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How do housing price and sentiment affect consumption distribution in China?

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ABSTRACT

Considering the lack of exploration of housing market sentiment in previous work, this paper uses quantile regression for panel data (QRPD) to investigate how housing price and housing market sentiment affect non-housing consumption distributions among owners and renters during their life cycles in China. The results show that the positive effect of housing price on consumption is stronger at the higher and lower parts of the distribution, and the differences caused by ages are more significant for owners. Furthermore, the housing market sentiment plays a significant role in owners' and highest-consuming renters' consumption. The heterogeneities in QRPD results suggest that the least square method provides less information. This study offers practical implication for governments in conducting different housing policy strategies for different households so as to help households benefit from the development of housing market and hence increase social welfare and equality.

1. Introduction

Since the real estate market reform in 1998, the housing price and transaction volume in China have continued to surge unabatedly, despite plummeting stock prices, decelerating Chinese economy and various government policies to curb rampant speculations in housing market during recent years. During this period when the stock market is much more volatile than the housing market, households prefer to choose real estate as an investment vehicle in order to maximize their wealth. The wealth appreciation caused by increasing housing price stimulates peoples' enthusiasm of purchasing houses and leads to an overheating and optimistic sentiment to Chinese real estate market. During a high-sentiment period with housing transaction price and volume rising, households tend to be affected by market sentiment and housing decisions made by others. Therefore, households may suppress their current expenditure on other goods and save money to buy a new house, in the hope of increasing their expected total wealth or hedging the uncertainty in renting in the future.

This phenomenon also leads to another concern: is it possible that the increasing housing price leads to a wealth redistribution, which in turn causes some changes in consumption distribution in different households? It seems to be true that people who make a right decision at the right time are more likely to accumulate a large amount of wealth by purchasing and investing property assets. Consequently, the plan of purchasing a house and the fluctuations in housing wealth affect households' expenditure on other consumption goods. As one of the most important parts in households' wealth, changes in housing wealth may exert a significant impact on households' non-housing consumption (Bostic, Gabriel, & Painter, 2009; Dong, Hui, & Jia, 2017; Hui, Zheng, & Zuo, 2012; Ludwig & Sløk, 2002). On the other hand, sentiment in the housing market may also have an effect on households' consumption by affecting their housing decisions. Sentiment, a general belief of investors towards a market, can be regarded as the aggregate attitudes to the market and reflect investors' propensity to speculate (Baker & Wurgler, 2006). The illiquidity and limitation to short selling of housing market prevent rational and sophisticated participants entering the market and counteracting mispricing (Clayton, Ling, & Naranjo, 2009; Hui & Wang, 2014; Ling, Naranjo, & Scheick, 2014). As a result, the boom and bust of housing market is hard to be explained by market fundamentals and sometimes may be influenced by the excessive market expectation (Case & Shiller, 2003), which we can call sentiment. What is more, due to the incompleteness and information asymmetry in housing market, less-informed households tend to imitate the actions taken by others who are perceived to be better informed and show herding behaviors. In this regard, the housing market sentiment drives the relative demand for housing and then alters households demand on other consumption goods. However, even the role of sentiment in stock market has been recognized in literature (Baker & Wurgler, 2006, 2007; Baker, Wurgler, & Yuan, 2012; Blasco, Corredor, & Ferreruela, 2012; Chau, Deesomsak, & Lau, 2011), its effect on the

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housing market and households' behavior has yet to be duly explored, whereas its significance is obvious.

One the other hand, most of previous studies focusing on heterogeneous effect of housing price on consumption use least square method and depend on the exogenous split of different households, which brings about large stand errors and leads to the estimated consuming propensity for different groups tending to be similar (Misra & Surico, 2014). In addition, least squares estimation is sensitive to outliers and explores the “average effect” of households, which is not suitable for the analysis of micro data since households in different consumption level have heterogeneous responses (Koenker, 2005). Given these limitations, quantile regression for panel data enables us to explore heterogeneity in response of non-housing consumption to housing price and market sentiment at different quantiles of the distribution and control individual heterogeneity. Moreover, being different from splitting the sample into different groups exogenously, quantile regression determines the groups of households within the estimation method.

Against this background, this study applies quantile regression for panel data (QRPD) to investigate heterogeneity in response of non-housing consumption to housing price and market sentiment across the whole distribution of consumption based on China Family Panel Studies (CFPS) 2010, 2012 and 2014. To be specific, we aim to find out whether fluctuations in housing price and sentiment can affect the distribution of consumption among owners and renters in different ages, with a further exploration to the effect of housing market on social welfare and equality.

The remaining of the paper is organized as follows: Section 2 introduces previous studies on related topics and presents our analytical framework. Section 3 describes the data and methodology. Section 4 displays and interprets the empirical results. Section 5 draws out the conclusion.

2. Literature review and analytical framework

2.1. Literature review

The studies focusing on the market sentiment are mainly about stock market, including the effect of sentiment on market returns (Brown & Cliff, 2005; Baker & Wurgler, 2006, 2007; Baker et al., 2012; Lemmon & Portniaguina, 2006) and market participants' behaviors (Kurov, 2008; Chau et al., 2011; Blasco et al., 2012; Ling et al., 2014). For example, Chau et al. (2011) and Kurov (2008) find that traders tend to purchase when price increases and sell when price decreases, and this behavior is more active when the market sentiment is high. Ling et al. (2014) proposes that investors are more likely to take actions during high sentiment periods.

Even though housing market is sometimes prone to be affected by sentiment due to its illiquidity and limitation to arbitrage, housing market has not received as much attentions as stock market has in terms of the effect of market sentiment. Despite that some literature have explored the relationship between housing market sentiment and property returns (Clayton et al., 2009; Hui et al., 2012; Lin, Rahman, & Yung, 2009; Wang & Hui, 2016), few of them have investigated the significant role of sentiment in households' behaviors, while its significance is obvious, especially in a volatile and irrational market like China. On account of the imperfect housing market, households tend to make their decisions irrationally (Hui & Wang, 2014). In other words, not only can households’ housing choice and consumption behavior depend on rational and fundamental factors, but they can also be modified by some psychological and irrational factors such as market sentiment. Furthermore, for different age groups, the effects of sentiment is various due to differences in their accesses to the housing market and future plans about housing and consumption in their life span.

As one of the most important proportions of households' wealth, fluctuations in house prices have significant impacts on households' non-housing consumption. Theoretically, the effect of housing price on consumption can be driven by the several mechanisms. First, according to the housing wealth effect, a rise in housing prices improves households’ total wealth or expected total wealth, or leads to a relaxation of credit constraint, which in turn stimulates their consumption (Ludwig & Sløk, 2002). Second, substitution effect means, for those who want to buy new houses or upgrade their houses, that higher housing prices will increase the cost of purchasing and renting houses, resulting in a reduction in their expenditure on other goods (Chamon & Prasad, 2010; Li, Li, & Chen, 2014). Besides, an increase in housing prices can also improve renters' consumption on condition that renters give up owning a house due to the unaffordable housing price, which is called the desperation consumption effect (Engelhardt, 1996). In addition, productivity explanation proposes that a positive expectation of future income increases the demand for houses (therefore leads to a rise in housing prices) and household consumption simultaneously (Attanasio, Blow, Hamilton, & Leicester, 2009; Pagano, 1990), then all renters and owners will consume more.

The heterogeneities in response of consumption to housing price has been widely discussed, including the effect of households' characteristics (Attanasio et al., 2009; Campbell & Cocco, 2007; Chamon & Prasad, 2010; Chen & Huang, 2013; Khalifa, Seck, & Tobing, 2013), financial market (Dong et al., 2017; Browning, Gørtz, & Leth-Petersen, 2013; Peltonen, Sousa, & Vansteenkiste, 2012) and different consumption categories (Bostic et al., 2009). Among the micro-level studies, two most popular topics are how age and homeownership affect the relationship between housing price and consumption. Generally speaking, increasing housing price stimulates owners' consumption by improving households' total wealth or expected total wealth, or leads to a relaxation of credit constraint. For renters, higher housing prices may suppress their expenditure by exerting substitution effects. The effect of households’ age has caused a debate among scholars, which is identified as the life cycle patterns of housing effect in literature. The life-cycle model has been applied by numerous scholars who explore the heterogeneous effect of housing price on consumption (Attanasio et al., 2009; Campbell & Cocco, 2007; Gan, 2010; Yang, 2009). Some of them argue that an increase in housing price has a larger effect on younger households as young people usually can benefit more from the financial development and they are more likely to change their houses, by which can the housing wealth appreciation be realized (Browning et al., 2013; Calomiris, Longhofer, & Miles, 2012). Furthermore, with increasing housing prices, younger households' expected future income will be more positive due to longer remaining working lives (Attanasio et al., 2009). On the other hand, a larger effect of housing price on consumption among older households is also supported by some scholars. In their opinion, older households are more likely to be owners and tend to consume though house refinancing (Campbell & Cocco, 2007; Sierminska & Takhtamanova, 2012), allowing them to transform housing wealth into consumption.

Previous studies have provided significant insights for further explorations. However, few of the studies have investigated the impact of sentiment on households' behavior. As China's real estate market is highly volatile, the households' decision making process is probably driven by irrational factors and market expectations such as sentiment. On the other hand, most of the existing studies on the relationship between housing price and consumption use least squares (LS) estimation method, which has several potential problems. Since LS estimates the mean effect, its results describe the “average” households. When the heterogeneous responses are investigated in a micro economic research, LS method tends to lack empirical support (Heckman, 2001). Koenker (2005) also argues that the mean effect estimated by LS method might not be able to interpret the coefficient from heterogeneous responses' models. Moreover, the exogenous split households into different groups may bring about large stand errors and cause the estimated consuming propensity for different groups to be similar (Misra & Surico, 2014).

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