Study on Impact of House Prices on the Level of the Residents' Consumption: Based on the Analysis of Liaoning Province

ETUDE SUR L'IMPACT DES PRIX DE L'IMMOBILIER SUR LE NIVEAU DE CONSOMMATION DES RESIDENTS: BASE SUR L'ANALYSE DE LA PROVINCE DU LIAONING

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Abstract

Cointegration model and error correction model were developed based on the economic theory of consumption. The relation between urban consumption level and prices of commercial property were inspected in Liaoning Province. The study shows that the urban consumption level is promoted by the prices of commercial property in the long run and the short-term effect is the inhibition of consumption level due to "squeeze effect". The government should safeguard the healthy development of estate market and promote the rapid stable growth of economic with Liaoning Province by the way of improving the individual disposable income and suppressing house price firmly.

Key words: Cointegration; Error correction model; Squeeze effect

Résumé

Le modèle de la co-intégration et le modèle de correction d'erreur ont été élaborés sur la base de la théorie économique de la consommation. La relation entre le niveau de la consommation urbaine et les prix de l'immobilier commercial ont été inspectés dans la province du Liaoning. L'étude montre que le niveau de consommation en milieu urbain est favorisé parles prix de l'immobilier commercial à long terme et l'effet à court terme est l'inhibition de niveau de consommation en raison des «effects de pression». Le gouvernement devrait garantir le développement sain du marché immobilier et d'y promouvoir la croissance rapide de la stabilité économique avec la province du Liaoning par le moyen d'amélioration du revenu individuel disponible et des prix des logements qui devraient être supprimés fermement.

Mots clés: Co-intégration; Erreur de la correction du modèle; Effect de la pression

INTRODUCTION

The real estate industry is a pillar industry of the national economy development, which undertakes the twin objectives of expanding domestic demand and ensuring economic growth.And the smooth operation of the real estate market touchons the healthy development of the entire national economy . As an important variable, house prices directly around the entire real estate market changes in the real estate market. House prices have been high in recent years, for a handful of people house prices can produce positive wealth effect and stimulate the growth of consumption, but for most people it may have asqueeze effect to inhibit consumption. Rapidly rising house prices hinders the upgrading of consumption, weakens the potential for consumption growth ,and largely affect the policies to stimulate consumption. Then it becomes the biggest obstacle to the expansion of restricting consumer. This paper mainly probes into the relationship between the sales of commercial housing prices and resident's consumption, its main mechanism involved is the wealth

effect, the negative income effect, the credit constraint effect, savings effect and so on. However, in the existing research literature on China's real estate prices and consumer spending, most of them concern on the total amount of macro-economic by empirical research ,the time series and panel data analysis, while the empirical study on micro-data is insufficient. This article uses sample data in Liaoning province to have a micro-analysis on the relationship between sales of commercial house prices and consumption levels in Liaoning province, hoping to provide a theoretical basis for the government and relevant authorities to take further effective measures.

1. DATA SELECTION AND THE BASIC MODEL

This paper selected a total date of 48 quarters from 1998 to 2009 as the sample data. All data are from the China Economic Information Network, China's statistics bureau network, Liaoning Statistical Information Network and the analysis software is Eviews7 .

1.1 The Determination of Study Index

The choice of indexs and symbols are : Liaoning Province urban residents per capita consumption level (C \ yuan), Liaoning Province urban residents per capita disposable income (I \ yuan), Liaoning Province per capita GDP (G \ yuan) and sale prices of commercial house in Liaoning Province (P \ yuan). After a logarithmic treatment, each sequence were separately represent by Liaoning Province urban residents per capita consumption level (LC), per capita disposable income (LI), Liaoning Province per capita GDP (LG) and sale prices of commercial house in Liaoning Province (LP) .

1.2 The Basic Characteristics of the Sale Prices of Commercial House and the Urban Residents Consumption Level in Liaoning Province

In order to inspect the relationship between sale prices of commercial house and the urban residents consumption level in Liaoning Province, we draw a trend chart (Figure 1) on an annual basis. From figure 1 we can see the trends of sale prices of commercial house and the urban residents consumption level in Liaoning Province are generally in line ,and the trends are similar to Figure 1 even it is added with the index LI and LG. This shows those sale prices of commercial house and the urban residents consumption level exists between the constraints or equilibrium relationship. From the residents consumption level, prior to 2002 consumption rose more slowly and the growth rate is under the 9% .we analyze and get the reasons that this change is mainly affected by deflation, the financial crisis, enterprise reform, health care reform . Household consumption grew fairly rapidly after 2003, due mainly to the rapid growth of salary, consumption structure change, income structure change and Price growth and

so on; From the sale of commercial house price changes, before 2002, the price steadily growth, but in 2003-2007 it growth largely, but due to State regulation the growth decrease slightly in 2008-2009 .[1]
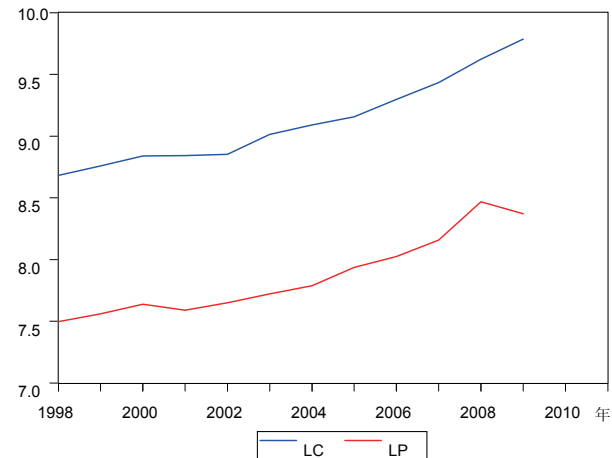

Figure 1
The Trends of the Sale Prices of Commercial House and the Urban Residents Consumption Level in Liaoning Province

1.3 Research Methods

In this paper, mainly through the establishment of co-integration, the error correction model and other econometric models, we research each index sequence . Simultaneously we examine the long-term and short-term effects on the sale prices of commercial house and the urban residents consumption level in Liaoning Province, and give the index change analysis and suggestions by comparing the data.

2. RESEARCH MODEL AND RESULTS

In order to inspect the relationship between the sale prices of commercial house and the urban residents consumption level in Liaoning Province, we examine the data stability, cointegration and error correction model.

2.1 Stability Test

Figure 1 shows, there are some certain variation trends in sequences, therefore there is must be a stability test for further analysis. Stability test results shown in Table 1 and Table 2.

Table 1
Indicator Data Unit Root Test Results

Variable	ADF	5% level critical value	Result
LC	-2.1654	-3.2598	Unstable
LP	-2.3657	-3.2598	Unstable
LI	-2.3687	-3.1754	Unstable
LG	-2.4747	-3.1754	Unstable

From results analysis which use ADF unit root test methods to test the data stability in table 1, when the significance level is on the basis of 5%, the various indicators are Unstable. And by taking the first difference of each index data available we can get some results in table 2, in which DDLC, DDLP, DDLI, DDLG represent separately the sequence obtained ,which are the second-order differential indicators of LC, LP, LI, LG .

Table 2
The Results after the Second-Order Differential Indicator Data Unit Root Test

Index	ADF	5% level critical value	Result
DDLC	-5.1654	-3.5196	Stable
DDLP	-4.3657	-3.5196	Stable
DDLI	-3.8687	-3.5196	Stable
DDLG	-3.9747	-3.5196	Stable

Table 2 shows test results of individual indicators are second-order single whole sequence.

2.2 The Cointegration Test of Long-Term Equilibrium Relationship

From figure 1 ,there is a consistent Trend between the sale prices of commercial house and the urban residents consumption level

2.2.1 Cointegration Test Method

Cointegration relationship refers to two or more non-stationary linear combination has stability. Assume that the sequence of independent variables is $\{x_{1t}\}, \cdots, \{x_{kt}\}$, and the response sequence is $\{y_t\}$,we makeup regression model $y_t = \beta_0 + \sum_{i=1}^{k} \beta_i x_{it} + u_t$. If the residual series

$\{u_t\}$ is stable,then there is a cointegration relationship between response sequence $\{y_t\}$ and the sequence of independent variables $\{x_{1t}\}, \cdots, \{x_{kt}\}$, The results of the stability test from table 1 and table 2 shows that the original targets are unstable and second-order single whole sequence, so it can be taken into account that the cointegration relationship among the indexs. This paper selects the method of EG two-step cointegration test method (1987) to test the cointegration relationship among the sequence LC, LP, LI, LG . Specific inspection procedures are as follows:

(1)Establish the linear regression equation between the response sequence and all of the input sequences, as follows .

$$LC_t = \beta_0 + \beta_1 LI_t + \beta_2 LG_t + \beta_3 LP_t + \varepsilon_t \quad (1)$$

Where $\beta_0, \cdots, \beta_3$ is the least squares estimates, ε_t as a random error term, So make $u_t = LC_t - \hat{LC}_t$ the re-

sponse sequence predictive value, and seek the regression residuals sequence.

(2)Use ADF test method test stability of the regression residual sequence $\{u_t\}$. If $\{u_t\}$ is stable, then the Cointegration relationship exists between the various indicator, otherwise there is not .

2.2.2 Cointegration Test Results

Make the urban residents consumption level in Liaoning Province as the response variable, the other three indicators as an input variable and get the following models by using least-squares method:

$$LC_t = 1.3075 + 0.4744LI_t + 0.2557LG_t + 0.1064LP_t + u_t$$

(2). Where the adjusted coefficient of determination is 0.9814, the standard deviation of 0.0485, DW statistics to 1.4578,then show the model has a high goodness of fit, but there may be a correlation among residuals. Considering joining lag, make lag orders as 1 and seek the distributed lag model of index as follows:

$$LC_t = 0.2524 + 0.4675LC_{t-1} + 0.6786LI_t - 0.2134LI_{t-1} + 0.4867LG_t - 0.2615LG_{t-1} + 0.2064LP_t - 0.0938LP_{t-1} \quad (3)$$

Where adjusted coefficient of determination is 0.9876, DW statistics is 1.9802, LM(1)=0.0200,LM(2)=2.3100,the results can be preliminarily viewed as a long-term and stable relationship a sequence of individual index .Finally, get the residual series of model (3), and test the stability of units root ADF ,its ADF value is -4.1245,which is less than critical value-3.6424 under 5% level. Meanwhile know residual difference sequence is stable, and the model (3) is a long-term balanced relationship model of index. Besides,And you can see that the main factors affecting the level of consumption is disposable income, by calculating we can get the long-term elasticity of the real estate sales prices impact on the resident's consumption of residential sales is 0.2115 .

2.3 Short-Term Fluctuation Error Correction Model

2.3.1 Error Correction Model

Traditional economic model is usually expressed long-run equilibrium relationship between the variables, but the actual data often generat in a dynamic and non-equilibrium processes. To measure the effects of index short-term changes, this paper created error correction model (ECM) to measure it, ECM model usually occur as a additional one of error correction model. When those index have cointegration relationships, the general form of error correction model is:

$$\nabla y_t = \sum_{i=1}^{k} \sum_{j=0}^{n} \alpha_{ij} \nabla x_{it-j} + \sum_{j=1}^{n} \gamma_j \nabla y_{t-j} + \lambda\, ecm + \varepsilon_t$$

Where the estimated parameters are $\lambda, \gamma, \alpha_{ij}$ random errors is ε_t ,error correction is ecm , which can be instead by the last issue residuals u_{t-1} in cointegration formula . k is the number of entered sequences, n is the lag order .

So we can get the error correction model for this paper's data:

$$\nabla LC_t = \sum_{j=0}^{n} \alpha_{1j}\nabla LI_{t-j} + \sum_{j=0}^{n} \alpha_{2j}\nabla LG_{t-j} +$$

$$\sum_{j=0}^{n} \alpha_{3j}\nabla LP_{t-j} + \sum_{j=1}^{n} \gamma_j\nabla LC_{t-j} + \lambda u_{t-1} + \varepsilon_t \quad (2)$$

Error correction model of estimation methods used in this article is EG two step methods (1981), whose steps are as follows:

(1)Estimate the model's OLS through Cointegrated regression, test the cointegration relationship among variables, estimation regression coefficients and get residual error sequences .

(2)According to the AIC, SC guidelines combined with the Q statistic, and LM statistics determine the lag order, make the last issue of residual as error correction ecm ,get a final result by using least-squares regression on the model (2) .

2.3.2 Error Correction Model Results
Build error correction model by using the results from 2.2.2 as follows :

$$\nabla LC_t = -1.1632u_t + 0.5861\nabla LI_t - 0.2843\nabla LI_{t-1}$$

$$-0.1142\nabla LI_{t-2} + 0.3643\nabla LG_t + 0.1451\nabla LG_{t-1} -$$

$$0.2435\nabla LG_{t-2} + 0.3321\nabla LP_t - 0.2964\nabla LP_{t-1} -$$

$$0.2156\nabla LP_{t-2} + 0.3121\nabla LC_{t-1} + 0.2884\nabla LC_{t-2}$$

Where adjusted coefficient of determination is 0.9901, DW statistics is 2.0134, LM (1) =0.7012, LM (2) = 2.0453. From the sales of commercial property prices on consumer spending in the short-term impact, the elasticity coefficient of current effect is 0.3321, the elasticity coefficient of previous effect is -0.2964, the elasticity coefficient of the first two periods is -0.2156 .That is, the latter two have inhibitory effects on consumption growth for the current period. Total influence coefficient is -0.1709, the overall impact in the short-term is "squeeze effect"..

CONCLUSION

This paper is based on econometric modeling, through empirically research interaction influence between the sale prices of commercial house and the urban residents consumption level in Liaoning Province . Results shows that consumption growth is the main influence factors of disposable income. The study shows that the urban consumption level is promoted by the prices of commercial property in the long run and the short-term effect is the inhibition of consumption level due to "squeeze effect". To sum up, the government should safeguard the healthy development of estate market and promote the rapid stable growth of economic with

Liaoning Province by the way of improving the individual disposable income and suppressing house price firmly.

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