



Market sentiment in private housing market



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ABSTRACT

Housing demands are partially driven by participant's sentiment, but the literature on housing economics rarely acknowledges that fact. This paper aims to investigate the role of market sentiment in housing market. A sentiment index is developed to capture the aggregate investor behavior and thus market scenario. In empirical application, using elaborate transaction records during 1991–2011 (more than two million registrations) in Hong Kong, the sentiment index is established. Generally, investors in housing market are more likely to be sentiment-influenced. In trading process, a delaying effect on the expected waiting time (duration) from buy to sell is found. Furthermore, market sentiment quantified by sentiment index is an efficient predictor of price level, return rate of price and trading volume. Meanwhile, sentiment remarks the significant role in long-run development of housing market. The approach and implications of this study may serve as a reference for the relevant authorities to stabilize and improve the environment of housing market.

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Introduction

Rational investors, as the most important assumption in classical economic and finance theory, participate in all kinds of transactions across various markets. The assumption strictly prohibits sentiment (sensitive factor) from being a role in a modern economic or financial theory. Even if some irrational deals exist, classical theory appeases such dispute by that they have no long-term impact on asset prices due to offset by arbitrageurs. Recently, more academic literature pay their attention to investigation of the effect of investor sentiment on the stock market (e.g. Baker & Wurgler, 2006, 2007). Some studies show their evidence to argue a relationship between investor sentiment and returns both in time-variation and cross-section (Baker & Wurgler, 2006; Schmeling, 2009).

Nowadays, academia studying behavioral finance has put their efforts into amendment of the standard model of asset pricing based on some new assumptions. As an indispensable part of assumptions, investor sentiment indicates that investors are subject to sentiment (De Long, Shleifer, Summers, & Waldmann, 1990). One possible definition of the investor sentiment is the general propensity of investors which is not justified by the external information at hand and is always connected with crowd psychology. It is investor's belief to anticipate price movement in a market. Baker

and Wurgler (2006, 2007) document that recent history has provided enormous evidence that investor sentiment shed the light on stock market. Schmeling (2009) affirms the impacts of investor sentiment on expected stock returns across 18 industrialized countries. Shleifer and Vishny (1997) propose that the potential risk of betting against sentiment-based investors is high. As such, rational investors behave away from what classical theory would suggest. They are not giving all the energy into forcing prices to equilibrium suggested by fundamentals.

As real estate market is the mainstay of modern economy in many countries (Hui & Wang, 2014), such group of investors specifically making investment in real estate market cannot be ignored. The real estate market would be affected by sentiment more significantly than the stock market mainly due to two reasons: illiquid nature and limitation on short-selling. Clayton, MacKinnon, and Peng (2008) discuss on the possible presence of sentiment-based transaction by partially irrational investors and thus suggest that deviation of asset price from fundamental can be attributed to the linkage of market-wide liquidity to investor sentiment. Moreover, real estate market falls short of short-selling which has restricted sophisticated participants to eliminate mispricing (Clayton, Ling, & Naranjo, 2009).

In particular, after several crises in real estate market, investor sentiment is now wildly accepted as a key factor driving the property price (Clayton et al., 2009; Hui, Zheng, & Wang, 2013) and REIT (Lin, Rahman, & Yung, 2009). In addition, Tam et al. (2010) contend that market sentiment is negatively correlated with default rate of housing mortgage. Particularly, the private housing

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market appeals to us to investigate on the role of sentiment for several reasons. First of all, in private housing market, the investors, who are mostly comprised of individual investors and households with lower ability to obtain useful and complete information, are characterized by being more susceptible to sentiment. That is to say, comparing within other sectors of real estate market, private housing market are sentiment-based with high potential. Second, [Clayton et al. \(2009\)](#) discuss that the liquidity of private commercial real estate market has substantial disparity from that of public stock markets, which leads to high segmentation of market and asymmetry of information. In contrast, private housing market shows higher liquidity than other sectors in real estate market, whose amount is close to the magnitude of stock market. Moreover, restriction on short-selling in housing market confines the ability of market regulation to eliminate the mispricing. Therefore, such limitation could render the deviation of asset pricing in the market influenced by investor sentiment ([Clayton et al., 2009](#); [Hui, Zheng, et al., 2013](#)). However, there are few literature to address the issue of investor sentiment in private housing market. Therefore, this paper is to investigate the investor sentiment and provide a sophisticated approach to construct a sentiment index. Furthermore, we test the predictability of sentiment index on price level, return rate of price and trading volume (liquidity). More specifically, we establish an equilibrium model of dynamics of housing market to capture both short and long-run sentiment relationships between sentiment and housing price, as well as other market fundamentals.

Accordingly, for the issue of sentiment indicator, some confidence indices have been released by various institute and authorities across the international markets ([Xu, Li, Hui, & Chen, 2010](#)). In general, the index reflects the grade of the status shifting in a specific real estate market. The index is normally established by using quantitative approaches through statistics on some

fundamental economic indicators. Since the indicators are selected by experts to describe the situation of a certain market, it is inevitable of variables being either objective or subjective.

Consequently, investor sentiment needs to be effectively measured to reflect the confidence of investors in market so that people can monitor the future expectation of investors, estimate the market perspective and make prediction on the trend of property price. In this paper, we establish a model to measure the investor sentiment. Firstly, we follow the framework of [Tay, Ting, Tse, and Warachka \(2009\)](#) and expand it into an approach to form a sentiment index. The approach is in a different way from the traditional regression on sentiment by some fundamental proxies. Distinctly, this is convenient of avoiding controversial choice of sentiment proxies from fundamental economic factors. Meanwhile, using transactions records in a market, it can directly capture the investor behavior in a market. In Hong Kong, the average number of transactions in private housing market is more than 330 in a day ([Table 1](#)). Thus, the data with such high frequency has benefit to assist in construction of sentiment index. Furthermore, we discuss the predictability on property price and trading volume. The former reveals the future trend of price level while the later reflects the liquidity of the market.

The remainder of this paper is structured as follows. [Literature review](#) presents a literature review. [Framework of index construction](#) introduces the approach of constructing the sentiment index. [Model of Index Construction](#) introduces the data and initial statistics, while [Model estimation](#) provides the empirical findings and implications. The final section summarizes the concluding remarks.

Literature review

[Baker and Wurgler \(2006\)](#) construct an investor sentiment index by using various proxies. The approach to measure sentiment in such an indirect way is well adopted by subsequent works (e.g. [Baker, Wurgler, & Yuan, 2012](#); [Dergiades, 2012](#)) on the stock market. Besides, the paper reveals that investor sentiment leads to a negative effect on cross-sectional stock returns such that higher sentiment induces relatively low subsequent returns that stocks earn. Such situation is echoed with several empirical studies (e.g. [Lemmon & Portniaguina, 2006](#); [Schmeling, 2009](#)), which have done detailed investigations on this argument in the global stock markets. Both [Schmeling \(2009\)](#) and [Lemmon and Portniaguina \(2006\)](#) carry out investigations through consumer confidence as an indicative measure of investor attitude. In particular, [Baker et al. \(2012\)](#) construct a global sentiment index and six local indices and thus reveals the interrelationship between local and global market by the channel of private capital flows. Nevertheless, the proxy selection for indexing sentiment embraces controversial standpoints of various angles. Therefore, we propose a model closer to the essence of market character, that is, the character of each transaction, which is on microeconomics stage instead of macroeconomics.

Recently, the boom and bust in economic cycle advocates a belief of investor sentiment inducing the mispricing mechanism of asset in financial market ([Brown & Cliff, 2005](#)). Consistent with the financial market, the real estate market has undergone several crises caused by a widely-accepted reason, the irrational pricing. [Agnello and Schuknecht \(2011\)](#) also point out that liquidity has a significant impact on the probability of booms and busts occurring. Both anomaly in pricing mechanism and liquidity of market can sum up into the issue of bubble. It's reasonable for people to believe that sentiment (or irrational trades, as appearance) has involved in the issue of bubble ([Baker & Wurgler, 2007](#); [Stambaugh, Yu, & Yuan, 2012](#)). Real estate market, which is relatively illiquid, limits

Table 1
Summary Statistics, 1991–2011.

Panel A: Transaction data of private domestic: 1991–2011						
Statistics	Total	Buy	Sell			
number of observations	2,077,956	1,080,275	997,682			
Statistics of trade						
average number of trades in a day	337.50	175.45	162.04			
average number of trades in a month	8446.98	4391.36	4055.62			
Statistics of duration (in seconds)						
average duration	423.23	423.42	423.06			
Panel B: Hang Seng Property Index (HSPI): 1991–2011, daily.						
Statistics	Raw	Return rate				
Mean	18145.20	0.00009				
Std.D.	6519.37	0.00824				
Min	6287.01	-0.06199				
Max	39,540	0.08983				
Panel C: Price index of private domestic (PI): 1993–2011, monthly.						
Statistics	Integral PI		Type 1 PI		Type 2 PI	
	Raw	Return rate	Raw	Return rate	Raw	Return rate
Mean	108.06	0.00335	107.32	0.00326	124.16	0.00499
Std.D.	31.02	0.02868	30.89	0.02877	40.61	0.03370
Min	58.4	-0.12595	57.9	-0.1275	67.4	-0.10660
Max	188.1	0.09299	186.8	0.09252	228.4	0.12073
Panel D: Macroeconomics Factors: 1993–2011, quarterly.						
Statistics	PI	GDP	All	STK	HIBOR	
Mean	108.54	348.39	98.27	2278.56	3.20	
Std.D.	31.50	65.23	11.89	237.60	2.27	
Min	59.3	209.71	74	1843.8	0.07	
Max	188.1	517.78	117.9	2616.5	7.13	

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