

# THE IMPACT OF HOUSING REFORM ON CONSUMPTION, INVESTMENT AND INDUSTRIAL GROWTH: A TALE OF THREE CHINESE CITIES

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## ABSTRACT

*Housing reform has been a key component in China's economic revitalization program, initiated by the late paramount leader Deng Xiaoping since 1978. By reforming the welfare housing system, the Chinese government aims for the removal of a burden (i.e. welfare housing) from state finances. At the same time, housing reform will stimulate changes in consumption, investment and related industrial sectors, and thus facilitate economic growth. This paper examines the impact of housing reform on consumption, investment and industrial growth in three Chinese cities. Research findings revealed that housing reform resulted in drastic changes in housing investment and growth of related industries. Self-raised capital became the main source of housing investment, while state investment declined considerably. Significant correlations were clearly discernible between housing investment and related industries. Nevertheless, the power of resident's consumption was a constraint against housing commercialisation. Further reforms to raise the level of effective demand for housing and to introduce various schemes in housing finance are critical for developing the China housing industry into an engine of economic growth.*

**Keywords:** Housing reform, economic growth, cities, China.

## INTRODUCTION

China's housing reform, which aims at transforming housing from a welfare good to a merit good, is probably the most complex process in China's economic transition in terms of the multiple dimensions involved and multiple purposes targeted. For more than 30 years since the founding the People's Republic of China in 1949, a mentality had developed among households and government authorities that housing should be provided almost free of charge by the state (Lim and Lee, 1993; Yan and Marans, 1995; Li, 2000). A planned economic system emerged in which the state was in charge of the production, finance, circulation and maintenance of housing. Despite heavy investment by the state, China's housing system had escalated serious problems such as housing shortage, insufficient investment, unfair distribution, low rent and poor management (Wang and Murie, 1999). As such, housing reform has to change peoples' mentality on housing provision, to diversify the sources of housing finance, to introduce reforms to the

wage system and banking system for raising effective demand, and to establish a sound legal framework that safeguards the emerging housing market.

An immediate benefit of China's housing reform was to stimulate economic growth, generating jobs and contributing to the growth of related industries from building materials to home furnishings and appliances (Rosen and Ross, 2000). Housing reform would also promote the reform of state-owned enterprises and the banking systems, as well as increase labor mobility. In 1980, when China's chief architect of the economic reform, Deng Xiaoping, outlined the overall plan for housing reform, the construction industry was envisioned as a pillar in the national economy. Deng used housing development as an example of the construction industry to illustrate his point. In several official policy documents issued by the central government in the consequent years (e.g. Document No 11 in 1988, Document No 43 in 1994, and Document No 23 in 1998. See The Editorial Board of the Selected Rules and Regulations on Housing Reform 1998), housing reform was seen as a catalyst of change in residents' consumption patterns, investment channels, and the growth of related industries. In June 1998, Deputy Prime Minister Wen Jia Bao spelt out clearly that:

“Housing construction possesses not only a high degree of linkage with other industrial sectors, but also a great market potential. The development of housing ... can create a large volume of jobs, and is a new pole of national economic development.” (The Editorial Board of China's Real Estate Market Yearbook, 1998).

The purpose of this paper is to examine the impact of housing reform on the patterns of consumption, investment and on the growth of related industrial sectors. Questions are raised as to how consumption of housing-related items has changed over time? If there was a success in diversifying housing investment from non-state sources? Did related industrial sectors, such as construction materials and furniture manufacturing growth correspond to housing investment?

## **LITERATURE REVIEW**

None of the above questions are addressed in the literature. The large and fast growing volume of publications on China's housing reform generally focus more on the changes brought about by the reform (Lee, 2000). Most discussions are on a variety of topics such as housing systems and policies pre-and post-economic reform, political ideology, housing inequalities, housing commercialization and housing finance (Badcock, 1986; Kim, 1987; Lee, 1988; Kirkby, 1990; Zhou and Logan, 1996; Chiu, 1995; Gu and Colwell, 1996). Even in Chinese language publications, there is little explanation about how housing reform can stimulate economic growth. For example, Mei (1999) predicted that every 100 yuan of housing investment would lead to 170-220 yuan of demand from related industrial

sectors, every sale of 100 yuan of housing would cause the sale of 130-150 yuan of related products. But the basis of his claim remains unknown.

Housing is an indispensable element in the economic nexus of a society as it has a close relationship with:

- 1) investment and output,
- 2) the growth of GDP,
- 3) inflation,
- 4) the monetary side of the economy,
- 5) taxation, and
- 6) tenure types (Ermisch, 1990).

According to his study of the British housing market, Ermisch (1990) claimed that the end of mortgage rationing and the house price movement influenced consumption and saving. The absence of a rental market affected the nature of housing price movements which further affected consumption and saving decisions, the risk faced by household and labor mobility.

In an export-driven economy, housing is perceived as a passive factor input in the three-element model of regional economic growth (Dipasquale and Wheaton, 1996). An increase in the demand for a region's products increases regional output, employment and stock of real estate, as well as output prices, wages and real estate rents. Output, employment and stock (in money terms) rise more than product prices, wages and rents when factors are readily available and elastically supplied. An increase in the supply of labor (an outward shift in the supply curve) increases output, employment, the stock of real estate and real estate rents, but wages and output prices fall. The increase in quantities and rent is largely relative to the decreases in wages and output prices when output demand is price elastic (Dipasquale and Wheaton, 1996).

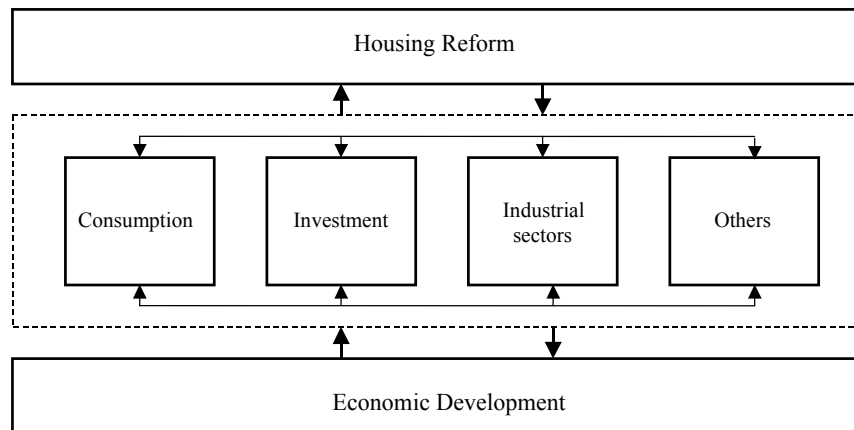
In an economy whose growth depends on internal investment, housing is one of the principal sectors that can catalyze domestic growth without generating more inflation, with negligible demands on foreign exchange and with little recourse to the fiscal exchequer (Woodfield, 1989). In the 1980s, technological advances and the slow growth of the industrialized countries had reduced their demand for many developing countries' primary products. Thus, growth strategies oriented towards the export sector are not likely, by themselves alone, to supply sufficient stimulus to reactivate growth. This was particularly relevant to the economic downturn in the Asia Pacific in the late 1990s. The Asian financial crisis reduced the demand for exports from China, which made it clear to Chinese leaders that internal investment, especially in the housing sector, was the key for stimulating economic growth (The Editorial Board of the Selected Rules and Regulations on Housing Reform, 1998).

## FRAMEWORK, SCOPE AND DATA

### Research framework

This paper suggests that there is a reciprocal relationship between housing reform and economic development in China. In other words, housing reform affects economic development, while economic reform and growth determines the pace, coverage and depth of housing reform. The interactions between housing reform and economic development occur in four main channels, i.e. consumption, investment, industrial sectors, and others (see Figure 1). By increasing rent levels and housing sales, housing reform invokes a larger proportion of consumer spending on housing and housing related items (e.g. furniture). This will in turn raise the demand for consumer goods and thus directly contribute to economic growth. Similarly, housing reform diversifies investment channels. Not only more funds are made available for housing development, but also the burden to state finance is reduced. This contributes positively to the economy by making internal investment and state funds available for larger infrastructures and the needy. Housing reform stimulates the growth of related industries such as construction materials, which directly contribute to the growth of the Gross Domestic Product. Other channels, such as tenure policy, affects on economic development as housing reform may shape labor mobility by increasing or decreasing home ownerships.

**Figure 1: Housing reform vs. economic development: a conceptual framework**



On the other hand, economic development poses an influence on housing reform through the same four channels. Higher income, as a product of economic development, pushes up the level of consumption. Residents will no longer spend most of their earnings on basic needs such as food. They will have extra monetary resources for branded clothes, entertainment and better housing. Housing commercialisation is thus stimulated by economic development. Similarly,

economic development strengthens both the state and the private sectors as the former may enjoy more tax revenue whilst the latter prospers. This will be translated into more investment in housing from the two sectors. The development of related industries, as a part of economic development, facilitates housing reform by supplying products that have backward or forward linkages with housing. Other channels, such as tenure type, may show supportive or unsupportive signs during the economic development process and may thus call reform measures to act properly.

### **Scope of research**

The scope of research is on the three channels in the above framework, i.e. consumption, investment and related industries, with an emphasis on the evidence of changes that reflect the interactions between housing reform and economic growth. We observed that economic growth continued during our period of research from 1985-1998, as did housing reform. Indeed, at a national level, China's GDP grew at an average rate of 9.5 per cent from 1979-1999 (State Statistical Bureau 2000), while new reform efforts on housing were initiated. Within the context of the continued development and housing reform, our attention is on what has happened in the patterns of consumption, investment and related industries. We seek evidence that is essential to understanding the impact of housing reform on the above three aspects.

The approach adopted for this paper is the case study method. Three cities are selected. They are Yantai (Shandong Province), Shenzhen (Guangdong Province) and Shanghai. These cities were chosen because they represent the three main types of housing reform in China (Cai, 1996). Yantai followed an approach of rent-hike accompanied by subsidies, with an emphasis on transferring the mechanisms of housing consumption (i.e. tenants pay for housing rather than getting it free from the state). Shenzhen used an approach of drastic rent-hike, with an emphasis on sale of housing. Shanghai represented an approach of gradual rent-hike, with emphasis on the diversification of investment sources. No assumption is made that the three sample cities are representative of the whole nation, as housing reform varied from city to city.

Table 1 summarizes the main characteristics of the sample cities. Shenzhen enjoyed the highest value in both GDP per capita and GDP growth rate. Shanghai had the largest population scale and density in urban areas. It also attracted the largest amount of foreign investment. Yantai was the smallest city among the three, but with the largest living space per capita. Compared with Shenzhen and Shanghai, the primary industry accounted for the largest share in GDP in Yantai. The tertiary sectors are more developed in Shenzhen and Shanghai, with each making up almost half of the GDP and far above the national average.

**Table 1: Major economic indicators of the sample cities: 1998**

Cities	All	Yantai	Shenzhen	Shanghai
GDP per capita (yuan)	6,392	11,439	35,896	28,227
GDP growth rate (97-98)	5.6%	0.7%	14.07%	10.3%
Population (10000 persons)	15,402.08	81.86	405.13	893.72
Population Density in urban areas (capita/sq.km)	689	593	2079	3295
Land area (sq.km)	2,730,866	13,746	1,949	6,341
Per capita net living space in urban areas (sq.m)	9.3	15.47	15.3	13.91
Direct Foreign Investment (USD 10000)	4,614,199	45,800	275,422	363,786
Primary industry to GDP	18.4%	17.9%	1.2%	2.1%
Secondary industry to GDP	48.7%	51.2%	50.6%	50.1%
Tertiary industry to GDP	32.9%	30.9%	48.2%	47.8%

Source: State Statistical Bureau 1998 and 1999; Yantai Statistical Bureau 1999; Shenzhen Statistics and Information Bureau 1999; and Shanghai Statistical Bureau 1999.

### Data and methods

Data is collected from two major sources: government policy documents and census materials. While some of the publications are available in various libraries, others were gathered during two field trips to China in 1999 and 2000. The temporal coverage is the period 1985-1998, with extensions to 1999 or 2000 where data is available.

Data on household consumption includes household expenditures on seven items: (1) household facilities, articles and services, (2) residence, i.e. housing rental or installment of purchasing, (3) food, (4) clothing, (5) medical services, (6) transportation and communication, and (7) recreation and education. Percentage spending out of the total of the above seven items are calculated on the basis of constant price in 1990. The results are plotted for discussion in the relevant sections (see Figures 2, 4 and 6).

Housing investment is composed of: (1) state budget, (2) domestic loans, (3) state bonds, (4) foreign capital, and (5) self-raised capital (e.g., investment from enterprises or individual households). Similar to the consumption data, the proportion of each investment source is calculated and plotted on the basis of the

1990 constant price (see Figures 3, 5 and 7). The annual sum of the above investment sources is further used as an indicator for housing development to compare with the growth of selected industrial activities (as discussed in the next paragraph). In so doing, it must be noted that a time lead-lag has to be considered. Within the context of the research framework, housing investment could be the result of economic development as partially represented by the selected industrial activities, and at the same time, a stimulus of the growth of the selected industrial activities. In other words, housing investment could be led by the growth of the selected industries, with a time lead-lag, and vice versa. An analysis on the complexity of the time lead-lag is outside the scope of this paper. For simplicity, this paper contrasts the values of housing investment with the values/volumes of the selected industrial output of the same year.

Twelve industrial activities are selected to represent the backward and forward linkages between housing reform and industrial growth. Two of them, namely the production value of civil engineering works and equipment installation represent the development of infrastructure as relevant to housing development. Six of the activities are related to the physical being and the function of housing. These include: (1) building decoration, (2) electricity and hot water supply, (3) gas production and supply, (4) tap water production and supply, (5) electric equipment manufacturing, and (6) furniture manufacturing. Changes in the sector of construction materials are represented by the production of (1) cement, (2) steel, (3) plate glass and (4) plastics.

We make use of descriptive statistics to depict the impact of housing reform on consumption and investment. Correlation analysis is employed to test the relationships between housing investment and the growth of various industrial activities. We recognize that housing investment may relate more than one variable, and thus there is a limitation of using bivariate correlation analysis. But given the data constraints, we believe that correlation analysis is an appropriate tool to uncover certain statistical relationships between housing reform and economic growth.

## **YANTAI**

### **Housing reform**

Yantai was one of the pioneers in implementing housing reform. In 1987, Yantai was selected by the State Council to experiment with reforms to commercialize the entire process of housing production, distribution and consumption. The major method was to increase rent in the public sector so that the construction costs can be recovered. At the same time, and for the first time, special housing-subsidy coupons were issued to help residents, making up the difference between the new and higher rent and the old and lower wage. Housing subsidy was a temporary measure and was gradually phased out as salaries increased to a level sufficient to meet housing costs (Wang and Murie, 1996).

The new rent covered five elements: building depreciation charge (2 per cent discount per year), repair and maintenance costs (an average of 2.1 yuan/sq m/year or US \$0.25/sq m/year), investment interest (an annual rate of 3 per cent), and management costs and property tax (SCOSConRHS, 1992). After a complicated calculation, an average standard monthly rent of 1.17 yuan (US \$0.14) per square meter in the city proper was proposed in 1987. At the same time, 23.5 per cent of the tenants' total salary was issued in the form of housing coupons.

The subsidy level was based on the principle that the total rent increase in the city should equal the total housing subsidy so that the reform would not incur extra costs to the government. Thus housing reform would not increase household's housing costs nor state housing investment.

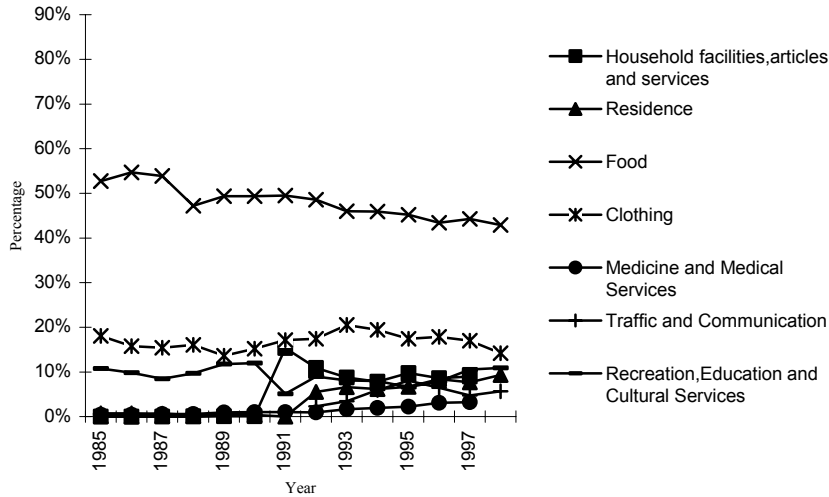
Along with rent changes, the Yantai housing reform plan encouraged public sector workers to buy the house they occupied. Standard sale prices were proposed. Tenants were required to pay a minimum 30 per cent of the price at the outset. The remaining part was to be paid through instalments over a period of 10-15 years. Special discounts subject to negotiation were proposed in order to encourage higher initial payments. At the same time, a new housing finance system was introduced to ensure that the income generated from rents and sales was used for building new apartments. The policy-makers also anticipated major changes in the tenure pattern in the city with a mixture of private, institutional/enterprise and city government ownership in each housing estate or even within a single building (SCOSConRHS, 1992).

### **Consumption**

Figure 2 shows the pattern of consumption in Yantai from 1985 to 1998. It appears that food consumption took the largest portion in household spending, while clothing and recreation accounted for the second and third largest parts. The spending on housing and related items did not change much until 1991 and 1992; after that, the percentage of consumption rose steadily and took the fourth and fifth places respectively after 1997. This sudden rise was mainly caused by the rent reform, which had been tested in selected districts since 1988. It was gradually implemented in the entire city. However, the low rent did not give enough incentive to householders to purchase their housing. The process of commercialisation was therefore very slow. As a result, the average scale of housing consumption was quite low, especially compared with food consumption.



**Figure 2: Household consumption in Yantai: 1985-1998**

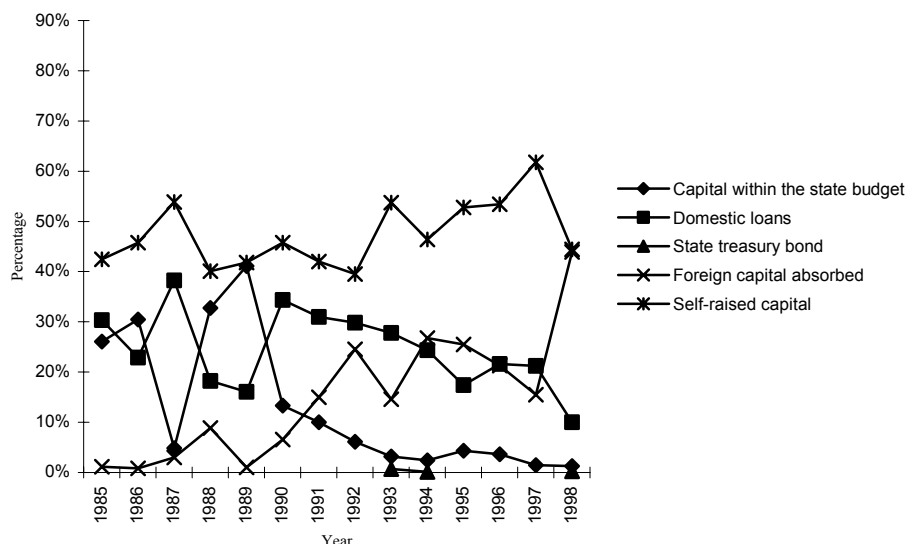


### Investment

The establishment of the Yantai Housing Saving Bank (YHSB) in December 1985 was a major step to diversify sources for housing investment (IFTE, 1996). The customer base of the YHSB was state-owned-enterprises, which represented 84 per cent of the bank's total deposit base at its start. Enterprise deposits were mainly from their retained profits, working capital, sales income of existing housing stock, loans for fixed assets, construction and development funds for renovation of old housing. The compulsory saving from individuals comprised 16 per cent of its total source of funds, of which 95 per cent were contracted saving with YHSB for home purchase.

In 1989, 70 per cent of the bank funds were lent to work-units and real estate companies as current capital. Loans to work units for the purchase and construction of homes amounted to 2.4 per cent of the use of funds, while the volume of mortgage loans to individual households constituted only 1.9 per cent of the bank's total loan portfolio. This showed that most of its lending was directed to work units and real estate companies (72.4%), while individuals (1.9%) as the final consumer of housing were left out or neglected. The interest rates for both deposits and loans were set lower than other prevailing rates. The interest paid on deposits was lower than those of temporary deposits and the interest spread between saving and lending was set at 1.8 per cent. Under these regulations, its operations were characterized by strict administrative control and remained small due to its limited range of services (IFTE, 1996).

**Figure 3: Housing investment in Yantai: 1985-98**



Source: Drawn by the author. Data are based on Yantai Statistical Bureau 1986-1999.

Figure 3 shows that the percentage of self-raised capital had been higher than other sources of investment. The self-raised capital fluctuated in proportion, but maintained at a level of 40 per cent throughout the period. The percentage of capital from the state budget had experienced even more drastic changes, with a peak of 41 per cent in 1987 but a steep drop to 2 per cent in 1998. Even so, the proportion of self-raised capital was considered low in comparison to other Chinese cities. There were two reasons attributable to the low proportion. One was the high down-payment (IFTE, 1996). Under the prudent underwriting criteria, the loan-to-value ratio were 50 per cent, which included 30 per cent down-payment and a deposit with the lending bank equivalent to 20 per cent of the total cost of home purchase. The other was the short maturity term of loans. After meeting all the requirements of the bank, the longest repayment term for individual borrowers was derived at about 10 to 15 years. In effect, such high down-payment and short maturity term, added by 20 per cent “preferential discount” to home buyers with lump-sum payments, only encouraged cash settlement, which limited the opportunities for operation and expansion of mortgage lending. Clearly, although many countries had adopted mortgage finance as a common instrument in housing finance, there was no clear sign of success in China as there were in other market-oriented economies (IFTE, 1996).

**Table 2: Total output value of related industrial sectors of Yantai: 1985-1998**

Year	HI	FU	EE	ES	GP	TW	CE	LE	BD	CM	ST
1985	107	72.3	306.3	187.1	1.1	11.0	-	-	-	167.46	35504
1986	150	89.8	401.4	225.9	1.2	13.1	-	-	-	208.50	44749
1987	108	85.2	365.4	215.5	1.1	10.5	-	-	-	188.80	50306
1988	122	115.4	503.1	281.2	1.2	13.7	-	-	-	237.01	52473
1989	44	120.5	634.0	312.9	1.4	12.4	-	-	-	247.28	55300
1990	210	146.6	660.8	347.6	2.9	11.8	-	-	-	252.00	63300
1991	312	157.7	995.3	576.4	14.7	20.8	-	-	-	320.32	77600
1992	579	194.0	1272.8	632.3	20.1	22.0	-	-	-	437.87	80100
1993	1243	353.2	2092.1	835.5	53.8	24.7	-	-	-	570.00	107300
1994	1258	293.6	2753.4	816.9	24.5	34.2	1031.2	83.9	61.8	692.00	95300
1995	355	287.3	3969.3	958.5	28.4	29.3	1257.1	131.3	61.1	-	-
1996	350	402.1	4527.8	1058	31.3	34.2	3159.6	236.1	141.8	836.29	33200
1997	430	400.2	5078.3	1105.6	30.9	33.8	3200.4	271.9	185.0	833.77	65900
1998	-	251.4	5889.3	1003.3	28.7	29.6	3110.3	326.7	89.3	623.64	-

*Notes:*

1. *HI-Housing Investment; FU-Furniture; EE-Electric Equipment and Machinery; ES-Electricity, Steam and Hot Water Production and Supply; GP-Gas Production and Supply; TW-Tap Water Production and Supply; CE-Civil Engineering; LE-Line Equipment Installation; BD-Building and Decoration; CM-Cement; ST-Steel.*
2. *No data was available on plate glass and plastics for Yantai.*
3. *All values are in million yuan Ren Min Bi in the constant price of 1990 (8.3 yuan Ren Min Bi is about US \$1. This exchange rate fluctuated slightly but was generally true for the 1990s), except CM and ST which are in million tons.*
4. *- : no data was available for the particular years.*

Source: Yantai Statistical Bureau, 1986; 1988; 1990; 1992; 1994; 1996; 1998; 1999; 2000.

**Related industries**

Housing reform in Yantai was accompanied by a rapid development of the construction industry. The total output value of the construction industry raised from 21.88 million yuan (US \$2.64 million) in 1993 to 52.98 million yuan (US \$6.38 million) in 1999 (Yantai Statistical Bureau, 1994, 2000). The construction industry has absorbed a large number of laborers as well, thus playing an important role in stabilizing surplus rural labor and increasing urban employment.

Housing reform in Yantai was also accompanied by the rapid development of other related industrial sectors. Among the twelve industrial activities selected for analysis, the electric equipment and machinery industry and the civil engineering sector had achieved a faster growth rate (Table 2). The output value of the electric equipment and machinery industry increased gradually from 306.33 million yuan (US \$36.9 million) in 1985 to 660.78 million yuan (US \$79.61 million) in 1990. In 1998, the same output value reached 5889.29 million yuan (US \$709.55 million).

For the output value of the civil engineering industry, statistics show that the increase was from 1031.16 to 3110.31 million yuan (US \$124.24 million to US \$374.74 million respectively) during the period of 1994-1998. Most of the increase was accomplished in the period 1995-1996 and the growth rate was 150 per cent during this period.

Table 3 shows the Pearson correlation coefficients for those variables that yield significant relationships with the housing development indicator. Among the twelve variables that represent housing related industries, six show a significant direct relationship with housing investment in Yantai. These six variables are: (a) furniture manufacturing; (b) electricity, steam and hot water production and supply; (c) gas production and supply; (d) tap water production and supply; (e) cement; (f) steel. The coefficients of the above six variables are supportive of the statement that there is a close and direct relationship between housing investment and the development of related industries.

## **SHENZHEN**

### **Housing reform**

At its start, Shenzhen adopted the same welfare housing system as all other cities in China. The state bore the responsibility of providing housing for the residents. From 1979 to 1987, state investment in housing amounted to 22.4 billion yuan (US \$2.7 billion), accounting for 23 per cent of the total investment in fixed assets and 20.36 per cent of the gross national income. A total housing space of 5.96 million square meters was constructed during this period. Nevertheless, housing supply failed to meet the ever-increasing housing demand. At the end of 1987, there were 22,000 households in search of housing (EBYSSEZ, 1989), more than three times that in 1983 (i.e. 5000 households). Though the fast growth of the population was attributable to the housing shortage to a certain extent, a more important reason was the rigid and highly centralized housing system.

The municipal government set up a task force in charge of housing reform in March 1987. A year later, in June 1988, the *Housing Reform Plan of Shenzhen Special Economic Zone* (HRPSZSEZ) was promulgated. This plan was officially put into practice in October 1988. The objectives of housing reform in Shenzhen, as spelt out in the above plan, were to lighten the heavy fiscal burden on the state (i.e. in the form of government organizations and state-owned enterprises) in housing construction, to boost up the consumption of housing, to accelerate circulation of funds in the real estate market, and eventually to achieve a market equilibrium of housing supply and demand (The Editorial Board of the Yearbook for Shenzhen Special Economic Zone, 1989).

**Table 3: Correlation coefficients between housing investment and related industries**

<b>Industrial activities</b>	<b>Yantai</b>	<b>Shenzhen</b>	<b>Shanghai</b>
Civil Engineering	-0.608	N/A	0.710
Line and Equipment Installation	-0.695	N/A	0.741
Building Decoration	-0.497	N/A	0.631
Electricity, Steam and Hot Water Production and Supply	0.564*	0.857**	0.91**
Gas Production and Supply	0.775**	0.697	0.948**
Tap Water Production and Supply	0.625*	0.886**	0.956**
Electric Equipment and Machinery	0.372	0.953**	0.934**
Furniture Manufacturing	0.612*	0.8**	0.849**
Cement	0.597*	-0.536	0.725*
Steel	0.845**	0.487	0.873**
Plate Glass	N/A	0.463	0.931**
Plastics	N/A	0.448	0.872**

Note: \*\* Correlation is significant at 0.01 level; \* Correlation is significant at 0.05 level.

One major change in Shenzhen's reform approach was to increase housing rent. According to the HRPSZSEZ, housing rental should cost as high as 25 per cent of the basic salary of employees. As a start, monthly rental was benchmarked at 2.06 yuan (US \$0.25) per sq m per month in 1988. The above rent was calculated by including five elements: building depreciation charge (an average of 0.42 yuan or US \$0.05 per sq m per month), investment interest (an average of 1.19 yuan or US \$0.14 per sq m per month), building cost (an average of 0.15 yuan or US \$0.02 per sq m per month), repair, maintenance and management cost (an average of 0.05 yuan or US \$0.006 per sq m per month) and property tax (an average of 0.25 yuan

or US \$0.03 per sq m per month). Adjustment was made every two years by introducing additional increments. In 2000, Shenzhen's housing rental reached 6.54 yuan (US \$0.79) per sq m per month. This rental level was significantly higher than that in other Chinese cities. For example, the monthly rent in Shanghai was 1.92 yuan (US \$0.23) per sq m in 2000. In Guangzhou it was 2.52 yuan (US \$0.30) per sq m. In Chengdu, it was 2.90 yuan (US \$0.35) per sq m.

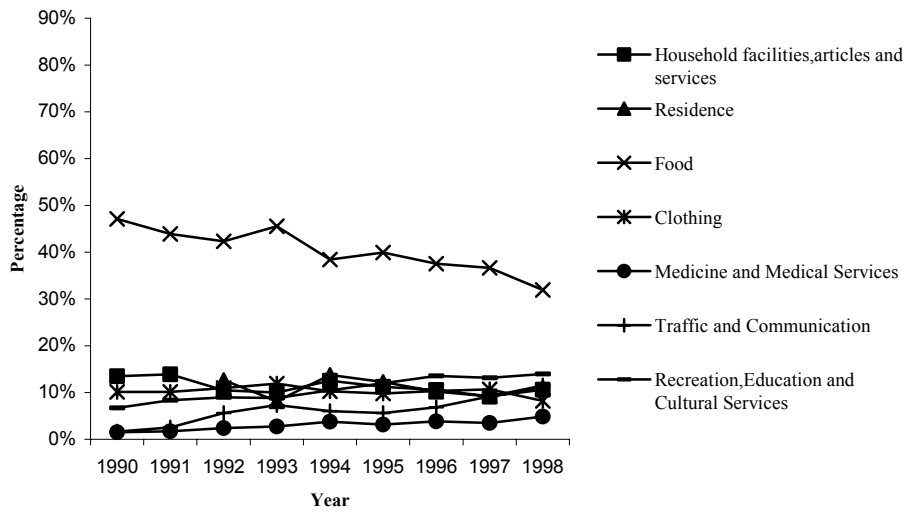
The other major change was to encourage residents to purchase their own housing. This was done by providing housing units at a reasonable price, on the one hand, and by providing necessary housing finance on the other. In the HRPSZSEZ, it was envisioned that housing would be priced differently and go through three stages. Housing prices would not include land prices nor development profits in the first stage, so that the lowest possible price would be offered to residents. As residents' purchasing power increased along with further reform, housing price would increase to include land prices but still exclude development profits. In stage three, development profits would be charged to consumers so that a free market equivalent housing price would be in operation. Clearly, the state acted as developers in the first two stages, when no development profits were part of the housing price. Private developers could only operate in stage three.

The increase of housing rent and sale of housing went hand in hand with a housing allowance, which was similar to the case of Yantai. In addition, Shenzhen introduced the "Housing Provident Funds" (HPFs) in 1992. Employees and work units each contributed 13 per cent of wages in Shenzhen. The HPFs was put together with old age security and medical insurance. The funds were managed by the Shenzhen Social Security Bureau and could only be used for housing-related investment. This system reduced the dependency of housing investment on the state, and thus facilitated housing privatization.

### **Consumption**

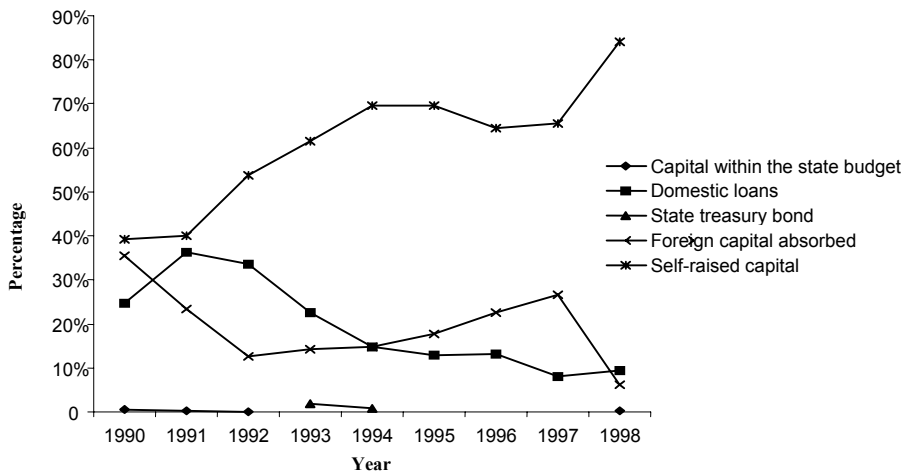
The increase of housing rent, together with sales of housing led to the increase of residents' spending on housing and related items (Figure 4). From 1990 to 1998, though food consumption took the largest portion in households' spending, it dropped gradually from 47 per cent in 1990 to 32 per cent in 1998. The spending on housing and related items rose steadily and took the third and fifth place respectively after 1997. This increase was mainly caused by the rent reform, which had been tested in selected units and districts since 1988. Although the average scale of housing consumption was still low compared with food consumption, they were relatively high compared with Yantai and Shanghai. This was especially true for the high percentage of consumption on residences, which showed the significant result of rent reform in Shenzhen.

**Figure 4: Household consumption in Shenzhen: 1990-1998**



Source: Drawn by the author. Data are based on Shenzhen Statistics and Information Bureau, 1992; 1993; 1995-1999.

**Figure 5: Housing investment in Shenzhen: 1990-1998**



Source: Drawn by the author. Data are based on Shenzhen Statistics and Information Bureau, 1992; 1993; 1995-1999.

## Investment

Figure 5 plots the percentage of different investment channels in the total housing investment in Shenzhen from 1990 to 1998. A clear pattern of housing investment is evident. The most rapidly growing channel was self-raised capital, which increased from 39 per cent in 1990 to nearly 90 per cent in 1998, whereas the state capital remained at a nominal level. Proportion from other channels, such as domestic loans and foreign capital, had fluctuated corresponding to the macro, political and economic environment. It showed that housing construction in Shenzhen were mainly dependent on self-raised capital and foreign investment, while state investment was almost negligible.

## Related industries

Shenzhen's construction industry has been growing rapidly since the economic reform and open policy were introduced. The total output value of the construction industry raised from 17.04 million yuan (US \$2.05 million) in 1979 to 10962.08 million yuan (US \$1320.73 million) in 1997. At its peak, the average growth rate registered a high rate of 71 per cent in the period of 1990-1992 (Shenzhen Statistics and Information Bureau, 1999).

**Table 4: Total output value of related industrial sectors of Shenzhen: 1990-1998**

Year	HI	FU	EE	ES	GP	TW	CM	ST	PG	PL
1990	1645	141.6	885.1	184.5	-	50.1	22.28	56481	207	103779
1991	3155	176.2	1206.2	187.9	-	53.5	28.17	65073	238	233094
1992	7039	205.6	1555.1	308.9	-	63.0	29.53	61300	269	244000
1993	5823	312.1	2173.6	382.9	-	90.0	31.4	60599	265	290508
1994	6168	253.8	2607.8	1582.9	-	112.7	37.53	86538	259	375757
1995	7959	219.4	3822.8	1454.7	63.82	188.1	30.09	93090	272	449183
1996	8598	262.1	4856.9	1577.4	6.40	227.7	25.17	100000	272	411132
1997	11351	276.1	5943.4	11298.2	1.17	757.4	17.48	73501	385	387692
1998	15005	857.8	9228.5	11871.0	160.03	795.1	16.17	81635	238	256327

Notes:

1. PG refers to Plate Glass which is measured in million cases. PL stands for Plastics and is measured in million tons. For other abbreviations and measurement unit, refer to the notes in Table 2.
2. - : no data was available for the year.

Source: Shenzhen Statistics and Information Bureau, 1992-1999.

Table 4 shows the growth of related industries in Shenzhen. Among the nine selected industrial sectors with data available, the electric equipment and machinery industry and the electricity, steam and hot water production and supply registered the fastest growth rate. The output value of the electric equipment and machinery industry increased about 10 times from 885.06 million yuan (US \$106.63 million) in 1990 to 9228.51 million (US \$1111.87 million) yuan in 1998. Statistics show that



the output value of the electricity, steam and hot water production and supply increased from 184.47 million yuan (US \$22.23 million) in 1990 to 11870.98 million yuan (US \$1430.24 million) in 1998. Other related industrial sectors had increased slowly or fluctuated during this period of time.

The Pearson correlation coefficients show that among the nine variables that represent housing related industries, four show significantly direct relationships with housing investment in Shenzhen (Table 3). These four variables are: (a) furniture manufacturing; (b) electric equipment and machinery; (c) electricity, steam and hot water production and supply; (d) tap water production and supply. The coefficients of the above four variables are supportive to a statement that there is a close and direct relationship between housing investment and the development of related industries.

## **SHANGHAI**

### **Housing reform**

Housing shortages have long been a severe problem in Shanghai, partly due to the large population base and poor housing conditions inherited from the past, and partly because of the regional development policies that undermined Shanghai's economic growth. Indeed, Shanghai was a 'cash cow' to the central government, with limited investment back to its non-productive sectors, such as housing, until the 1980s (Han, 2000). As such, Shanghai's per capita living space registered a historical low point of 4.3 square metres in 1979.

Housing reform in Shanghai began in the early 1990s. The municipal government undertook two important reforms (The Editorial Board of Shanghai Almanac, 1992). The first was to privatize the housing stock at a large scale. Older state-owned residential units, with independent kitchens and toilets, were sold to individuals at preferential prices. The government hoped that these reforms to the housing system would speed up urban housing construction, and would help to achieve the targeted 10 square metres per capita living space by 2000. The second was the establishment of the Housing Provident Funds (HPFs). According to the Shanghai Municipal Construction Commission, the establishment of a HPFs was first introduced in 1991 and all other cities subsequently adopted it from Shanghai.

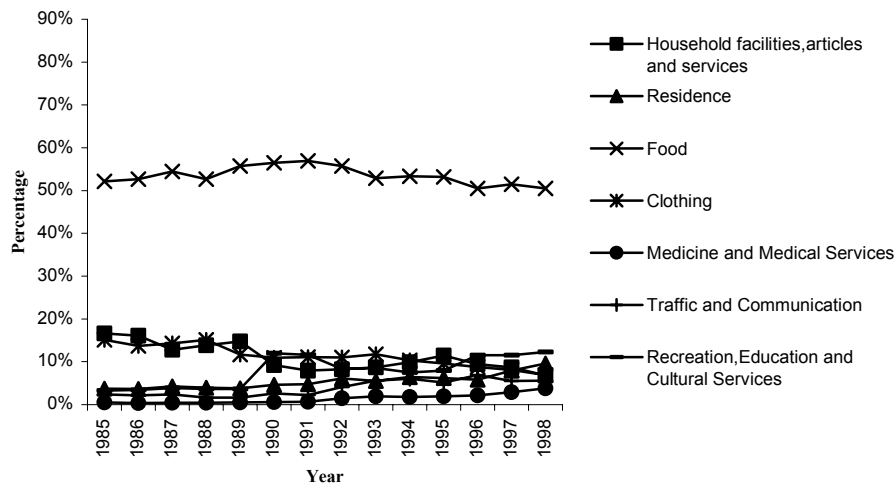
In the Shanghai scheme, rent reform was carried out with great caution (Yuan, 1998). First, the rent was raised to such a level that tenant payments could cover routine maintenance and management costs. This meant that payments were raised from an average 0.27 to 0.45 yuan (US \$0.03 to US \$0.05 respectively) per square metre monthly. The ultimate goal was to raise the rent from 3 per cent to about 15 per cent of a household's total income by 2000. Second, all newly allocated rental housing was subject to the household purchase of a five-year bond carrying a nominal interest payment. These bonds were calculated on the basis of rented space per square metre and varied according to housing quality and location. For example,

65 yuan (US \$7.83) per square metre for newly allocated housing of the highest quality in downtown Shanghai, 50 yuan (US \$6.02) per square metre in suburban areas, and 35 yuan (US \$4.22) in Shanghai's periphery. Although the approach of a five-year housing bond has been an improvement over existing practices, it has had a limited impact (Yuan, 1998).

### Consumption

A World Bank report commented that 'since the housing bonds are redeemable within five years, their impact on household rental expenditures is limited, when compared to the policy of redemption only on vacating the premises' (World Bank, 1992). Such effects can be seen from Figure 6, which shows the percentage of consumption in household facilities and services had decreased in Shanghai from 1985-1998. However, the growth rate of total consumer spending was faster than the growth rate of the total consumer spending on housing and related items. The urban household per capita annual consumer expenditure increased from 991.8 to 6866.41 yuan (US \$119.49 to US \$827.28), representing an annual growth rate of 16 per cent. Whereas, in the same time period, the total consumer spending on household facilities, article services and residence increased from 201.96 to 1126.43 yuan (US \$24.33 to US \$135.71), representing an annual growth rate of 14 per cent.

**Figure 6: Household consumption in Shanghai: 1985-1998**



Source: Drawn by the author. Data are based on Shanghai Statistical Bureau 1990-1994; 1997; 1999.

## **Investment**

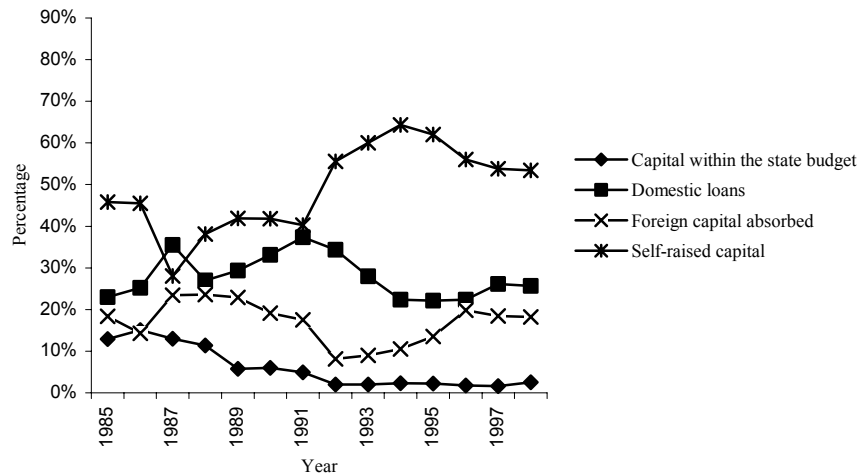
Housing reform in Shanghai raised a large amount of non-state capital for housing construction. The HPFs has accumulated over the years 20.7 billion yuan (US \$2.49 billion) which were used for housing investment by May 2000 (<http://www.snweb.com/gb/hd/2000/06/12/n0612002.htm>). Private housing investment in the form of real estate corporations also became an important funding source of housing construction. In 1998, there were more than 1,400 real estate corporations in Shanghai. Some were from other provinces and others were set up by investors from overseas. In 1993, for example, the former accounted for one sixth of the total. Real estate corporations built mainly for commercial purposes and sold houses at market value. Although there were development companies working in every province, Shanghai was in the lead of land, housing and rental markets in China (Han, 1998). Nearly half of the real estate investment was concentrated in Shanghai, Beijing and Guangdong.

Figure 7 gives the percentage of different investment channels in the total housing investment in Shanghai from 1985 to 1998. On average, the percentage of self-raised capital had been higher than other sources of investment. The self-raised capital increased from 46 per cent in 1985 to nearly 65 per cent in 1994, then dropped gradually to 54 per cent in 1998. The capital from the state budget declined from 13 per cent in 1985 to 3 per cent in 1998. Macroeconomic factors have played an important role for the above drop. Following Deng Xiaoping's southern tour and subsequent speech on continuous commitment on reform in early 1992, the economy grew at an alarming rate. GDP in Shanghai was 1114.32 billion yuan (US \$134.26 billion) in 1992 and it rose to 3688.2 billion yuan (US \$444.36 billion) in 1998, which was more than 3.3 times of 1992. The rapid economic expansion was fuelled mainly by the expansion of investment. At the same time real estate and stock market fever created a flow of funds from investments and various other channels, and led to credit expansion and a currency supply that was out of control. Thus, the Chinese government began macroeconomic retrenchment in late 1993. Influenced by the macroeconomic control from 1993 to 1996, investment in Shanghai's real estate market dropped during this period. After a steady period between 1997 and 1998, real estate investment began to increase in 1999.

## **Related industries**

Shanghai's construction industry has been a key sector in its economic development, especially with the construction of Pudong area. The total output value of construction industry raised from 16.41 billion yuan (US \$1.98 billion) in 1980 to 573.37 billion yuan (US \$69.08 billion) in 1999. The construction industry has absorbed a large number of labourers. Statistics show that there were 272,700 employees working in the construction industry in 1980; the number increased to 374,00 in 1997 (Shanghai Statistical Bureau, 1998; 1999; 2000).

**Figure 7: Housing investment in Shanghai: 1985-1998**



Source: Drawn by the author. Data are based on Shanghai Statistical Bureau, 1990-1994; 1997; 1999.

The development of housing reform and growth of the construction industry has caused a sound development of several industrial sectors. Among the twelve selected industrial sectors, the furniture industry and the plate glass industry have achieved the fastest growth rate (Table 5). The output value of the furniture industry increased gradually from 2.83 million yuan (US \$340, 964) in 1985 to 9.81 million yuan (US \$1.18 million) in 1993. It increased from 14.72 million yuan (US \$1.77 million) in 1994 to 29.28 million yuan (US \$3.53 million) in 1998. The total output value in 1998 was more than 10 times that of 1985. The statistics of the plate glass industry show that from 1985 to 1998, the output value of the plate glass industry increased from 160.08 million tons to 701.45 million tons. Most of the increase was achieved after 1990. There was also a considerable increase in the civil engineering activities. From 1993 to 1998, the output value increased from 91.52 million yuan (US \$11.03 million) to 321.87 million yuan (US \$38.78 million).

The Pearson correlation coefficients between housing investment and the related industrial output reveal that nine out of the twelve industries had a significant direct relationship with housing investment in Shanghai (Table 3). They are: (a) furniture manufacturing; (b) electric equipment and machinery (c) electricity, steam and hot water production and supply; (d) gas production and supply; (e) tap water production and supply; (f) cement; (g) steel (h) plate glass; (i) plastics. The coefficients of the above nine variables are supportive to a statement that there is a close and direct relationship between housing investment and the development of related industries, especially the building material industry in Shanghai.

**Table 5: Total output value of related industrial sectors of Shanghai: 1985-1998**

Year	HI	FU	EE	ES	GP	TW	CE	LE	BD	CM	ST	PG	PL
1985	-	2.83	48.53	13.27	3.58	1.38	-	-	-	219.31	570.16	160.08	17.46
1986	-	2.89	52.92	13.83	3.60	1.40	-	-	-	227.28	801.39	146.44	17.77
1987	-	3.26	56.43	13.68	3.73	1.50	-	-	-	232.81	866.92	161.85	17.76
1988	1428	3.58	63.44	14.27	3.51	1.64	-	-	-	261.84	859.80	415.59	18.07
1989	1255	3.60	67.38	14.26	3.51	1.67	-	-	-	251.85	808.78	507.24	17.96
1990	2566	4.84	101.50	23.22	3.83	3.83	-	-	-	230.30	914.62	503.05	25.35
1991	2799	5.36	117.95	25.51	7.44	4.02	-	-	-	297.85	1006.92	483.47	33.91
1992	2668	6.74	155.60	50.49	6.83	4.81	-	-	-	354.73	1234.24	513.55	42.32
1993	7714	9.81	220.68	74.46	8.77	7.19	91.52	10.36	4.98	359.88	1298.22	570.72	51.46
1994	30065	14.72	292.05	98.72	12.42	9.69	160.46	15.63	8.87	379.44	1326.77	664.81	56.22
1995	40782	17.73	323.63	92.73	13.55	11.36	165.67	18.10	11.61	433.22	1454.11	634.63	58.24
1996	43385	12.72	304.17	107.51	15.25	12.51	209.10	30.25	23.61	443.77	1441.92	687.63	65.46
1997	43305	29.73	406.46	145.99	17.89	14.56	306.10	40.46	37.72	338.47	1532.42	691.08	64.56
1998	38327	29.28	-	-	-	-	321.87	35.32	41.88	330.95	1603.75	701.45	-

Notes:

1. Refer to the notes in Tables 2 and 4 for the abbreviations and measurement units of industrial activities.
2. -: no data was available for the year.

Source: Shanghai Statistical Bureau, 1988; 1990; 1992-1999.

## CONCLUSION

A number of observations can be made from the three sample cities in terms of the changing patterns of consumption, investment and the growth of related industries. In terms of consumption, spending on basic needs, as represented by the proportion of spending on food items, made up the largest part of consumer spending in all sample cities. Nevertheless, this high proportion had been shrinking consistently during the study period, reflecting that China is by and large a developing economy, but striving effectively for higher per capita income. The slight increase of the proportion spent on housing and related articles was an indication of the effect of the rental hike and housing sales. In other words, housing reform did squeeze money from residents' pockets for housing.

In terms of investment, self-raised capital became the main source of housing investment. At the same time, state investment on housing dropped drastically. Investment from different sources, including the state, self-raised, foreign and domestic loans, fluctuated corresponding to the overall stability of the socio-political environment. The period 1989-1992, i.e. from the Tianamen Square incident of student demonstrations to Deng Xiaoping's southern tour, witnessed the lowest proportions of self-raised capital investment on housing. Domestic loans, reflecting government lending policies, shot up during the same period, perhaps in the hope of stabilizing the economy. Foreign investment in housing shrunk during the period 1989-92 in the more sensitive cities, such as Shenzhen and Shanghai, but kept on increasing in Yantai.

The growth of related industries shows that housing reform was indeed a pole of growth in the national economy, as it had close relationships with many industrial sectors. However, the impact of housing reform on related industries, or vice versa, cannot be treated the same in different cities. Cities are not self-sufficient in supplying all the material and product needs for housing. Rather, cities are situated in a hierarchy of specializations. Thus, furniture, electricity and tap water production showed significant direct correlations with housing investment in all the three cities. Construction materials such as steel and cement showed significant relationship with housing investment only in Yantai and Shanghai. The growth of electric equipment and machinery was relevant only in Shenzhen and Shanghai. The production of plate glass and plastics showed their relevance to housing reform only in Shanghai. The selective impact of housing development on related industries, as restrained by the economic structure and functions of a city, must be incorporated in policy making with regard to housing reform and economic development.

Evidence from the three cities confirm that housing reform has brought about remarkable changes in the patterns of consumption, investment and the growth of related industries. Over the years, self-raised capital became the main source of housing investment, while state investment declined considerably. Significant

correlations were clearly discernible between housing investment and related industries. Nevertheless, the power of resident's consumption, as measured by the percentage expenditure on housing and related articles and services, was a constraint against housing commercialisation. Indeed, China's housing reform is one of the many reforms that transform China from a planned economy to a market economy. A successful housing reform is very much dependent on parallel reforms in the social, economic and political realms.

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