



## Bounded rationality, anchoring-and-adjustment sentiment, and asset pricing



Hanchao Liang<sup>a,\*</sup>, Chunpeng Yang<sup>a</sup>, Rengui Zhang<sup>b</sup>, Chuangqun Cai<sup>a</sup>

<sup>a</sup> School of Economics and Commerce, South China University of Technology, Guangzhou, China

<sup>b</sup> School of Economics, Shenzhen Polytechnic, Shenzhen, China

### ARTICLE INFO

#### Article history:

Received 11 March 2016

Received in revised form 1 February 2017

Accepted 2 February 2017

#### Keywords:

Bounded rationality

Limited attention

Anchoring and adjustment

Sentiment

Asset pricing

### ABSTRACT

This paper presents a framework that incorporates an investor's limited attention and anchoring and adjustment sentiment and their joint effects on asset pricing, with endogenous cost of neglecting part of the dividends and the asymmetric rationality levels of investors. We find that the combined effect of the two bounded rationality factors is often embodied in the "loss", and the retail investors are insensitive to market sentiment and forced to pay more cognitive loss. A higher level of investor rationality and bullish market sentiment will jointly increase demand and then prices, while the effects of different bounded rationality factors are asymmetric.

© 2017 Elsevier Inc. All rights reserved.

### 1. Introduction

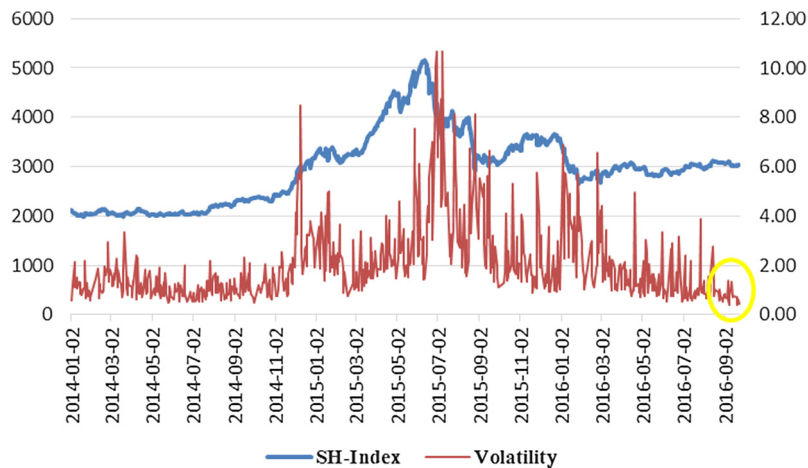
From the second half of 2014 to the end of 2015, China's A-share market index experienced a large range of fluctuations in a long period of time, from rapid rise to rapid decline. At the end of 2014, with the release of good news on the market, a large number of inexperienced retail investors crowded into the market, buying stocks directly, purchasing public funds or using other channels, and market sentiment began to rise. With the rapid rise in the market index, the overall market volatility increased. Subsequently, the rise in the index was also interpreted as good news, promoting positive market sentiment and volatility for a further increase.

Fig. 1 illustrates that, before the end of 2014, the volatility of the index stays at a low level and with a relatively flat curve, and investors are not sensitive to its rise. Then, with the rapid increase in volatility, the index increases rapidly. Recently (since September 2016, in the yellow circle in the lower right corner of the figure), index volatility significantly converged at low levels. This shows that when the volatility is lower, the stock price index reacts more sluggishly to the good news (followed by adjustment), and even placidly (followed by anchoring).

This phenomenon partly illustrates the idea of "anchoring and adjustment", two aspects of investor psychology first described by Tversky and Kahneman (1974). Their study indicates that the investor anchors on a default value and partially adjusts towards the truth. Gabaix (2014) propose a tractable way to model this idea by demonstrates the "sparse maximum" operator, which is a behavioural generalization of the traditional optimization method to capture some types of "sparsity-based" bounded rationality.

\* Corresponding author at: School of Economics and Commerce, South China University of Technology, Guangzhou 510006, China.

E-mail address: [lianghanchao@hotmail.com](mailto:lianghanchao@hotmail.com) (H. Liang).



**Fig. 1.** China stock market index and volatility. This figure shows the comparison between the trend and volatility of the Chinese A-share stock market, using data of the China Shanghai composite index and its intraday swing from Wind database. The sample period ranges from 02 January 2014 to 30 September 2016, covering a total of 668 days.

Studies such as [Sargent \(1993\)](#) and [Kahneman \(2003\)](#) provide an introduction to bounded rationality: researchers use a limited number of variables when analysing a specific reality problem ([Miller, 1956](#)). Kahneman further uses two systems, where system 1 is the intuitive, largely unconscious system, and system 2 is the analytical, conscious system that makes use of “mental operations”. This decision-making system (mixed systems 1 and 2) is not taken into account when an investor has no time to think and must rely on defaults ([Gennaioli & Shleifer, 2010](#)). [Gabaix \(2014, 2016a, 2016b\)](#) proposes models of bounded rationality that include all of the above characteristics. Empirical findings demonstrate that a bounded rationality model with cognitive limitation provides a reasonable fit to auto- and cross-covariances of the data, which are mainly driven by a high level of intrinsic persistence in output and an inflation gap in economic dynamics ([Jang & Sacht, 2016](#)).

Among the most interesting ideas in this paper about bounded rationality is that of investors’ limited attention. In “rational inattention” models, such as those of [Sims \(2003\)](#) and [Woodford \(2009\)](#), there is an exogenous cost of information processing, and the agents’ dilemma is whether to obtain any information, and if so, how much. In our model, information (volatility, etc.) serves as a cue to determine which dividends are most worthy of attention, and then, the level of attention. Other studies have also focused on a different aspect of limited attention: when the market offers a multi-dimensional dividend, investors may take only a subset of these dimensions into consideration. [Eliaz and Spiegler \(2011a, 2011b\)](#) formalize a model for agents who only consider a subset of the available information; they abstract from prices and analyse only by offering a menu with a payoff-irrelevant marketing device. In their model, agents are characterized by a preference relation and a consideration function, which, given firms’ choices, pays attention only to exogenously determined default or whether competitors also consider the information. [De Clippel, Eliaz, and Rozen \(2014\)](#) propose a model that shows that having partially attentive consumers improves consumer welfare, and customers who are less attentive are more likely to miss the best offers, but enhanced cross-market competition decreases the average price paid, as leading firms try to stay under the consumers’ radar.

Market interaction among heterogeneous investors with limited attention is, of course, more intricate than the environment we analyse. In [Gabaix and Laibson \(2006\)](#), where some agents do not observe the price of an add-on before choosing a firm, prices increase as more agents notice add-ons. [Bordalo et al. \(2013\)](#) study a duopoly model where agents consider the relative weights of their endogenously determined attributes. [Liang, Yang, and Cai \(2017\)](#) present a dynamic model that incorporates investor sentiment, bounded rationality and higher-order expectations to study how these factors affect asset pricing equilibrium. As in the [Gabaix \(2014\)](#) model’s idea of sparsity, investors often do not pay attention to all the aspects of the problem but only to those that matter most for their decision. In solving any problem, they proceed in two steps. In the first step, they choose which aspects of the problem will be worthwhile to consider by minimizing the losses from possible non-optimal decisions but also considering the costs of thinking. This cost-benefit analysis allows them to choose an optimal level of attention for the problem that they may face in the future, treating it at this stage as a problem whose parameters are random variables. At the second stage, the optimal level of attention is chosen, the values of the parameters are realized and the problem can be solved. Because the level of attention is never full (because of cost), the solution is also not optimal.

In this work, we consider a partially attentive (to dividends) and biased cognitive (to market sentiment) investor, who is the driving force of our results. While Chapter 3 in this paper gives the chosen optimal level of attention and sentiment, stage one; subsequent chapters apply these to asset pricing, stage two.

The second point of bounded rationality in this paper is the market (or investor) sentiment. Previous studies propose that sentimental investors produce a biased valuation of the asset, or stock excess returns are affected by sentiment ([Baker, Wurgler, & Yuan, 2012](#); [Brown & Cliff, 2004, 2005](#); [Cen, Lu, & Yang, 2013](#); [Kumar & Lee, 2006](#); [Lee, Jiang, & Indro, 2002](#);

Download English Version:

<https://daneshyari.com/en/article/5102237>

Download Persian Version:

<https://daneshyari.com/article/5102237>

[Daneshyari.com](https://daneshyari.com)