AN EMPIRICAL STUDY ON RELATIONSHIP BETWEEN POPULATION IMMIGRATION AND URBAN HOUSING MARKET*

Fen Jie LONG, Ming LIU, Ming FANG

Institute of Real Estate Studies, Tsinghua Univ., Beijing, China

Abstract: Since the natural growth rate of Chinese urban population is under effective control, migration has become the major cause of the changes of urban population. Population immigration would largely increase the demand of housing; meanwhile high housing price would also restrain immigration. At present population migration in China mainly falls into the spontaneous migration, and the first motivation of migration is to increase income. According to academic study, transferred-in population has a strong demand of housing and considerable purchase power. The absorption rate of transferred population by housing stock is relatively low, which means their demand of housing is generally satisfied by the increment market. According to empirical study, in short run, change of housing increment is largely decided by the volume of migration and housing completion of the previous year, which shows the lag of demand impact and the inertia of housing construction; from a long-term equilibrium perspective, housing completion and volume of immigration presents a positive correlation, and presently population migration affects the housing increment market mostly in the form of short-term fluctuations. On the other hand, living cost and the quality of life are the major consideration for people when make decisions of migration, and presently housing price is the chief cost for urban residents. Quantitative analysis of the impact factors of migration on a database of 35 major cities reveals that population immigration is not significantly restrained by housing price. The result of this research would theoretically be helpful for understanding the relationship between population immigration and housing market, and practically helpful for local governments to make population and housing policy which assorts with urban development.
Keywords: Population immigration; Housing market; Effective demand; Panel data

1 Introduction

At present the natural growth of Chinese urban population is already under effective control, and population migration has become the major cause of the changes in urban population. From the perspective of urban development, on one hand, the local government needs to attract excellent people in order to improve the quality and structure of labor, and thus improve the competency of the city; on the other hand, they also need to control population growth in order to make sure that the population does not overweigh the capacity the city can hold with its limited resource and current infrastructure, which represents a sustainable development strategy (Long et al. 2006).

Study on population migration up to present generally focuses on four subjects: volume of population migration, changes in location and pattern, population migration theory and transfer of labor, and analysis of the factors which affect population migration. Housing market has a close relationship with population migration (Case and Shiller 1990, Potepan 1996, Baffoe-bonnie 1998, Deutsch et al. 2001). Specifically, population immigration would lead to demand of housing, and in return the rising housing price would restrain immigration. That is what this paper aims to discover.

Because of the current household registration system in China, moved population is usually divided into two categories according to whether they have had their registered location changed. Those who have changed their registered location are called transferred population, and those who have not are called floating population. Most transferred population have already registered in cities and held the certificate for residence in urban areas, and they immigration are approved by authority for the reason of job relocation, marriage or other family issues. Housing policy is no different between local residents and those transferred residents, so they are quite different from floating population (Long and Wu 2003). Here in this article migration population only include transferred population who have reregistered their residence location, and we use population growth from migration to indicate population immigration during quantitative analysis below.

In this article some characteristics such as age structure, education level, migration reason of migration population in china is discovered through statistics analysis and comparative analysis. And then the features of migration population are generated from that. Econometrics methods of Error Correction Model (ECM) and Fixed-effect Variable Intercept Model (Li and Ye 2000) are applied in this study for empirical analysis of the relationship between urban population immigration and housing market.

2   Features of Population Migration in China

2.1   Population Immigration in Major Cities

From a horizontal perspective, according to the data of natural population growth and population growth from migration in 35 major cities in China in 2003, urban population growth in major cities has four features:

(1) The numbers of natural population growth in most cities tends to be smooth and steady with a net growth below 50,000 in 2003. Beijing, Shanghai, Dalian and Shenyang had a negative natural growth.
(2) In contrast to natural growth above, net immigration in one third of these cities exceeded 50,000, among which Beijing hit the highest of 141,100. All the cities except Yinchuan and Huhehaote have positive growth from migration.
(3) Comparing the natural population growth and population growth from migration, we found that population growth from migration generally exceeds the natural population growth in 2003 except for in a few small-sized cities such as Guiyang, Kunming, Yinchuan. Especially in large cities such as Beijing and Shanghai, immigration population reached above 100 thousand while natural population growth is below zero.
(4) Comparison among cities shows that there is a relationship between the economy of the city and its way of population growing. In developed areas such as Shanghai, Beijing and Shenzhen, population growth from migration seems to be a dominant way; mean while in underdeveloped cities such as Xining, Yinchuan and Guiyang, there is no such evidence.

From a vertical perspective, take population growth from migration in Shanghai from 1991 to 2004 as an example, the volume of population growth from migration in Shanghai generally increased over time (Figure (5) The other cities are not as developed as Shanghai and they are following up the path, so it can be assumed that they have even larger room for population immigration.
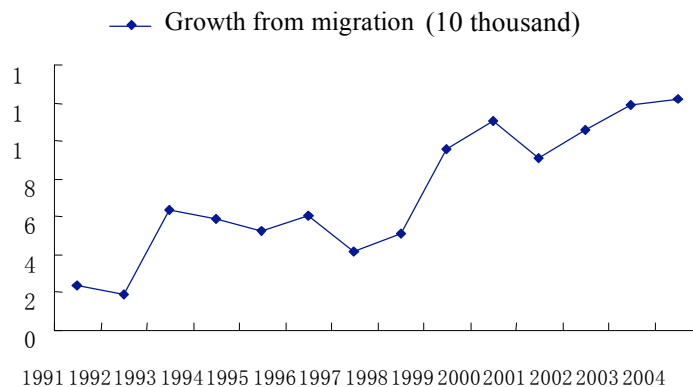

Figure 1 Population growths from migration in Shanghai

To sum up, population birth has been under effective control during the last 20 years in China, and the natural growth of population is leveling off or even decreasing. Mean while migration is taking the place to become the major reason of population growth. Population growth form migration will increase steadily for a long

time in future. Although attraction of a city is not entirely decided by its economy, obviously population migration has a strong relationship with its economy, which means cities with better economy would be more attractive.

2.2 Feathers of immigrated citizens

Feather study takes an important role in population migration studies. Features such as age, education and occupation of immigrated citizens are discussed below.

2.2.1 Age

Migration theory indicates that migrated population mainly consists of young and middle aged people. According to national wide census 2000, migrated working people among provinces are mainly between 20 and 29 years old, while the nation's working force are between 20 and 49. Proportion of population above 50 significantly exceeds that of immigrated population. Besides that, the average age of migrated working people among provinces is 27.6, and the median is 26, while the average of the nation's population is 37.46 with the median 36. Obviously the age structure of migrated population is younger than the nation, and population immigration can be treated as an important way to add energy and competence to cities.

2.2.2 Education

The quality of labor is an important factor for economy development. According to nation wide census 2000, migrated working people among provinces had an average education of 8.95 years, while not working people 10.57 years. That is because 34.39% of migrated not working people is for training programs and 39.64% of them are students. The education of level of immigrated population in major cities is definitely even higher.

2.2.3 Occupation

Occupation of migrated people compared to the nation population according to the nation wide census 1995-2000 is presented below (Table 1).

First, manufacturing industry has the most migrated people of 33.91%, followed by wholesale and retail industry, and trade and catering industry which takes up 17.17% of migrated people, and then agriculture of 15.86. The proportion of migrated people working for the government and scientific research institutions is relatively low.

Second, immigrated people decrease over Secondary, Tertiary, and Primary industry, which shows that not all migrated people are working in non-agriculture-related jobs. Primary Industry takes up the largest proportion of the nation's working force, which reveals that population migration is accompanied by notable urbanization.

Table 1 Occupation

Industry	Migrated Working People	The Nation Working People
Primary Industry	15.86	64.28
Secondary Industry	43.07	16.96
Tertiary Industry	40.56	18.51
Total	100	100

*Data source: Chinese Census 2000 (0.95‰ sample survey)

2.2.4 Reason of migration

From a macro perspective, large scaled migration is a result of imbalanced economy development among areas, and migration policies.

Firstly, working or doing business is the main reason of migration, and education is another important reason. That means people immigrate to destination cities mainly because of economic and education reasons.

Secondly, the better economic conditions of the original area has, the low proportion is who rate working and doing business as their primary reason, and the more who rate education as their reason of migration. The reason of migration for people in rural areas is simple economic, but in well developed areas, economic and education reasons are equally rated.

In spite of that, the reason of migration has evolved over time. Reasons as job distribution, job relocation has declined, and reason of business has increased, which shows that self-motivated market migration has become the dominant immigration pattern in China.

3   Impact of Population Immigration on Housing Market

3.1   Population Immigration and Demand of Housing

At present in China the development of real estate market is decided by its effective demand, which also decides the speed of real estate construction. According to the feature analysis above, it could be inferred that migrated population has certain purchase power, and it might be effective demand. We used nation wide census (0.95‰ sample family) and did the following analysis: first, house ownership of different people, which shows that immigrated population buys more commercial housing; second, their housing condition, which shows that housing condition of immigrated population is above average. The result is that migrated people have a larger contribution to the commercial housing market. So it is an effective demand.

There are three ways to satisfy new demand of housing – by filling vacancy or increasing residential density from a market stock perspective, or by driving new construction form a market increment perspective.

Vacancy is usually believed ineffective in absorbing population because of two major reasons: First, commercial housing market itself has not yet played the role as we expected, and it only takes up 8.7% of housing purchased buy urban population. Second, the second hand housing market has not yet helped to form a gradient market, and commercial housing stock market and rental market are not yet well developed either. So only a low proportion of new built houses can truly enter the market to circulate, especially the market for former public houses which has already been bought by employees has not come into being, which made the virtuous circle of real estate construction and market with individual as its major participants almost impossible. Therefore, te development of second hand housing market is vital for the entire housing market.

Another way of absorbing is to increase residential density. Looking back from 1984 to 2003, Per Capita Floor Space of Residential almost rose perpendicularly. Large amount of immigration did not cause cut back in Per Capita Floor Space of Residential, which indicates that this is not the major way of accommodating immigrated population. According to data of develop countries, Per Capita Floor Space of Residential in China still has a large room to grow.

As a conclusion, increment market is the most important contributor to accommodate immigrated population compared to vacancy and residential density. And population immigration affects the increment housing market in two ways: First, immigrated people in the previous year brings new demand and construction to be completed this year, which has a time lag. Second, developers would have a higher expect of market demand according to the current immigration and increase their construction volume.

3.2   Empirical Study about the Effect of Immigration on Housing Increments

Here we take Shanghai below as an example to do some quantitative analysis.

3.2.1   Modeling

This quantitative analysis is designed to discover the relationship between population immigration and urban housing increment market. Because housing construction has a long period and time lag, which means housing completion this year is not related to the current volume of population immigration, but also previous

immigration and completion. So ECM which can reflect both short term fluctuations and long term equilibrium of variables is applied in the study below. ECM is based on co-integrate relationship. For example, if housing completion *(Q)* and population immigration *(PO)* have a co-integrate relationship, it can be expressed by an autoregression lagging model:

$$Q_t = \beta_0 + \beta_1 PO_t + \beta_2 Q_{t-1} + \beta_3 PO_{t-1} + \varepsilon_t \qquad (3\text{-}1)$$

$$\Delta Q_t = \beta_0 + \beta_1 \Delta PO_t + (\beta_{2-1})Q_{t-1} + (\beta_1 + \beta_3)PO_{t-1} + \varepsilon_t \qquad (3\text{-}2)$$

$$\Delta Q_t = \beta_0 + \beta_1 \Delta PO_t + (\beta_{2-1})[Q - (\beta_1 + \beta_3)/(1 - \beta_2)PO]_{t-1} + \varepsilon_t \qquad (3\text{-}3)$$

$$\Delta Q_t = \beta_0 + \beta_1 \Delta PO_t + \gamma ecm_{t-1} + \varepsilon_t \qquad (3\text{-}4)$$

(Δ represents difference; β_0，β_1，β_2，γ are parameters; ε_t is random error)

This is a short term model and it show how short term fluctuations are decided. $Q\text{-}(\beta_1+\beta_3)/ (1-\beta_2)$ *PO* represents long term equilibrium between *Q* and *PO*. Thus Short term fluctuations are divided into two parts: long term equilibrium part and short term fluctuation part. β_{2-1} is usually below zero. So if *Q* is larger than its long term equilibrium solution at time *(t-1)*, γecm_{t-1} would be negative and ΔQ_t would decrease. And if *Q* is smaller than its long term equilibrium solution at time *(t-1)*, γecm_{t-1} would be positive and ΔQ_t would increase. This shows control of long term equilibrium error on *Q*.

Because the annual volume of population immigration is an increment indicator, we choose to use housing completion in this model so that they could match. We use Population Growth from Migration *(PO)* in Shanghai based on Census from 1985 to 2004, which is total population increment minus natural growth, to represent immigrated population, and annual housing completion *(Q)* from 1985-2004 in Shanghai to represent housing completion.

(1) Unit root test (ADF test)

Use the following models to do unit root test of series *LnQ* and *LnPO*. The result is that at given significant level of 5%, they are both integrated of order one, which means that there are probably co-integrated relationship, or long term equilibrium between them.

Model 1 $\quad \Delta X_t = \delta X_{t-1} + \sum_{i=1}^{m} \beta_i \Delta X_{t-i} + \varepsilon_t$ $\qquad (3\text{-}5)$

Model 2 $\quad \Delta X_t = \alpha + \delta X_{t-1} + \sum_{i=1}^{m} \beta_i \Delta X_{t-i} + \varepsilon_t$ $\qquad (3\text{-}6)$

Model 3 $\quad \Delta X_t = \alpha + \beta_t + \delta X_{t-1} + \sum_{i=1}^{m} \beta_i \Delta X_{t-i} + \varepsilon_t$ $\qquad (3\text{-}7)$

(2) Establishing equations

This is an autoregression distribution lagging model, which includes lag of explained variable, explanatory variables and their lags. Second order lag has been brought in to the model since the time period of construction is usually long. The equation is as follows:

$$LnQ_t = \alpha_0 + \alpha_1 LnQ_{t-1} + \alpha_2 LnQ_{t-2} + \alpha_3 LnPO_t + \alpha_4 LnPO_{t-1}$$
$$+ \alpha_5 LnPO_{t-2} + \varepsilon_t \tag{3-8}$$

The result of estimation by Least Square Method shows that all parameters passed t-test. The constant is not significant. But because this equation only has theoretical meaning in the following study, we remain it in the model. *LnQ(-2), LnPO(-2)* are negative due to ollinearity of variables, and this does not affect this study. Thus the fitted equation is generated below.

$$LnQ_t = 0.09 + 1.75 LnQ_{t-1} - 0.761 LnQ_{t-2} - 0.113 LnPO_t$$
$$+ 0.247 LnPO_{t-1} - 0.12 LnPO_{t-2} \tag{3-9}$$

(3) Long term equilibrium equation

Long term equilibrium equation for investment of fixed assets is as follows:

$$LnQ_t = \alpha_0 + \alpha_1 LnPO_t \tag{3-10}$$

Fitted equation below shows that population immigration has a significant positive relationship with housing completion:

$$LnQ_t = 5.387 + 0.831 LnPO_t \tag{3-11}$$

Ecm can be easily generated from the equilibrium equation above:

$$ecm_{t-1} = LnQ_{t-1} - 5.387 - 0.831 LnPO_{t-1} \tag{3-12}$$

(4) Establishing the Error Correction Model

Both the first order and second order lags in the equation in step 2 are significant, so we decided to bring ΔLnQ_t, $\Delta LnPO$, ΔLnQ_{t-1}, $\Delta LnPO_{t-1}$, and ecm_{t-1} in to the error correction model as follows:

$$\Delta LnQ_t = \alpha_0 + \alpha_1 \Delta LnQ_{t-1} + \alpha_2 \Delta LnPO_t + \alpha_3 \Delta LnPO_{t-1} + \gamma ecm_{t-1}$$
$$+ \varepsilon_t \tag{3-13}$$

Fitted equation:

$$\Delta LnQ_t = 0.039 + 0.76 \Delta LnQ_{t-1} - 0.115 \Delta LnPO_t$$
$$+ 0.122 \Delta LnPO_{t-1} - 0.01 ecm_{t-1} \tag{3-14}$$

All variables except *ecm* are significant. First order lag of population migration and housing completion are highly significant with a positive parameter, which means that they have a significant positive correlation.

3.2.2 Analysis of the Results

According to long term equilibrium equation, completion and population immigration has a positive correlation, and the elastic parameter is 0.831. This proved the assumption that immigrated population is main accommodated by housing market increments.

According to ECM, ΔLnQ_{t-1} and $\Delta LnPO_{t-1}$ have the highest t values and positive parameter, which means they have significant positive correlations with $\Delta LnQt$. It reveals the lag effect and construction inertia in this

case. On one hand, because of long construction circle, housing completion in the current year usually represents housing demand in the previous year. On the other hand, because of the housing construction inertia, completion this year is always affected by completion in the previous year. The parameter of 0.122 before $\Delta LnPO_{t-1}$ shows the elastic of population immigration of the previous year to housing completion of this year.

The parameter before *ecm* shows how strong the system is in adjusting from disequilibrium, and the estimator is usually negative. -0.01 before ecm shows that the adjusting power is not strong. The long term equilibrium adjusting process is as follows: as to the long term equilibrium equation *LnQ$_t$=5.387+0.831LnPO$_t$*, if *LnQ>5.387+0.831LnPO* at time *(t-1)*, ecm would be negative and *ΔLnQ* would decrease, which would make the increase of *LnQ* at time *t* level off and return to the long term equilibrium; if *LnQ<5.387+0.831LnPO* at time *(t-1)*, then ecm would be negative and *ΔLnQ* would increase, which means *LnQ* would accelerate increase.

Conclusions can be drawn from the empirical study based on Shanghai that from a short term perspective volume of housing increment is largely decided by population immigration and housing completion in the previous year. From a long term perspective housing completion and immigration has a significant positive correlation, but the strength to draw it back from disequilibrium is weak. This exactly accords with the reality at present in China. Population immigration is still getting active in China and it is still far from steady and equilibrium. Thus market increments are taking the most important role.

4 Restraint Effect of Housing Price Increase on Population Immigration

4.1 Cost Effect of Housing

While pursuing higher life quality by migration, the costs can not be forgot as restrain factors. These include risk of unemployment, higher living cost etc., and among which cost of housing has the most significant impact. Cost of housing would change labor cost of a city and finally the attractiveness of the city to industries and labor force (Xu 2005).

Immigrated people are mainly young people with relatively high education, but their income level is almost the same with normal urban residents. Study show that people of different income level have different sensitivity to housing price. Thomas (1993) studied migration population in Grate Britain and found this rule: housing price has a slight restrain effect on those who move for the reason of career, but it plays an important role when people decide to move for other reasons; housing price has no restrain effect on transfer of housewives, but I largely effects retired people.

At present the property of migration population in China is quite similar and the restrain effect on them are could be considered the same. So we use treat it as one factor in the follow quantitative analysis.

4.2 Empirical Study about the Restrain Effect of Housing Price on Population Immigration

Economic optimization is always the ultimate reason of large-scaled population migration, especially at present in China. So we treat all the influential factors as one economic factor and from this perspective. The volume of immigration can be recognized as people's demand of the city which is decided by the benefit and cost of immigration, and housing price could be included in the cost.

4.2.1 Modeling

(1) Model Selection

Log-linear demand function:

$$q_i = f(I, p_1,..., p_i,..., p_n) \qquad\qquad (4\text{-}1)$$

$$\ln q_i = \alpha + \sum_{j=1}^{n} \beta_j \ln p_j + \gamma \ln I + \mu \qquad\qquad (4\text{-}2)$$

q_i represents demand of product i, I indicates income, p_i is the price of product i.

The assumption of this model that all variables should be price can not be satisfied here. But variables in this study have clear economic meanings and meet requirements of the function.

Sing-equation panel data model:

$$y_{it} = \alpha_i + x_{it}\beta_i + u_{it}, \qquad i = 1,\cdots,n, \qquad t = 1,\cdots,T \qquad\qquad (4\text{-}3)$$

x_{it} is a 1*K vector, β_i is a K*1 vector, where K is the number of explanatory variables, error u_{it} has a average of zero and variation of σ_u^2.

Finally log-linear demand function panel data model is applied in this study.

(2)   Variable Selection

The explanatory variable is people's demand of the city, which is represented by the actual volume of population immigration. Demand variable is represented by net immigration of urban areas (Q).

The cost of immigration can be divided into two parts: risk of unemployment which is represented by registered unemployed rate J (%), and living cost which is represented by housing cost in this paper. Income variable includes steady income at present and increase in future. A combination of current income and house cost - $R=$ *urban per capita disposable income/ urban average housing price,* which is positively related to income and negatively related to housing price – is a good indicator to represent the first part of income and as well simplify the model. Income increase in future is mainly related to education and opportunities, which can be indicated by education expenses per capita P (yuan) and the scale of the city S (km^2).

4.2.2   Result Analysis

Let Q denote Net Urban Immigration, J denote Urban Registered Unemployment rate, R equal to Income/Housing Price, P denote Education Expenses per Capita and S denote the urban area. There is no change of economic structure in cross-section, but differences of individual influence, so variable intercept model is uesd. The number of cities far exceeds years of time in this research, and according to experience, fixed-effect variable intercept model seems to be a good choice.

$$LnQ_{it} = \alpha_i + \beta_0 LnR_{it} + \beta_1 LnJ_{it} + \beta_2 LnP_{it} + \beta_3 LnS_{it} + \mu_{it} \qquad i = 1,\cdots,35,$$

$$t = 1999,\cdots,2003 \qquad\qquad (4\text{-}4)$$

Regression result shows that education, city scale passed the t-test with a positive estimator, which shows that they truly have a positive relationship with population migration. Unemployed rate has a relatively small t value and a negative parameter, which indicates that unemployment has some negative relationship with population immigration. Variable R did not pass the t-test but it has an obvious economic meaning, so it can not be eliminated.

From the analysis above, population immigration is largely influenced by education expense and city scale, which proves that the attraction of a city is mainly decided by expected income of people there. This strongly proved the previous qualitative analysis that people who choose to move basically wants a high income. At the present stage of development in China, urban development needs population immigration. In order to

improve a city's competence and attract people of high quality, it needs to improve education and economy to show that there will be an increase in expected income after moving into the city.

Unemployment only has a slight impact on population migration. There might be two reasons: First, there is not much difference between 35 major cities, the data of which we mainly used in this study. Second, unemployment rate at present is not a big head ache for major cities, so the restrain effect is not significant. As immigration continues and job hunting becomes a serious problem, employment might also become a major constrain factor.

Income/Housing Price has an insignificant positive relation with immigration, which shows that housing price has only a limited effect on immigration. The reasons might be as follows: First, immigration in China is still very active but irrational. Second, immigration between cities is taking a larger and larger proportion compared to transferring from rural places to urban areas, and housing price in urban areas is generally rising while the difference between cities is getting small, so the sensitivity of housing price seem to be low. Third, housing price to some extent represents the local economy, which is just the driving force of immigration.

5   Conclusion

(1) Free population migration driven by economic benefits is increasing as the household registration system gradually get weaken. Population growth from immigration is taking up the place of natural growth and become the major growth form of population. Immigrated people at present have some features: They are generally young people at the age for work; they have a better average education than the local residents; and they prefer to work in the secondary and tertiary industry. The primary reason of self motivated migration is economic benefit and immigrated people add energy and livingness to the city.

(2) According to the features of immigrated people such as their age, education and reason of immigration, it can be inferred that immigrated population has brought new demands to urban housing market. Research on housing ownership and conditions of different people shows that immigrated people makes up an important part in urban housing increment market. Empirical study based on Shanghai from 1985 to 2004 revealed that in the short run housing increment is influenced by immigration and housing completion in the previous year, which proved lag of demand and inertia of construction; in the long run housing completion and immigration have a significant positive relationship. At present, population immigration mainly affects the housing increment market in a short-run way.

(3) Life quality in a city is what primarily attracts people, so when deciding to move, living cost of the city would usually be taken into consideration, of which housing cost is a big part. Because of that, economic theoretical analysis tells that housing price should have a restrain effect on population immigration. However, through quantitative analysis based on 35 major cities in China, it is discovered that housing price has some negative effect on population immigration, but it's not significant. The reason might be as follows: Firstly, housing price to some extent represents the local economy, which is just the driving force of immigration; secondly, immigration in China is partially irrational; thirdly, difference of housing price among these major cities is shrinking, and immigration is not quite sensitive to housing price.

References

Baffoe-bonnie J.(1998). *The dynamic impact of macroeconomic aggregates on housing prices and stock of houses: a national and regional analysis,* Journal of Real Estate Finance and Economics, 17(2): 179-197
Case K. E., and Shiller R. J.(1990). *Forecasting pries and excess returns in the housing market,* AREUEA Journal, 18(3), 253 273
Deutsch D., Neuwirth N., and Yurdakul A. (2001). *Housing and Labor Supply,* Journal of Housing Economics, 10(3), 335-362
Li, Z. N., and Ye, A. Z. (2000). *Advanced Econometrics,* Beijing, Tsinghua University Press, in Chinese.
Long, F. J., Shen, Y., and Liu, H.Y. (2006). *Retrospect and prospect of the research on interaction mechanism between housing market and urban economics,* Urban Problems, 129(1), 44-51, in Chinese.
Long, F. J., and Wu, G. L. (2003). *The impact of urban population on real estate investment,* China Civil Engineering Journal, 36(9), 65-70, in Chinese.

Potepan M. J.(1996). *Explaining Intermetropolitan Variation in Housing Prices, Rents and Land Prices,* Real Estate Economics, 24(2), 219-245

Thomas A.(1993). *The influence of wages and house prices on British interregional migration decisions*．Applied Economics，25(9), 1261-1268

Xu H.(2005). *resistance of house purchase for urban household of middle and low income.* Chinese Economist 10, 50-56, in Chinese