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# How does investor sentiment predict the future real estate returns of residential property in Hong Kong?<sup>☆</sup>

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## ABSTRACT

Given the high volatility of housing prices in Hong Kong and the cycles of boom and bust, the traditional finance theory may not fully explain the market behavior. We observe that there exists a strong gap on explaining the actual interaction between the fundamental economic factors and the property price levels in Hong Kong, resulting in a wrong expectation about the property price levels and trends in various cycles in the past few decades. We therefore construct a proprietary new measure of investor sentiment for the Hong Kong property market to investigate whether sentiment affects residential property prices in Hong Kong. The results confirm that sentiment is negatively related to future returns of Hong Kong residential properties, with a lagged effect from 3 to 12 months. Consistent with the theoretical prediction by previous studies that sentiment should have stronger effect on more speculative assets (i.e. “hard to value” assets), we find that sentiment has a stronger effect on the prices of smaller units in Kowloon district than on larger units in all three Hong Kong districts (Hong Kong Island, Kowloon and New Territories). This study offers important implications for the Government and policy makers to consider timely measures trying to cool down the property market whenever the investor sentiment is persistently high for some period so as to avoid significant price corrections in the future.

## 1. Introduction

The role of investor sentiment in the financial market has received more attention from academics during the last two decades, especially in the past 5 years where Robert Shiller (behavioral finance) and Richard Thaler (behavioral economics) were awarded the Nobel Prize in Economic Sciences in 2013 and 2017 respectively. The main theme of the investor sentiment studies is to determine 1) whether a level of high sentiment (optimism) in the current period leads to a low return (or vice versa) in the future, and 2) whether some asset classes are more sensitive to sentiment in terms of future returns or price changes, especially those assets that are “hard to value” (having high subjectivity on valuation) and that have “limits to arbitrage”.

The “boom and bust” in the financial markets over the last two decades has provided space for behavioral finance to explain market behavior. For example, “noise traders” or “irrational investors” in the market may cause asset prices to deviate from their fundamental values, especially in the stock market. This deviation from fundamental value may be attributable to “investor sentiment”. Nonetheless, the mispricing may not be easily corrected due to the “limits to arbitrage” and

“hard to value” assets. As a result, there is a growing trend toward using investor sentiment to explain future returns and to detect bubbles, especially in the stock market where data are abundant, and transactions are more frequent as compared to the property market.

Residential property is an important asset class that is very significant in Hong Kong's economy. As of March 2017, Hong Kong has 2.745 million permanent residential flats for a total population of 7.38 million with 2.55 million domestic households (end-2016), with 56.0% (or 1.537 million units) belonging to private sector owners and the remaining 1.208 million units being various types of public housing built by the Government (Housing in Figures 2017, Census and Statistical Dept, HKSAR). Total outstanding bank loans to the residential mortgage market amounted to HKD1,137 billion as of March 2017, and this sum was 45.7% of the total GDP (HKD2,486 billion) in 2016. Housing prices have been extremely volatile in the past 20 years, with 5 times the difference between the trough and crest (May 2003 the lowest and Oct 2017 the highest). Despite warnings by economists, property researchers, Government and related organization (like Hong Kong Monetary Authority), property prices are still in upward trends in the past 10 years since the Global Financial Crisis in 2007 and with

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significant growth. For the 2001 to 2016 period, the Centa-City Index (CCI), a representative index for all Hong Kong properties increased from 43.8 in January 2001 to 141.17 in December 2016, a 222% increase, and now has reached its historical high level. However, the median household income growth was only 33.7% for the past 15 years (2001: HKD18,705 per month; 2016: HKD25,000 per month), a huge mismatch with the housing price growth. The Demographia International Housing Affordability Survey (“DIHAS”) published its 2017 annual report using the data as of 3Q 2016 to compare housing affordability globally. Hong Kong ranks first again, with a median income multiple of 18.1 years (19.0 years in the previous year’s survey). Hong Kong has had the worst housing affordability index among all cities in the world for all seven years since it has been included in the DIHAS.

Previous studies show that residential property prices are affected by economic factors such as GDP growth, income levels, population growth, interest rates, supply and demand functions, etc. (Case & Shiller, 1990; Quigley, 1999). However, as can be seen in many regions including Hong Kong, the residential prices and price movements are not well explained by these economic factors, as there are considerable differences between “expected” rational prices and actual market transacted prices (Chan, Lee, & Woo, 2001; Wong, Hui, Seabrooke, & Raftery, 2005). The wider the gap between rational and actual prices, the larger the bubble described by academics (Shen, Hui, & Liu, 2005). The basic rationale is that the unexplained component of the property price is driven by “noise trader” activity (Barkham & Ward, 1999), and this is considered the “irrational” component of the price composition that is not related to the fundamental or rational factors. Noise traders may drive the market value of assets away from fundamental values for longer-than-expected periods. However, the investment market is growing increasingly complicated, and there may be a paradigm shift (both for the stock and the property markets) in which the original market mechanisms and fundamentals may need new explanations, or even some structural changes to the rules of the game (Cochrane, 1991). Therefore, using investor sentiment to study the future returns of residential property shall provide additional angle for us to look into this matter. Without a better understanding of the determinant components (both fundamental and irrational) of property prices, and of the effects on the future property price movement based on those components, our financial and banking system is exposed to a very high risk that may ultimately have negative effects on the Hong Kong economy as a whole. This risk has already been seen in the negative effect to the economy in June 2003, when Hong Kong reached a peak of 106,000 households with negative equity in property assets.

This paper attempts to provide a better understanding of whether investor sentiment predicts the future returns of residential property in Hong Kong. We use a behavioral finance approach to investor psychology in constructing a new sentiment index of the Hong Kong residential property market that helps us to see how investor sentiment predicts the future returns in various categories of residential properties in Hong Kong.

We limit the regression models on the property market to 1) using monthly data only; 2) using the longest period of quality dataset we can obtain for various residential estates (from 1996 to 2012); 3) using the difference in returns for different classes of residential properties to test for sensitivity to sentiment; and 4) using different lagged periods, from 3 months to 15 months, to see the effect of sentiment on future returns in residential properties. These conditions on property market models are necessary because property does not sell like stocks and cannot be bought and resold within a very short period.

This paper has the following contributions: 1) construct a new

customized investor sentiment index for the Hong Kong residential market that has a significant effect on the Hong Kong economy; 2) examine how investor sentiment affects future property prices; 3) investigate whether the effect of sentiment is greater on properties that are more speculative; and 4) alert the Government and policy makers to impose appropriate measures to cool down the property market when the index is high and persists for some period of time.

The rest of this paper is organized as follows: Section 2 provides the literature review; Section 3 develops the hypothesis and the model; Section 4 discusses the empirical studies and methodology; Section 5 conducts the discussion of the findings; and Section 6 concludes the paper with a summary of results and implications.

## 2. The research framework

### 2.1. Literature review

Classical finance theory holds that investors are rational, that asset prices are determined by fundamental factors and should be equal to “intrinsic values” and that the market is efficient (the efficient market hypothesis, or “EMH”) (Fama, 1970). According to this school of thought, there is nothing in investor psychology (or investor sentiment) that can affect asset pricing, and thus the movement of future prices. Classical theory argues that even if some investors are irrational, their demands are eliminated by arbitrageurs and therefore mispricing is corrected (De Long, Shleifer, Summers, & Waldmann, 1990).

However, the explanation based on behavioral finance has become more popular since the early 1990s, as we have seen booms and busts in asset prices in the 1980s, especially in the U.S. (Black Monday in 1987) and in Japan (bubbles in 1989). Therefore, EMH has been subject to criticism (Malkiel, 2003). De Bondt (1993, pp. 1153–1183) mentions that “a general theory of booms and busts cannot be derived from institutional explanations that depend on time and place; however, it may be based on investor psychology.” Hirshleifer (2001) also writes that “the purely rational approach is being subsumed by a broader approach based upon the psychology of investors.”

Recent studies show that investor sentiment does affect asset price movement. Brown and Cliff (2005) posit that future returns of stocks are negatively related to sentiment. Excessive optimism causes market overreaction in the short run, whereas high current sentiment is followed by low cumulative returns in the long run. Lemmon and Portniaguina (2006) conclude that consumer confidence does predict future returns of small stocks as well as stocks with low institutional ownership (i.e., hard to value and limits to arbitrage). Stambaugh, Yu, and Yu (2012) conclude that the presence of market-wide sentiment is combined with the argument that overpricing should be more prevalent than underpricing, due to short-sale impediments.

A major study using a new approach on investor sentiment by Baker and Wurgler (2006), involves constructing a new sentiment index to investigate how investor sentiment affects the future stock returns on a cross-sectional basis in the U.S. To examine their hypothesis, these authors build a composite sentiment index that is based on the variation in the six representative sentiment proxies. They conclude that investor sentiment does have significant cross-sectional effects. Baker and Wurgler (2007) further analyze whether current level of investor sentiment predicts future returns and eventually correct mispricings.

Regardless of the potential importance of investor sentiment in property markets, there are limited studies that investigate the role of investor sentiment directly in the pricing and returns generation process for this asset class. One study by Lin, Rahman, and Yung (2009) comes close to investigating investor sentiment by examining the effect

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