Full length article

Properties of expectation biases: Optimism and overconfidence

CrossMark

Yusuke Kinari *

College of Business, Stony Brook University, Harriman Hall, Stony Brook, NY, 11794-3775, USA
Department of Economics, Kyushu University, 6-19-1, Hakozaki, Higashi-ku, Fukuoka, 812-8581, Japan

A R T I C L E   I N F O

A B S T R A C T

This study examines the properties of expectation biases using 14 sets of panel surveys that required participants to forecast the NIKKEI 225 over three forecasting horizons: one-day, one-week, and one-month. Constructing proxies for optimism and overconfidence as the expectation biases, this study shows that participants, on average, had pessimistic beliefs for the one-day and optimistic beliefs for one-week and one-month horizons, while they had overconfident beliefs for all three horizons. It also shows that participants tended to become more optimistic and overconfident at longer horizons. Moreover, the degree of optimism or pessimism varied considerably across samples taken at different times, while overconfidence remained stable. Furthermore, this study finds a negative correlation between optimism and the return on the NIKKEI 225, demonstrating that participants became optimistic when the NIKKEI 225 decreased. A negative correlation would be expected if people formed expectations following a random walk; however, this study rejects this hypothesis.

1. Introduction

Many recent studies depart from a long-maintained assumption that people have rational expectations and instead focus on expectation biases such as overconfidence (or underconfidence) and optimism (or pessimism), which are deviations from the notion of rationality behind expectation formation. Some empirical studies have investigated whether or not people have expectation biases (Clark and Friesen, 2009; Giordani and Söderlind, 2006; Mansour et al., 2006), while others have examined the effect of expectation biases on specific economic behaviors

(Kinari and Tsutsui, 2009; Mizutani et al., 2009; Niederle and Vesturlund, 2007; Barber and Odean, 2001; Camerer and Lovallo, 1999). In addition, there are many theoretical works on expectation biases (Jouini and Napp, 2006; Abel, 2002; Delong et al., 1990). Although these studies have mainly focused on the negative aspects of expectation biases, some studies discuss positive aspects (Anderson and Brion, 2010; Galasso and Simcoe, 2010; Hirshleifer et al., 2010).

While the number of studies on expectation biases has increased, little has been written about the properties of expectation biases.[1] For example, it is unclear whether the

---

* Correspondence to: Department of Economics, Kyushu University, 6-19-1, Hakozaki, Higashi-ku, Fukuoka, 812-8581, Japan.
E-mail address: kinari@econ.kyushu-u.ac.jp.

---

[1] Shiller et al. (1996) examined expectation data from 1989 to 1994 in the United States and Japan to identify the cause of the crash in the NIKKEI 225, and demonstrate that expectations themselves change over time.

degree of expectation bias changes over time. It is important to understand the properties of expectation biases over time, particularly for theoretical studies that attempt to model and explain various economic phenomena by incorporating departures from rational expectations. For example, Abel (2002) demonstrated that two expectation biases – pessimism and underconfidence – might solve the equity premium puzzle proposed by Mehra and Prescott (1985). The equity premium puzzle has been observed in many countries and the degree of equity premium has been found to change over time. If expectation biases actually cause the equity premium puzzle, the degree of expectation bias would also need to change over time. On the other hand, if expectation biases do not change over time, then the theory might require some modifications.

Delong et al. (1990), the most pioneering research in this field, modeled noise traders' misperception of the expected price of the risky asset and its variance, but little is known about the features of the misperception, such as the degree and the direction of expectation biases. Any information on the properties of expectation biases would be helpful to model traders' misperceptions and to improve the theory. Thus, given the crucial role played by expectation in economic theories and the impact of expectation biases on the theories, further research focusing on the properties of expectation biases is needed.

The purpose of this study is to explore the properties of expectation biases using 14 sets of weekly panel surveys, which asked participants to forecast the Nikkei 225 over three forecasting horizons: one day, one week, and one month ahead. Focusing on two kinds of expectation biases, optimism (or pessimism) and overconfidence (or underconfidence), this study investigates the degrees and the directions of optimism and overconfidence. In addition, it examines how the degrees and directions change over time as well as over forecasting horizons.

The survey was conducted at four universities and the participants were all students. They were required to provide both their point forecasts and probability distribution forecasts. This paper defines optimism and overconfidence following Giordani and Söderlind (2006), which constructed proxies for optimism and overconfidence from the point forecasts and the probability distribution forecasts, respectively.

Giordani and Söderlind (2006), the study most relevant to this paper, examined forecasts of GDP and consumption growth one to four quarters ahead by US professional forecasters using the Survey of Professional Forecasters (from 1982 to 2003) and Livingston Survey (from 1972 to 2003), and showed evidence of pessimistic and overconfident beliefs. Furthermore, they found that the degree of pessimism became larger as the forecasting horizon became longer. In contrast to Giordani and Söderlind (2006), this paper deals with expectation biases on stock price forecasts with

shorter horizons, at most one month ahead.[2] Research on stock price forecasts and their expectation biases connects more directly with theories of financial assets such as Delong et al. (1990). In addition, not only long-term expectation but also short-term expectation becomes a concern when considering financial markets.

The results of this study show that the participants, on average, had pessimistic beliefs for one-day and optimistic beliefs for one-week and one-month forecasting horizons, while they had overconfident beliefs for all three forecasting horizons. The results also show that participants tended to become more optimistic and overconfident as forecasting horizons became longer. In addition, the direction and the degree of the optimism varied considerably over time, whereas those of the overconfidence measure remained stable over time. Further analysis of this study found a significantly negative correlation between optimism and the return on the NIKKEI 225 during the survey period, demonstrating that participants became optimistic (pessimistic) when the NIKKEI 225 went down (up). The same tendency was found in Giordani and Söderlind (2006) and Shiller et al. (1996), although they did not focus on this point.

There are at least two possible explanations for the negative correlation between optimism and the return during the survey period. One is that people form their expectations following a random walk. According to the efficient market hypothesis, stock prices follow a random walk and the best forecast of the future price is the present price. This makes expectations pessimistic (optimistic) when the price goes up (down) ex post. This study, however, rejects the random walk explanation. Expectations significantly deviated from the most recent price at the time that participants made their forecasts. The other possible explanation is that expectations take on status quo bias, meaning that people prefer the status quo to changes. If people were affected by status quo bias, they would not expect drastic changes when forecasting future stock prices. Although this study does not examine this explanation explicitly, the negative correlation between optimism and the return on the NIKKEI 225 during the survey period might suggest that people have status quo bias. In fact, the stability of overconfidence, which is one of the findings of this study, supports this explanation, in that it also causes forecasts not to deviate from the present price.

The survey used in this paper has at least two limitations. First, it did not give the participants a monetary reward depending on their response, so that they did not have an incentive to state their true forecasts. Clark and Friesen (2009), however, found that incentives did not improve forecasts, suggesting that the lack of incentives may not be a severe problem. Second, the respondents were all students who, at the least, are less informed about

---

Beshears et al. (2013) conducted an experiment that required subjects to forecast future values of generated time series to investigate whether the subjects can detect a process of short-run momentum and long-run mean reversion. However, they did not explicitly investigate expectation biases and their features.

---

[2] Ito (1990) investigated expectation data on foreign exchange rates from 1985 to 1987 in Japan to test the rational expectation hypothesis, and reported that the forecasts with long horizons showed less yen appreciation than those with short horizons. However, the paper did not explicitly examine the relationship between expectation biases and forecasting horizons.