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Informational overconfidence in return prediction – More properties ☆

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ABSTRACT

A field experiment revealed 3 forms of unrealistic optimism in skilled investors' interval predictions of future stock returns. The judgmental intervals were about 50% shorter than realized spreads in recent 3–6 months histories, suggesting that "underestimation of volatility" persists past the financial crisis. The intervals, however, rapidly widened as predictions diverged from zero, and a complementary technical-forecasting experiment showed that the increased spread pattern emerges even when volatility is accounted. The results support "anchoring with noisy monotone adjustments" and suggest that overconfidence hazards may instinctively attenuate when expectations get extreme.

1. Introduction

The irrational belief in precision of private assessments is considered a primary flaw of individual judgment (Lichtenstein, Fischhoff, & Phillips, 1982). When decision makers provide 80–90% confidence intervals for unfamiliar quantities, in particular, the actual hit rate is frequently lower than 50% (e.g., Biais, Hilton, Mazurier, & Pouget, 2005; McKenzie, Liersch, & Yaniv, 2008; Soll & Klayman, 2004).[1] Recent studies demonstrate that irrationally narrow intervals also emerge in expert financial prediction (for a range of examples see Ben-David, Graham, & Harvey, 2010; Deaves, Lüder, & Schröder, 2010; Glaser & Weber, 2007; Oberlechner & Osler, 2011). The overconfidence in subjective beliefs has drawn substantial interest in finance

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[1] Throughout the paper we use "hit rate" or "calibration rate" to denote the proportion of cases where the hidden quantities fall within the respective intervals (e.g., Soll & Klayman, 2004).

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research. Theoretical models show that informational overconfidence may boost trading volumes, affect prices in competitive markets, and influence profitability (see Subrahmanyam, 2008 for specific references). Experiments confirm that calibration-based overconfidence (henceforth: CBO) positively correlates with individual propensity to trade (Deaves, Lüder, & Guo, 2009), while adversely affecting performance in experimental asset markets (Biais et al., 2005; Kirchler & Maciejovsky, 2002).[2]

In experiment I we employed the field-based experimental approach (Harrison & List, 2004) to explore the predictions of competent Tel-Aviv stock exchange investors for the highly volatile, past crisis market of 2010–2011. The prediction assignments were framed as incentivized professional consultation tasks and participants were requested to provide 95% confidence limits for the return that familiar stocks would show in the 3-months following consultation. The target stocks were randomly drawn for each participant to test predictions on a broad collection of leading stocks, and questionnaires were distributed by email, explaining that the 3-months countdown would start at the date where the completed form is returned. The 93 preregistered participants (mean age 33; 54% MBAs; 40% reporting investment-industry experience) could thus deliberate their predictions freely, and even time their exact 3-months test period. While we hypothesized that the ambiguous economic conditions would push calibration rates close to the 90% rational benchmark, the results revealed that field players still administer drastically unrealistic expectations. The eventual hit rate (across 930 intervals) was only 27.5% and the median was even lower at 20%. Realized return fell beneath the 5% low confidence limit in almost 60% of the cases, revealing a particularly strong form of unrealistic optimism (Weinstein, 1980) in short-run stock return forecasting. Using the stock-specific historical return series for each date of participation, we moreover demonstrate that calibration rates could double or triple if the participants were adapting to realized fluctuations in very recent 3–6 months histories. With all these respects, the data suggests that the financial crisis and strong subsequent uncertainty did not alleviate the fundamental tendency for informational overconfidence.

In addition, we exploit the large sample of semi-professional predictions, for closer look into the exact patterns of informational overconfidence in finance-related prediction. While theoretical finance papers are able to gain much insight assuming that overconfident traders constantly underestimate volatility (e.g., Daniel, Hirshleifer, & Subrahmanyam, 1998), we more closely hypothesized that confidence may naturally decrease with the extremity of predictions. The prediction intervals centered at 10%, for specific example, should be longer than the intervals with midpoint at 5%, conveying lower level of subjective confidence.[3] A similar pattern is intuitively expected on the negative side, with the forecast intervals increasing in length as the midpoint turns more negative. The field-based prediction data strongly supported the conjectured pattern. A median split, for example, revealed that the relatively extreme predictions were 50% longer than the less extreme forecasts (mean interval lengths of 18% vs. 12% respectively). The increase in length with absolute predictions reflects in the predictions for specific stocks, shows in regressions controlling for other determinants of predictions, and it is even confirmed in individual-level comparisons. We propose 2 formal explanations for the increased length pattern, beyond the intuitive appeal. The first follows from the observation that economic return processes are frequently heteroskedastic with the conditional variance increasing in recent squared or absolute realizations (cf. the GARCH formulation of Bollerslev, 1986). If the noise in return processes increases with the magnitude of returns, judgmental confidence may diminish in parallel, and confidence lengths would increase as the intervals diverge from zero for "statistical reasons". Alternatively, the increased length pattern could nicely fit Tversky and Kahneman's (1974) Anchoring and Adjustment Theory (AAT). Decision makers that comply with AAT derive their best estimate of the target quantity first, and adjust the anchor upwards and downwards to obtain the confidence bounds. As adjustments from the anchor are insufficient, the emerging intervals are generally too tight. If the adjustments, however, increase with the absolute value of the anchor, then the increased length pattern may follow from "technical reasons" beyond the statistical explanation.

To further explore the statistical and technical motives we devised a short in-class technical forecasting experiment, where finance students predicted the monthly return on anonymous stocks from only few statistics regarding performance in 12 preceding months. The return series for each prediction assignment were drawn from historical S&P500 records, but the identity of underlying stocks and exact dates of inspection were concealed to control the information that subjects may access (Sonsino & Shavit, in press). By including the standard deviation of monthly returns as one of only 6 statistics that subjects observe regarding each unidentified series, we control the perceived volatility of return in month 13, the target of prediction. The results of the secondary experiment confirmed that both statistical and technical motives play significant role in the automatic increase in spread with absolute predictions. The confidence intervals that subjects delivered significantly widened with historical volatility (in line with the statistical explanation), while positive significant correlation between absolute point predictions and interval lengths still emerged when volatility was accounted (in line with the technical explanation), but only for highly volatile series. At the appendix we demonstrate that an AAT model where adjustments are subjected to constant noise while marginally increasing with the absolute value of the anchor and also increasing with the perceived volatility of the target, nicely captures the experimental results.

The increased spread pattern documented in our two experiments may hold interesting practical and theoretical implications. Primarily, the pattern suggests that the hazards associated with informational overconfidence may instinctively

[2] Glaser and Weber (2007) reject CBO showing that other facets of overconfidence (better-than-average scores) significantly correlate with trading frequencies.

[3] To encourage independent deliberation of the confidence limits and decrease experimental load, we did not elicit point predictions in experiment I. Extremity is therefore measured by the midpoint distance from zero.