Economics Letters 118 (2013) 526–530

Contents lists available at SciVerse ScienceDirect

Economics Letters

journal homepage: www.elsevier.com/locate/ecolet

Financial markets forecasts revisited: Are they *rational*, *stubborn* or *jumpy*?

Ippei Fujiwara [a,*], Hibiki Ichiue [b], Yoshiyuki Nakazono [c], Yosuke Shigemi [b]

[a] *Australian National University, Australia*
[b] *Bank of Japan, Japan*
[c] *Waseda University, Japan*

ARTICLE INFO

Article history:
Received 17 January 2012
Received in revised form
19 December 2012
Accepted 22 December 2012
Available online 11 January 2013

JEL classification:
D03
G17

Keywords:
Anchoring
Forecast revisions
Over-reaction
Under-reaction
Survey forecasts

ABSTRACT

This paper evaluates professional forecasters' behavior using a panel data of individual forecasts. We find that (i) professional forecasts are *behavioral*, and (ii) there exists a *stock–bond dissonance*: the forecasting behavior seems to be *stubborn* in the stock market, but *jumpy* in the bond market. Even in the same country, forecasting behavior is quite different by market.

1. Introduction

In this paper, we test whether professional forecasters forecast *rationally* or *behaviorally* using a unique database, the *QSS database*. This survey includes forecasts on both stock prices and bond yields for various time horizons. The history of forecasts made by a particular individual forecaster can be also tracked.

Testing the rationality of decision-making, including forecasting, is not a new subject. There has been a vast and growing number of studies from both theoretical and empirical perspectives. The seminal study by Tversky and Kahneman (1974) shows the possibility that the decision-making is not perfectly rational but rather *heuristic*. Decision makers tend to use a simple rule such as *anchoring*, where the decision is based on some *uninformative* targets.[1] In particular, Tversky and Kahneman (1974) report that answers to such a simple but unfamiliar question as "How many countries in Africa are members of the United Nations?" can be heavily influenced by the number suggested by the *Wheel of Fortune*. Kahneman and Knetsch (1993), Wansink et al. (1998), and Beggs and Graddy (2009) also show similar results on different economic activities.

Many studies examine irrational behavior in the financial markets, particularly forecasting behavior taken by analysts or professional forecasters. De Bondt and Forbes (1999) define *excessive agreement* among analyst predictions, that is, a surprising degree of consensus relative to the predictability of corporate earning. Ehrbeck and Waldmann (1996) raise the possibility of *rational cheating*, a tendency to mimic able forecasters.[2] Cooper et al. (2001) empirically support this rational cheating using analysts' performances, and Grinblatt et al. (1995), Graham (1999), and Welch (2000) also report similar results for mutual fund managers. Park and Sabourian (2011) investigate the relationship between herding and contrarian behavior.[3] Ashiya (2009) inquires into strategic motives of macroeconomic forecasters and the effect of their professional affiliations. Ichiue and Yuyama (2009) find

* Correspondence to: Crawford School of Public Policy, Australian National University, Canberra, ACT 0200, Australia. Tel.: +61 2 6125 4763.
E-mail address: ippei.fujiwara@anu.edu.au (I. Fujiwara).

1 For developments in studies on anchoring, see Chapman and Johnson (2002).

2 Ehrbeck and Waldmann (1996) develop a model in which less-able professional forecasters rationally choose to change their forecasts by smaller amounts than the changes in their beliefs, if able forecasters do not have to change their forecasts by large amounts since their forecasts are relatively accurate. This mimicking strategy by less-able forecasters contributes to concealing their inferior skills and to keeping the relationship with their clients, the users of their forecasts.

3 Park and Sabourian (2011) define contrarian behavior as acting against the crowd.

0165-1765/$ – see front matter © 2013 Elsevier B.V. All rights reserved.
doi:10.1016/j.econlet.2012.12.037

irrationality of professional forecasts for the Fed Funds futures market.

Previous studies also report behavioral biases in terms of sensitivity of forecasts to new information. For example, Abarbanell and Bernard (1992) show that security analysts under-react to earnings information. Amir and Ganzach (1998) use the Institutional Brokers Estimate System (IBES) database and find that analysts' earnings forecasts over-react when the forecast revisions are positive and under-react when the forecast revisions are negative. Using the forecasts on the GDP in Japan, Ashiya (2003) reports that forecasters tend to over-react to new information.

We revisit biases of forecasting behavior with a new, unique database. The estimation results show that (i) professional forecasts are behavioral, namely, significantly influenced by past forecasts, (ii) there exists a *stock–bond dissonance*: while forecasting behavior in the stock market seems to be *stubborn* in the sense that forecasts stick to previous forecasts or under-react to new information, forecasting behavior in the bond market seems to be *jumpy* in the sense that forecasts tend to be negatively related to past forecasts or over-react to unexpected information, and (iii) the dissonance is due, at least partially, to the individual forecasters' behavior, which is influenced by their own past forecasts rather than others'. We also show that forecasting behavior in the Japanese financial markets has little to do with individual experiences as professional forecasters. This finding is contrary to the previous studies such as Hong et al. (2000) and Lamont (2002), but is consistent with the results in Ashiya and Doi (2001).

These are new results, and they imply a complex forecasting behavior in Japanese financial markets. Even in the same country, forecasting behavior is quite different by market. This suggests that the nature of professionals in the stock market is fundamentally different from that in the bond market. This might be caused by the fact that many respondents do not report for both stock and bond markets, and that the composition of the stock market forecasters is different from that of the bond market forecasters. Findings reported by Ashiya (2009) and Nakazono (2012) seem to be related here. They report that forecasting behavior can be quite different by professional affiliation.

The remainder of this paper is structured as follows. Section 2 shows the details of the data used in this paper and estimation strategy. Then, we report estimation results in Section 3. Finally, Section 4 concludes.

2. Estimation

2.1. The QSS data

The QSS conducts monthly paper-based surveys of forecasts made by professional forecasters as well as their attitudes in the Japanese financial markets. This survey includes forecasts on both stock prices and bond yields for various time horizons. We use forecasts on the stock prices (TOPIX) and newly issued JGB yields (5-year, 10-year and 20-year maturities) for the one-, three-, and six-month horizons. Each respondent is asked to answer a point forecast for each horizon. Surveys are collected from securities firms, asset managements, investment advisers, banks, trust banks, life insurances, general insurances, and pension funds. On average, we have approximately 150 forecasts each month. We can also track the history of forecasts made by a particular individual forecaster.

The QSS launched surveys of TOPIX in June 2000. For bond yields, surveys of 20-year bonds started in April 2003, those of 10-year bonds in July 1998, and those of 5-year bond sin May 2001. In this paper, we use data up to November 2010.

2.2. Estimation strategy

Do professional forecasters determine their own forecasts rationally or behaviorally relying on past forecasts? We first evaluate this question only using macro aggregated data. We then test how individual forecasts are influenced by forecasters' own past forecasts or publicly available past mean forecasts.

In this paper, $S_{t\to t+n}$ denotes a survey forecast conducted in period t of the stock price or bond yields in period $t+n$, and K_{t+n} denotes the *ex post* realized value in period $t+n$. Since we have a panel data set, we have two definitions of survey forecasts. The first is what we call the aggregate mean forecast $\bar{S}$ and the second is the individual forecast $\tilde{S}$. $\mathbb{E}_t$ denotes the expectation operator under rational expectations.

Following Ichiue and Yuyama (2009), we consider a partial adjustment model of survey forecasts:

$$S_{t\to t+n} = \rho S_{t-k\to t+n} + (1-\rho)\mathbb{E}_t K_{t+n}, \tag{1}$$

where ρ measures the degree of the inertia in survey forecasts. Naturally, if $\rho = 0$, the current survey forecasts $S_{t\to t+n}$ are equal to the rational expectations conditional on the information available in period t, namely $\mathbb{E}_t K_{t+n}$. $\rho \neq 0$ implies that current survey forecasts are influenced by previous surveys. By using the definition of the forecast error, Eq. (1) can be transformed into

$$K_{t+n} - S_{t\to t+n} = \beta(S_{t\to t+n} - S_{t-k\to t+n}) + \eta_{t\to t+n}, \tag{2}$$

where

$$\beta = \frac{\rho}{1-\rho},$$

and

$$\eta_{t\to t+n} = K_{t+n} - \mathbb{E}_t K_{t+n}.$$

$\eta_{t\to t+n}$ denotes the forecast error, which is not predictable from information known in period t under rational expectations. As a result, we can test a null hypothesis of $\beta = 0$, which implies rational forecasts, by estimating Eq. (2).[4] When $\beta \neq 0$, forecasts are behavioral. Especially when $\beta > 0$, forecasts are pulled by past forecasts and therefore are considered stubborn. When $\beta < 0$, the current forecast tends to be revised more widely than the changes in the rational expectations, and toward opposite directions from past forecasts. Such a forecast is considered jumpy.

When testing the rationality of forecasts, we examine three cases depending on the definition of survey forecasts. Case A: aggregate mean forecasts on aggregate past mean forecasts, namely $\bar{S}$ on $\bar{S}$; Case B: individual forecasts on aggregate past mean forecasts, namely $\tilde{S}$ on $\bar{S}$; Case C: individual forecasts on individual past forecasts, namely $\tilde{S}$ on $\tilde{S}$. Regarding the combinations of (n, k), we examine three cases: $(n, k) = (1, 2)$, $(3, 3)$, or $(1, 5)$.

We also evaluate the differences by professional experience for Case B and Case C. We divide the forecasts into three categories: (1) all, (2) more than 1 year of experience, and (3) more than 2 years of experience. Since the mean for each category (1), (2), and (3) is not publicly available, we always use $\bar{S}$ as reference forecasts.[5]

4 Note that a constant term is not included in the regression, since the forecast errors of market expectations $\eta_{t\to t+n}$ should be unbiased at least *ex ante*, according to Nordhaus (1987). Thus, if the estimated forecast errors are biased, we interpret the biases as a sample artifact. We will discuss this issue subsequently.

5 Average months of experience are 20.18 for TOPIX, 18.71 for 20-year bonds, 17.44 for 10-year bonds, and 18.78 for 5-year bonds.