Simple Forecasts and Paradigm Shifts

Harrison Hong and Jeremy Stein

Discussed by

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The Big Picture

- Another intriguing paper by Hong and Stein
- Always interesting questions!
- Behavioral finance: An engine of growth

Summary

- Simple forecasts: Multivariate true model, but update univariate models
- Paradigm shifts: If a simple model does poorly, choose another
- Results: Momentum, value, and stochastic volatility and skewness

Details

- Infinite horizon, a single asset, dividend: $D_t = A_t + B_t + \epsilon_t$
- Sources of public information: $A_t = \rho A_{t-1} + a_t; B_t = \rho B_{t-1} + b_t$
- ***Constant discount rate,*** r
- Rational benchmark valuation: $V_t^R = \frac{1}{1+r-\rho}(A_{t+1} + B_{t+1})$
- No learning — investors always use only one simple model
  - Positive return autocorrelations — momentum
  - Negative price-return correlation — value

- Learning — investors think either model A or B, but never the right model

- Bayesian updating between two wrong models A and B

  - Learning magnifies the value/growth effect

  - The growth-stock underperformance clusters after negative earnings surprises; the value-stock outperformance clusters after positive earnings surprises

  - More volatile returns around paradigm shifts; more negatively skewed growth-stock returns than value-stock returns

- Simple assumptions, rich predictions

Punchline

- The assumption of a constant discount rate seems a bit too strong

Outline

- The importance of constant-discount-rate in the model
- Unrealistic model structure underlying constant-discount-rate
- Internal consistency
- How I would formulate the model

Role

- What does the constant-discount-rate assumption buy the authors?
- Enables all the calculations based on dividend-capitalization multiples
- Attributes stock return predictability to systematic mispricing ***only***.

$$\underbrace{r_{t+1}}_{\textbf{Realized return}} = \overbrace{\mathrm{E}_t[r_{t+1}]}^{\textbf{Expected return}} + \underbrace{\varepsilon_{t+1}}_{\textbf{Abnormal return}}$$

Realism

- What model structures imply a constant discount rate?

- ***Very*** restrictive structures on the pricing kernel, m_{t+1}:

$$\mathrm{E}_t[m_{t+1}r_{t+1}] = 1 \qquad \Rightarrow \qquad \mathrm{E}_t[r_{t+1}] = \frac{1}{\mathrm{E}_t[m_{t+1}]} - \frac{\mathrm{Cov}_t[m_{t+1}, r_{t+1}]}{\mathrm{E}_t[m_{t+1}]}$$

  Constant m_{t+1} or constant $\frac{1}{\mathrm{E}_t[m_{t+1}]}$ and zero correlation between m_{t+1} and r_{t+1}

- Time-varying expected return seems more natural

Consistency

- Is the Hong-Stein model internally consistent?
- Doubtful
- Start with a constant discount rate. Then get "predictable variation in the expected returns to value and glamor stocks" (p. 25).
- Assumptions and results are incompatible
- The analyzed scenario is very special — why don't investors take time-varying expected returns into account?

Alternative

- Brandt, Zeng, and Zhang (2004): A fully-specified learning model
- Dividend growth: A Markov-switching process with a hidden state
- Investors update beliefs, π_t, using Bayesian learning and irrational learning
- Optimality conditions:

$$\frac{P}{D}(\pi_t, \triangle d_t) = \beta \mathrm{E}_t \left[\left(\frac{D_{t+1}}{D_t} \right)^{1-1/\psi} \frac{P}{D}(\pi_{t+1}, \triangle d_{t+1}) \right]$$

- Determine expected returns endogenously

- Bayesian learning can generate short-term positive autocorrelation, long-term negative autocorrelation, and predictability with valuation ratios

- See also Lewellen and Shanken (2002) and Brav and Heaton (2002)

Question

- The Hong-Stein results are very intriguing

- But how robust are these results to the constant-discount-rate assumption?

The Future

- I believe behavioral biases are potentially important for anomalies
- But so are time-varying expected returns: Berk, Green, and Naik (1999); Gomes, Kogan, and Zhang (2003); Berk and Green (2004); Carlson, Fisher, and Giammarino (2004a, b); Kogan (2004); and Zhang (2004a, b)
- No reason why behavioral biases cannot be analyzed in traditional framework
- An integrated framework?

  Essential to establish the relative importance of irrationality