

The Regional Effect of Commodity Housing Price on Urban Residents' Income Gap

Zhou Yu^{1,1}, Zhang Jun² Xiao Liya³

(1, Peking University HSBC Business School, Guangdong, Shenzhen, 518055; 2, China Merchants Fund, Guangdong, Shenzhen, 518040; 3, Peking University HSBC Business School, Guangdong, Shenzhen, 518055)

Abstract: This paper uses a panel data from China 31 provinces during the period of year 2000 and 2011 to investigate the regional effect of commodity housing price on urban residents' income gap. We found that the main drive of positive effect comes from the western provinces, while there is no significant effect among eastern areas. Effect in the central region is statistically significant, but not from the economic perspective.

Key words: commodity housing price, urban residents' income gap, regional effect

1. Introduction

With the fast development of real estate industry, commodity housing price is increasing quickly in most of cities in China. As we all know, between 2000 and 2011, the average commodity housing price rose from 2112 to 5357 as the nominal price rose by 2.54 times. Besides, measured by income distribution index, urban residents' income gap is increasing. Between 2000 and 2011, the income distribution index increased from 3.61 to 5.38. Commodity housing price and urban residents' income gap are both increasing, which poses a threat to sustained and healthy development of real estate industry and social harmony and stability, triggering widespread concern of scholars and the public. Using co-integration analysis, Granger causality test and the 1991-2004 national data, Chencan Huang (2007) analyzed the relationship between housing prices and urban residents' income gap. He found that there existed a significant positive correlation in the long run. In addition, in the short term, housing prices was the unidirectional Granger causality of urban residents' income gap. Shi Hong (2007), Yin Xiangfei and Chen Liuqing (2008), Tang Hao and Liu Dan (2007), Li Dezhi (2008) used similar methods and made the conclusion that the increasing commodity housing price helped expand urban residents' income gap. Zhaoxia (2012) found that housing price elasticity of urban residents Gini coefficient was 0.55, which came to the same conclusion. Using FAVAR models and 2000-2010 national data, Shen Yue and Li Shanshen (2012) made a study about the interaction between the income gaps and price changes. They found that there actually existed interaction between income gaps and price changes. With panel data of 31 provinces from 1999 to 2010, Hu Jingjing (2012) found a significant positive effect of commodity housing price on urban residents' income gap, in which the price of commodity residence has a larger influence on urban residents' income gap.

Now, we use wealth effect to explain why the increasing of commodity housing price will

¹ [Description about first author] Zhou Yu (1976-), male, born in Jiangsu Yangzhou, Ph.D. in economics from Ohio State University, Peking University HSBC Business School Assistant Professor, Deputy director of the Real Estate Research Center, U.S. economist at Fannie Mae, Research directions for Real Estate Economics and Finance.

cause the expansion of urban residents' income gap. The increasing of commodity housing price will make the wealth transfer to specific sectors, thus expanding the gap between rich and poor. For high-income people, they have both housing for living and housing for investment. With the continuing rise in housing prices, the investment income is far greater than the cost, as a result, they gain an added wealth. For middle or low-income people, they generally only have a set of independent housing. While housing prices rises, they are unable to make profit through the sale of houses, therefore, they can only get the growth of carrying value. For low-income population, these people generally rent houses because they don't have their own housing. Rentals will rise with the rise of housing prices. So these people will have to spend more money, thus their wealth will decrease and they can hardly become the mid-income people. In conclusion, the continuing rise in housing prices makes the wealth transfer from low-income people to the high-income people, thus expanding the income gap between different sectors. As result, high-income people will become richer while low-income people will become poorer.

For existing literature, they need improvement because most of them use co-integration and Granger causality test method, with only 10-15 years' time series data. In my mind, study interval span is not long enough and there are too few observed values. Furthermore, most of them ignore the relationship between these two in differences regions. In addition, scholars use Gini coefficient (Gini) or Kuznets (Kuznet) index as a measurement of urban residents' income gap. The Gini coefficient only considers the case of the middle 60 percent of income earners, while the Kuznets index only consider the share of 20% people in the entire population income.

In this paper, we will use panel data in 31 provinces in China, a total of 372 observations, to build a multi-factor model to study the effect of urban residents' income gap. We not only consider the impact of prices changes on the income gap, but also consider the impact of other control variables on urban residents' income gap, so that our results are more credible and more comprehensive. Taking the level of economic development in different regions of China, constitute of urban residents' income, a wide gap between the asset structure and changes of commodity housing price into account, we study the different impact of commodity housing price on urban residents' income respectively in the eastern, central and western regions. As for research methods, we add a dummy variable about province into the model after our examination, which not only take into account the differences between individuals, but also give us a visual view about the specific differences between each province. As result, we can make different policy proposals for different provinces and provide a more detailed and reliable basis for policy makers in different regions.

2. Data and variables

Firstly, our data is from China Statistical Yearbook, the local statistical yearbook and China Economic Information Network. Then, to eliminate heteroscedasticity, we make a logarithm of all data, which can also help us use the percentage or rate of growth to explain the coefficient of the regression. We use income distribution index (Ingap) to measure the urban residents' income gap. The greater the ratio of the 20% highest income residents share to the 20% lowest income residents share, the greater the income gap between high-income populations and low-income populations. For income distribution index, it has its own metrics (in brackets is natural logarithm). For example, 3 (1.09) means the income is highly equal, 3-6 (1.79) means relatively equal, 6-9 (2.19) means relatively reasonable, 9-12 (2.48) means the income gap is relatively large,

12-15 (2.70) means the gap is too large, 15 more than means the gap is enormous.

In this paper, we use commodity housing price (lnhp) as our main variable. After reading many articles, we add some other factors that may affect urban residents' income gap into our model as control variables. We will show them as following.

(1) Unemployment rate (lnunem): if the unemployment rate is decreasing, it will increase the income of low-income people, thus reducing the proportion of low-income people and urban residents' income gap. Therefore, we predict that there is a positive relationship between unemployment rate and urban residents' income gap.

(2) Natural population growth (lnpop): Fengjin (2004), who used an iterative model, verified that the decline in population growth would lead to the decline in the average welfare and expansion of intergenerational income gap. Therefore, we predict that there is a negative relationship between natural population and urban residents' income gap.

(3) Education (lnedu): Du Peng (2005) made an empirical study with Chinese education and income distribution data and he found that education had an important effect on residents' income gap. In this paper, we will use the proportion of expenditure on education in the total financial expenditures as the measurement of education in different provinces. Besides, we predict that there is a positive relationship between education and urban residents' income gap.

(4) Tax (lntax): As we all know, tax policy has an influence on income redistribution between residents. Then, we think it may impact income gap. And Zhao Zhengyu and Bai Chongen (2007) has made a study to verify it. In this paper, we will use the proportion of tax revenue in total government revenue as the measurement of tax situation in different provinces.

(5) Social security (lnsocial): Social security system can ease the expansion of urban residents' income gap by providing subsidies for low-income people to increase their revenues. Zhu Lulu and Kou Enhui (2010)、Hu Baodi (2011) etc has made a study about it. In this paper, we will use the proportion of total social security spending in financial expenditures as the measurement of social security situation in different provinces.

(6) Foreign-trade dependence (lnopen): Wei Hao and Zhao Chunming (2012) made a conclusion that foreign trade which reflected the openness of the economy, could impact urban residents' income gap. In this paper, we will use the proportion of export and import volume in GDP as the measurement of foreign-trade dependence.

To avoid multicollinearity, we calculate the correlation coefficients between explanatory variables. Just as shown in table 1, lnsocial and lnopen have a significant correlation with many other variables (absolute value of the correlation coefficients are greater than 0.5). So we decide to remove these two variables to ensure the accuracy of the model.

Table 1: correlation analysis (the whole data)

	lnh	lnu	lnp	lned	lnta	lnso	lno
lnh	1						
lnu	-0.3	1					
lnp	-0.1	0.0	1				
lned	-0.4	0.2	0.4	1			
lnta	0.2	-0.3	-0.3	-0.	1		
lnso	-0.2	0.3	0.3	0.	-0.5	1	
lno	0.6	-0.2	-0.2	-0.	0.6	-0.7	1

Besides, we make the correlation analysis about data of eastern area, central region and

western area. We have eleven provinces in eastern area including Beijing, Tianjin, Hebei, Liaoning, Shanghai, Jiangsu, Zhejiang, Fujian, Guangdong, Shandong and Hainan. For central region, there are eight provinces such as Jilin, Heilongjiang, Shanxi, Anhui, Jiangxi, Henan, Hunan and Hubei. There are Guangxi, Sichuan, Chongqing, Yunnan, Guizhou, Xizang, Gansu, Ningxia, Shanxi, Qinghai, Neimengu which are located in western area. According to our analysis, we remove variable \lnopen which has great significant correlation with other variables from eastern area data. Similarly, we remove \lnsocial from central region data and western data.

We show the description of main variables such as mean, variance, min and max in table 2 and table 3. We can see the \lngap is between 1.09 and 1.79 in these three areas which means that the residents' income is relatively equal. However, the mean of the data of central region is smaller than those of eastern and western area, so as max. But the min of data of central region is the biggest. We can conclude that the urban residents' income gap of central region is smaller than the other two and the residents' income is relatively equal. For \lnhp , mean and variance of eastern area data is the highest, which is consistent with actual situation in China. The housing price is higher and has greater volatility in eastern China. In addition, there are significant differences between control variables in these three areas. For example, the unemployment rate in the western region and central area are higher than the eastern area. There are more employment opportunities in eastern region than in the central and western region because of more developed economy. In terms of education, there are higher degree of education in the central and western region than that in the eastern region, which may be due to our measurement. We use the proportion of local education spending in total government expenditure as our measurement. However, the total government expenditure in central and western area is smaller than that in eastern area, so that we get a higher proportion. Another difference is the tax, tax in the eastern region is also significantly higher than that in central and western regions.

Table 2: mean, variance, min and max of variables (the whole data)

variables	numbers	mean	variance	min	max
\lngap	372	1.55	0.19	1.06	2.21
\lnhp	372	7.86	0.55	6.85	9.78
\lnunem	372	1.29	0.22	0.09	1.87
\lnpop	372	1.36	0.94	-4.60	2.54
\lnedu	372	3.52	0.45	2.55	5.31
$\ln tax$	372	4.36	0.11	4.00	4.68

Table 3: mean, variance, min and max of variables (east, middle, west)

variable	mean			variance			min			max		
	east	mid	west	east	mid	west	east	mid	west	east	mid	west
\lngap	1.56	1.51	1.57	0.20	0.15	0.19	1.06	1.20	1.09	2.02	1.85	2.20
\lnhp	8.26	7.63	7.63	0.59	0.39	0.36	7.26	6.85	6.98	9.78	8.47	8.50
\lnunem	1.20	1.32	1.36	0.31	0.13	0.10	0.09	0.91	1.02	1.87	1.58	1.58
\lnpop	0.99	1.31	1.72	1.18	0.68	0.68	-4.60	-0.79	-0.52	2.24	2.23	2.54
\lnedu	3.13	3.58	3.84	0.26	0.14	0.4	2.55	3.03	3.06	3.73	3.90	5.31
$\ln tax$	4.44	4.31	4.32	0.09	0.07	0.09	4.18	4.03	4.00	4.68	4.47	4.54
\lnsocial	2.42	-	-	0.65	-	-	1.03	-	-	3.79	-	-
\lnopen	-	2.38	2.32	-	0.37	0.43	-	1.61	1.08	-	3.20	3.72

Ps: there are 132 samples in eastern region, 96 in central region and 144 in western region.

“-” means that the variable is removed from the data.

Before regression, we should have a stationary test for time series data to avoid spurious regression. In this paper, we use unit root test and the results are shown in table 4. Table 4 shows that all the sequences have passed at least one test of significance, therefore, we can say that all the panel data are stationary, and we can come to regression directly.

Table 4: Unit root test

region	method	Value of unit root test							
		lngap	lnhp	lnunem	lnpop	lnedu	lntax	lnsocial	lnopen
China	LLC	-17.89*** (C, T, 1)	-7.02*** (C, T, 1)	-9.27*** (C, 0, 1)	-48.57*** (C, 0, 1)	-5.15*** (C, 0, 1)	-6.89*** (C, 0, 1)	-	-
	ADF	188.76*** (C, T, 1)	84.59** (C, T, 1)	107.43*** (C, 0, 1)	391.21*** (C, 0, 1)	94.45*** (C, 0, 1)	107.93*** (C, 0, 1)	-	-
East	LLC	-8.51*** (C, T, 1)	-5.98*** (C, T, 1)	-6.93*** (C, 0, 1)	-12.02*** (C, 0, 1)	-4.14*** (C, 0, 1)	-4.72*** (C, 0, 1)	-3.99*** (C, 0, 1)	-
	ADF	44.52*** (C, T, 1)	40.99** (C, T, 1)	37.83** (C, 0, 1)	124.50*** (C, 0, 1)	35.06** (C, 0, 1)	44.75*** (C, 0, 1)	22.59 (C, 0, 1)	-
Middle	LLC	-12.05*** (C, T, 1)	-0.65 (C, T, 3)	-5.64*** (C, 0, 1)	-9.98*** (C, 0, 1)	-2.78*** (C, 0, 1)	-4.22*** (C, 0, 1)	-	-3.49*** (C, 0, 3)
	ADF	67.41*** (C, T, 1)	20.45** (C, T, 3)	35.16*** (C, 0, 1)	80.87*** (C, 0, 1)	26.06* (C, 0, 1)	27.17** (C, 0, 1)	-	19.32 (C, 0, 3)
West	LLC	-12.89*** (C, T, 1)	-4.66*** (C, T, 1)	-3.14*** (C, 0, 1)	-47.74*** (C, 0, 1)	-2.43*** (C, 0, 1)	-2.85*** (C, 0, 1)	-	-1.39* (C, 0, 1)
	ADF	76.85*** (C, T, 1)	30.33 (C, T, 1)	34.45* (C, 0, 1)	185.83*** (C, 0, 1)	33.33* (C, 0, 1)	36.02* (C, 0, 1)	-	16.72 (C, 0, 1)

Ps: ***, **, * means that the variables pass the t test respectively in 1%, 5% and 10% significant level.

In (C, T, p), C is intercept, T is trend item and p is lag order.

“-” means that the variable is removed from the data.

3. Model

Firstly, we should think about whether the model has individual effects. In our paper, we use fixed effect model and random effect model to make a test for the whole data and three regions respectively. The result shows that the individual effects of each province are significant. Then, we add province dummies into the model. Just as what I have shown above, we remove lnsocial and lnopen from the whole data sample, so we can establish the model just as below.

Model 1 (for the whole data): $\ln gap_{ij} = \alpha + \beta_1 \times \ln hp_{ij} + \beta_2 \times \ln unem_{ij} + \beta_3 \times \ln pop_{ij} + \beta_4 \times \ln edu_{ij} + \beta_5 \times \ln tax_{ij} + (\text{province Dummies}) + \varepsilon_{ij}$

For eastern region sample, we have the multi-factor model 2 with removing the variable lnopen.

Model 2 (for eastern region data): $\ln gap_{ij} = \alpha + \beta_1 \times \ln hp_{ij} + \beta_2 \times \ln unem_{ij} + \beta_3 \times \ln pop_{ij} + \beta_4 \times \ln edu_{ij} + \beta_5 \times \ln tax_{ij} + \beta_6 \times \ln social_{ij} + (\text{province Dummies}) + \varepsilon_{ij}$

For central and western region, we have the model 3 with removing the variable lnsocial.

Model 3 (for central and western region): $\ln gap_{ij} = \alpha + \beta_1 \times \ln hp_{ij} + \beta_2 \times \ln unem_{ij} + \beta_3 \times \ln pop_{ij} + \beta_4 \times \ln edu_{ij} + \beta_5 \times \ln tax_{ij} + \beta_6 \times \ln open_{ij} + (\text{province Dummies}) + \varepsilon_{ij}$

4. Empirical results

The whole data consist of 31 provinces data. And we show the result of model 1 in table 5 just as following.

Table 5: Regression results for the whole data

	coefficient	Standard deviation	t value	P value
intercept	-0.19	0.55	-0.34	0.73
lnhp	0.16***	0.02	8.93	0.00
lnunem	0.15**	0.06	2.36	0.02
lnpop	0.03***	0.01	2.88	0.00
lnedu	0.21***	0.05	3.88	0.00
lnntax	-0.13	0.10	-1.33	0.18
Guangdong province	0.36***	0.07	5.01	0.00
Chongqing province	-0.18***	0.05	-3.16	0.00

F(35,336)=21.36 P>F =0.00
R-squared=0.69, Adj R- squared=0.65

Ps: ***, **, * means that the variables pass the t test respectively in 1%, 5% and 10% significant level.

The regression results of model 1 demonstrate that the rise in commodity housing price will lead to the expansion of the urban residents' income gap. *Ceteris paribus*, urban residents' income gap will expand 0.16% with commodity housing price rise by 1%. For province dummies, Xinjiang, as a reference province, is not added to the regression. Besides, the coefficients of Guangdong province dummy is the biggest and all greater than 0 while that of Chongqing province dummy is the smallest and less than 0. It indicates that, with the same percentage increase in commodity housing price, deterioration of urban residents' income gap of Guangdong province is the most serious while that of Chongqing province is most mild.

For other control variables, we will make an analysis about them. There is a significant positive relationship between unemployment rate and urban residents' income gap. The increase of unemployment rate will deteriorate the distribution of urban residents' income. The natural population growth rate has a significantly positive impact on urban residents' income gap, which shows that the decline of population growth rate will improve the distribution of urban residents' income. Just as what Fengjin's (2004) study shows, the decline in population growth rate will lead to the decline in average social welfare level and expansion of intergenerational income gap. However, the income gap may be narrowed if labor productivity and government income distribution policy are improved. Education also has a significantly positive effect on urban residents' income gap which tells that the increase in education spending will actually worsen the urban residents' income gap. Du Peng (2005) has made a study and he thought only when we combine the expansion of education and equality, can we narrow the income gap. The effect of education premium will be weakened with the increase of educated people. Lastly, the impact of tax policy is not obvious in the whole data. In our mind, tax policy should play an important role in income redistribution and narrowing the income gap. However, we can't make this conclusion according to our regression results.

Table 6: Regression results for eastern region data

	coefficient	Standard deviation	t value	P value
intercept	4.64***	1.00	4.64	0.00
lnhp	0.04	0.03	1.23	0.22
lnunem	-0.01	0.07	-0.11	0.91
lnpop	-0.00	0.01	-0.34	0.73
lnedu	-0.02	0.10	-0.23	0.81
Intax	-0.86***	0.20	-4.20	0.00
lnsocial	0.21***	0.04	4.90	0.00
Guangdong province	0.36***	0.08	4.05	0.00
Hebei province	-0.38***	0.04	-7.88	0.00

F(16,115)=28.25 P>F =0.00
R-squared=0.79, Adj R- squared=0.76

Ps: ***, **, * means that the variables pass the t test respectively in 1%, 5% and 10% significant level.

We cover 11 provinces data in eastern region sample just as shown in model 2 and table 6.

Just as regression results shows, the impact of commodity housing price on urban residents' income gap is not obvious. In our opinion, the eastern region is economically developed and residents have a more diversified asset structure including commodity housing, stocks and funds. The proportion of commodity housing in asset is small, as result, the change of commodity housing price has an unobvious effect on change and distribution of residents' welfare. For province dummies, Hainan, as a reference province, is not added to the regression. Besides, the coefficients of Guangdong province dummy is the biggest and all greater than 0 while that of Hebei province dummy is the smallest and less than 0. It indicates that, with the same percentage increase in commodity housing price, deterioration of urban residents' income gap of Guangdong province is the most serious while that of Hebei province is most mild.

For other control variables, we will make an analysis about them. There exists a positive relationship between social security and urban residents' income gap. It indicates the increase of the proportion of social security spending in fiscal expenditure will expand the urban residents' income gap. Nowadays, Chinese current social security policy is actually beneficial to high-income people, making the rich richer and the poor poorer. It doesn't play its role in alleviating disparity in poor-rich gap and maintaining social stability which can be seen obviously in eastern region. Tax has a significant negative effect on urban residents' income gap which tells that the higher proportion of tax revenue in fiscal revenue, the smaller the urban residents' income gap is. As the most important income redistribution policy, tax policy actually plays its role. In addition, the impact of unemployment rate, education and population growth rate are not significant.

Our model 3 covers central and western regions data and our results are shown in table 7.

For central region, the results show that the increase of commodity housing price will expand the urban residents' income gap but the impact is small. Ceteris paribus, urban residents' income gap will expand 0.07% with commodity housing price rise by 1%. For province dummies, Hunan, as a reference province, is not added to the regression. Besides, the coefficients of Heilongjiang

province dummy is the biggest and all greater than 0 while that of Jiangxi province dummy is the smallest and less than 0. It indicates that, with the same percentage increase in commodity housing price, deterioration of urban residents' income gap of Heilongjiang province is the most serious while that of Jiangxi province is most mild. In addition, increase of educated people and population growth rate will result in the expansion of urban residents' income gap. And the higher proportion of tax revenue in fiscal revenue, the smaller the urban residents' income gap is which indicates that tax policy actually plays its role. Furthermore, the impact of unemployment rate and foreign-trade dependence are not significant.

Table 7: Regression results for central and western region data

	coefficient		Standard deviation		t value		P vaule	
	center	west	center	west	center	west	center	west
intercept	1.42	-3.90***	0.98	0.89	1.44	-4.35	0.15	0.00
lnhp	0.07**	0.24***	0.03	0.03	2.27	6.99	0.02	0.00
lnunem	0.20	0.39**	0.13	0.15	1.45	2.55	0.15	0.01
lnpop	0.05***	0.03	0.02	0.02	2.69	1.56	0.00	0.12
lnedu	0.25***	0.31***	0.09	0.08	2.73	3.74	0.00	0.00
Intax	-0.40**	0.35**	0.19	0.14	-2.03	2.48	0.04	0.01
lnopen	0.02	0.07**	0.04	0.03	0.56	2.15	0.57	0.03
Heilongjiang	0.10**		0.05		1.91		0.05	
Jiangxi	-0.22**		0.05		-4.49		0.00	
Qinghai		0.28***		0.07		3.94		0.00
Chongqing		-0.16***		0.02		-8.07		0.00
center					west			
F(13,82)=13.90 P>F=0.00					F(17,126)=17.70 P>F=0.00			
R-squared=0.68, Adj R- squared=0.63					R-squared=0.70, Adj R- squared=0.66			

Ps: ***, **, * means that the variables pass the t test respectively in 1%, 5% and 10% significant level.

Just as table 7 shows, in the western region, the increase of commodity housing price will also expand the urban residents' income gap, but the impact is large. Ceteris paribus, urban residents' income gap will expand 0.24% with commodity housing price rise by 1%. For province dummies, Xinjiang, as a reference province, is not added to the regression. Besides, the coefficients of Qinghai province dummy is the biggest and all greater than 0 while that of Chongqing province dummy is the smallest and less than 0. It indicates that, with the same percentage increase in commodity housing price, deterioration of urban residents' income gap of Qinghai province is the most serious while that of Chongqing province is most mild. In addition, for education, unemployment rate, tax policy and foreign-trade dependence, they are all has significant impacts on urban residents' income gap. It indicates that tax policy and foreign-trade dependence don't play their role in alleviating urban residents' income gap.

5. Conclusion and suggestions

In this paper, we cover panel data from 2000 to 2011 with 31 provinces and make a study about the impact of rise in commodity housing price on urban residents' income gap in three different regions. We summary our results in the following table 8.

Table 8: summary of regression results

	Commodity housing price	Unemployment rate	Population growth rate	education	tax	Social security	Foreign-trade dependence	Province with biggest coefficient	Province with smallest coefficient
East	none	none	none	none	Negative, larger	Positive, large	-	Guangdong	Hebei
Center	Positive, small	none	Positive, small	Positive, large	Negative, large	-	none	Heilongjiang	Jiangxi
West	Positive, large	Positive, large	none	Positive, large	Positive, large	-	Positive, small	Qinghai	Chongqing

Ps: “-” means that the variable is removed from the data.

For the whole data, we see the increase of commodity housing price will lead to the deterioration of urban residents’ income gap which is caused by the results in the western region. However, the results in three regions are different. The impact is not obvious in the eastern region while the impact is significant but small in the central region. For the western region, the impact is also significant and large. In other words, with the same percentage increase in commodity housing price, the deterioration of urban residents’ income gap in the western region is more serious than that in the central region. In our mind, the reason why the results are different may be the difference of urban residents’ asset structure. In eastern region, urban residents have diversified assets, making the proportion of real estate is small. Then, the increase of housing price has a small influence on total welfare. By contrast, it’s economically backward in the western region. With a higher proportion of commodity housing in assets, welfare is sensitive to the change of commodity housing price. So the rise of housing price is more likely to lead to the expansion of urban residents’ income gap.

According to the results, we suggest that government should make some policy to control the rapid growth trend of housing price, especially in some large and medium-sized cities. As the housing price remains at a reasonable level, it will be helpful to narrow the urban residents’ income gap and maintain social stability.

In addition, we also found that expenditure on education, social security spending, taxes don’t play their role in alleviating residents’ income gap in most areas. We suggest that not only central government but also local government should improve the existing education, social security, and tax policies. Only when government adjust the structure instead of blind pursuit of total GDP, can these public policy play their role in income redistribution.

Reference

- [1] Chen Canhuang, The relationship between the increasing housing price and urban residents' income gap, *Journal of statistics and decision*, 2007(22): 87-89.
- [2] Du Peng, Empirical study about the impact of education development on income gap, *Nankai Economic Studies*, 2007(22): 87-89.
- [3] Feng Jin, Welfare effect of change in population structure—— a model with social insurance, *Economic science*, 2004(01): 35-64.
- [4] Hu Baodi, Liu Wei, Liu Xin, An Empirical Study of the impact of social security expenditure on the urban residents' income gap - Experience Evidence from China (1978-2008) [J], *Journal of Jiangxi University of Finance and Economics*, 2011(2): 49-54.
- [5] Hu Jingjing, The impact mechanism and empirical study about the urban residents' income gap and increasing housing prices, *Journal of China University of Geosciences (SOCIAL SCIENCE EDITION)*, 2012(4): 91-96.
- [6] Li Dezhi, Li Qiming, He Ya, Chen Yuan, An analysis about wealth transfer effect of urban residents with rising housing prices[J], *Building Economics*, 2008(06): 55-57.
- [7] She Zhaoxia, The impact of housing price on income distribution—— take urban residents' income gap as example, *Journal of Chongqing University of Science and Technology (SOCIAL SCIENCE EDITION)*, 2012(24): 95-98.
- [8] Shen Yue, Li Shanshe, An Empirical study about the relationship between income gap and housing price, *Journal of Central University of Finance and Economics (SOCIAL SCIENCE EDITION)*, 2012(11): 68-72.
- [9] Shi Hong, The relationship between increasing housing price and urban residents' income gap, *Journal of statistics and decision*, 2007(22): 87-89.
- [10] Tang Hao, Liu Dan, An Empirical study about the relationship between housing price and urban residents' income gap, *Journal of Xi'an Institute of Finance and Economics*, 2007(06): 52-56.
- [11] Wei Hao, Zhao Chunming, An Empirical study about the impact of foreign trade on urban residents' income gap, *Finance and economy*, 2012(01): 78-86.
- [12] Yin Xiangfei, Chen Liuqin, Causality test about the relationship between urban residents' income gap, the wealth gap, income growth and housing prices with data between 1992 and 2006, *Journal of Hebei University of Economics and Business*, 2008(06): 16-21.
- [13] Zhao Zhenyu, Bai Chong'en, The impact of government tax on urban residents' income gap, *China soft science*, 2007(11): 48-56.
- [14] Zhu Lulu, Kou Enhui, The relationship between urban residents' income gap and social security expenditure—— taking Jiang Su province as example, *Journal of Shanghai University of Finance and Economics*, 2010(3): 91-97.