

REAL ESTATE PRICE STATISTICS IN CHINA

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## **1.Introduction**

Recent years Chinese Government has been prompting real estate market as an important mean to stimulate economic development, especially make construction of residential building as a new growth point of national economy. In the same time a series of reforming policy set out one after another, such as raising the sales price and rent price of public owner houses, canceling welfare regulation of allocating dwelling houses to urban unit employees. As following up the rapid growth of national economy and deepgoing reform of residential house system, the scope of Chinese real estate market is constantly expanding. It is becoming an important part of commercial market of China. The value-added of real estate industry increases from 49.1billion Yuan (about 6 billion US\$) in 1978 to 1258.8billion Yuan (about 157 billion US\$) in 1997, the ability of absorbing labor force increases from 310 thousands in 1978 to 940 thousands in 1998.

At present, Chinese National Statistical Bureau (NSB) of China has used consumer price index as a substitute index to deflate value added of current price for real estate industry. For filling this gap, providing price statistics information for national accounting, and satisfying the needs of national macro-economy management and control, NSB has conducted pilot survey of real estate price, and compiled real estate price index from 1997. Now the work of pilot survey has ended, and the regular survey will be implemented from 2000. The survey frame and method of compiling real estate price index are mainly introduced by following pages.

## **2.Concept and definition in real estate price statistics**

**2.1 Industry of real estate:** According to Industry Classification and Code for National Economic Activities of China, real estate industry consists of three classes: real estate development, renting and business activities, real estate management activities and real estate brokerage service. The real estate price statistics only involves real estate development and business activities at present.

**2.2. Real estate price** refers the aggregate price of building and its occupied land.

Real estate price contains house price and land price. House price consists of 2 kinds of form: house sale price and house rent price.

In the survey, the price which we want obtain is the actual transaction price. When the transaction is finished, the ownership (tenure or the right of use) of the house and land would been transferred. This transaction price exclude other fees which related to transaction, such as service charges, intermediary fee, etc.

? **Land transaction price** refers the average land transaction charge per square meter. According land usage, land comprise the land used for residential house, the land used for industry, the land used for business, tour and entertainment. The component of land price includes: premium fees of levy land, premium fee for settler, management fee, and cost of land used, etc.

? **House sale price** refers the average house sale charge per square meter. Houses comprise commercial buildings, public-owner houses and private-owner houses. The

component of house sale price includes: the cost of purchase land, the cost of development land, the cost of house construction, profit and tax, etc.

? **House rent price** refers the average house rent charge per square meter. House rent comprise residential house rent and non-residential house rent, the latter is divided into office house rent, commercial house rent, factory building, storehouse rent, etc. The component of House rent price include: land rent charge, depreciation allowance of house and building, interest of loan, insurance cost, management fee, profit and tax, etc.

### **2.3. Categories of house**

? **Commercial houses(or buildings)** refer new houses or buildings for sale in real estate market, its include residential houses and non- residential houses.

? **Economic applicable houses(or buildings)** refer new houses or buildings, which of house welfare character. The price is lower than commercial house. Economic suitable houses are sold to employees by their working units.

? **Common residential houses** refer a kind of residential house, which of citizen residential building standard.

? **Luxury residential house** include villas and superior standard apartments. The construction standard of superior standard apartment is at least doubled as common residential house.

**2.4. Item located grade** refers the item grade according land value and economic development level of item located place. Item located grades include grade 1; grade 2; and grade 3. In the case of some regions have not grade criterion, it can be divided into three classes: downtown area, ordinary area, and remote area.

## **3.Outline of survey**

### **3.1. Task of survey**

We collect price data of house sale, house rent and land transaction, and calculate average prices, then compile year and quarter aggregate price indexes of real estate industry and its classification indexes.

### **3.2. Contents of survey**

? Land transaction prices both in base period and current period; transaction space and value in current period.

? House sale prices both in base period and current period; transaction space and value in current period.

? House rent prices both in base period and current period; rent space and value in current period.

### **3.3. Coverage and objectives of survey**

The universe consists of real estate institutional units and establishments, which

engaged real estate development and business activities in urban area.

? Real estate institutional units, such as government management agency (Real Estate Management Agency, Land Management Agency, House Reform Office, etc.); Development company, real estate agents;

? Real estate establishments under enterprises, institutions, government organizations, which engaged real estate development and business activities in urban area.

### **3.4. Frequent of survey**

The survey is on quarterly base.

### **3.5. Principle of selecting survey unit and item**

? The survey must keep considerable representatives. The scale of units and the volume of business to be comparatively large should be selected. The total transaction of the survey units should be covered 30% and above in local area. For the same item it is necessary to ensure 3 units to be reported.

? The survey must covered various usage of real estate items, include general residential building, superior quality residential building, office building, also consider building structure, facing, floors, land grades, land usage.

? The survey must covered various geographic location of real estate projects, such as downtown area, ordinary area, remote area.

### **3.6. The method of survey and data collection**

The survey is a combined survey of key investigation and typical investigation. Mail questionnaire and interview will collect real estate price, sale volume and turnover in each month. Quarterly sale volume and turnover come from the total of monthly data, quarterly price is calculated on monthly price of sample by arithmetic average method. Yearly price is calculated on quarterly price by arithmetic average method.

## **4. Compiling method and formulas of price index**

Real estate price index is divided into 3 groups: house sale price index, house rent price index, and land transaction price index. All calculation methods of these indexes are the similar. Each group index is divided into subgroup indexes, then class indexes, sub-class and category indexes (see annex 2).

### **4.1. Calculate group index**

In following we give the example of calculating the house sales price index (group a):

The house sale includes 3 sub-groups: commercial building sale, public-owner house sale and private-owner house sale. The house sales price index would be calculated on these 3 sub-group indexes by weighted arithmetic average method. The steps and formulas are following:

? Step 1: calculate individual item index, use formula 1:

$$K_i = \frac{P_{1i}}{K_i} \quad \text{(formula 1)}$$

Step 2: calculate category index, use formula 2:

$$K = \frac{\sum P_{oi} K_i W_i}{\sum W_i} \quad (\text{formula 2})$$

Where:

K = the item price index;

$K_i$  = individual index of ith item;

$P_{1i}$  = price of ith item in current period ( price is calculated on monthly price of sample by arithmetic average method).

$P_{0i}$  = price of ith item in base period (last quarter, or the same quarter of last year).

$W_i$  = weight(the turnover proportion of ith category in current period).

Step 3: calculate sub-class and class index, use formula 3:

$$K = \frac{\sum W_i K_i}{\sum W_i} \quad (\text{formula 3})$$

where:

K = the sub-class or class price index;

$K_i$  = ith category index of this sub-class or class;

$W_i$  = weight(the turnover proportion of ith category or sub-class in current period).

(In the case of calculating other group indexes, if there is no sub-class in the class index, or there is no category in the sub-class index, the formula of class index or sub-class indexes are same as formula2).

Step 4: calculate sub-group index, use formula 4:

$$K = \frac{\sum K_i W_i}{\sum W_i} \quad (\text{formula 4})$$

where:

K = the sub-group price index;

$K_i$  = ith class price index of this sub-group;

$W_i$  = weight(the turnover proportion of ith class in total turnover of last year).

Step 5: calculate group index, use formula 5.

After calculate price indexes of commercial building sale, price index of public-owner house sale, and price index of private-owner house sale (the 3 sub-group price indexes), the group price index of house sale can be calculated:

$$K = \frac{K_1 * W_1 + K_2 * W_2 + K_3 * W_3}{W_1 + W_2 + W_3} \quad (\text{formula 5})$$

K = group price index of house sale ;

$K_1, K_2, K_3$  = price index of commercial building sale, price index of public-owner house sale, and price index of private-owner house sale( the 3 sub-group price indexes)

separately ;

W1? W2? W3= turnover proportion of commercial residential building sale, turnover proportion of public-owner house sale, and turnover proportion of private-owner house sale in the total turnover of last year separately.

#### **4.2. Calculate aggregate price index of real estate**

Aggregate price index of real estate is calculated by weight average method from the group price index of house sale, the price index of house rent and the price index of land transaction.

$$K = \frac{K1 * W1 + K2 * W2 + K3 * W3}{W1 + W2 + W3} \quad \text{(formula 6)}$$

Where:

K = aggregate price index of real estate;

K1? K2? K3 = group price index of house sale, house rent and land transaction separately ;

W1? W2? W3= turnover proportion of house sale, turnover proportion of house rent and turnover proportion of land transaction in the total turnover of last year separately;

### **5. Data resources**

#### **5.1. Price data resources**

##### **5.1.1. Land price data**

Land price data (and the list of transaction units) can be obtained from land management sectors. Detail information can be obtained from investigation of these transaction units, if necessary.

##### **5.1.2. House sale price data**

? Prices of economic applicable house, public-owner house, private-owner house can be obtained from real estate management agencies, house reform offices, house transaction centers.

? Prices of common residential house and luxurious residential house can be obtained from real estate management agencies, or real estate development companies.

? Prices of non-residential house can be obtained from real estate management agencies, real estate development companies.

##### **5.1.3. House rent price data**

? Price of public-owner house can be obtained from real estate management agencies, or obtained by typical surveys.

? Price of private-owner house can be obtained from intermediary organizations, real estate management agencies, or obtained by typical surveys.

? Price of office building, commercial house, factory house, storehouse can be obtained from real estate development companies, or obtained by typical survey to renters.

## **5.2. Weighting data resources**

Class indexes and above are used fixed weight, (adjusted every year), sub-class, category indexes are used sample weight. Fixed weight should be the turnover of last year.

### **5.2.1. Weighting data of land price index**

The weights of different usage land can be obtained from land management sectors.

### **5.2.2. Weighting data of house sale price index**

? The weights of commercial house can be obtained from real estate agencies, or NBS's production statistical reporting data of real estate enterprises.

? The weights of private-owner house can be obtained from real estate transaction sectors.

? The weights of public-owner house can be obtained from house reform offices.

### **5.2.3. Weighting data of house rent price index**

? The weights of residential house, and public-owner house and private-owner house can be obtained by household surveys.

? The weights of house for office used and house for business used can be obtained from construction sectors.

? The weights of factory house and storehouse can be obtained by typical surveys.

## **6. Conclusion**

Price statistics of real estate industry is a new task of NBS. The survey scheme as well as practice methods have remained quite a number of disadvantages. Over the next few years, we will focus on some aspects work, such as:

? Sampling method would be used in selecting unit, in stead of no-random sample survey, in order to raise the representatives of price index.

? The categories of house would be subgroup in specifications, according floor, facing, location, quality and used material of the house, in order to choose the suitable item.

? Production statistics of real estate industry would be improved, some classificatory indicators related to house sale, rent and land transaction would be added, so as to obtain the reliable information of weight.

In term of real estate price statistical, we are still at a very early stage and the work we are facing would be quit hard, because of our lower statistical level and poor information of basic units. So far we have known very little experience of other countries in this filed. We hope to communicate with the colleagues of other countries, learn from their advanced experience, and get perfect in price statistics of real estate in China.

Any suggestion and comments will be very welcomed to this e-mail address:

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## Annex1: Reporting form

### Reporting form of land transaction price

Name of unit:

Unit code:

Unit address:

Unit register type:                      year      quarter

Item code	Item located grade	Transaction type	Item name	Item address	Space of transaction of this quarter	Turnover of this quarter	Unit price of transaction		
							This quarter	Last quarter	Same quarter of last year
A	B	C	D	E	1	2	3	4	5

### Reporting form of house sale price

Name of unit:

Unit code:

Unit address:

Unit register type:                      year      quarter

Item code	Item located grade	Item structure	Item name	Item address	Sale space of this quarter	Turnover of this quarter	Unit price of sale		
							This quarter	Last quarter	Same quarter of last year
A	B	C	D	E	1	2	3	4	5



## Reporting form of house rent price

Name of unit:

Unit code:

Unit address:

Unit register type:                      year    quarter

Item code	Item locate grade	Item structure	Item name	Item address	Rent space of this quarter	Total rent charge of this quarter	Unit price of rent		
							This quarter	Last quarter	Same quarter of last year
A	B	C	D	E	1	2	3	4	5

### **Annex2: Classification**

#### **Classification and code of land and house**

##### **a. Land transaction**

- 11. The land used for residential house
  - 111. The land used for luxury residential house
  - 112. The land used for common residential house
- 12. The land used for industry
- 13. The land used for business, tour and entertainment
- 14. Others

##### **b. House sale**

- 15. Commercial house
  - 151. Residential house
    - 1511. Economic applicable residential house
    - 1512. Common residential house
      - 15121. Multiple-floor residential house (2-6floors)
      - 15122. High-layer residential house (7 floors and above)
    - 1513. Luxury residential house
      - 15131. Villa
      - 15132. Superior standard apartment
  - 152. Non-residential house
    - 1521. Office building
    - 1522. House for business used
    - 1523. Others
- 16. Public-owner house

- 161. Residential house
- 17. Private-owner house
- 171. Residential house

**c. House rent**

- 18. Residential house
  - 181. Public-owner residential house
  - 182. Private-owner residential house
- 19. Office building
  - 191. Superior standard office building
  - 192. Common office building
- 20. House for business used
- 21. House for industry and storehouse used
  - 211. House for industry
  - 212. Storehouse

22. Others

(5digit: category; 4digit: sub-class; 3digit: class; 2digit: sub-group; alphabet: group)

**Transaction types and code**

- 01. Sale
- 02. Alienation
- 03. Rent
- 04. Others

**Item locate grade and code:**

- 01. Grade 1
- 02. Grade 2
- 03. Grade 3

...

Or if there is no a regulation of grade, use following classification:

- 01. Downtown area
- 02. Ordinary area
- 03. Remote area

**Item structure and code**

- 01. Steel structure
- 02. Steel and reinforced concrete structure
- 03. Reinforced concrete structure
- 04. Mixed structure
- 05. Brick and wood structure
- 06. Others