

Learning from the Loudest:  
Do the Most Active Information Providers Sway Investors'  
Equity Premium Expectations?

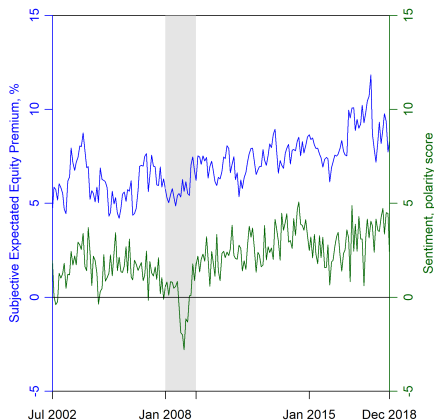
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# Stylized Fact: Average Beliefs Reveal a Particular Information Aggregation

**Figure.** Average Subjective Expected Equity Premium & Sentiment of 500+ Information Providers Weighted by *Reporting Activity*



Public information is abundant - yet beliefs respond only to specific ways it is aggregated.

- Beliefs about expected stock market returns vary substantially over time
- Public information is supplied by many providers with heterogeneous activity

**Missing piece:** How public information is aggregated before entering beliefs.

### **Belief formation and subjective expectations**

- Greenwood & Shleifer (2014): survey expectations and expected returns
- Malmendier & Nagel (2011): belief formation from personal experiences
- Nagel & Xu (2019): beliefs about return predictability

Prior work studies beliefs and relevant signals; this paper studies how public information is aggregated before entering beliefs.

- Investors observe many publicly available equity research reports:

$$I_t = \{ \dots, s_{j-1,t}, s_{j,t}, s_{j+1,t}, \dots \}$$

- Beliefs about returns are formed as conditional expectations given the information investors attend to:

$$\tilde{r}_t \equiv \tilde{E}_t[r_{t+1} | I_t] = \alpha + \beta s_t,$$

- The belief-relevant sentiment aggregate is:

$$s_t = \sum_{j=1}^n w_j s_{j,t}, \quad \sum_{j=1}^n w_j = 1.$$

- Empirical question:** which aggregation of public information is revealed by observed beliefs?

- Investors face attention and processing constraints
- Repeated signals receive greater cognitive weight
- Reporting activity acts as implicit confirmation under attention constraints

Beliefs reflect the distribution of *reported* information, not underlying fundamentals.

## Two events:

- One positive (+1), one negative (-1)

## Without information intermediaries:

$$\mathbb{E}[s] = \frac{(+1) + (-1)}{2} = 0$$

## With asymmetric reporting:

$$\mathbb{E}[s] = \frac{(+1) \cdot 3 + (-1) \cdot 1}{4} = 0.5$$

Beliefs are distorted even when underlying fundamentals are symmetric.

## **Subjective expectations (2002–2019)**

- Michigan Survey of Consumers
- Conference Board Consumer Confidence Survey

## **Information supply (2002–2019)**

- ~1 million equity research reports (InvesText)
- 500+ information providers (InvesText)

Estimate joint dynamics of beliefs and aggregate sentiment using VECM:

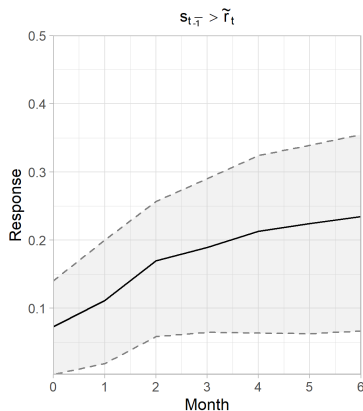
$$\Delta \begin{pmatrix} s_t \\ \tilde{r}_t \end{pmatrix} = \Gamma \Delta \begin{pmatrix} s_{t-1} \\ \tilde{r}_{t-1} \end{pmatrix} + \alpha(s_{t-1} + \beta \tilde{r}_{t-1}) + \varepsilon_t$$

Identification via timing:

$$s_{t-1} \rightarrow \tilde{r}_t$$

# Main Result: Belief Formation

**Figure.** Orthogonal Response of Subjective Expected Excess Market Return,  $\tilde{r}_t$ , to Reporting Activity-Weighted Sentiment,  $s_{t-1}$ , Shock



Shocks to activity-weighted sentiment generate persistent belief responses.

- Belief response peaks within 2–3 months
- Does not revert
- Accounts for  $\approx 15\%$  of belief variation

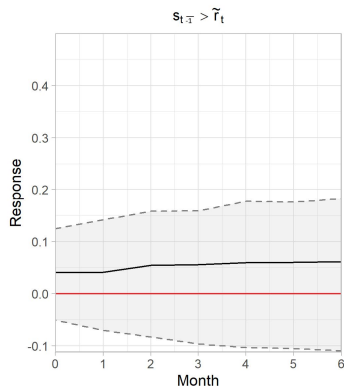
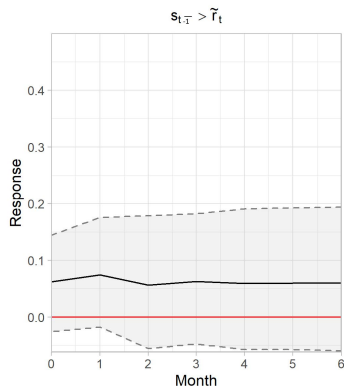
Persistent belief updating, not short-lived attention.

# Alternative Aggregations

**Figure.** Orthogonal Response of Subjective Expected Excess Market Return,  $\tilde{r}_t$ , to Aggregate Sentiment,  $s_{t-1}$ , Shock

(a) Equally-weighted Aggregate Sentiment

(b) Company cap-weighted Aggregate Sentiment

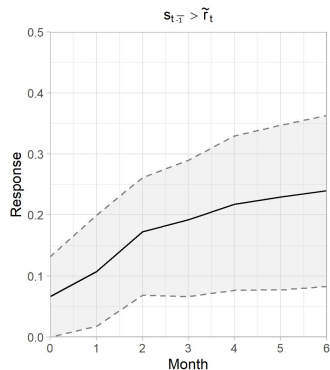


No belief response under equal- and company capitalization-weighted aggregation

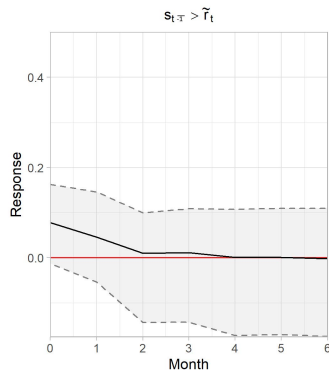
# Mechanism: Beliefs Are Driven by the Loudest Providers

**Figure.** Orthogonal Response of Subjective Expected Excess Market Return,  $\tilde{r}_t$ , to Reporting Activity-weighted Sentiment

(a) Sentiment of More Active Providers,  $s_{t-1}^{w,5}$



(b) Sentiment of Less Active Providers,  $s_{t-1}^{w,1-4}$



Belief responses are concentrated among the most active providers.

## Belief-based implication:

- Investors overweight information from highly active (“loud”) providers
- Prices should therefore reflect loud-provider information quickly
- Public information from less active (“quiet”) providers is underweighted

## Key distinction:

- **Predictive regressions** mix priced (loud) and unpriced (quiet) information
- **Targeted trading strategies** isolate information ignored by belief formation

Market inefficiency arises because public information from quiet providers is underweighted in beliefs and not fully incorporated into prices.

## Test implied by belief distortion:

- Form long–short portfolios based on provider sentiment signals
- Compare strategies using information from:
  - highly active (loud) providers
  - less active (quiet) providers
- Portfolios are value-weighted and rebalanced monthly

## Results:

Strategy	Mean Return	St. Dev.	Sharpe Ratio
Market benchmark	0.28	0.49	0.31
Active-provider sentiment	0.16	0.46	0.08
Quiet-provider sentiment	0.30	0.36	0.50

Information ignored in belief formation earns high returns.

- Belief distortions originate on the supply side of information
- Quiet providers are ignored in belief formation
- Mispricing arises where beliefs fail to adjust

- 1 Belief formation depends on the structure of information supply
- 2 Reporting intensity distorts learning about fundamentals
- 3 Ignored information generates high returns