financial funds necessary for such assistance must be prepared beforehand.

(2) Raising of Interest Compensation Funds for Lowering Housing Cost Burden Rate

In addition to institutional measures of extension of loan period and raising of loan upper limit, housing loan interest rate itself should be lowered to an appropriate level to lower the current high housing loan burden rate for purchasers.

A scheme of compensating differential interests using public funds should be instituted so that the Housing Provident Fund system and commercial banks can offer low interest housing loans without decreasing their margins. The task is to envision how the public bodies can raise the funds equivalent to the differential interest.

III-4.

Direction in which Infrastructure be Built up to Activate Housing Market and Promote Housing Policy

4. Direction in which Infrastructure be Built up to Activate Housing Market and Promote Housing Policy

4.1. To Activate Housing Market

In China, the housing market has been being formed rapidly with the lead taken by promoting the private ownership of housing. And it has led to a great success in achieving the housing system reform. Coupled with her economic and social developments, on the other hand, the environments surrounding the housing market has been changing rapidly, including a progress of urbanization, an increase in migration and a formation of new life styles. The housing market formation so far achieved in China is grasped as the "Primary Changeover to the Market Economy of Housing." On this premise, it is important to construct those mechanisms/systems, which would accelerate the "Secondary Changeover to the Market Economy of Housing" so that an autonomous and continuous development and growth of the housing market can be promoted while eventually contributing to an evolution of the national economy. In this stage, those systems whose importance has been so far attached to the promotion of private housing ownership should be importantly reviewed while studying the feasibility of maintaining, renewing and distributing the relatively genuine housing stock currently being formed. In addition, it is important to study the creation of (from a medium-term point of view) the system striving to promote the construction rental houses which have a high level of added value suitably enough to meet the substantial needs in new demand for housing. Given below is an essay on those measures which are intended to mature and activate the Chinese housing market with its formation now in progress, by promoting the distribution of used housing and the construction of new rental housing in a far greater measure.

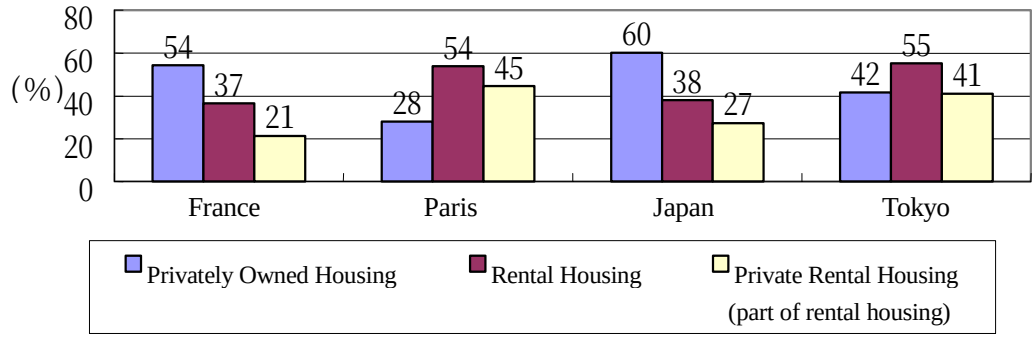
4.1.1. Basic Recognition on Housing Market Activated, with Used/Rented Housing Market Formed

It is considered necessary that the long-/medium-term sustainable activation of a housing market in China should be thought about, based on such a basic recognition of the housing market to be activated through the formation of a used housing market and a private rental housing market as referred to below.

(1) Privately owned houses and rental housing are inseparable for a wholesome activated housing market. Especially in a large city, dwellings are moving rapidly, coupled with a population flow and with a change in household configuration and/or life style. Besides, private rental housing (houses for rent) are of greater importance nearer to the centers of such a city. (Refer to Fig. 4-1.) It should be recognized that both privately owned and

rental housing are advantageous in both aspects of housing demanders and housing market evolution (economic growth). A housing policy, (including a housing finance policies,) is required to consider and address the formation, maintenance, and improvement of a good housing stock in the rental housing market.

Figure 4-1 Rental Houses Occupying a Critical Position in Large Cities (Paris and Tokyo)



NOTE: Numerals stand for the percentage at which each component of housing occupies in the total housing stock. Those for Paris in France are 1988. Out of the rental houses, a portion with the housing rated at an appropriate rent (HLM) excluded has been taken the Private Rental Housing. The numerals for Tokyo, Japan, are as of 1988.

Source: "Private Rental Housing in France," General Japan Housing Center, Government Housing Loan Corporation

(2) In China, a variety of policies are being deployed to supply and dwell in the newly built privately owned housing. As far as the used housing distribution, critical component of the housing market, and the (private) rental housing market are concerned, however, China has lagged behind in studying and developing policies to form and activate the used and rented housing distribution market. At present, a rental housing policy is available, including the "inexpensive housing (The low-income lease housing)" for a low-income stratum. Nevertheless, no progress has been yet made in addressing a stimulus of the private rental housing consumption on behalf of the middle-income stratum. Since the middle-income stratum have a higher level of housing consumption needs irrespective of privately owned or rented housing. It is necessary, therefore, to activate the private rental housing consumption in the middle-income stratum from both supply and consumption points of view while promoting the used housing distribution. This will not only enhance the housing market filtering function but will eventually induce a demand (purchases) for newly built housing. This stratum includes singles, young households and aged ones (including singles), who are expected to have a relatively short dwelling period. A dwelling area of more than 100 square meters, (on which the currently newly constructed housing is supplied) is not always required for the middle-income stratum who have a wide diversity of housing needs. To satisfy these diversified needs for housing, it is

important to study and implement the market-complementing incentives to supply and consume the private rental housing, and measures to promote the used housing promotion.

(3) When studying the measures to stimulate the private rental housing supply and consumption in large cities of China, the public sector should not directly construct or supply housing to the middle-income stratum but should strive to build up the environments for activating the market by arranging and disclosing the information around individual properties in both existing and new housing stocks. With the limitations of financial and human resources in local governments taken into consideration, moreover, a method considered more realistic in this sense is to indirectly induce and stimulate the market on behalf of the private sector by granting them incentives in such institutional aspects as taxation, financing and so on.

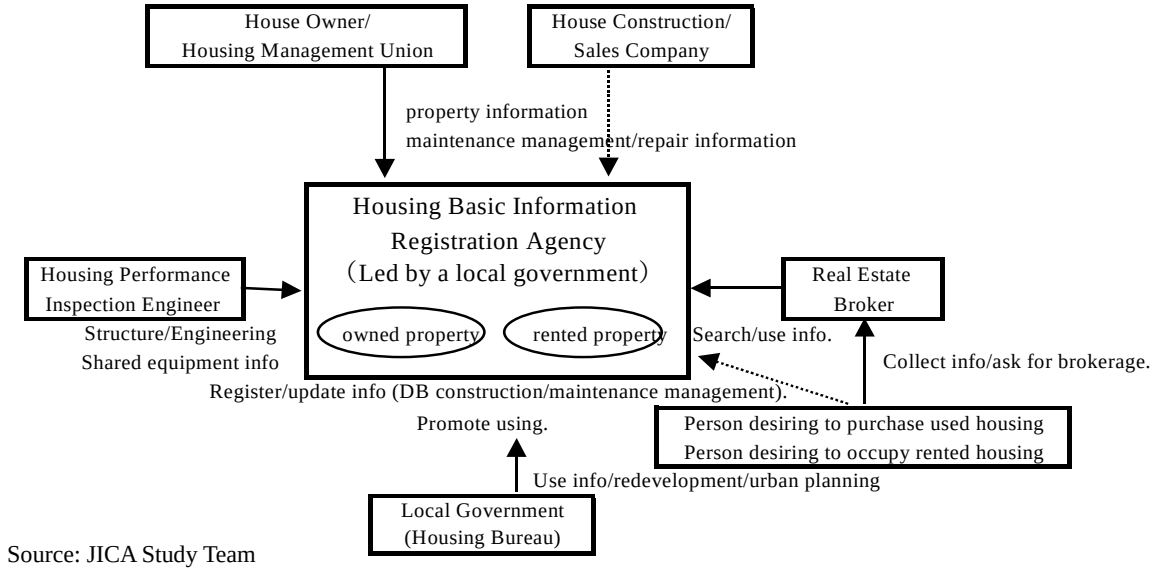
(4) At the same time, a significant size of the housing stock is existing in China. Most of the stock was transferred to individuals after supplied as corporate housing in the public sector. It will lead to an induction of the new demand for housing to make effective use of and fluidize the housing stock as used or rented housing according to their quality and/or architectural age. It is necessary to study the information buildup through a public involvement in the existing housing stock, including a temporary purchase, maintenance/repair, and re-input into the used housing/private rental housing market.

4.1.2. Building up Housing Basic Information Registration System and Making Effective Use of Database

To promote an autonomous growth and development of the housing market, it is important for three market players, i.e. “Demand Body” for housing, “Supply (Construction) Body” and “Information/Service Supplier,” to search and make effective use of quality information while performing such activities as rental transactions and brokerage/information services. To this end, it is necessary to build up the information relating to the existing housing stock and to such housing assets as those newly constructed product houses, which have been currently showing a rapid increase, and to make an institution, which allows for an effective use of such information. In other words, it is critical to build up the “housing basic information registration system” and to construct and operate the database (DB) thereunder.

For housing basic information, it is necessary to build up the basic property data, such as architectural age, location, room arrangement, area, and so on. And it includes the information relating to housing performance, such as construction, engineering and share equipment of a building, and the updated information relating to the existing stock for maintenance, management and repairing.

Figure 4-2 An Image of the Housing Basic Information Registration System to Activate Housing Distribution/Rental Market

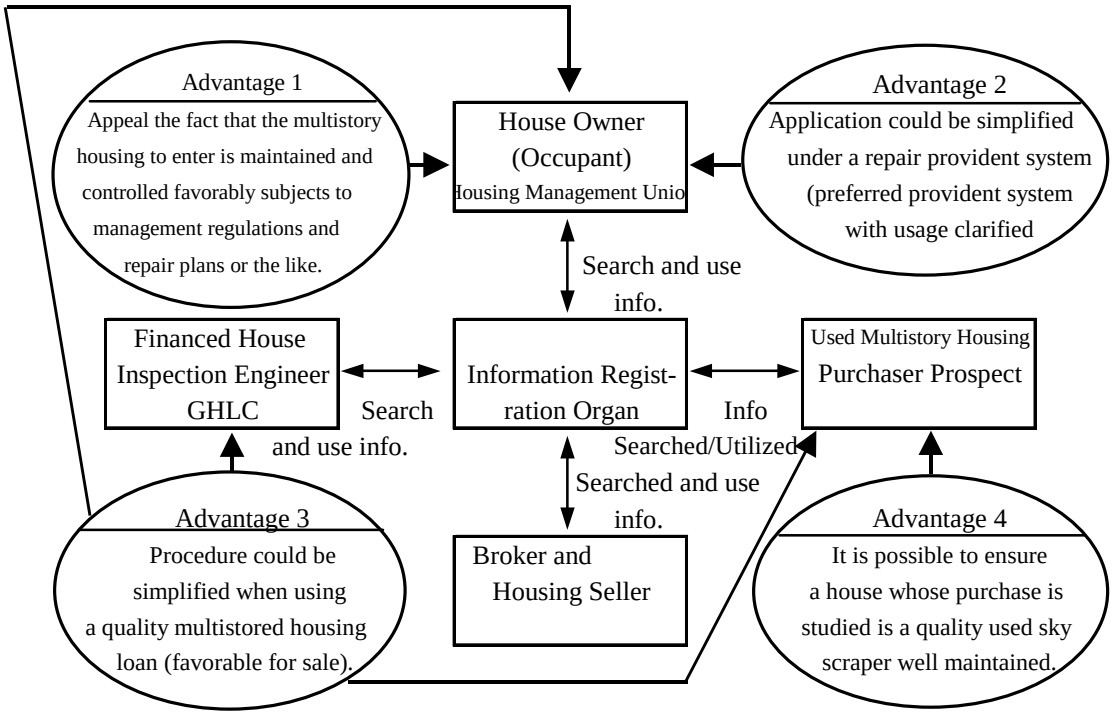


Source: JICA Study Team

To build up such housing basic information, it will be more realistic to establish a housing basic information registration agency, with the lead taken by a local government. While absorbing the private needs in the demand and supply bodies, the procedures and standards for designing and operating a DB, such as necessary information, search methods, etc., should be established and mapped out. It is difficult for such information buildup and operation to identify a problem from the very beginning as a private business. In addition, China has had a housing stock, former corporate housing born to the planned economy. To create the mechanisms which would accelerate the effective use, maintenance and renewal of such social capital, it is considered that the Government should be burdened with a certain level of financial resources. Under the Housing Bureau of a local government, for example, a 100% government-owned agency may well be organized and operated. To raise the cost consciousness by absorbing the private needs, on the other hand, a joint venture type company may he established as capitalized jointly by the local government and by a private real estate firm or firms. To make use of the information registered in the DB, furthermore, it is necessary to minimize the financial burden involved on the running cost by receiving a certain level of charges from the viewpoint that the use of the information registered in the DB will provide the user with a lot of advantages. In relation to the housing performance-related information, such as structural data, engineering, shared equipment information, including the maintenance, management and renewal information, etc., it is important to map out and construct a related manpower cultivation system and programs. Once such housing basic information has been buildup in relation to the main housing stock in each city, it is possible for

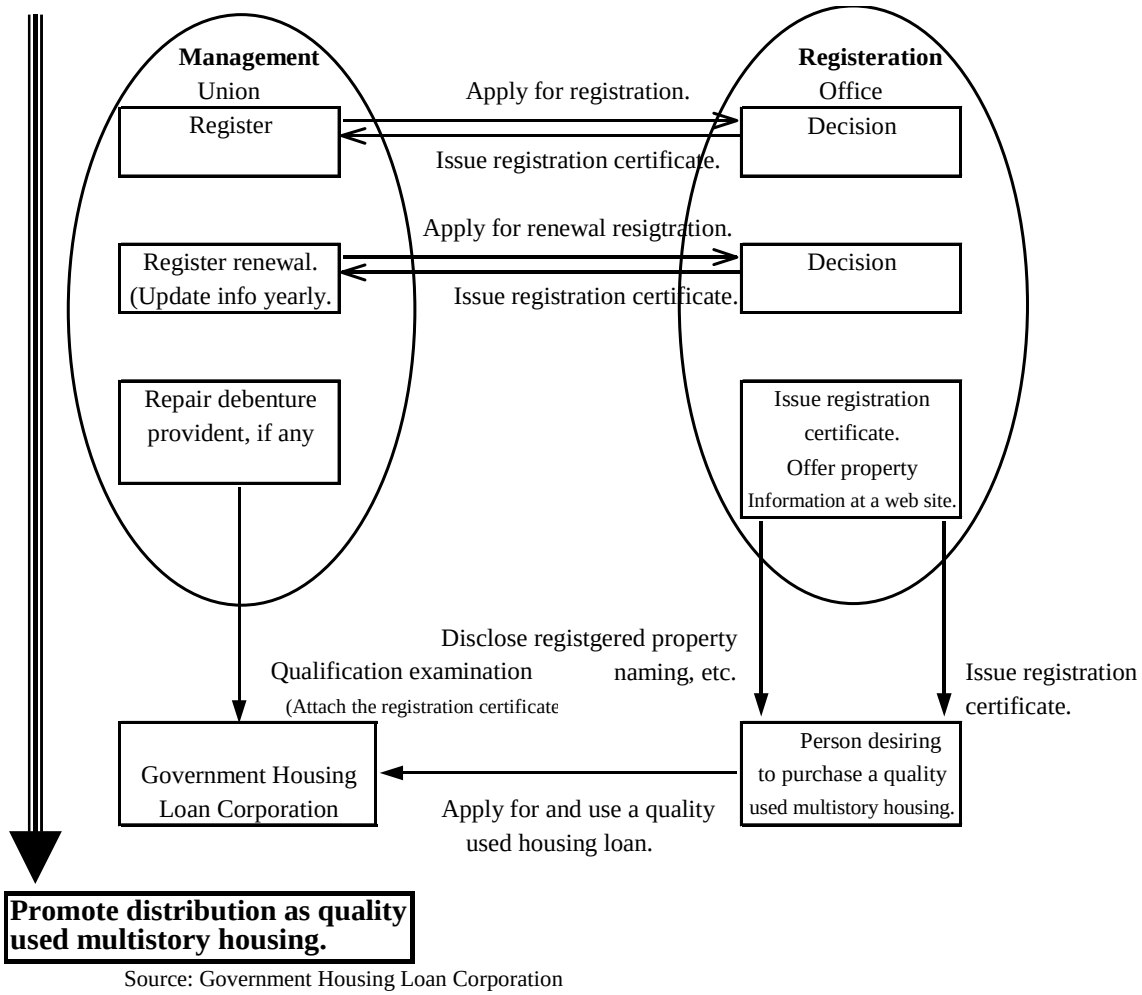
the local government to obtain the important information around the total quantities of the existing and newly constructed housing stocks and a status of their occupancy. In other words, it could turn out to be a very useful tool when studying and mapping out medium-/long-term redevelopment/urbanization plans. Such a system has just begun to be constructed and put into operation also in Japan as a means of activating the used multistory housing distribution. The housing basic information system has been striving to be unified with financial pollicies and systems, such as a repair provident scheme, a used housing purchasing loan system and the like. This is intended to give some incentives and advantages in registering and using the information, thereby accelerating the activation of housing distribution all the more. Fig. 4-3, 4-4 outlines the multistory housing information registration system in Japan.

Figure 4-3 Mechanisms and Advantages of Ministry Housing Information Registration System in Japan



Source: Government Housing Loan Corporation

Figure 4-4 Multistory Housing Information Registration System Application Procedure in Japan



Source: Government Housing Loan Corporation

In China, the object to be registered in the housing basic DB should not be limited to those properties sold and purchased as used housing but extended to those operated as rental properties. This is intended to make a cue for the formation of a transparent and wholesome rental housing market. And it may be considered capable of furnishing house owners with a wider range of options, i.e. used housing sales/purchases and rental housing transactions. Once a housing basic information registration agency and a housing basic DB-related system design/operation scheme have been constructed, it turns possible to register and use the housing basic information as referred to below. To promote such a scheme, some optional examples are given below.

(1) Registering the "former corporate housing" existing as the existing stock and private rental houses on a house by house or building by building basis in the "Housing Basic Information DB" (architectural age, structure, floor area, performance rating, etc.)

→ House owners need cooperate with their management unions. As incentives to encourage the registration, it is necessary to reduce various taxes involved and to disclose the information, and PRs available free of charge when selling the existing housing stocks as used housing or when placing them as rental properties on the market. To place the existing stock as used housing on the market, it is necessary to study a possible cooperation with the finance system, under which a buyer is entitled to use a housing loan under favorable terms and conditions while enjoying a favorable interest rate as well. In addition, it is necessary to raise the information quality by making positive use of the assessments and identifications to be made by the housing performance inspection engineering (newly organized).

(2) Encouraging newly constructed housing to be registered in the housing basic information DB:

→ Housing construction/sales companies should be encouraged to register their products upon construction/sale. As incentives to encourage the registration, a variety of taxes should be reduced while studying the feasibility of establishing a system to certify "quality undertakings" according to a ratio of their registration in the housing basic information DB.

(3) Registering and updating the maintenance/repair information about the existing houses in the housing basic information DB:

→ House owners need cooperate with their management union. As an incentive to encourage the reiteration/updating, a registration certificate should be issued to securely certify the housing quality while increasing the ease of distribution. A

preferred loan should be provided when selling an existing house as used housing and reducing the real estate transaction tax upon lease.

(4) Encouraging private real estate brokers to use the housing basic information DB (market information):

→ It is necessary to study the feasibility of implementing a system, under which real estate enterprise taxes or cooperate taxes may be reduced and/or "quality undertakings" may be certified.

4.1.3. Building up Housing Distribution Promoting System

To activate the housing market so as to form a matured market of houses, it is important not only to enhance the mechanisms to construct, sell and purchase newly constructed product housing but also to activate the used housing purchase/sale and rental transactions of the existing houses. To this end, a housing basic information registration system need be built up, first all. Based on this system, it is necessary to construct and operate a housing basic information DB. To make effective use of the DB, it is considered important to construct systems and cultivate the manpower as referred to below.

(1) Designing and establishing a housing performance inspection/assessment technology system (technology certification and qualification):

An immense volume of housing stocks, mainly former corporate housing, are existing in local large cities of China. Then contain those old houses of poor quality, which should be subjected to a redevelopment. On the premise that appropriate maintenance and repairing are performed, however, such a housing stock is considered likely to contain a lot of housing assets, mainly former corporate housing that could be turned into an object of second-hand sales and rental transactions. In addition, a stock of relatively quality houses are available on the market as a result of constructing and selling large quantities of newly constructed product houses, coupled with the housing system reform since 1990s. A further progress of the housing system reform, moreover, is considered likely to bring about a steady trend in constructing and selling the newly built product houses in the future, too. The housing performance inspection/assessment system is essential to the efforts of activating the housing market by furnishing the housing basic information of high quality while properly evaluating and judging the performance of both existing and newly constructed houses, including their safety standards. It is important to design and establish the national or local governmental engineering standards and a qualification system with a certain number of grades compatible with such engineering standards. And it is also comparably important to cultivate a large number of housing performance inspection engineers enough to cover a

quantity of houses constructed, sold, and distributed.

(2) Designing and Establishing Training/Qualification Systems relating to Housing Distribution Transactions (used housing purchases/sales and rental translocations):

The housing basic information or a collection of housing performance inspection/assessment information, should be effectively utilized to proceed smoothly with used housing sales/purchases and rental transactions. To this end, it is necessary to make human resources and abilities available in real estate brokerage firms, being able to identify the architectural technologies/market values while having knowledge and skill about housing finance systems and legislation, including IT utilization techniques and contractual paperwork. To secure these human resources, it is important to design and construct a qualification system to qualify a “real estate dealing chief” or the likes as seen in housing sale/purchase and lease contracts, including a manpower cultivation system to reinforce the qualification system. In China, it appears that such a qualification system is now being established. It is desirable, however, to review the qualification requirements that should be fully compatible with the details of the housing basic information registration system already referred to. Then, the target number of those who should be cultivated should be determined on a medium-term basis. And a manpower cultivation (training) program should be desirably designed and operated to meet such target. It is also one of the options to study such an incentive that the real estate firm or real estate brokerage company staffed with the personnel qualified in house to be exclusively engaged in housing distribution transactions may be certified and qualified as a quality firm or the like. Through a design and operation of such systems, the rental transactions apt to be latent should be actualized and opened so that the real estate economic activities can be normalized while striving to increase the capture rates of various taxes and duties.

As far as the housing distribution promoting systems as referred to above are concerned, it is considered more realistic to study and build them up, with a used/rented housing administration cooperation (tentatively named) organized in each local city together with the housing basic information registration system already referred to a summary thereof (draft) is given in Table 4-1.

Table 4-1 Outline (Draft) of Used/Rented Housing Management Public Coporation (tentatively named) in Local Large Cities (1st Phase 2002 thru 2005)

OBJECTIVE	・To activate the housing market by promoting the distribution of the existing housing stock. (used housing purchase/sale and retal transactions)
Capital	・Non-profitmaking legal person wholly owned by a local government ・Study the feasibility of establishing the legal person, with two or more private real estate companies contributing to the capital in some regions.
Organization/Manpower	・Partially transfer the functions of a local government (Housing Development Bureau or the like). ・Initially secure a personnel of about 20 persons, which are to be transferred from the local government either temporarily or permanently and from private real estate companies. ・Perform the functions of a secretariat in relation to the map-out of a basic policy/detail plans for a variety of institution designs while taking the design, construction and operation of a housing basic information database for the first objective.
Main Functions	① Build up the basic information relating to the existing housing stock (by building/by house) (first objective for the time being).. （To design and construct a housing basic information database and to offer information) ② Study, design, establish and operate a housing performance survey/evaluation technology system. ③ Study, design, establish and operate an education/qualification system relating to the housing distributic (used housing purchase/sale, and rental) ④ Map out specific measures to promote the fluidization of the existing housing stock, including . former corporate housing. （Temporarily buy, maintain and repair, and input all over again into the housing market, with a specfic-purpose company established.)

Source: JICA Study Team

4.1.4. Promoting Existing Stock Distribution and Making Effective Use of Specific-purpose Company

As a successful achievement of the housing system reform, it may be pointed out that the disposal of the corporate housing by state-owned and other public enterprises has made approximately two-thirds of the urban resident households in China privately own their houses. Nationwide, it is estimated that the publicly owned houses disposed have reached a total area of 1 billion square meters. Consequently, a huge stock of houses are likely to enter the housing market in the form of used housing sales/purchases and rental transactions. In some cities with their housing market advancedly liberalized, with the lead taken by Shanghai in reality, a movement has come to be actualized to resell the disposed housing and replace their own living houses. It is said, on the other hand, that there are not so a large number of disposed houses resalable on the housing market. From a social capital buildup point of view, it will be a challenge to maintain a stock of quality houses by properly maintaining and repairing a majority of the former corporate housing on their buildings themselves, especially at shared facilities thereof. In these former corporate houses, moreover, an increase in quantity distributed through used housing sales/purchases and rental transactions on the market would bring about a

far more active housing market while enhancing this market's filtering function. Since 1990s, furthermore, a large number of product houses have been constructed and sold. These houses also require a similar promotion of maintenance, repairing and fluidization, too. After grasping both quantity and quality of the existing housing stock, therefore, it is considered important to maintain and repair them on a building by building basis, as required, while constructing a system to promote the distribution of used and rented properties on the market. Becoming important in this stage is the viewpoint that a housing stock of high quality be formed and maintained and that the housing market be securely kept fluidized while addressing a wide diversity of housing needs. An example of the existing stock distribution promoting policies to be studied is given below.

(1) Grasping Quality Housing Stock, based on Housing Performance

Inspection/Assessment Information:

The housing basic information (DB), including the housing performance inspection/assessment information already referred to, is used to grasp both quality and quantity of the existing housing stock, especially in the quality aspects a certain level of evaluation standards should be established, based on which "houses" should be rated. According to such ratings, a study should be made on various incentives aimed at promoting the used/rented housing distribution and the measures intended to maintain, repair and redevelop (scrap and build). (Refer to Table 4-2.)

Table 4-2 Measures to Promote Fluidization, based on Quality Evaluation of Existing Housing Stock (example)

RATING	QUALITY EVALUATION	MEASURE (FLUIDIZATION-ADDRESSING MEASURES)
A	・10 or less years elapsed after construction without necessity of repair/renewal for the time being. ・Fully possible to distribute the house on the market, as it is, on a used housing purchase/sale/rental transaction basis.	・Encourage an enhancement of the maintenance/management system. (Study the feasibility of organizing a management union and of constructing a repair provident system.) ・There is no incentive, in particular, to promote distribution.
B	・Necessary to repair/renew in small scale though 10 years or less have passed after construction. ・Fully possible to distribute the house on the market on a used housing purchase/sale/rental transaction basis after repaired/renewed in small scale.	・Encourage to organize a maintenance/management union and to renew/repair on a self-assisting effort basis (Encourage to set and use a full-scale repair loan. ・Reduce tax on the distribution/transaction of property after completion of maintenance and renewal.
C	・Of high quality though 10 years or more have passed after construction but requiring repair/renewal in medium scale ・Fully possible to distribute the house on the market on a used housing purchase/sale/rental transaction basis after repaired/renewed in medium scale.	・Study the feasibility of a blanket purchase by a specific-purpose company and of repairing/renewing building by building. The existing owner, if desired, is allowed to occupy on a rental/lease basis while selling the rest as used property. ・Give a specific purpose company a preferred treatment under the taxation system.
D	・10 or more years elapsed after construction and requiring repair/renewal in full scale ・Possible to distribute on the market on a used housing purchase/sale/rental transaction basis but requiring significant cost.	・Study the measures similar to those for housing Rank C. If impossible to commercialize, study the measures similar to those in Rank E (incentives as term-limited rental property, etc.)
E	・Constructed too many years ago and structurally difficult to drastically maintain/repair. ・Considered to have a residual serviceable period of within 10 years	・Map out a medium-term transfer of proprietary tight plan/occupant move program as redevelopment (scrap and build) measure ・Study incentives as a term-limited rental property.

Source: JICA Study Team

(2) Studying and Designing Incentives to Continuously Maintain/Repair Quality Housing Stock

As far as the quality housing stock rated at A or B in the newly constructed product houses or in Table 4-2 is concerned, it is desirable to continuously maintain and repair them so as to form and keep a housing stock of high level. To this end, a maintenance/management union should be organized on collective housing on a collective housing basis to map out a medium-/long-term plan of maintenance, repairing and mending. At the same time, it is necessary to provide a fund to implement such a plan. To support a systematic repair of multistory housing, the Government Housing Loan Corporation in Japan has provided the "multistory housing repair debenture reserve system" while striving to reserve and form the fund. Under this system, a repair loan may be obtained under favorable terms and conditions. At the same time, the Corporation has provided some financial tools, such as the "Multistory Housing Shared Portion Reform Loan" to address a variety of maintenance, repairing and mending works. In China, it is also desirable to study and design various types of incentives in the institutional aspects involved in taxation and finance systems.

(3) Studying Implementation of Temporary Purchases, Repair and Renewal by Specific-purpose Company of Existing Housing Stock, and Promoting Distribution (used housing sales/purchases)

The housing stock rated at C and D on Table 4-2 is considered difficult to distribute on the market on a secondhand sale/purchase basis unless repaired/renewed in medium or full scale. Though dependent upon a total of the housing available in this category, it is necessary to create those mechanisms which will enable used housing sales/purchases and leases to promote the smooth market distribution as long as the housing rated at C or D occupies a majority of the housing stock in a city. And this will accelerate the activation of the entire housing market as a whole, including the newly constructed housing market.

A significant amount of cost will be incurred to repair and/or renew such properties/buildings without having almost any market value. With these taken into consideration, it is necessary to establish and operate the specific-purpose company that will purchase, repair, renew, resell or lease the housing entirely on a collective housing (building) by collective housing basis. And it is considered meaningful to study and construct the system under which such a specific-purpose company is entitled to be established and operated. After purchasing all the houses of a related collective housing at a reasonable price, the specific-purpose company should repair and mend the building as a whole and its shared facilities and reform each component house over a certain period of time. Then, the company should perform a function of returning the property as a used house for sale or to let on the market. In this case, it is necessary to study the preferred measures regarding how much each dwelling is sold by the existing owner, how the existing owner should cope with the dwelling issue for the time being and in the future, how to raise

the fund for repair and renewal works, and how to proceed and/or pay taxes imposed when incorporating and operating the specific-purpose company. To make use of the know-how available in a private real estate company, it will be a good idea to establish a joint venture owned by two or more companies and /or a local government. With two or more consortia invited, moreover, a competitive bidding system my well be introduced to establish such a specific-purpose company. In any case, both quantity and quality of the existing housing stock as already referred to should be grasped local city by local city, first of all. Then, the features of each city should be taken into due consideration while verifying the impact on the housing market. After that, the necessity of a system design should be studied preferably. In this sense, it is considered more realistic to build up the information in the used/rented housing management corporation in a large local city as already proposed and to design a variety of systems with priority. As part of such information buildup and system designs, the meaning and means of utilizing the specific-purpose company could be reviewed more realistically.

4.1.5. Building up Systems to Promote New Construction/Consumption of Quality Private Rental Housing

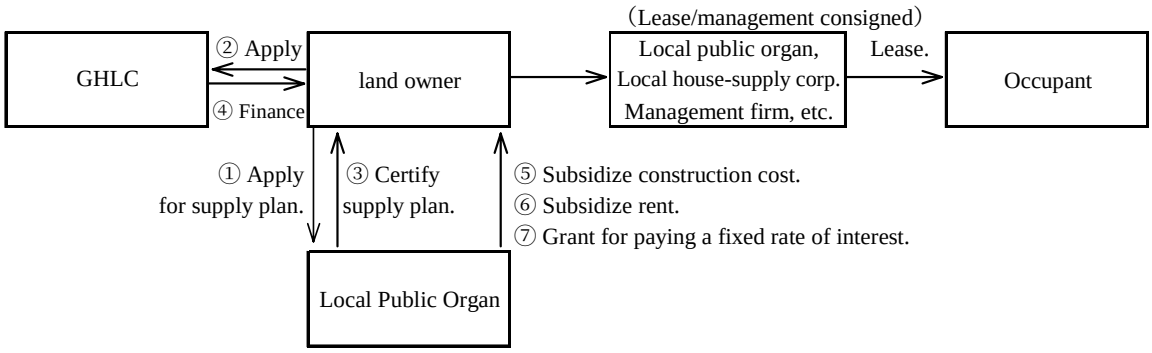
In China, the housing system reform has been striving to design and operate systems, with first priority given to a project of promoting the private ownership of housing while discontinuing the publicly owned corporate housing system. The private rental housing, on the other hand, has not had its meaning and positioning always defined though there are many cases where some house owners have really put their properties for lease on the housing market. Besides, such system designs and operations as incentives to promote the construction and consumption of rental housing have remained limited yet. As already referred to, however, the important of rental housing is remarkable in an advanced age city. In China, a wide diversity of private rental housing needs are considered likely to be actualized in the future. It is important, therefore, to diversity and activate the housing market all the more through the system designs/operations to promote the new construction/consumption of quality private rental housing.

Fig. 4-5 and Table 4-3 summarize the mechanisms and applicable requirements for the “specific quality rental housing system” in Japan. For rental housing, the Japanese Government has provided subsidies (either central or local) generally in two categories: for new construction and for rent. Nevertheless, the Specific Quality

Rental Housing System started in 1993, combining both of the subsidies categorized as referred to above. The rent subsidy, however, is substantially oriented for construction because it is granted to the house owner to reduce the rent. This system is intended to mature and activate the housing market all the more by supplying a quality rental housing stock to the

private rental housing market where quality rental houses for household are scarcely available while making effective use of the small residential lots personally owned. Since its Foundation, the system has been steadily increasing in the number of houses supplied. Because of the discrepancies in socioeconomic institutional factors and market situations, the case could not be considered directly applicable to the housing market in China. As far as the system's objective and concept are concerned, however, it may well turn out to be a reference. A clarification of the qualification requirements for an application of the system as seen in this instance, in particular, would involve a certain income stratum or a certain demand stratum, such as young household, aged household or the like, as target. At the same time, it is considered important to induce the system into the market to satisfy a wide diversity of users' needs in the manner completing the current newly constructed product housing supply system. Namely. it may be safely said that China should try to form and induct a quality rental housing market by strictly operating a rental housing version of Economical Housing.

Figure 4-5 Mechanisms of Specific Preferred Quality Rental Housing System in Japan



Source: Government Housing Loan Corporation

Table 4-3 Requirements for Japan to Organize Specific Quality Rental Housing System

CLASS	ITEM	REQUIREMENT
Land	Area of Premises	300 square meters or more
Building	Construction	fire-resistant or semi-fire-resistant construction
	Number of houses	100 or more houses
	Floor area per house (exclusive area)	50 square meters or more but 125 square meters or less
	Equipment	To have a kitchen room, a water closet and a bath room, all independent

Source: Government Housing Loan Corporation

A variety of incentives, such as subsides, preferred taxes, finance systems, etc. are required to design and operate the systems to promote the formation of such a quality private rental housing market as referred to above. These incentives include options, such as a "subsidy for construction," "subsidy for occupant rent," "offering a preferred loan for construction and a grant for paying a fixed rate of interest," and the like. It is necessary, therefore, to make a detail study and design about the measures and their combinations, which would be suited to each status of the housing market in China and in local large cities, including their regional features.

Table 4-4 is a summary of the housing subsidy status by advanced country, including Japan. In a word, the USA and Japan have a higher percentage of subsidies assigned to the privately owned housing while three European developed countries, namely: the UK, Germany and France, are offering a higher percentage of subsidies for rental housing. American and European countries, moreover, have been moving toward the withdrawal from subsidies on construction but increasing the household subsidies (rent subsidies and housing allowances) under the slogan "From subsidies for stone to those for people". It may be safely said that China has also come to the stages to reconsider the fact that the subsidies have been so far granted in relation to those housing-related tax reduction and economical housing construction, which have so far given the first priority to the obtainment of privately owned housing. Thus, now is the time to make a comprehensive study about the new system design toward the rental housing construction and consumption promotion as tailored to the progress of economizing the housing market, including how the housing-related financial burns be allocated.

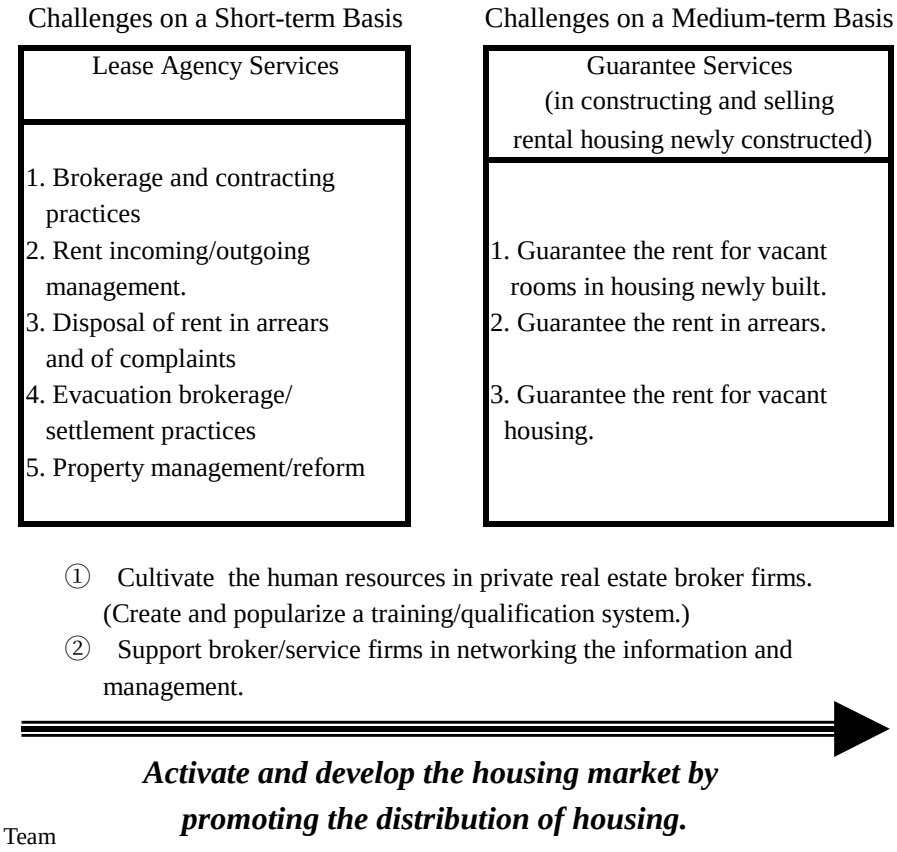
Table 4-4 An International Comparison of Housing-related Financial Burdens and Housing Subsidies

		USA (1992) $00 million	UK (1993) £ 00 million	Germany (1992) DM 00 million	France (1988) FF 00 Million	Japan (1992) ¥0 billion
Total housing-related expenditure		1,045	164	110	938	175
Share in governmental budget		7.6%	6.7%	2.6%	7.3%	2.4%
Breakdown	Housing budget	245	79	82	457	126
	Social security expense	0	33	0	227	0
	Housing tax reduction	800	52	28	254	49
Housing Subsidized on an Ownership Basis	Publicly managed housi	63	53	0	0	47
	(%)	6.0%	32.3%	0.0%	0.0%	26.9%
	Other public housing	0	20	0	0	16
	(%)	0.0%	12.2%	0.0%	0.0%	9.1%
	Private rental housing	100	33	0	0	0
	(%)	9.6%	20.1%	0.0%	0.0%	0.0%
	Privately owned housing	800	52	34	315	88
	(%)	76.6%	31.7%	30.9%	33.6%	50.3%
	Housing in general	81	7	75	623	24
	(%)	7.8%	4.3%	68.2%	66.4%	13.7%
Construction Subsidy and Household Subsidy	Construct/maintenance cost subsidy	63	72	31	230	102
	(%)	6.0%	43.9%	28.2%	24.5%	58.3%
	Housing allowance/rent subsidy	100	33	36	418	0
	(%)	9.6%	20.1%	32.7%	44.6%	0.0%
	Housing tax reduction	800	52	28	254	49
	(%)	76.6%	31.7%	25.5%	27.1%	28.0%
	Housing in general	81	7	15	36	24
	(%)	7.8%	4.3%	13.6%	3.8%	13.7%

Source: "Economics on Housing" 1997 (Ebizuka 1996)

In this stage, moreover, some critical challenges will have to be tackled with, including the mapping out and operations of various incentives to promote the improvement of rental housing market services in the private sector, such as to plan and operate the popularization/enlightenment activities involved in the effective use of IT and new services, manpower cultivation programs for various rental housing market services and qualification system designs and operations. (Refer to Fig. 4-6.)

Figure 4-6 Rental Housing Market Services to be Enhanced from Now On



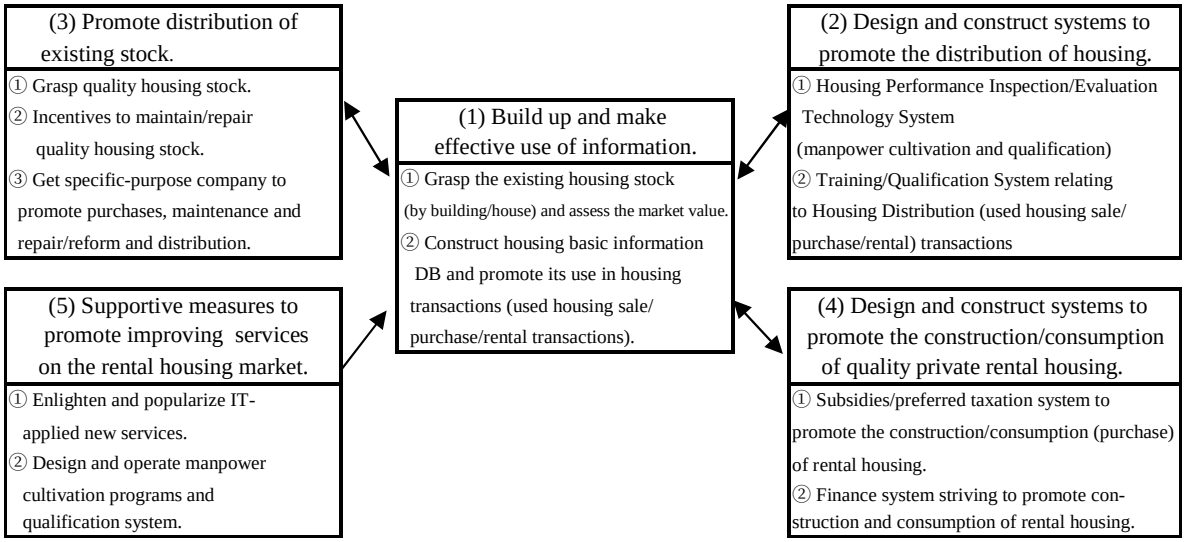
Source:

JICA Study Team

4.1.6. Studying Measures in Detail to Activate Housing Market

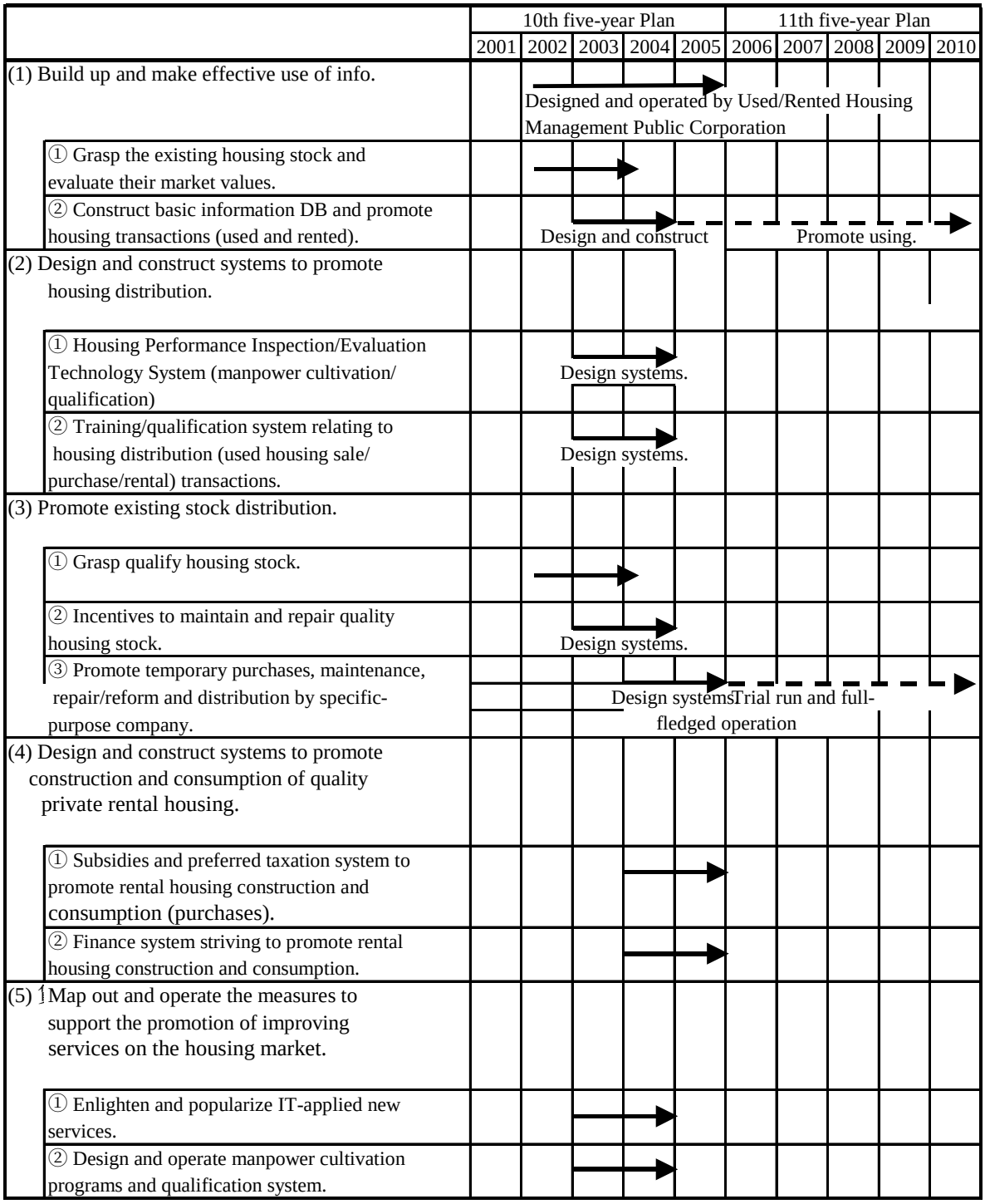
Fig. 4-7 shows an entire flow of the proposed measures so far referred to, and Fig. 4-8 depicts a deployment schedule view (image of such measures. These persistently remain an essay, to make a specific study and/or design, it is necessary for China to perform operations in detail while taking into account the status quo of the housing market in each local city and a future course of housing policies. When China (Ministry of Construction and 1 or 2 local model cities [local governments]) proceeds with a study of the draft in detail, it may be envisaged as one of the proposals that both China and Japan jointly make a “study of information and system designs to activate the private housing market”.

Figure 4-7 Measures to Activate Housing Market and their Flow



Source: JICA Study Team

Figure 4-8 A View (image) of the Schedule to Deploy Housing Market Activation Measures



Source: JICA Study Team

4.2. Toward Establishment of Infrastructure to Promote Housing Policies

China is now rapidly changing her socioeconomic environments, including a fast

progress of urbanization, a high growth rate of economy, an advancement of people's age, a penetration of urban life styles and so on. Under these circumstances, it is important to objectively grasp the needs for the people's dwellings and living itself and to map out a housing plan, in which the quantitative demand for housing and the needs of housing funds are taken into account. In order that the plan is really effectively covered and accepted by the people, moreover, it is necessary to periodically assess the effects of housing plants and policies as a result of implementing the plan and to make up the mechanisms in which the effects so grasped may be fed back ("Plan" →"Do"→ "See").

To proceed with the creation of these plans, it is necessary to make a specific study of the two measures referred to below.

- ○ Build up a housing-related statistic system and take measures to make effective use of such system.
- ○ Process of mapping out a housing plan (housing fund plan).

4.2.1. Building up Housing-related Statistic System and Establishing Measures to Make Effective Use of the System

(1) Backgrounds and Outline

As the environmental infrastructure supporting a more advanced plan, it is urgently required to establish a statistic system, which will support an appropriate picture of the housing (market) in the future. Statistics should be built up sufficiently to grasp the status quo of housing (equipment), the needs of housing and the achievements by a buildup of housing, and to establish the measures to make effective use of statistics so that they can be sequentially reflected upon a housing plan and on a housing loan plan.

At present, some developed cities, including Shanghai, are projecting a quantitative demand on qualitative housing-buildup targets by making effective use of housing statistics and economic statistics relating to the entirety of a city or of a municipal district whenever a housing plan may be mapped out. From now on, it is important to establish the housing related statistic system, which will support a nationwide housing projection covering other cities, etc.

(2) Study Scheme

With the lead taken by the Ministry of Construction, the project will be proceeded with in collaboration with the National Statistics Bureau, State Council, local governments, etc. In Japan, it is assumed that the Statistics Bureau in the Ministry of General Affairs and the Statistical Institute for Asia and the Pacific will cooperate, including the Government Housing Loan Corporation under Ministry of National Land and Traffic.

(3) Financial Resources for the Study (budget)

To construct a nationwide system to collect statistics, control, set up an architecture and a supply system, a certain level of financial resources are required. To study what statistics be built up, a statistical buildup process, a manpower cultivation system, and an intelligent system supporting the statistical collection, it is necessary to make a “study to build up and review Chinese housing statistics (tentatively named) while taking into account the utilization of budgetary appropriations in JICA, JETRO, etc.

(4) What be Reviewed Specifically (in detail):

To concretize the measures to build up and make effective use of a housing-related statistic system, the following should be studied in more detail:

1） Studying What be Contained in Housing Statistics to be Built up with Priority

The statistics required for mapping out a housing policy should cover a wide range of fields, such as to grasp the status quo of a housing stock, the needs of housing purchaser prospects and the achievements as a result of implementing a housing policy.

The statistics relating to a housing stock and an industrial relation chart to analyze the construction sector, among others, are considered absolutely lacking at present. With such statistics covered, studies will be made about technological challenges to prepare such statistics (including a treatment of the existing statistics), standards to prepare housing statistics and what an organizational scheme should be to collect statistics and so on.

Figure 4-9 What is Specifically Contained in Housing Statistics

【Housing Basic Statistic Group】

○ Housing flow statistics (by method of construction, number of works started by form, value of work started (investment)

[Japan]：Annual Statistical Report of Construction、number of public works started, and construction unit price survey (GHLC)

● Housing Stock Statistics (how to construct, form, number of residential houses by status of equipment, area)

[Japan]： Housing Statistic Survey <Ministry of General Affairs>

【Housing Industry/Real Estate Sales Statistics Group】

○ Housing sales statistics (selling prices, number of houses sold,. types of houses sold...)

[Japan]： Real Estate Economics Laboratory>

○ Housing Industry Statistics

［Japan］： Real Estate Industry Statistics <Ministry of National Land and Traffic

【House Purchaser Statistics Group】

● Annual Income/Consumption Statistics (consumed value by goods/service, disposable income, ...)

[Japan]：Housekeeping Survey Annual Report, Consumption Fact Finding Survey <both Ministry of General Affairs>

● Savings Statistics (value saved, value of assets owned, ...)

[Japan]：Savings Trends Survey <Ministry of General Affairs>

● Housing Needs Survey (questionnaire survey assumed)

【Housing Fund Statistics Group】

○ (Housing) Fund Circulation Statistics (value of funds raised, amount of loons by organization and by field, ...)

[Japan]：Fund Circulation Statistics <Bank of Japan> , Financial Banking Statistics Monthly Report <Ministry of Financial Affairs>

● Housing Fund User Fact-finding Survey (value borrowed, types, such as purchased house construction method, form, etc.

[Japan]： User Fact-finding Survey <Government Housing Loan Corporation

【Housing Evaluation Statistics Group】

● Industry-related chart (value of annual investments by construction member, value of transaction by construction member industry....)

[Japan]：Industry-related Chart for analysis of the construction sector <Ministry of National Land and Traffic>

● Housing User Fact-finding (satisfaction level) Survey/Statistics (level of satisfactions by house and by equipment, ...)

[Japan]：User Fact-finding Survey (Government Housing Loan Corporation>

＊● stands for those items which China is especially required to provide:

Source: JICA Study Team

2）Studying Scheme to Collect, Control and Furnish Statistics:

National statistical mechanisms are generally divided into two categories: one is the "concentrated type" in which a specific organ or agency is intensively collecting, treating and furnishing statistics, and the other is the "distributed type" where two or more administrative organs are separately rendering statistical services relating to each category concerned. In China, each local government prepares statistics, which the Central Government in turn adjusts. This is the socalled "vertically divided distribution type" statistical system.

From the viewpoint of enrich such a "distributed" statistical system all the more, studies will be made about what an organ should be for a local government) to be able to gather statistics stably and richly (local organs in charge of statistics are functioning in Japan and what the manpower (statistics surveyors, etc.) should be.

Table 4-5 Types of Statistical Mechanisms

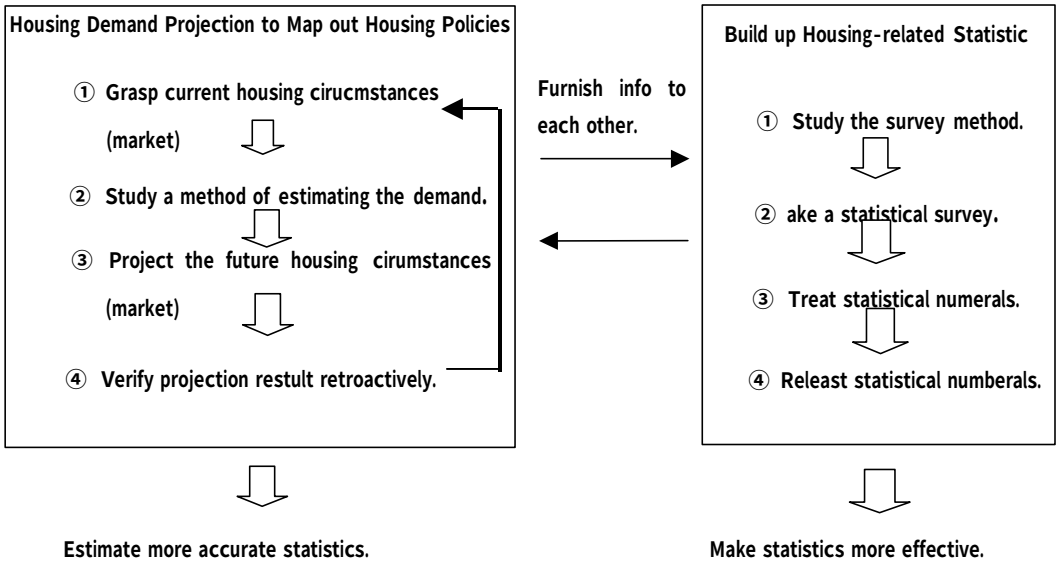
	Distributed	Concentrated
Description	・ A statistical survey is to be planned and implemented by each administrative organ regarding the field under charge. ・ A general regulatory organ is to examine the statistics surveys made by each administrative organ.	・ A statistical survey is planned and implemented intensively by a specific organ.
Advantages	・ The statistics as tailored to the individual needs of each administrative organ may be prepared. ・ A survey can be done efficiently while making effective use of the information available in services. ・ A statistical survey, which may especially over an enterprise or shop, may be made more smoothly if it is made by the administrative organ in jurisdiction	・ Statistics can be more systematically arranged by the Government as a whole. ・ Budget and personnel may be elastically allocated according to a change in statistical needs. ・ A general affairs department or the like may have efficiency improved all the more. ・ Statically techniques may be accumulated more readily while allowing technical engineering to be improved all the more.
Example Overseas	U.S.A., and U.K.	Canada, and the Netherlands

Source: Statistics Bureau, Ministry of General Affairs, Japan

3）Studying Strategies to Build up Statistics from a Housing Statistical Point of View

To build up the housing statistics, their effective use would make them more and more precise. The housing statistics in Japan have collection items and presentation methods reviewed, based on the request submitted through the process of a demand project in operation under the Housing Construction Five-Year Plan. This has led to the current architecture of statistics in detail. With this factor taken into consideration, a process of measuring the housing demand and the housing fund demand is assumed to study the future course toward an increase in precision of statistics.

Figure 4-10 Correlation between Housing Demand Projection and Housing-related Statistics



Source: JICA Study Team

4）Studying Central-Local Online Statistics Collection System

Studies are to be made about the information system that supports the statistics-preparing services between local and central or across related agencies, including the preparation, collection and inspection (audit) of statistics, a changeover to magnetic media (CD-ROM , etc.) , an introduction of OA equipment for statistical survey paperwork and a development of software toward an increase in efficiency of clerical work.

5）Studying Measures to Cultivate Manpower Able to Make Effective Use of Statistics

To prepare statistics, the manpower is required to be able to prepare and process statistics properly and efficiently from the viewpoint of statistics effective utilization. It is necessary to secure the manpower who has a certain level of statistics and to study what a training system should be so that statistical surveys can be made effectively and efficiently while making most of the abilities available from the existing personnel in charge of statistics.

Table 4-6 Specific Items to be Studied toward Materialization of Measures

		SPECIFIC ITEM TO STUDY	MAIN STUDY BODY	TERM		
				1ST PHASE	2ND PHASE	3RD PHASE
Basic Direction		・Enrich housing statistics. - Housing stock statistics - User need survey (user fact-finding, industry-related table, etc. ・Establish systems to collect, control and furnish statistics, with Local and Center	Ministry of Construction, National Statistics Bureau, local government	○		○
SPECIFIC ITEMS TO STUDY	Organi-zation	・Study a statistical organ in a local government. (Activate the organ mainly in charge of local statistics, etc.) ・Study an evaluation organ to secure reliability on statistics.	National Statistics Bureau, local government	○	○	
	Man-power	・Study measures to secure the statistic-collecting manpower (statistical inspectors). ・Study systems to recruit and cultivate the manpower able to make effective use of statistics. - Make effective use of Statistical Training Center for Asia and the Pacific	National Statistics Bureau, local government , National Council	○	○	○
	Inform-ation	・Study a Central-Local online statistic-collecting system. ・Study a statistics internal management system. ・Study statistical processing system (Internet, CD-ROM, etc.) ・Study statistical processing systems associated with databases in non-profit making legal persons and in the private sector.	Ministry of Construction, National Statistics Bureau, local government	○	○	○ ○
	Budget	・Secure and study statistics budget (paperwork processing expenses, clerical work entrustment charges involved in collection/treatment).	Ministry of Construction, National Statistics Bureau, local government	○		

NOTE） It is assumed that 1st Phase: 2002 thru 2003, 2nd Phase: 2004 thru 2007 and 3rd Phase: 2008 thru 2010.

Source: JICA Study Team

4.2.2. Establishing Process of Mapping out Housing Plan (Housing Fund Plan)

(1) Backgrounds and Contents

To keep up with the rapidly changing housing market, it is necessary to systematically promote those housing policies which are consolidated effectively with housing finance over a long-/medium-term basis. To this end, China is urged to make a conceptual conversion and enrich the contents in the existing long-/medium-term housing plans, mainly five-year housing pans (for a project period of 5 years) in each city, including the housing development plan (for project periods of 5 years and of 20 years) in the overall urban planning.

Conventional planning has not been interlocked with any measures to raise funds and secure financial resources. With the progress of housing making inroads into the market, however, a housing plan has come to interlock more closely with the finance market and with the national economy. Under such circumstances, it is necessary to map out an "effective" plan that has housing (social capital buildup) interlocked with its financial security (finance planning and budgetary appropriation).

In this sense, it will be important in the future to map out such a plan that has annual finance/fund-raising interlocked properly with a statistical long-/medium-term housing stock buildup, say, such a plan that allows an allocation of resources (a materialization of social welfare) and an economic trend regulation (an impact on the economy) to be implemented at a time.

China has to cope with a rapid progress in changing over to the market economy and in reforming the economic structures, with her participation in the WTO as a turning point, as well as rapid social changes, including an advancement of population age, urbanization and so on. To this end, China should refer to the contents and planning process* of the housing construction five-year plan in Japan. Then, it is necessary to establish a contained comprehensive planning system that permits a proper prediction of the demands for houses/housing funds to be reflected dynamically and elastically on housing buildup (construction) planning, with the structural changes taken into consideration.

* Described for "Reference" attached hereto

(2) Study Scheme

Mechanisms and processes relating to a housing policy are to be studied, with the lead taken by the Ministry of Construction. And the People's Bank of China should lead in the field involving a housing fund plan and its mapout.

(3) Financial Backup of Studies

As far as the technology transfer relating to such techniques to predict the demands for houses and housing funds is concerned, it is envisaged that studies will be made while

making effective use of the budgetary appropriations available from JICA, etc. A budgetary appropriation available from a council or the like is to be secured separately to cover various expenses incurred in new planning processes.

(4) Specific Items to Study

To study the measures as referred to above, China is asked to study another individual items as follows:

1) Developing Techniques for Predicting Demand for Housing and Studying Direction in which Such Techniques be Effectively Used

The regression on the premise of economic structures in the past has been mainly used so far in China to predict a demand for housing. In China, a structural reform has been making rapid progress at the present. Under such circumstances, such an analytical technique only would make it difficult to properly predict the demand. To map out a housing policy, therefore, a study is to be made about the measures to develop a demand projection technique, with environmental changes and needs taken into consideration, and to implant such technique. More specifically, the timing, method and scheme of grasping the needs are to be clearly defined.

This review will progressively cover more and more details while making effective use of the findings in the study reported herein.

2) Study Aimed at Implanting Housing Fund Demand Projections

Findings in a housing demand projection should be reflected upon a housing finance plan, a fund-raising plan, etc. To this end, a study is to be made to develop and make more precise the technique for predicting a demand for housing funds. More specifically, what data (statistics) is required to make a proper prediction of the demand for housing funds? What meaning does the data have? How could the data be treated and expended? These questions will be clearly answered and their clarifications will be summarized as a fund-raising demand projection package.

Similarly to the demand for housing, this review will cover more and more details while making effective use of the findings in the study reported herein.

3) Studying Crosswise Housing Policy Planning/Deliberation Organ

It is necessary to make a plan in which a quantitative and qualitative housing buildup target and a housing fund (finance) target are interlocking to each other, based on the findings in predicting the demands for houses and for housing funds. A scheme/mechanisms are asked to be established to materialize such planning. In this sense, a model is to be taken in the housing/lot council that has been playing a leading part in the housing buildup five-year plan in Japan. This model is to be used to show a policy-planning/deliberating organization of inter-agency crosswise/public-private sector joint working type, in which both central and local governments are collaborating. At

the same time, a review is to be made toward the establishment of such an organization in China.

4) Studying Information Network Supporting Housing Policy Planning

A housing policy planning process involves grasping the housing needs, making effective use of housing statistics, predicting the demands for houses and for housing funds, and mapping out a housing plan. The main bodies concerned in this process are the National Statistics Bureau and National Council, including the Ministry of Construction and the People's Bank of China. And these bodies have to give and take data, discuss and make decisions promptly and smoothly. To support these communications, a study is to be made about what a policy support information system with a large capacity should be, with consideration given to a man-machine interface, too. The information system requires a detail review from the following points of view:

- Policy planning data accumulation system (statistical system, etc.)
- Demand projection system
- Communication system
- Certification system, etc.

5） Studies aimed at Securing/Cultivating Manpower with Expertise:

Planning a new housing policy addressing a demand projection would require the human resources that have a wide range of knowledge to make effective use of statistics and a demand projection, expertise relating to statistics and techniques/skill of predicting a demand. To cultivate such manpower, a detail study is to be made about the invitation of experts from the outside on a short-term basis (one year) and about what a training system and a training organ should be established in China to cultivate the manpower.

Table 4-7 Specific Items to be Studied toward Materialization of Measures

		SPECIFIC ITEM TO BE STUDIED IN THE FUTURE	MAIN STUDY BODY	TERM		
				1ST PHASE	2ND PHASE	3RD PHASE
Basic Policy		・Develop and implant a new housing demand projection technique. ・Make housing fund demand projections mandatory. ・Create the field where demand projections could be reflected upon housing plans and on housing finance plans.	Ministry of Construction, People's Bank of China	○		○
SPECIFIC ITEMS TO STUDY	Organi-zation	・Newly organize a housing (fund) demand projection section. ・Study a housing council-oriented organization to study quantitative targets and funds	Ministry of Construction	○	○	
	Man-power	・Learn a demand projection system and study a related manpower cultivation system.	Ministry of Construction, People's Bank of China	○	○	○
	Inform-ation	・ Study the development, introduction and effective utilization of a demand projection package system. ・Study the feasibility of networking between statistical and planning organs (People's Bank of China and National Statistics Bureau, or the like)	Ministry of Construction, People's Bank of China	○	○	○ ○
	Budget	・ Study budgetary appropriations contributing to mapping out a plan (expenses to hold a meeting of the council, intelligent advisor fees, etc.)	Ministry of Construction	○		

NOTE） It is assumed that 1st Phase: 2002 thru 2003, 2nd Phase: 2004 thru 2007 and 3rd Phase: 2008 thru 2010.

Source: JICA Study Team

(Reference) Housing Construction Planning Method and Housing Five-Year Plan in Japan

A housing five-year plan in Japan is to be analyzed hereunder as an example for reference from the four points of view: ① Relations between Law and Plan, ② Framework of the Plan, ③ Roles Played by Plans in the Past and ④ Financial/Banking Mechanisms to Implement the Plan.

(1) Housing Construction Planning Method and Housing Five-Year Plan

After the World War Ⅱ, Japan started a housing policy aimed at dissolving the absolute shortage for housing. From 1950 to 1955, housing-related acts, "Government Housing Loan Corporation Act," "Publicly Managed Housing Act," "Japan Housing Public Corporation" and so on, were enforced, thereby striving to establish a public housing supply system. In 1966, the Housing Construction Planning Act was established for the Japanese Government not only to supply the Japanese people with public houses but also to induce the promotion of housing construction all over the nation.

The Government had been positively tackling with the housing issues to dissolve the shortage for housing and to improve the living level of the People. An alteration of the administration had often led to a change in the housing policy. And the administration had got the housing competent authority divided into two or more departments. With these institutional disadvantages reflected upon, the Government recognized it necessary to map out a comprehensive long-/medium-term housing construction plan clearly defining the roles of public and private sectors at a national level and to efficiently invest the financial resources, such as a limited amount of banking funds and financially administrative investment loans (the funds available in a fund operating department, who centralizedly operate the People's postal savings, pension funds, etc.). in the public sector. To properly supple the people with housing with a public fund according to their income, the Government had decided to strive to materialize a housing construction plan (to quantitatively secure the number of houses supplied and to improve the living level of dwellings).

The most significant role that the Housing Construction Planning Act has played is an establishment of the scheme in which the Act helps promote the housing construction for a long period under a mandatory housing construction five-year plan, with national and local public organizations and the People collaborating.

(2) Framework of Housing Construction Plan

It is the Housing Construction Five-Year Plan that the Government sets all housing construction targets, including the housing independently constructed in the private sector, and induces into the housing market, especially clarifying a "publicly-funded house."

From Phase 1, the Plan has already defined its administrative objectives: a) To let the national and local public organizations construct housing by themselves for the low-income stratum ad the middle-income strata, such as urban workers, etc. or assist them in raising the funds for construction; b) To let the Government supply a housing lot and grant a subsidy under finance and taxation systems, including the technical assistance when the People construct their own housing independently, and promote the Plan as far as practicable, and c) To properly manage and allocate the publicly funded housing supply by improving an occupant management system and a rent system.

To understand the framework of the housing construction five-year plan, there are key points as follows:

1) Plan Setting Targets and Publicly-funded Housing Quantities:

To set a housing construction target in the Housing Construction Five-Year Plan, it is necessary to define a construction project size (mainly number of houses to be constructed; with funds given for mere reference). The housing construction standards (dwelling level and living environmental level) required to achieve such a construction target, moreover, are to be established. In accordance with such standards, housing should be

2) Mapping out Local/ Prefectural Housing Construction Five-Year Plans

Once a nationwide housing construction five-year plan has been mapped out (former Ministry of Construction, currently Ministry of National Land and Traffic), a local housing construction five-year plan should be promptly mapped out on a region by region and notified to the related prefectural government. Immediately after notified of the local housing construction five-year plan, the prefectural government discusses with municipal governments and maps out a prefectural housing construction five-year plan in line with the nationwide one. In this stage, the Government Housing Loan Corporation as a policy-oriented banking institution is to have a place to exchange opinions with the local public organization about the local housing construction plan.

3) Discussing and Cooperating with Related Administrative Organizations

Before mapping out the national housing construction five-year plan, it is made as a rule to discuss with related administrative organizations, etc. in relation to the requirements for a smooth execution of the Construction Plan, such as to revise the laws and regulations ass required to implement the Plan, to secure the financial resources, to raise the loan funds and to innovate engineering standards. In this stage, the Government Housing Loan corporation exchanges opinions with the sections in charge, competent authorities, so as to arrange the project and fund plans for their reasonableness. It is provided for, furthermore, that the related administrative organizations, etc. shall also cooperate in building up the public and utility-oriented facilities for a buildup of the

infrastructure required to materialize the Plan.

(3) Roles Played by Housing Construction Five-Year Plan

Since the housing construction five-year plan had its Phase 1 started (1996 thru 1970), eight terms have passed. In 2001, the Plan had its Phase 8 (2001 thru 2005) mapped out. An overview of the details in each Phase of the Plan would allow us to divided it into two stages, if roughly classified: the first covered Phases 1 and 2 aimed at securing quantities of housing. and the second Phase 3 and on aimed at improving the qualitative level of housing. Thus, it may be safely said that the Japanese Government has played its reasonable roles over a long period of time, thereby contributing greatly to the promotion of housing in Japan.

(4) Financial and Banking Mechanisms to Implement the Plan

To materialize the induction of housing under the governmental plan as referred to above, it is as a matter of course essentially necessary to provide a financial/banking infrastructure. The financial banking infrastructure, as used herein, is important in terms of not only its size but also its mechanisms.

1) Financial Banking Mechanisms to Implement a Policy

In Japan, the public banking system, including postal savings, has widely collected the saving-oriented funds from the People. And these funds have been forced to be deposited in the Fund Operation Department of the former Ministry of Finance. With these funds as capital, the Fund Operation Department have been financing policy-oriented special legal persons, such as Government Housing Loan Corporation and the like. This mechanism is the socalled “Financial Administration Investment Financing System.”

To properly carry out a project defined by the Government, moreover, it is necessary to properly and clearly control the details of financial activities. To this end, the Government takes into consideration various plans and policies (Housing Construction Five-Year Plan, for example) and maps out a plan of income and expenditure every fiscal year after they have been deliberated and resolved in the Diet. The national budget may have broken down into a) Budget appropriated as General Accounting, that is, accounting to cover the fundamental expenses for the promotion of national measures of greatest importance (examples: social security project, education product, housing-related project, public utility project, etc.), b) Budget appropriated as Special Accounting, that is, individual accounts for diversified special projects (examples: Printing Bureau, national schools, Fund Operating Department, etc.) and c) Budget appropriated to Government-associated Organizations, that is, accounting for those enterprises which conduct on public-oriented operations near to governmental projects (examples:

governmental banking institutions, such as GHLC or the like, banks, such as policy-oriented ones). Grants for paying a fixed rate of interest, however, is to be financially borne by the Government and reckoned in the Budget Appropriated as General Accounting.

The term, government-associated organization, is a special legal person owned by the Government. Its budget must be submitted to and resolved by the Diet. The term, special legal person, moreover, means a corporation organized under a special act. GHLC is a special legal person established in accordance with the Housing Loan Corporation Act.

2) Policy-oriented Organizations to Implement a Policy

It is important that a housing acquisition fund is being supplied stably without depending upon a trend of the economy so that it will be available according to the life stage of a household. It is preferable, moreover, that a loan falls within a range of the user's capacity to bear the household expenditure while allowing the user to map out a refund plan easily, with the refund burn stabilized. To meet such a request, the GHLC is financing a fund for a long term at a low rate of interest, using a financially administrative investment loan as fund source. A lower annual income household is able to obtain its own house, using such long-term/low-interest fund financed by the GHL. So, it is very effective in increasing the number of the households able to acquire housing. A loan of this type has a significantly positive impact on the promotion of housing acquisition by the People.

Since founded, the GHLC has been financing approximately 15 million houses, which occupy approximately 15% of the total of the houses constructed since the WW-Ⅱ. From the viewpoint of a policy induction materialized on housing, the GHLC has had a very important position.