Housing Price, Land Transferring Fee and Property Tax in China : Based on Pilots Panel Data

Hu, Huimin
Graduate School of Economics, Kyushu University

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Huimin Hu[†]

1．Introduction

In Chinese everyday life, the expenditure on housing makes up a large ratio of the total.　From 1990s, under the ***housing commodification*** and ***land market-oriented reform***[1], the government takes measures focusing on the supply management, such as tax and land transferring fees relief, in order to reduce the cost of the construction, finally to get the housing resource sufficient. These measures boosted the real estate industry in China, and it has been developing fast in the past two decades and become one of pillar industries.　However, the housing price is climbing up and up, not as the policy purpose.　Recent years, the affordability concerns scholars, policy makers and common people.　Among those macro-control means like land supply, interest rate, and tax, property tax policy and its reform are attracting more attention.

Because of the heavy tax and fees burden at the time of housing development and easy shift to the house buyers, the house price is beyond the affordability of common citizens, meanwhile, this situation, in which very little amount of tax during one holding a house, encouraged the speculation.　In order to reduce the high transaction cost, it was put forward in the third session of the 16th CPC Central Committee in 2003, that there was a need to levy property tax ("Wuye Shui"), or to switch from the up-front fees to property tax (Anderson John E., 2008), levied during the possession of houses.　Scholars argued that property tax reform will increase housing affordability as a result of lower transaction costs; reduce speculation because of the higher opportunity cost at tenure stage (Li Dan et al, 2008).　Also, the property tax, which is local tax in developed countries, can be a stable and sustainable resource of the local tax revenue, providing an incentive for the local government to improve the public goods and services.

[†] Graduate School of Economics, Kyushu University, Japan.　Email: huhuimin1985@gmail.com

1）Housing commodification ("Zhufang Shangpin Hua") and land market-oriented reform ("Tudi Shichang Hua") are important reforms to promote China's real estate industry.　Before 1978, the houses in China were allocated to people, and it's called Physical Housing Allocation System ("Zhufang Shiwu Fenpei Zhidu").　In that system, related to the payment system, the government kept some payment from the workers to save money for the house construction, and then the state authorize the work units to allocate the houses to the works as a form of welfare and wages in kind.　The owners only paid a very low rate of rent and could live in their house forever.　However, such a low rate of rent can't cover the investment needed by the government to maintain the houses, rather than to promote the further construction.

For ordinary citizens, it's the most important thing to get the house affordable through the property tax regulation, that's to say, reduce the house price or make it increasing not so fast. At the beginning, the frame of property tax reform is to reduce the taxes and fees (especially the land transferring fee) levied at the phases of land acquisition, house construction and transaction (house acquisition), make an unified property tax during the tenure (house holding)(Macro Group, CCER, Peking University, 2006; Li Dan et al, 2008; Anderson John E., 2008). However, the property tax in China has taken a long time to do experiments[2]. Because of the unwillingness of local government, it's difficult to implement or even to start the radical reform; finally, the newly reform tries to focus on the speculation. At the beginning of 2011, Shanghai and Chongqing announced *Private House Property Tax Rules* and actually started the tax. But the reform frame was changed; only simply introduce a new tax item[3] during the tenure of the housing, failing to integrate the related taxes and fees. And it does not involve the land transferring fee, a large portion of local government revenue, encouraging the local government to implement it. The experiment in Shanghai and Chongqing is intending to crack down on speculation by increasing the cost during house holding.

Obviously, in China there is always property tax during the whole life of a house in other forms. However, they are not in an integrated structure and an integrated administration (Roy Bahl et al, 2008), especially unbalance during the taxation phases ends up such a high price to get a house. Fortunately, the current property tax system is on the edge of reform. People expect to reduce the taxes and fees during land acquisition and house construction to get the housing price down, and to increase the tax at the stage of house tenure to raise the holding cost, finally drive speculators out of the market. However, how the property tax can affect the price, and to what extent? Further, how to promote the property tax?

In this paper, we examine the effect of property tax on housing price, and discuss the framework of the property tax reform. Using the date of two different reform plans experimented in pilots, we find that the new reform experiment in Shanghai and Chongqing is only aimed to drive

2) Since 2006, property tax reform has been carried out in various districts of the two batches of experiments, the first six pilots include Beijing, Liaoning, Jiangsu, Shenzhen, Ningxia and Chongqing; In early 2008, another four pilots were also launched, they are Anhui, Henan, Fujian, and Tianjin. On May 25th 2009, the State Council stressed that "deepening the real estate tax reform, research and try to start the property tax". Then, from June 2009 to June 2010 Shenzhen was selected as the first city to try to get the system ready to actually levy this tax, with a total investment 9.1 million Yuan. However, a year later Shenzhen didn't levy the property tax.

3) Actually, it's not suitable to call it a new tax item. China's house property tax has a long history, starting from the Urban House Property Tax introduced in 1951, which is on the foreign housing property in China. The rate is 1.2% of the housing value, and if rented, the rate is 12% on the house rent. Form 1986, House Property tax levied on the national house property on the state-owned land was introduced, and the rate is the same with Urban House Property Tax. However, if the house is not used to make profit but only used to live, the holder will not to pay the tax. Urban House Property Tax was repealed from 2009.1.1. Then both the foreign and national housing properties are the objects of House Property Tax. Although there are property taxes aimed both foreign and national house property, the residential property is exempt from taxation.

out the speculation from real estate market; empirical test doesn't prove this would affect housing price.　However, in the long run, in order to promote the house affordability and to establish a rational tax system, China need to take a profound reform in property tax system, shifting lots of taxes and fees at the construction and transaction stages into a unified property tax during house tenure.　Further, the land leasing system also should be taken in account into the transformation.

The paper develops as follows.　Section 2 gives the background of China's property tax reform experiment and makes an overall review of the tax description since 1998.　Section 3 discusses theoretical analysis and puts forward hypothesis.　Based on the panel data and framework of property tax pilots, section 4 carries out econometric examines.　Section 5 finally reports the conclusion.

2. Brief of China's property tax system

In China, the pattern of real estate development is relevant to its public land leasing system. Because of the state-owned land system, only can a real estate developer get the use right, the real estate starts.　The pattern of China's real estate development includes several links, land acquisition, and then, construction, house acquisition (transaction) and tenure.　During these stages, there are complicated taxes and fees as follows:

As we can see from Table 1, besides the land transferring fee, there are 6 tax items directly levied on land and house property, such as, House Property Tax, Urban House Property Tax, Land Transferring Fee, Urban Land Use Tax, Farm Land Occupation Tax, and Deed Tax.　In fact, there is another tax aimed on housing construction, regulatory tax on fixed asset investment, it is suspended to collect from 1st January 2001.　At the same time, because of the separate land and house management and complexity of the tax system, there are lots of other Charges based on the land or house, taking a large amount of local governments' extra-budgetary revenue.　13 charges are collected during land acquisition and development, and 16 in house construction. According to statistic, all the charges before house transaction make up more than 50% of its construction cost (Zhang Qing, 2006).

In order to compare the revenues of the taxes and fees in China's real estate system, we simply divide them into 3 groups, Land Transferring Fee (LTF), Property Transfer Tax[4] and Property Tenure Tax[5].　And only the House Property Tax and Urban Land Use Tax are property tenure tax.　As it presents in Table 2, it's obvious that the property tax system is extremely unbalanced and that the tax burden is mainly concentrated at the phases of land access, house construction,

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4) Property Transfer Tax is levied at the stages of land or house transactions.
5) Property Tenure Tax is levied during the tenure every year.

Table 1　Summary of Real Estate Related Taxes and Fees

Stage	Item	Rate	Tax Base	Taxpayer
Land Acquisition	Land Transferring Fee	——	——	Developer
	Land Appreciation Tax	30-60%	Appreciation value from transfer land or house	The last land holder
	Deed Tax	3-5%	Price of the land	Developer
	Stamp Duty	0.05%	Value recorded in the certification	Developer
House Construction	Business Tax	3%	Turnover	Construction Company
	Stamp Duty	0.05%	Charges of Survey and design of construction	Construction Company
		0.03%	Value of Construction contract	Construction Company
	City Maintenance and Construction Tax	1%; 5%; 7%	Business Tax	Developer
	Corporate Income Tax	33%	Expenses before house construction completion	Developer
	Urban Land Use Tax	1.5-30yuan/m²·year (big city) 1.2-24 yuan/m²·year (medium-sized city) 0.9-18 yuan/m²·year (small city) 0.6-12yuan/m²·year (counties, towns, and mining zones.)	Area occupied by developer	Developer

and house transaction.　　This unbalanced property tax system makes it so easy and frequent that the taxes as a part of the cost of house are finally borne by the common citizens who are at the end of the cycle.　　On the other hand, for a long history, the residential house is exempted from House Property Tax.　　However, it's lucky for a speculator to be levied zero tax from hoarding houses to selling them.

From Table 2 and Graph 1, we explore the increasing gap among these 3 groups.　　Land Transferring fee and Property Transfer Tax revenue together is over 6 times of Property Tenure Tax revenue in 2009, and the ratio had ever climbed up to nearly 8 times of the latter in 2003. And as the real estate industry developed, the gap between the up-front taxes and fees and the tenure taxes keep increasing.　　The land transferring fee is one of the important results of land market-oriented reform, while the increment of Property Transferring Tax is mainly driven by the booming transaction.

As contrast, the Property Tenure Tax, especially the House Property Tax, is still lag behind in both the revenue amount and share in ratio, and even in the growth rate.　　Why it failed to grow with the reforms?　　One possible explanation is that the emphasis of the current land and property tax in China is on transaction but not the tenure.　　And the fact is that there is a large scale of exemption[6] within the collection of House Property Tax, so the owners of all the residential houses in cities pay no House Property Tax after they got the Real Estate Title Certificate.

Table 1   Summary of Real Estate Related Taxes and Fees (continued)

Stage	Item	Rate	Tax Base	Taxpayer
House Construction	**House Property Tax**	1.20%	House original value with a ratio of deduction (10-30%)	Developer
	Farm Land Occupation Tax	10-50 yuan/m² · year (average farm land is under 1 mu) 8-40 yuan/m² · year (average farm land is between 1-2mu) 6-30 yuan/m² · year (average farm land is between 2-3mu) 5-25 yuan/m² · year (average farm land is above 3 mu)	Farm land area occupied by developer	Developer
Transaction	Business Tax	3%	Turnover	Developer
	City Maintenance and Construction Tax	1%; 5%; 7%	Business Tax	Developer
	Land Appreciation Tax	30-60%	Appreciation value from transfer land or house	Developer
	Deed Tax	3-5%	Transaction Value	House holder
Tenure	**Urban Land Use Tax**	1.5-30yuan/m² · year (big city) 1.2-24 yuan/m² · year (medium-sized city) 0.9-18 yuan/m² · year (small city) 0.6-12yuan/m² · year (counties, towns, and mining zones.)	Area occupied by developer	House holder
	House Property Tax	1.20% 12%	House original value with a ratio of deduction (10-30%) Rent revenue	House holder

*Urban house property tax was repealed from 2009.1.1.

*Land Transferring Fee is the price payed by the developers to get the use right of a parcel of residential land for 70 years.   The price is determined through bidding ,auction and negotiation.

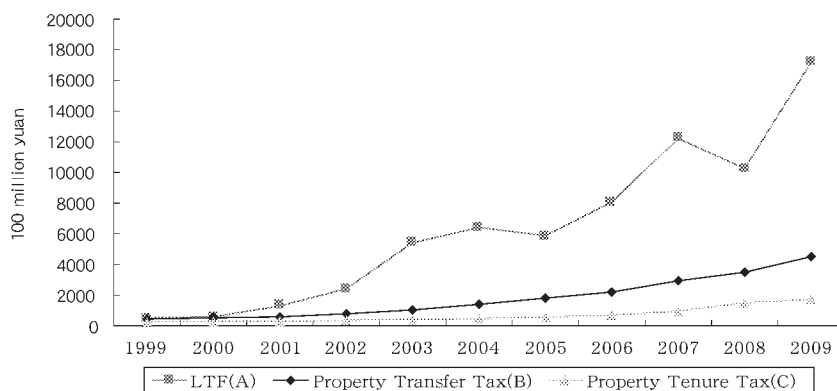 Source: China Taxation, Liu Zuo, 2009

Table 2   Land Transferring Fee, Property Transfer Tax and Property Tenure Tax in China (1999-2009)

100 million Yuan; times

Items	LTF(A)	Property Transfer Tax(B)					Property Tenure Tax(C)			A/C	B/C	(A+B)/C
		LAT	FOT	DT	CMCT	Subtotal	HPT	ULUT	Subtotal			
1999	514.33	6.81	33.03	95.96	312.57	448.37	183.36	59.06	242.42	1.15	1.85	3.00
2000	595.58	8.39	35.32	131.08	348.96	523.75	209.38	64.76	274.14	1.14	1.91	3.05
2001	1,295.89	10.33	38.33	157.08	380.62	586.36	228.42	66.15	294.57	2.21	1.99	4.20
2002	2,416.79	20.51	57.34	239.07	467.11	784.03	282.38	76.83	359.21	3.08	2.18	5.27
2003	5,421.31	37.28	89.90	358.05	546.71	1,031.94	323.86	91.57	415.43	5.25	2.48	7.74
2004	6,412.18	75.04	120.09	540.10	669.74	1,404.97	366.32	106.23	472.55	4.56	2.97	7.54
2005	5,883.82	140.31	141.85	735.14	791.02	1,808.32	435.96	137.34	573.30	3.25	3.15	6.41
2006	8,077.64	231.47	171.12	867.67	933.43	2,203.69	514.85	176.81	691.66	3.67	3.19	6.85
2007	12,216.72	403.10	185.04	1,206.25	1,148.70	2,943.09	575.46	385.49	960.95	4.15	3.06	7.21
2008	10,259.80	537.43	314.41	1,307.54	1,336.30	3,495.68	680.34	816.90	1,497.24	2.93	2.33	5.27
2009	17,179.53	719.56	633.07	1,735.05	1,419.92	4,507.60	803.66	920.98	1,724.64	3.81	2.61	6.42

Resource: China Statistical Yearbook (2000-2010); China's land resources yearbook (2000-2010)

*LTF＝Land Transferring Fee CMCT＝ City Maintenance and Construction Tax LAT＝Land Appreciation Tax FOT＝Farm land Occupation Tax   DT＝Deed Tax HPT＝ House Property Tax   ULUT＝ Urban Land Use Tax

Graph 1 Trends of Land Transferring Fee, Property Transfer Tax and Property Tenure Tax in China (1999-2009)

Since there is no clear record document of every house or building, it's common that house purpose is change into business but still exempted from House Property Tax.　Another problem with urban land use tax is that it's specific but not *ad valorem* tax, so that the tax base is very much deflected away from the real value.

　This situation, in which easy tax shifting and zero tenure cost, provides an incentive to hoard land and houses.　Both will cause increasing housing price.　However, what concerns citizens most is the affordability of a house.　Some previous researches find that these taxes and fees largely raise the housing price.　Chinese Housing Bureau (CHB) reported that the land transferring fee, all kinds of taxes during every stage, and other charges account for 50% of a house, and the land transferring fee makes up about 30% of the house price, taxes and charges for 20%, however, the construction costs only 30% (Dan Li, Shunfeng Song, 2008).　That's to say, the heavy property tax burden is perfectly disguised.　In China, the land use right for 70 years is accessed by the land transferring fee, actually, it's the rent of China's state-owned land, or called the land price.　Because of the immovability of land and house and the difficulty in distinguishng their value, the land price is always supposed to be a part of housing price.　There is unidirectional Granger causality between housing and land prices in the short run: housing prices are Granger caused by land prices, while the reverse does not hold (Lan Feng et al, 2011; Du Hongyan et al, 2011).　What's more, Kuang Weida (2009) testifies that property tax has more effect on housing price than construction cost in national and eastern China.

　Many Chinese scholars propose to reduce the taxes and fees during the land acquisition and house construction and transaction and club them together into a unified property tax at the

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6) Besides urban residents' houses, there are 6 kinds of house property used for non-profit or public utilities: (1) government institutions and organizations; (2) military; (3) public parks; (4) religion-related properties and land; (5) urban roads and greenery areas; (6) schools, hospitals and daycare facilities. See Song Shunfeng et al, 1999.

tenure stage, so that the tax will be levied every year instead of lump-sum charge. Under this proposal, existing studies provide evidence for the impact of property tax reform on housing price. Focusing on the public land leasing system now in China, Macro Group, CCER, Peking University (2006) find that if the land transferring fee can be paid every year, it will make it possible to reduce the price of both existing and newly building house in short time. And they point out that although the land use fee is rent but not tax, since it has the same tax object with property tax, it will improve administrative efficiency in tax collection.

A total impact of property tax system on housing price is proved to be negative, while House Property Tax and Deed tax are negative and urban land use tax, land appreciation tax and farm land occupation tax are positive (Du Xuejun et al, 2009). Kuang Weida (2009) examines the effect of property tax policy on housing price based on provincial panel data from 1996 to 2006. The result shows that the property tax is effectively able to curb the inflated house prices in national and eastern China. However, the effect of property tax upon house prices is insignificant in middle and western China. And the construction cost doesn't impose a less effect on housing price than property tax policy.

3．Theoretical Analysis and Hypothesis

Like other goods in market, the housing price is primarily decided by the supply-demand relations. In the past two decades, China's real estate industry changed the supply mechanism from Physical Housing Allocation System to housing market. As a result, housing supply has been greatly improved. But, the from the demand side, its price is beyond people's imagine. So there are something unusual happened to China's property market, that is the coexistence of high housing price, high investment and high vacancyrate In fact, China's central government takes a series of measures to regulate the real estate market, including land supply regulation, interest policy, and tax policy and so on. However, these all failed, the price is still increasing.

Real property market has been examined a lot these years. If it goes well with the economic fundamentals is always considered as a useful measurement to verify its development. China's real estate market has been frequently examined out of real economy. Using panel date from 1995 to 2002, Shen Yue et al, (2004) find the growth of housing prices begin not be well explained by past information of economic fundaments and housing prices in China. There seems to be a weak two-way linkage between property prices and GDP growth, while a negative relationship between housing and rental prices implies it's deviated from fundamentals in coastal areas (Peng Wensheng, 2008). Luo Gangqiang et al, (2010) provides Empirical results that regional housing prices appreciation is apparently auto-correlated, that historical housing prices information has been more powerful to explain the current price volatility and housing prices have gone beyond

the scope supported by the driving force of regional economic fundamentals since 2003. Housing price is out of the explanation of the economic fundamentals. And scholars suggest government to control the situation to get house affordable.

From view of the composition of the housing price, usually, increase in housing price reflects rising housing quality and construction costs. Income and in construction costs have important effects on real house prices, but against that, there is also evidence that there is widening gap between Housing price and construction cost (Edward L. Glaeser et al, 2004). Poterba et al (1991) point out that property tax will affect housing price by user cost instead of construction cost. In fact, compared with the large portion of various taxes and land use cost (50%), construction cost only takes 30% of the housing price in China (Li Dan et al, 2008), so that, it's impossible for Chinese government to curb housing price by construction cost control. So we can assume that *construction cost is not a crucial determinant on housing price*.

In terms of economic effect of property tax, there are three typical theories. According to traditional view (Simon, 1943; Netzer, 1966), property tax actually is excise tax through Partial Equilibrium Approach. It will lead to higher housing price, and the tax burden will shifted to house owners. While, based on Tiebout Model (1956), benefit view (Hamilton, 1975, 1976; Fischel, 1992, 2001) believes that property tax is just a payment for local utilities and service by dwellers and that it's like user charge or head tax but not capital tax, will not be distortionary in capital and resource allocation, imposing no effect on housing price. The new view introduces property tax competition in General equilibrium analysis, and gives result that disparity among different jurisdictions can cause capital mis-allocation. There are two kinds of effect, profits tax effect and excise tax effect, on one hand, property tax reduces capital returns in the nation, on the other, it leads prices changing in production factors and goods among jurisdictions. In other word, property tax is a distortionary tax in capital use.

Till now, there is no conclusion among these three views, and property tax effect is always examined through whether it's capitalized. If it's true, the tax burden will be disguised into housing price and actually paid by house owner. Previous papers did find evidence of property tax capitalization, Oates (1969, 1973) King (1977), Edel and Sclar (1974), Gustely (1976), Rosen and Fullerton (1977), Richardson (1981) and Palmon and Smith (1998) agree that property tax is highly capitalized, and that it's believed as an excise tax.

As analyses in last sector, it is also the right situation in China, so property tax system is criticized as unreasonable, imbalanced and inefficient. Du Xuejun et al, (2009) analyze the impacts of real estate tax and local public expenditure on house price and point that current real estate tax system has negative effects on house price, and also point out that different taxes related to land and house property impose different effect on housing price. Since its negative effect from house property tax and deed tax is reduced by positive effect from other Property

Transfer Tax, the capability of China's real estate taxes impacts on house price curbing is not strong enough, so it is necessary to reform the real estate taxes. Together with the land leasing system, tax policy and large amount of land transferring fee have an overwhelming impact on housing price than interest policy (Kuang Weida, 2009; Du Xuejun et al, 2009). Land cost and taxes and fees seem to be significant to push up the housing price.

So, based on our previous theoretical analysis, we propose our hypothesis as:

China's property tax system makes it capitalized into housing price. Its imbalanced arrangement, in which high burdens from taxes before and in house transaction, together with a lump-sum land use fee, leads that it's be liable to shift to the next buyer. Further, zero property tenure tax for residential house gives an incentive for speculators to hoard houses and expect to sell at a higher price. So it represents inefficiency in housing price control in China's property tax system.

4．Econometric Test and Result

Model and data

According to the theoretical analysis above, we set the econometric model as follow:

$$\ln P_{it} = \beta_0 + \beta_1 \ln CC_{it} + \beta_2 \ln LTF_{it} + \beta_3 \ln PTT_{it} + \beta_4 \ln PHT_{it} + \beta_5 \ln HCA_{it} + \beta_6 \ln GDP_{it} + \varepsilon_{it} \quad (1)$$

Where the dependent variable P_{it} stands for the housing price of region i at the year t; CC_{it} means the average Construction Cost at time t in region i; LTF represents the Land Transferring Fee, PTT property transfer tax, PHT[7] property holding tax, HCA housing construction area in the region i at the year t; ε_{it} is an error term.

From the view of cost, we know that the price is basically a composition of LTF, CC and Tax (PTT and PHT). So, here our explanatory variables are as following. LTF is the indicator measuring the current Public Land Leasing System. This paper uses its average LTF every year as a part of the housing cost. For the house developers in China, it's some like prepaid lump-sum value of a parcel of land, and as a land cost, it's really shifted to the end users, house buyers who will possess the house attached to the land for several decades. And another reason to use the indicator is that LTF is argued as an unreasonable system in which it makes a large portion of

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7) Here we divide property tax system into two parts, Property Transfer Tax which happens during house construction and transaction, and Property Tenure Tax during holding a house. In order to distinguish them, we use PTT for Property Transfer Tax and PHT for Property Tenure Tax.

the housing price, and that some tax reform proposal suggests reforming the land use system to levy the land use right tax together with annual Property Tenure Tax.

Property tax is the indicator of tax incidence, which reflects the tax capitalization in China's current real estate market. Further, considering imbalanced tax arrangement with China's real estate tax system, and the new reform experimented in Shanghai and Chongqing is mainly focused on the tenure phase, here Property tax is divided into two groups, Property Transfer Tax at transaction phase and Property Holding Tax at tenure phase, to make a comparison of the two indicators. CC is an indicator of house physical cost, measured by average Construction Cost per square meter in each region.

The other control variables include GDP and HCA. While there are some economics fundamentals pushing the price climbing up, so we choose GDP data as control variables to stand for economic development. At the same time, HCA represents the supply of house in a region, and it reports the supply growth along with the industry development.

In this paper, we use the panel data of 11 property tax reform pilot regions from 1999-2009 to carry out the econometric test. Data resources are mainly China Statistical Yearbook, China Land Resource Statistical Yearbook and Province Statistical Yearbook.

Descriptive Statistics

Table 3 reports the descriptive statistics of the Napierian logarithm value (LN) of all dependent and explanatory variables. The variables used here have a time frame from 1999 to 2009, that is, we use the date since the housing commoditization reform in China. We can find out that the important independent variables LTP, PTT and PHT have the higher value of LN in standard deviation than the other variables, and they can be understood as the consequence of the

Table 3　Descriptive Statistics of the Variables

	LNP	LNCC	LNLTF	LNPTT	LNPHT	LNHCA	LNGDP
Mean	7.986693	7.230464	8.038613	3.808554	2.922419	8.580867	8.580074
Median	7.888335	7.196687	7.976000	3.857539	3.012845	8.708177	8.708332
Maximum	9.532351	8.117611	10.58803	6.255649	5.300353	10.30741	10.58361
Minimum	6.929517	6.521195	5.732658	0.310495	0.096945	5.345424	5.486828
Std. Dev.	0.570708	0.412963	*0.947512*	*1.274747*	*1.148444*	0.964077	1.050973
Skewness	0.505141	0.240960	0.078791	-0.492530	-0.364444	-0.911349	-0.819347
Kurtosis	2.798407	2.077644	3.298082	2.922689	2.922700	4.027255	3.880823
Jarque-Bera	5.350758	5.460059	0.573163	4.922274	2.708651	22.06980	17.45004
Probability	0.068881	0.065217	0.750826	0.085338	0.258121	0.000016	0.000162
Sum	966.3899	874.8862	972.6722	460.8350	353.6127	1038.285	1038.189
Sum Sq. Dev.	39.08494	20.46459	107.7334	194.9976	158.2709	111.5334	132.5452
Observations	121	121	121	121	121	121	121

state-owned land system and the land and house tax system in China, also they imply the inequality of land and markets across different regions. Together with CC, the four parts are main component of China's housing price. As to Jarque-Bera test, among these variables, only lnTLF is normally distributed, while the rest are all skewed distribution. So we can not apply the OLS regression.

Test results and analysis

We report the test results in Table 4. From the cost view, here we first make estimation (1) of Construction Cost and the three groups of Land Transferring Fee, Property Transaction Tax and Property Tenure Tax. And then control variables are included in estimation (2).

The empirical estimation above can be calculated in both random effect model and fixed effect model. In order to choose a suitable model, Hausman test is carried out. Since the p-value is less than 0.05, so we apply fixed effect model to estimate the equations.

In the estimation (2), it shows that the estimated coefficients of variables are of high significance except for the lnPHT. However, the overall estimate results of goodness-of-fit test prove that the housing prices in pilots coincided with samples, which shows the relationship with independent variables is statistically significant, and these variables can explain the housing price, land system and property system reasonably.

From both the equation (1) and (2), the coefficient of lnCC is positive and significant at 1% level, indicating that construction cost still is an important factor in China's housing price, since it's the necessary cost to build houses and the continued rise in housing price is still a necessary factor

Table 4 Test Result of Housing Price in 11 Pilot Regions in China (1999-2009)

	(1)		(2)	
	Coefficient	T-Statistic	Coefficient	T-Statistic
lnCC	**0.240998*****	2.691734	**0.289814*****	3.531236
lnLTF	0.05844	2.49088	0.043051**	1.996672
lnPTT	**0.249157*****	4.590928	**0.29913*****	4.162638
lnPHT	0.04737	0.865403	0.008377	0.15926
lnHCA	——	——	-0.194704***	-4.159487
lnGDP	——	——	0.188981**	2.12224
C	4.687027***	8.093474	4.430658***	5.396822
Adjusted R-squared	0.964032		0.970303	
F-statistic	230.7361		246.0503	
Model Type	Fixed Effect		Fixed Effect	
P-value of Hausman Test	0.000000		0.000000	

Note: The dependent variable is lnP here. There are 11 pilots in the real estate tax reform, and here in order to get the data available at provincial level, we use date from whole Gongdong province instead of Shenzhen city. ***denotes significance at the level of 1%, while **5%.

in the physical cost increase. And from the macro-economy development, lnGDP has positive effect on housing price at the 5% significance, which implies that the real estate industry has a consistent relationship with the whole country's economic fundamentals. At the same time, ln HCA' coefficient is of minus value at 1% significant level, suggesting that Housing Construction Area factor has a negative effect on housing price and the price would be cushioned through increase China's housing supply.

And as to the Land Cost, although the coefficient of lnLTF is much smaller but also positive at 5% significant level, which prove that the lump-sum Land Transferring Fee for 70 years is really a pushing element in housing price. What's important, as it shows in both equation (1) and (2), the coefficient of lnPTT possesses the largest value among these cost parts, and it's of 1% level significance, which definitely proved capitalized in to housing price that Property Transaction Tax has an overwhelming effect on housing price climbing. It's basically consist with most researchers' conclusion that in current China a large amount of land price under the land leasing system and heavy tax burden before house tenure contribute to feverish rise in housing price. In fact, the PTT data we use here include neither the numerous Administrative Charges and Fees, nor the Business Tax, Stamp Tax and Corporate Income Tax levied on developers and construction companies. So we can assume that the taxes, charges and fees accruing during the land development and house construction periods totally are of prime importance in bidding up China's housing price. That's why scholars argue that the tax and fee should be reduced or put some items of tenure nature into property tenure period to curb the soaring housing price, or even the stated-owned land leasing system should be rearranged into year-by-year payment.

When we compare the effect between the property transaction tax and property tenure tax, we can figure out that it's imbalanced in the total property tax system, which is stressed on tax in stages of development, construction and transaction. With respect to the housing tenure tax, the coefficient of lnPHT is absolutely not significant at all. At present, the taxation during house tenure almost has no effect on housing price. Possible explanations lie in the system itself: 1). Since house property tax was launched initially, tax exemption has been allowed to residential house and other non-profit used house. That is to say, the tax revenue from non-business use house is nearly zero, and further, the situation leaves a speculative space for the speculators. 2). In the housing tenure tax system, Urban Land Use Tax is still levied on the size of a plot. Although the local governments are allowed to fix the tax rate at their own discretion, it's obvious that the tax revenue would not grow with the pace of macro-economy. We can say that the house tenure tax doesn't make difference in regulation. To the opposite, speculations induced by the extensive exemption and low tenure cost from outdate tax computation method provide as a protection to resell house for a higher profit.

Considering the failure of Property Tenure Tax System, from 2011, the house property tax

reform experiments in Shanghai and Chongqing are aimed to strike the speculation by levying residential house tax.　The tax objects include mainly upscale villa, the second and more house owned by a family with registered permanent address in that city and house bought by non-resident family.　According to internet survey carried by Shanghai Statistics Bureau, there are 64.1% of the respondents who still plan to buy a house for marriage, living condition improvement and other aims, while only 11.9% will buy houses for investment[8].　This indicates that the living demand is prevalent in Shanghai's house market.　So we doubt that if it can reach the policy target of control housing price by getting rid of speculation.　Without a comprehensive reform in real estate tax system, the impact would be offset by other taxes and fees during developing and construction.　Since the data of the new experiments are now not available, we can't make further empirical analysis.　However, it's really an important step to reform the unreasonable housing hold tax.

5．Conclusion

To what extent, the real estate tax has impact on the housing price in China?　Will the two different reform experiments make sense to curb the climbing housing price?　Based on cost view, the paper makes both theoretical analysis and econometric test, and we can draw the conclusion as follows:

Land cost, construction cost and tax cost together are possible explanation to the increase of housing price.　The heavy tax burden during land development, house construction and transaction links is imposing positive effect on housing price in China.　Also, the construction cost is still a necessary cost at present.　Besides, the lump-sum land transferring fee prepaid for decades in future obviously increases the house owners' cost further.　This suggests that it would be available to get the house affordable by real estate tax reform and land system rearrangement, which is consist with the former reform experiment.

The property tax system is imbalanced arranged among different phases, which ends with the inefficiency of tax regulation.　When we test the property tenure taxes after house acquisition, it properly has no effect on the housing price in current China, due to much exemption in residential houses and area-based tax copulation method in Urban Land Use Tax.　If the new experiment frame only intends to enlarge the scale of house property tax objects to strike housing investment demand, its regulation effect would be doubted to fail in price control.　And China's property tax is calling for a sweeping transformation.

In order to get the house affordable for ordinary citizens, property tax reform is promising In

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8 ）See Shanghai Statistics Bureau. The Impact of the Shanghai Property Tax Pilot on Public Housing Purchase.
  http://www.stats-sh.gov.cn/fxbg/201110/233168.html (1/10/2012)

addition, to increase the house supply is also an option to reduce the climbing trend of housing price.　　However, it's the consequence of land supply.　　So there's need for the government to review the argued land leasing system.

References

Anderson, John E. (2008). *The Path to Property Taxation in China*, Lincoln Institute of Land Policy's Annual China conference, Cambridge, A, May 12.

Chang Lingli, Liu Xinping. (2010). "Analysis of Commercial Housing Price and Economic Fundamentals of Chongqing City Based on Time Series Data", *Construction Economy,* May.

Du Hongyan, Yongkai Ma, Yunbi An. (2011). "The Impact of Land Policy on the Relation between Housing and Land Prices: Evidence from China", *The Quarterly Review of Economics and Finance* 51, pp. 19-27.

Edel, Matthew, and Sclar, Elliott. (1974). "Taxes, Spending, and Property Values : Supply Adjustment in a Tiebout2Oates Model", *Journal of Political Economy*, 82, September and October, pp. 941-954.

Fischel, William A. (1992). "Property Taxation and the Tiebout Model: Evidence for the Benefit View from Zoning and Voting", *Journal of Economic Literature*, Vol. 30, No. 1, March, pp. 171-1771.

Fischel, William A. (2001). "Homevoters, Municipal Corporate Governance, and the Benefit View of the Property Tax", *National Tax Journal, March,* 54, 1, pp. 57-173.

Gustel, Richard D. (1976). "Local Taxes, Expenditures and Urban Housing: A Reassessment of the Evidence", *Southern Economics Journal*, pp. 659-665.

Hamilton, Bruce W. (1975). "Zoning and Property Taxation in a System of Local Governments", *Urban Studies, June,* 12, pp. 205-211.

Hamilton, Bruce W. (1976). "Capitalization of Intrajurisdictional Differences in Local Tax Prices", *American Economic Review*, Dec., 66 (5), pp. 743-753.

King, A. Thomas. (1977). "Estimating Property Tax Capitalization: A Critical Comment", *Journal of Political Economy,* 85, April, pp.425-431.

Kuang Weida. (2009). "Housing Characteristics, Property Tax and House Prices", *Economic Research Journal*, April, pp. 151-160.

Li Dan, Shunfeng Song. (2008). "Property Tax in Urban China", *China & World Economy*, Vol.16, No.4, pp. 48-63.

Lan Feng and Yuan Zhang. (2011). "Spatial Autoregressive Model of Commodity Housing Price and Empirical Research", *Systems Engineering Procedia* 1, pp. 206-212.

Luo Gangqiang, Zhao Tao. (2010). "Regional Economic Fundamentals and Housing Prices Fluctuations: Empirical Analysis of Regional Housing Prices Driving Forces in China (1999-2008)", *Journal of Xidian University(Social Science Edition)*,April.

Liu Zuo. (2010). *China Taxation* (Zhongguo Shuizhi Gailan), The Publishing House Of Economic Science.

Macro Group, CCER, Peking University. (2006). "Reform of Property Tax and Local Public Finance", *Economic Research Journal.* March, pp. 15-24.

Netzer, Dick. (1966). *Economics of the Property Tax*. Washington: Brookings Institute.

Peng Wensheng, Dickson C.Tam, Matthew S. Yiu. (2008). "PROPERTY MARKET AND THE MA-CROECONOMY OF MAINLAND CHINA: A CROSS REGION STUDY", *Pacific Economic Review*, Vol.13, No. 2: pp. 240-258.

Oates, Wallace E. (1969). "The Effects of Property Taxes and Local Public Spending on Property Values: An Empirical Study of Tax Capitalization and the Tiebout Hypothesis", *Journal of Political Economy*, Vol. 77, No. 6, Nov.2 ec. , pp. 957-971.

Oates, Wallace E. (1973). "The Effects of Property Taxes and Local Public Spending on Property Values: A Reply

and Yet Further Results", *Journal of Political Economy,* 81, July and August, pp. 1004-1008.

Palmon, Oded and Smith, Barton A. (1998). "New Evidence on Property Tax Capitalization", *Journal of Political Economy*, Vol. 106, No.5, Oct., pp. 1099-11111.

Richardson, David H. and Thalheimer, Richard. (1981). "Measuring the Extent of Property Tax Capitalization for Single Family Residences", *Southern Economics Journal,* 47, January, pp. 674-689.

Rosen, Harvey S. and Fullerton, David J. (1977). "A Note on Local Tax Rates, Public Benefit Levels, and Property Values", *Journal of Political*, 85, April, pp. 433-440.

Roy Bahl, Sally Wallace. (2008). *Reforming the Property Tax in Developing Countries: A New Approach.* Lincon Institution of Land Policy, working paper.

Simon, Herbert A. (1943). "The Incidence of a Tax on Urban Real Property", *Quarterly Journal of Economics*, Vol. 57, No. 3, May, pp.398-420.

Shanghai Statistics Bureau. (2011). "The Impact of the Shanghai Property Tax Pilot on Public Housing Purchase", *http://www.stats-sh.gov.cn/fxbg/201110/233168.html (1/10/2012).*

Song Shunfeng, George S.-F. Chu, and Rongqing Cao. (1999). "Real Estate Tax in Urban China", *Contemporary Economic Policy*, Vol.17, No.4, Oct., pp. 540-551.

Shen Yue and Liu Hongyu. (2004). "Housing Prices and Economic Fundamentals: A Cross City Analysis of China for 1995-2002", *Economic Research Journal*, Jun., pp.78-86.

Tiebout, Charles M. (1956). "A Pure Theory of Local Expenditure", *Journal of Political Economy*, Oct., 64 (5), pp. 416-424.

Zhang Qing. (2006). *China Property Tax Research* ("Zhongguo Wuyeshui Yanjiu"), China's Financial & Economic Publishing House.

Zhou Min, Logan, John R. (1996). "Market Transition and the Commodification of Housing in Urban China", *International Journal of Urban and Regional Research* Vol.20, No.3, pp. 400-421.