Online Appendix

A Mind is a Terrible Thing to Change: Confirmatory Bias in Financial Markets

This online appendix provides extensions of the model presented in the paper. Our baseline model includes three signals and four dates, and assumes that biased traders tend to ignore signals that are inconsistent with their priors. In order to show the robustness of our theoretical results, we study separately the following three variants:

- A continuous signal version of our model.
- An infinite-horizon version of our model.
- A two-signal version of our model in which biased traders, as in Rabin and Shrag (1999), might change the valence of - and not simply ignore - signals that are inconsistent with their priors.

This online appendix also offers additional tests for our predictions and robustness checks for our empirical analysis. In particular, we consider the following variants for the main specifications:

- We hypothesize that earnings news announced in the midst of macroeconomic volatility are more likely to admit different interpretations of the news. We thus expect our prediction that *traders are less likely to update their beliefs in the same direction as the latest SUE for SUEs that are of a different sign compared to the previous ones* to be stronger for earnings announced in the midst of macroeconomic volatility. To examine whether this hypothesis holds in the data, we augment Equations (1.1) and (1.2) by

interacting the variables SUE SIGN CHANGE(Q-1,Q-2) and SUE SIGN CHANGE(Q-1,Q-2,Q-3) with a dummy, MACROVOL(HIGH), that equals one if macroeconomic volatility in quarter $Q-1$ lies in the highest tercile of its empirical distribution. We also include MACROVOL(HIGH) as additional control variable. Following Bloom (2009), we define macroeconomic volatility as the Chicago Board of Options Exchange VXO index of percentage implied volatility, on a hypothetical at the money S&P100 option 30 days to expiration, from 1986 onward; and over the Pre-1986 period for which the VXO index is unavailable, as the monthly standard deviation of the daily S&P500 index normalized to the same mean and variance as the VXO index when they overlap from 1986 onward. Tables (A.1) to (A.2) present the results.

- Including control variables with or without logs: Tables (A.3) to (A.7).
- Constructing the dependent variables using analysts' forecasts made between the end date of each fiscal quarters (instead of using announcement dates of quarterly earnings): Tables (A.8) to (A.10).
- Constructing analysts' revisions for each analyst that has covered the stock before the earnings announcement (and not only for analysts that issue forecasts both before and after the quarterly announcement of interest): Tables (A.11) to (A.12).
- Controlling for uncertainty using stock price volatility from monthly returns: Tables (A.13) to (A.15).
- Controlling for uncertainty from at-the-money options 60 days or 90 days to expiration, or separately from either put or call options: Tables (A.16) to (A.25).
- Measuring analysts' prior beliefs (either bearish or bullish) with the sign of analysts' last annual earnings forecast revision made in one of the two quarters before the announcement of the Q-1 earnings: Table (A.26).

- Reproducing the Tables on analysts' forecast revision with standard errors clustered at the analyst level: Tables (A.27) to (A.32).

Appendix to the theoretical analysis

In the following sections, only the changes with respect to the basic model analyzed in the paper are described.

A.1. Continuous signal structure

We assume that, conditional on the state of nature, v has a log normal distribution. Specifically, $v = e^d$ where d is normally distributed with mean μ_X and variance σ^2. We assume $\mu_H = 1 = -\mu_L$. Finally, information about the dividend payment is generated by the observation of public signals s_t whose probability distribution depends on the state of nature. Conditional on the sate of nature, s_t are independent and identically normally distributed with mean μ_X and variance σ^2.

If we denote by $\mathbb{E}_t$ the conditional expectation with respect to the history generated by the public signal $s_1, s_2, \ldots, s_t$, the rational price is given by $P_t = \mathbb{P}_t(X = H)\Psi_H + \mathbb{P}_t(X = L)\Psi_L$ where $\Psi_X = e^{\mu_X - \frac{1}{2}\sigma^2}$.

We maintain our assumption regarding biased traders' signals: $\sigma_t^i = s_t \mathbb{1}_{s_t(\mu_{t-1}^i - \frac{1}{2}) > 0} + z_t s_t \mathbb{1}_{s_t(\mu_{t-1}^i - \frac{1}{2}) < 0}$, where z_t is Bernoulli random variable independent of s_t with $\mathbb{P}(z_t = 1) = 1 - q$.[1]

[1]Given our assumption that there are two states of the world, it seems natural to consider, as we do here, that a signal realization is consistent with a trader's beliefs if this particular realization was more likely under the state of the world that was deemed most likely by the trader. However, we could also have considered more refined expressions of the confirmatory bias. For example, we could assume that the bias depends on the strength of the beliefs and not only on their sign. If someone has wildly optimistic priors, what would he think if a weakly positive piece of news comes in? Would he view this correctly since it has the same sign as his priors, as we consider in this paper? Or would he ignore it since, relative to his beliefs, it is "bad news"? In this case, we believe that our main results would still hold given that the fundamental positive autocorrelation in belief updating would still prevail. Additional research in psychology is needed to provide better guidance on how to define more finely the confirmatory bias.

A.1.1 Stylized facts

We first prove below that Proposition 3.3 in the paper holds under continuous signals:

Proposition 3.3'. Stylized facts (Continuous signal). *When some traders are prone to the confirmatory bias (that is, when $\lambda q > 0$), market outcomes are as follows:*

- *There is excess volume at $t \in \{2, 3\}$:*

$$V_t > V_t^* = 0.$$

- *There is excess volatility in asset prices at $t = 2$ and $t = 3$:*

$$\mathrm{Var}(P_t) > \mathrm{Var}(P_t^*).$$

- *There is momentum in asset prices at $t = 1$ and $t = 2$:*

$$\mathbb{E}(P_2 - P_1 | P_1 - P_0 > 0) > 0,$$

$$\mathbb{E}(P_3 - P_2 | P_2 - P_1 > 0) > 0.$$

- *A bubble forms after a good initial public signal:*

$$\mathbb{E}\left(P_3 | s_1 = 1\right) > \mathbb{E}\left(P_2 | s_1 = 1\right) > P_1\left(s_1 = 1\right) = P_1^*\left(s_1 = 1\right).$$

- *A crash occurs after a bad initial public signal:*

$$\mathbb{E}\left(P_3 | s_1 = -1\right) < \mathbb{E}\left(P_2 | s_1 = -1\right) < P_1\left(s_1 = 1\right) = P_1^*\left(s_1 = -1\right).$$

Proof of Proposition 3.3'. The proof follows the same steps as in the paper.

Beliefs dynamics. We start by studying beliefs dynamics. Let $\mu_t = \mathbb{P}_t(X = H)$. Baye's rule implies that

$$\mu_{t+1} = \frac{\mu_t f(1, s_{t+1})}{\mu_t f(1, s_{t+1}) + (1 - \mu_t) f(-1, s_{t+1})},$$

where $f(m, x)$ is the density function of the Gaussian distribution with mean m and variance σ^2.

Excess volume. In our context, excess volume emerges because there is a difference of opinion between traders and consequently it does not depend on the choice of the probability distribution of the public signals.

Excess volatility. As in the paper, we define $\varepsilon_2 = P_2 - P_2^*$ where:

$$\varepsilon_2 = \lambda q(\mu_1(s_1) - \mu_2(s_1, s_2))\mathbb{1}_{s_1 s_2 < 0}.$$

Therefore:

$$\mathrm{Var}(P_2) = \mathrm{Var}(P_2^*) + \mathrm{Var}(\varepsilon_2) + 2\mathrm{Cov}(P_2^* \varepsilon_2).$$

We will show that $Cov(P_2^* \varepsilon_2) > 0$. First, we observe that:

$$\mu_1(-s_1) = 1 - \mu_1(s_1) \text{ and } \mu_2(-s_1, -s_2) = 1 - \mu_2(s_1, s_2)$$

Thus:

$$\begin{aligned}
\mathbb{E}(\varepsilon_2) &= \lambda q \left[\mathbb{E}(\mu_1(s_1) - \mu_2(s_1, s_2))\mathbb{1}_{s_1 > , 0 s_2 < 0} + \mathbb{E}(\mu_1(s_1) - \mu_2(s_1, s_2))\mathbb{1}_{s_1 < 0, s_2 > 0}\right] \\
&= \lambda q \left[\mathbb{E}(\mu_1(s_1) - \mu_2(s_1, s_2))\mathbb{1}_{s_1 > 0, s_2 < 0} + \mathbb{E}(\mu_2(s_1, s_2)) - \mu_1(s_1)\mathbb{1}_{s_1 > 0, s_2 < 0}\right] \\
&= 0.
\end{aligned}$$

Hence, $Cov(P_2^* \varepsilon_2)$ is proportional to $\mathbb{E}[\mu_2(s_1,s_2)(\mu_1(s_1)-\mu_2(s_1,s_2))\mathbb{1}_{s_1 s_2<0}]$.

Using the martingale property, we have:

$$\begin{aligned}
\mathbb{E}[\mu_2(s_1,s_2)(\mu_1(s_1)-\mu_2(s_1,s_2))\mathbb{1}_{s_1 s_2<0}] &= \mathbb{E}[\mu_2(s_1,s_2)(\mu_1(s_1)-\mu_2(s_1,s_2))(1-\mathbb{1}_{s_1 s_2>0})] \\
&= -\mathbb{E}[\mu_2(s_1,s_2)(\mu_1(s_1)-\mu_2(s_1,s_2))\mathbb{1}_{s_1 s_2>0}] \\
&= -\mathbb{E}[(2\mu_2(s_1,s_2)-1)(\mu_1(s_1)-\mu_2(s_1,s_2))\mathbb{1}_{s_1>0,s_2>0}] \\
&\geq 0.
\end{aligned}$$

There is thus excess volatility at date 2. The same logic applies at date 3. We now turn to the proof of the novel predictions.

Momentum. We have:

$$\begin{aligned}
P_2 - P_1 &= (\Psi_H - \Psi_L)(\bar{\mu}_2 - \bar{\mu}_1) \\
&= (\Psi_H - \Psi_L)\left[\mu_2 \mathbb{1}_{s_1 s_2>0} + (\lambda q \mu_1 + (1-\lambda q)\mu_2)\mathbb{1}_{s_1 s_2<0} - \mu_1\right] \\
&= (\Psi_H - \Psi_L)\left[\mu_2 - \mu_1 + \lambda q(\mu_1 - \mu_2)\mathbb{1}_{s_1 s_2<0}\right].
\end{aligned}$$

So:

$$\mathbb{E}\left(P_2 - P_1 | s_1 > 0\right) = (\Psi_H - \Psi_L)\left[\mathbb{E}\left(\mu_2 - \mu_1 | s_1 > 0\right) + \lambda q \mathbb{E}\left(\mu_1 - \mu_2\right)\mathbb{1}_{s_2<0} | s_1 > 0)\right].$$

Because μ_t is a martingale, the first term vanishes.

Moreover, on the set $\{s_2 < 0\}$, $\mu_2(s_1,s_2) < \mu_1(s_1)$. Therefore:

$$\mathbb{E}\left(P_2 - P_1 | s_1 > 0\right) > 0.$$

This shows that there is momentum over the first two dates.

The proof of momentum at date 3 is much more involved and detailed below only for low values of q in order to maintain the appendix at a reasonable length. First, we have:

$$\mathbb{E}(P_3 - P_2 | P_2 - P_1 > 0) = \frac{\mathbb{E}((P_3 - P_2)\mathbb{1}_{s_2>0})}{\mathbb{P}(s_2 > 0)}.$$

It suffices to show that $\mathbb{E}((P_3 - P_2)\mathbb{1}_{s_2>0}) \geq 0$. Note that the set $\{s_2 > 0\}$ can be decomposed as $\mathbb{1}_{s_2>0} = \mathbb{1}_{\{s_2>0, s_1>0\}} + \mathbb{1}_{\{s_2>0, s_1<0, s_1+s_2>0\}} + \mathbb{1}_{\{s_2>0, s_1<0, s_1+s_2<0\}}$. We compute below $P_3 - P_2$ on each subset.

On the set $\{s_1 > 0, s_2 > 0\}$, we have:

$$P_3 - P_2 = (\mu_3 - \mu_2) - \lambda q(\mu_3 - \mu_2)\mathbb{1}_{s_3<0}.$$

Therefore, using the martingale property:

$$\mathbb{E}\left((P_3 - P_2)\mathbb{1}_{\{s_2>0, s_1>0\}}\right) = -\lambda q \mathbb{E}\left((\mu_3 - \mu_2)\mathbb{1}_{s_2>0, s_1>0, s_3<0}\right).$$

On the set $\{s_1 < 0, s_1 + s_2 > 0\}$, we have:

$$\begin{aligned} P_3 - P_2 = &\left(\lambda q(1-q)(\mu_2(s_1, s_3) - \mu_1) + (1 - \lambda q)(\mu_3 - \mu_2)\right)\mathbb{1}_{s_3>0} \\ &+ \left(\lambda q(\mu_2 - \mu_1) + (1 - \lambda + \lambda(1-q)^2)(\mu_3 - \mu_2)\right)\mathbb{1}_{s_3>0}. \end{aligned}$$

Using the martingale property again, we obtain:

$$\begin{aligned} \mathbb{E}\left((P_3 - P_2)\mathbb{1}_{\{s_2>0, s_1<0, s_1+s_2>0\}}\right) = &-\lambda q^2 \mathbb{E}\left((\mu_2(s_1, s_3) - \mu_1)\mathbb{1}_{s_1<0, s_1+s_2>0, s_3>0}\right) \\ &- \lambda q(1-q)\mathbb{E}\left((\mu_3 - \mu_2)\mathbb{1}_{s_1<0, s_1+s_2>0, s_3<0}\right) \end{aligned}$$

In the same manner, we obtain:

$$\begin{aligned}\mathbb{E}\left((P_3 - P_2)\mathbb{1}_{\{s_2>0,s_1<0,s_1+s_2>0\}}\right) = &-\lambda q^2 \mathbb{E}\left((\mu_2(s_1, s_3) - \mu_1)\mathbb{1}_{s_1<0,s_1+s_2<0,s_3>0}\right) \\ &- \lambda q(1-q)\mathbb{E}\left((\mu_3 - \mu_2)\mathbb{1}_{s_1<0,s_1+s_2<0,s_3>0}\right)\end{aligned}$$

Finally:

$$\begin{aligned}\mathbb{E}\left((P_3 - P_2)\mathbb{1}_{\{s_2>0\}}\right) = &-\lambda q \mathbb{E}\left((\mu_3 - \mu_2)\mathbb{1}_{s_2>0,s_1>0,s_3<0}\right) \\ &- \lambda q(1-q)\mathbb{E}\left((\mu_3 - \mu_2)(\mathbb{1}_{s_1<0,s_1+s_2<0,s_3>0} + \mathbb{1}_{s_1<0,s_1+s_2>0,s_3<0})\right) \\ &- \lambda q^2 \mathbb{E}\left((\mu_2(s_1, s_3) - \mu_1)(\mathbb{1}_{s_1<0,s_1+s_2<0,s_3>0} + \mathbb{1}_{s_1<0,s_1+s_2<0,s_3>0})\right)\end{aligned}$$

The above expression consists in three terms. Note that the first term is positive and that the last one is negligible for low values of q. We now show that the second term is positive or equivalently that:

$$A = \mathbb{E}\left((\mu_3 - \mu_2)(\mathbb{1}_{s_1<0,s_1+s_2<0,s_3>0} + \mathbb{1}_{s_1<0,s_1+s_2>0,s_3<0})\right) \leq 0.$$

Denote by $\mathcal{N}(x)$ the cumulative function of a standard Gaussian random variable and set $\delta = \mathcal{N}(1) - \frac{1}{2} = \frac{1}{2} - \mathcal{N}(-1)$. Finally, remember that the joint density function of (s_1, s_2, s_3) is:

$$f(x_1, x_2, x_3) = \frac{1}{2}(f(1, x_1)f(1, x_2)f(1, x_3) + f(-1, x_1)f(-1, x_2)f(-1, x_3)),$$

and:

$$\mu_3((x_1, x_2, x_3) = \frac{f(1, x_1)f(1, x_2)f(1, x_3)}{f(1, x_1)f(1, x_2)f(1, x_3) + f(-1, x_1)f(-1, x_2)f(-1, x_3)}.$$

We have:

$$\begin{aligned}
A &= \int_{-\infty}^{0}\int_{0}^{-x_1}\int_{0}^{+\infty}(\mu_3((x_1,x_2,x_3)-\mu_2((x_1,x_2))f(x_1,x_2,x_3)\,dx \\
&+ \int_{-\infty}^{0}\int_{-x_1}^{+\infty}\int_{-\infty}^{0}(\mu_3((x_1,x_2,x_3)-\mu_2((x_1,x_2))f(x_1,x_2,x_3)\,dx \\
&= \frac{1}{2}\int_{-\infty}^{0}\int_{0}^{-x_1}\int_{0}^{+\infty}(f(1,x_1)f(1,x_2)f(1,x_3)-\mu_2((x_1,x_2)f(x_1,x_2,x_3))\,dx \\
&+ \frac{1}{2}\int_{-\infty}^{0}\int_{-x_1}^{+\infty}\int_{-\infty}^{0}(f(1,x_1)f(1,x_2)f(1,x_3)-\mu_2((x_1,x_2)f(x_1,x_2,x_3))\,dx
\end{aligned}$$

Integrating with respect to x_3, we obtain:

$$\begin{aligned}
A &= \frac{1}{2}\int_{-\infty}^{0}\int_{0}^{-x_1}(\frac{1}{2}+\delta)f(1,x_1)f(1,x_2)-\mu_2((\frac{1}{2}+\delta)f(1,x_1)f(1,x_2)+(\frac{1}{2}-\delta)f(-1,x_1)f(-1,x_2))\,dx \\
&+ \frac{1}{2}\int_{-\infty}^{0}\int_{-x_1}^{+\infty}(\frac{1}{2}-\delta)f(1,x_1)f(1,x_2)-\mu_2((\frac{1}{2}-\delta)f(1,x_1)f(1,x_2)+(\frac{1}{2}+\delta)f(-1,x_1)f(-1,x_2))\,dx.
\end{aligned}$$

Using

$$\mu_2((x_1,x_2)=\frac{f(1,x_1)f(1,x_2)}{f(1,x_1)f(1,x_2)+f(-1,x_1)f(-1,x_2)},$$

we get:

$$\begin{aligned}
A &= \delta\left(\int_{-\infty}^{0}\int_{0}^{-x_1}\mu_2 f(-1,x_1)f(-1,x_2)\,dx-\int_{-\infty}^{0}\int_{-x_1}^{+\infty}\mu_2 f(-1,x_1)f(-1,x_2)\,dx\right) \\
&\leq \frac{\delta}{2}\left(\int_{-\infty}^{0}\int_{0}^{-x_1}f(-1,x_1)f(-1,x_2)\,dx-\int_{-\infty}^{0}\int_{-x_1}^{+\infty}f(-1,x_1)f(-1,x_2)\,dx\right) \\
&< 0,
\end{aligned}$$

where we have used $\mu \leq \frac{1}{2}$ in the first term and $\mu \geq \frac{1}{2}$ in the second term.

$\diamond$

A.1.2 Novel empirical predictions

We now prove below that Proposition 3.4. in the paper also holds under continuous signals.

Proposition 3.4'. Novel predictions (Continuous signal). When some traders are prone to the confirmatory bias (that is, when $\lambda q > 0$),

- Beliefs dispersion is higher when past signals have different signs:

$$\mathbb{E}\left(\mathrm{Var}\left[\nu_2|_{s_1 s_2<0}\right]\right) > \mathbb{E}\left(\mathrm{Var}\left[\nu_2|_{s_1 s_2>0}\right]\right),$$

$$\mathbb{E}\left(\mathrm{Var}\left[\nu_3|_{s_1 s_2<0 \text{ or } s_2 s_3<0}\right]\right) > \mathbb{E}\left(\mathrm{Var}\left[\nu_3|_{s_1 s_2>0 \text{ and } s_2 s_3>0}\right]\right),$$

  where ν_t is the probability measure characterizing beliefs distribution at date t.

- There are less beliefs revisions when signals have different signs. For example, after a positive signal, the proportion of upward beliefs revisions is lower if at least one of the previous signals was negative:

$$\int_0^1 \mathbb{P}(\mu_2^j - \mu_1^j > 0 | s_1 > 0, s_2 > 0) dj > \int_0^1 \mathbb{P}(\mu_2^j - \mu_1^j > 0 | s_1 < 0, s_2 > 0) dj$$

$$\int_0^1 \mathbb{P}(\mu_3^j - \mu_2^j > 0 | s_1 > 0, s_2 > 0, s_3 > 0) dj > \int_0^1 \mathbb{P}(\mu_3^j - \mu_2^j > 0 | s_1 < 0 \text{ or } s_2 < 0, s_3 > 0) dj$$

- A trader tends to revise his belief less often when signals have a sign that is different from the sign of his last belief revision. For example, after a positive signal, the probability that a trader revises upward his belief is larger if his last belief revision was positive than if it was negative:

$$\int_0^1 \mathbb{P}(\mu_2^j - \mu_1^j > 0 | \mu_1^j - \mu_0^j > 0, s_2 > 0) dj > \int_0^1 \mathbb{P}(\mu_2^j - \mu_1^j > 0 | \mu_1^j - \mu_0^j < 0, s_2 > 0) dj$$

$$\int_0^1 \mathbb{P}(\mu_3^j - \mu_2^j > 0 | \mu_2^j - \mu_1^j > 0, s_3 > 0) dj > \int_0^1 \mathbb{P}(\mu_3^j - \mu_2^j > 0 | \mu_2^j - \mu_1^j < 0, s_3 > 0) dj$$

Proof of Proposition 3.4'. Beliefs dispersion. Again, we assume $s_1 > 0$. On a path where $s_1 > 0$ and $s_2 > 0$, all agents have the same belief $\mu_2(s_1, s_2)$ thus the belief dispersion is zero. More precisely, the belief measure is $\nu_2 = D_{\mu_2(s_1,s_2)}$ where D stands for the Dirac measure.

On a path where $s_1 > 0$ and $s_2 < 0$, a proportion λq of biased traders has a belief $\mu_1(s_1)$. As a consequence, the dispersion $\nu_2(s_1, s_2)$ is a Binomial random variable taking values in $\mu_1(s_1), \mu_2(s_1, s_2)$ with respective probability λq and $1 - \lambda q$. Observe that the average belief $\bar{\mu}_2$ is the mean of ν_2, that is $\lambda q \mu_1(s_1) + (1 - \lambda q)\mu_2(s_1, s_2)$. The belief dispersion after $s_1 > 0$ and $s_2 < 0$ is thus $\lambda q(1 - \lambda q)(\mu_1(s_1) - \mu_2(s_1, s_2))^2 > 0$. Belief dispersion at date 2 is higher after mixed signal histories.

At date 3, we first observe that:

$$\mathbb{E}(\mathrm{Var}(\nu_3 | s_1 s_2 > 0 \text{ and } s_2 s_3 > 0) = \mathbb{E}(\mathrm{Var}(\nu_3 | s_1 > 0, s_2 > 0, s_3 > 0) \frac{\mathbb{P}(s_1 > 0, s_2 > 0, s_3 > 0)}{\mathbb{P}(s_1 s_2 > 0 \text{ and } s_2 s_3 > 0)} = 0,$$

whereas

$$\begin{aligned}\mathbb{E}(\mathrm{Var}(\nu_3 | s_1 s_2 < 0 \text{ or } s_2 s_3 < 0) = {} & \mathbb{E}(\mathrm{Var}(\nu_3 | s_1 > 0, s_2 > 0, s_3 < 0) \frac{\mathbb{P}(s_1 > 0, s_2 > 0, s_3 < 0)}{\mathbb{P}(s_1 s_2 > 0 \text{ and } s_2 s_3 > 0)} \\ & + \mathbb{E}(\mathrm{Var}(\nu_3 | s_1 > 0, s_2 < 0, s_3 < 0) \frac{\mathbb{P}(s_1 > 0, s_2 < 0, s_3 < 0)}{\mathbb{P}(s_1 s_2 > 0 \text{ and } s_2 s_3 > 0)} \\ & + \mathbb{E}(\mathrm{Var}(\nu_3 | s_1 > 0, s_2 < 0, s_3 > 0) \frac{\mathbb{P}(s_1 > 0, s_2 < 0, s_3 > 0)}{\mathbb{P}(s_1 s_2 > 0 \text{ and } s_2 s_3 > 0)}.\end{aligned}$$

We conclude by observing that the last three terms are strictly positive.

Beliefs revision. We focus on date 2 (the same logic applies at later dates). We want to

prove that:

$$\int_0^1 \mathbb{P}(\mu_2^j - \mu_1^j > 0 | s_1 > 0, s_2 > 0)\, dj > \int_0^1 \mathbb{P}(\mu_2^j - \mu_1^j > 0 | s_1 < 0, s_2 > 0)\, dj.$$

On the set $\{s_1 > 0, s_2 > 0\}$, all agents have the same belief and we have for every j:

$$\mu_2^j - \mu_1^j = \frac{\mu_1^j(1-\mu_1^j)(f(1,s_2) - f(-1,s_2))}{\mu_1^j f(1,s_2) + (1-\mu_1^j) f(-1,s_2)},$$

which is positive when $s_2 > 0$. Therefore:

$$\int_0^1 \mathbb{P}(\mu_2^j - \mu_1^j > 0 | s_1 > 0, s_2 > 0)\, dj = 1.$$

On the set $\{s_1 > 0, s_2 < 0\}$, there is a proportion λq of agents that misperceived the signal s_2. For an agent j of that type, $\sigma_2^j = 0$ and thus:

$$\mu_2^j - \mu_1^j = \frac{\mu_1^j(1-\mu_1^j)(f(1,0) - f(-1,0))}{\mu_1^j f(1,0) + (1-\mu_1^j) f(-1,0)} = 0.$$

Therefore:

$$\int_0^1 \mathbb{P}(\mu_2^j - \mu_1^j > 0 | s_1 < 0, s_2 > 0)\, dj = 1 - \lambda q,$$

which completes the proof.

◇

A.2. Longer horizon

In this section, we consider an infinite-horizon version of our basic model: we thus set $T = +\infty$.[2] To fix ideas, let us assume that the true state of the world is $X = H$. Rational

[2]This assumption is made for simplicity. Another version of our model could consider that a cash flow is paid from time to time. Our result presented below would hold in this case because the state of the

traders' belief, $\mu_t = \mathbb{P}_t(X = H)$, is thus a bounded martingale converging almost surely to 1.

We start with a simple example assuming $q = 1$ to show that biased traders misperception may survive in the long run. Assume that the first signal s_1 equals -1, an event of probability $\delta(1-p)$. Biased traders thereafter only see the negative public signals because $q = 1$ (they ignore all the negative signals). Therefore, $\mu_t^i = \mathbb{P}_t(X = H|s_1 = 1, \ldots, \sigma_t)$, the belief of biased trader i, is a decreasing sequence (bounded below by zero) because biased traders only perceive negative signals (because the first signal is assumed to be negative and q is assumed to equal 1). As time goes to infinity, μ_t^i thus converges to 0. Therefore, biased traders' misperception occurs in the long run because μ_t^i does not converge to one in probability.

The assumption that $q = 1$ is strong and was only made to fix ideas. If we assume instead that $q < 1$, the question is whether biased traders' average belief may not converge to 1. One way to address this question is to study whether a biased trader's belief may converge with positive probability to $\mathbb{1}_{X=L}$, the wrong state of nature. When the state of nature is $X = H$ (such that μ_t converges to 1), the distribution of the public signal is:

$$s_t = \begin{cases} 1 & \text{with probability } \delta\theta \\ 0 & \text{with probability } 1-\delta \\ -1 & \text{with probability } \delta(1-\theta) \end{cases}$$

For ever-pessimistic biased traders, who always exist, the distribution of the signal at date

world would also never be realized. The explicit computation of the probability for a trader to believe with certainty that the wrong state of the world has occurred would follow the same logic.

$t > 1$ is:

$$\sigma_t = \begin{cases} 1 & \text{with probability } \delta\theta(1-q) \\ 0 & \text{with probability } 1-\delta+\delta\theta q \\ -1 & \text{with probability } \delta(1-\theta) \end{cases}$$

Therefore, if $\theta(1-q) \leq (1-\theta)$ or equivalently $q \geq \frac{2\theta-1}{\theta}$, the belief of ever-pessimistic biased traders converges to zero: they become sure that the low state of the world has occurred (when in fact the high state has occurred). The difficulty is to prove that the set of ever-pessimistic biased traders has a positive probability in the long run.

To address this issue, we will focus on the long-term behavior of the biased belief dynamics. We will assume to be in the good state of the economy where the public signals s_t are independent and identically distributed on $E = \{1, 0, -1\}$ with

$$\mathbb{P}(s_t = 1) = \delta\theta, \qquad \mathbb{P}(s_t = -1) = \delta(1-\theta) \qquad \text{and} \qquad \mathbb{P}(s_t = 0) = 1-\delta.$$

It is clear that the public belief $\mu_t^* = \mathbb{P}(H|s_1, \ldots, s_t)$ converges to one almost surely. We are interested in the asymptotic behavior of $\mu_t = \mathbb{P}(H|\sigma_1, \ldots, \sigma_t)$.

We introduce some useful notation:

$$\forall \mu \in [0,1] \qquad \mu^+ = f(\theta, \mu) \qquad \text{and} \qquad \mu^- = f(1-\theta, \mu)$$

Remember that we assume that θ is strictly larger than $1/2$, which in turn implies that:

$$\forall \mu \in [0,1] \qquad 1 \geq \mu^+ \geq \mu \geq \mu^- \geq 0.$$

Note that $(\mu^+)^- = \mu = (\mu^-)^+$ for all μ. Define $\mu^{(k)}$ as the $|k|$-th iterate of the " $+$ " operator if $k \geq 0$, or " $-$ " operator if $k < 0$. For any initial belief $\mu_0 = \mu$, the process μ_n has state

space $\{\mu^{(k)} \mid -t \leq k \leq t\}$. To normalize the problem, if $\mu \geq 1/2$, define

$$N(\mu) = \min\{k \geq 0 \,|\, \mu^{(-k)} < 1/2\}$$

and for $\mu < 1/2$

$$N(\mu) = \min\{k \geq 0 \,|\, \mu^{(k)} \geq 1/2\}$$

Observe that $N(\frac{1}{2}) = 1$. We embed the belief process in $\mathbb{Z}$ with $\phi : E \to \mathbb{Z}$ as follows, if $\mu \geq 1/2$, then $\phi(\mu) = N(\mu) - 1$. If $\mu < 1/2$, then $\phi(\mu) = -N(\mu)$ so that $\phi(\mu^{(k)}) = \phi(\mu) + k$.

It follows that the process $R_t = \phi(\mu_t)$ is a Markov chain on $\mathbb{Z}$ whose transitions do not depend on μ.

Moreover, on $\mathbb{N}^*$ and $-\mathbb{N}^*$, the transitions correspond to two birth-death chains with constant probabilities of transitions.

Assume $\theta q < 1$ so that μ_∞ equals 0 or 1 almost surely and define $f(\mu) = \mathbb{P}_\mu[\mu_\infty = 1]$, then the value of $f(\mu)$ depends only on the law of the process R_t which depends itself only on $N(\mu)$. f is therefore piecewise constant as $N(.)$ is piecewise constant.

Let $h(N(\mu)) = f(\mu)$ with $h : \mathbb{Z} \to [0, 1]$. Then using standard results on birth-death chains (see R. Bhattacharya and E. Waymire, Stochastic Processes with Applications, 2009, Chapter 3), we have:

$$f(\frac{1}{2}) = h(1) = \left(1 - \left(\frac{(1-q)\delta(1-\theta)}{\delta\theta}\right)^2\right) + \left(\frac{1-q}{q(2-q)}\right)\left(\frac{\delta\theta - (1-q)\delta(1-\theta)}{\delta(1-\theta)}\right)\left(\frac{(1-q)\delta(1-\theta)}{\delta\theta}\right)^2,$$

which is lower than 1. This indicates that there is a fraction $1 - f(\frac{1}{2})$ of biased traders who end up believing with certainty in the wrong state of the world being realized.[3]

These developments correspond, in our setting, to Proposition 4 in Rabin and Schrag

[3]This result that some agents become convinced about the state of the world and at the same time are wrong follows from the extreme assumption that they have received an infinite number of signals. In practice, the fact that some agents believe with certainty in the wrong state of nature would translate into extremely high trading volume and belief dispersion.

(1999) in which the case of an infinite number of signals is analyzed.

A.3. Confirmatory bias modeled as in Rabin and Schrag (1999)

We focus on a binary signal structure in which all signals are informative - i.e., there is no signal $s_t = 0$ anymore. We consider that the random variable z takes values in $\{1, -1\}$ instead of $\{1, 0\}$. We thus consider that a biased trader changes the sign of public signals that are inconsistent with his prior beliefs with probability q. This is exactly the set up of Rabin and Schrag (1999).

A.3.1 Stylized facts

We here show that the following proposition holds:

Proposition 3.3". Stylized facts (Extreme bias). *When some traders are prone to the confirmatory bias (that is, when $\lambda q > 0$), market outcomes are as follows:*

- *There is excess volume at $t \in \{2, 3\}$:*

$$V_t > V_t^* = 0.$$

- *There is excess volatility in asset prices at $t = 2$ and, for $q(1 + 4\lambda) > 2$, at $t = 3$; in this case:*

$$\text{Var}(P_t) > \text{Var}(P_t^*).$$

- *There is momentum in asset prices at $t = 1$ and $t = 2$:*

$$\mathbb{E}(P_2 - P_1 | P_1 - P_0 > 0) > 0,$$

$$\mathbb{E}(P_3 - P_2 | P_2 - P_1 > 0) > 0.$$

- *A bubble forms after a good initial public signal:*

$$\mathbb{E}\left(P_3 | s_1 = 1\right) > \mathbb{E}\left(P_2 | s_1 = 1\right) > P_1\left(s_1 = 1\right) = P_1^*\left(s_1 = 1\right).$$

- *A crash occurs after a bad initial public signal:*

$$\mathbb{E}\left(P_3 | s_1 = -1\right) < \mathbb{E}\left(P_2 | s_1 = -1\right) < P_1\left(s_1 = 1\right) = P_1^*\left(s_1 = -1\right).$$

Proof of Proposition 3.3". The proof follows the same steps as in the paper.

Belief dynamics. To set the stage for the analysis of the evolution of prices and volume, we start by studying belief dynamics.

Lemma. *For speculators, belief dynamics are given by:*

$$\mathbb{P}(X = H | s_1, \ldots, s_{t+1}) = \mu_{t+1} = f(\theta, \mu_t)\mathbb{1}_{\{s_{t+1}=1\}} + f(1-\theta, \mu_t)\mathbb{1}_{\{s_{t+1}=-1\}},$$

and for biased traders ($i \in [0, \lambda]$),

$$\mathbb{P}^i(X = H | s_1, \ldots, s_{t+1}) = \mu_{t+1}^i = f(\theta, \mu_t^i)\mathbb{1}_{\{\sigma_{t+1}^i=1\}} + f(1-\theta, \mu_t^i)\mathbb{1}_{\{\sigma_{t+1}^i=-1\}},$$

where

$$f(\theta, \mu) = \frac{\theta\mu}{\theta\mu + (1-\theta)(1-\mu)}.$$

Proof. Because the law of the rational beliefs μ_t under $\mathbb{P}$ is the same as the one of biased

beliefs μ_t^i under the biased probability $\mathbb{P}^i$, it is enough to focus on belief dynamics for rational agents. Using Bayes' formula, we have:

$$\begin{aligned}\mathbb{P}(X=H|s_1,\ldots,s_t,s_{t+1}=1) &= \frac{\mathbb{P}(X=H;s_{t+1}=1|s_1,\ldots,s_t)}{\mathbb{P}(s_{t+1}=1|s_1,\ldots,s_t)}\\ &= \frac{\mathbb{P}(s_{t+1}=1|X=H)\mathbb{P}(X=H|s_1,\ldots,s_t)}{\mathbb{P}(s_{t+1}=1|s_1,\ldots,s_t)}\\ &= \frac{\theta\mu_t}{\theta\mu_t+(1-\theta)(1-\mu_t)}.\end{aligned}$$

Likewise, we have:

$$\mathbb{P}(X=H|s_1,\ldots,s_t,s_{t+1}=-1) = \frac{(1-\theta)\mu_t}{(1-\theta)\mu_t+\theta(1-\mu_t)}.$$

We conclude by noting that:

$$\mu_{t+1}=\mathbb{P}(X=H|s_1,\ldots,s_t,s_{t+1}=1)\mathbb{1}_{\{s_{t+1}=1\}}+\mathbb{P}(X=H|s_1,\ldots,s_t,s_{t+1}=-1)\mathbb{1}_{\{s_{t+1}=-1\}}.$$

$\diamond$

Note that for a belief history of length t, $h_t=(s_1,\ldots,s_t)$, the possible values for μ_t are:

$$\theta(j,t)=\frac{\theta^j(1-\theta)^{t-j}}{\theta^j(1-\theta)^{t-j}+\theta^{t-j}(1-\theta)^j}. \tag{A.3.7}$$

where j is the number of signal with $s_u=1$ for $u\leq t$ (this is similar to Rabin and Schrag, 1999).

We continue by giving some results concerning the probability distribution of the public signal. Clearly:

$$\mathbb{P}(s_1=1)=\frac{\theta+1-\theta}{2}=\frac{1}{2}.$$

Because of the symmetry of the model, the law of the belief process with path starting with

$s_1 = -1$ is obtained by changing θ in $1-\theta$. Therefore, we only focus on belief paths with $s_1 = 1$. We have:

$$\begin{aligned}
\mathbb{P}(s_2 = 1 | s_1 = 1) &= \frac{\mathbb{P}(s_1 = 1; s_2 = 1)}{\mathbb{P}(s_1 = 1)} \\
&= \frac{\mathbb{P}(X = H)\mathbb{P}(s_1 = 1; s_2 = 1 | X = H) + \mathbb{P}(X = L)\mathbb{P}(s_1 = 1; s_2 = 1 | X = L)}{\mathbb{P}(s_1 = 1)} \\
&= \theta^2 + (1-\theta)^2,
\end{aligned}$$

and thus:

$$\mathbb{P}(s_2 = -1 | s_1 = 1) = 2\theta(1-\theta).$$

Likewise, it is straightforward to prove that:

$$\mathbb{P}(s_3 = 1 | s_1 = 1; s_2 = 1) = \frac{\theta^3 + (1-\theta)^3}{\theta^2 + (1-\theta)^2}, \quad \mathbb{P}(s_3 = -1 | s_1 = 1; s_2 = 1) = \frac{\theta(1-\theta)}{\theta^2 + (1-\theta)^2},$$

and:

$$\mathbb{P}(s_3 = 1 | s_1 = 1; s_2 = -1) = \mathbb{P}(s_3 = -1 | s_1 = 1; s_2 = -1) = \frac{1}{2}.$$

At date t, there exist 2^t paths for the public signal history. Let us denote by $h_t = (s_1, s_2, \ldots, s_t)$ a path and $(z^i h)_t = (s_1, z_2^i s_2, \ldots, z_t^i s_t)$ biased trader i's belief path. A speculator has a rational estimation of the future dividend at date t given by $\mathbb{P}(v = 1 | h_t) = p_L + (p_H - p_L)\mu_t$. Biased trader i has an estimation of the future dividend given by $\mathbb{P}^i(v = 1 | (z^i h)_t) = p_L + (p_H - p_L)\mu_t^i$.

Excess volume. Confirmatory bias induces excess volume. Consider for example the mixed history path $(s_1 = 1, s_2 = -1)$. The equilibrium price along this path is:

$$P_2(1, -1) = p_L + (p_H - p_L)(\lambda q \theta(2,2) + (1 - \lambda q)\theta(1,2)).$$

Therefore, there is a proportion λq of agents (corresponding to the biased traders who perceived a positive signal at date 2 instead of the actual negative signal) who have a price estimation $p_L + (p_H - p_L)\theta(2,2)$ which is higher than the equilibrium price. Hence, volume equals:

$$V_2(1,-1) = \frac{(p_H - p_L)\lambda q(1-\lambda q)}{c}(\theta(2,2) - \theta(1,2)) > V_2^*(1,-1) = 0.$$

Excess volatility. Confirmatory bias may induce excess volatility. To show this result, it is useful to note that $\mathbb{E}(P_t) = \frac{p_H + p_L}{2}$, for $t = 1, 2, 3$. To see this, consider two opposite signal histories $h_t = \{1, s_2, \ldots, s_t\}$ and $-h_t = \{-1, -s_2, \ldots, -s_t\}$. The law of signals s_t being symmetric, $\mathbb{P}(h_t) = \mathbb{P}(-h_t)$. Moreover, Equation (A.3.7) implies that $\mu_t^j(h_t) + \mu_t^j(-h_t) = 1$. As a consequence, the pricing formula yields $P_t(h_t) + P_t(-h_t) = p_H + p_L$. Finally:

$$\begin{aligned}
\mathbb{E}(P_t) &= \sum_{h_t} \left(\mathbb{P}(h_t)P_t(h_t) + \mathbb{P}(-h_t)P_t(-h_t)\right) \\
&= \sum_{h_t} \mathbb{P}(h_t)\left(P_t(h_t) + P_t(-h_t)\right) \\
&= (p_H + p_L)\sum_{h_t} \mathbb{P}(h_t) \\
&= (p_H + p_L)\mathbb{P}(s_1 = 1) \\
&= \frac{p_H + p_L}{2}.
\end{aligned}$$

We deduce from the price dynamics that:

$$P_2 = P_2^* + \varepsilon_2 \text{ and } P_3 = P_3^* + \varepsilon_3,$$

where ε_i are the symmetric random variables given by:

$$\begin{aligned}\varepsilon_2(s_1,s_2) &= \varepsilon_2(1,-1)(\mathbb{1}_{s_1=1;s_2=-1}-\mathbb{1}_{s_1=-1;s_2=1})\\ &= (p_H-p_L)\lambda q(\theta(2,2)-\theta(1,2))(\mathbb{1}_{s_1=1;s_2=-1}-\mathbb{1}_{s_1=-1;s_2=1}),\end{aligned}$$

indicating that $\varepsilon_2(-1,1)=-\varepsilon_2(1,-1)$ and $\varepsilon_2(1,1)=\varepsilon_2(-1,-1)=0$, and:

$$\begin{aligned}\varepsilon_3(s_1,s_2,s_3) &= \varepsilon_3(1,1,-1)(\mathbb{1}_{s_1=1;s_2=1;s_3=-1}-\mathbb{1}_{s_1=-1;s_2=-1;s_3=1})\\ &+ \varepsilon_3(1,-1,1)(\mathbb{1}_{s_1=1;s_2=-1;s_3=1}-\mathbb{1}_{s_1=-1;s_2=1;s_3=-1})\\ &+ \varepsilon_3(1,-1,-1)(\mathbb{1}_{s_1=1;s_2=-1;s_3=-1}-\mathbb{1}_{s_1=-1;s_2=1;s_3=1})\\ &= (p_H-p_L)\lambda q(\theta(3,3)-\theta(2,3))(\mathbb{1}_{s_1=1;s_2=1;s_3=-1}-\mathbb{1}_{s_1=-1;s_2=-1;s_3=1})\\ &+ (p_H-p_L)\lambda q(\theta(3,3)-\theta(2,3))(\mathbb{1}_{s_1=1;s_2=-1;s_3=1}-\mathbb{1}_{s_1=-1;s_2=1;s_3=-1})\\ &+ (p_H-p_L)\lambda q(q\theta(3,3)+2(1-q)\theta(2,3)\\ &- (2-q)\theta(1,3))(\mathbb{1}_{s_1=1;s_2=-1;s_3=-1}-\mathbb{1}_{s_1=-1;s_2=1;s_3=1}).\end{aligned}$$

Thus, noting $m=\frac{p_H+p_L}{2}$, we have:

$$\mathrm{Var}(P_2)=\mathrm{Var}(P_2^*)+\mathrm{Var}(\varepsilon_2)+2\mathbb{E}\left[(P_2^*-m)\varepsilon_2\right].$$

It is straightforward to see that $\mathbb{E}\left[(P_2^*-m)\varepsilon_2\right]=0$. Indeed, because $P^*(1,-1)=P^*(-1,1)=m$ and $\varepsilon_2(1,1)=\varepsilon_2(-1,-1)=0$, we have:

$$\mathbb{E}\left[(P_2^*-m)\varepsilon_2\right]=0.$$

Therefore:

$$\mathrm{Var}(P_2) > \mathrm{Var}(P_2^*).$$

There is thus always excess volatility in the price at date 2.

Regarding date $t = 3$, we first compute $\mathrm{Var}(\varepsilon_3)$. Because $\mathbb{E}(\varepsilon_3) = 0$, we have $\mathrm{Var}(\varepsilon_3) = \mathbb{E}(\varepsilon_3^2)$. Moreover, we note that for every path h_3 containing a change in the sign of the public signal $\mathbb{P}(h_3) = \frac{\theta(1-\theta)}{2}$ and

$$P_3^*(h_3) - P_3^*(-h_3) = (p_h - p_L)(2\theta - 1).$$

Therefore:

$$\begin{aligned}
\mathbb{E}(\varepsilon_3^2) &= \theta(1-\theta)\left(\varepsilon_3^2(1,1,-1) + \varepsilon_3^2(1,-1,1) + \varepsilon_3^2(1,-1,-1)\right) \\
&= \theta(1-\theta)(p_H - p_L)^2\lambda^2 q^2\left\{2(\theta(3,3) - \theta(2,3))^2 + [q(\theta(3,3) - \theta(2,3)) + (2-q)(\theta(2,3) - \theta(1,3))]^2\right\}
\end{aligned}$$

On the other hand:

$$\begin{aligned}
\mathbb{E}[(P_3^* - m)\varepsilon_3] &= \frac{\theta(1-\theta)}{2}\varepsilon_3(1,1,-1)\left(P_3^*(1,1,-1) - P_3^*(-1,-1,1)\right) \\
&+ \frac{\theta(1-\theta)}{2}\varepsilon_3(1,-1,1)\left(P_3^*(1,-1,1) - P_3^*(-1,1,-1)\right) \\
&+ \frac{\theta(1-\theta)}{2}\varepsilon_3(1,-1,-1)\left(P_3^*(1,-1,-1) - P_3^*(-1,1,1)\right) \\
&= \frac{\theta(1-\theta)}{2}(p_H - p_L)^2\lambda q(2\theta - 1)(2-q)(\theta(3,3) + \theta(1,3) - 2\theta(2,3)).
\end{aligned}$$

Therefore:

$$\begin{aligned}\mathrm{Var}(P_3) - \mathrm{Var}(P_3^*) &= \theta(1-\theta)(p_H - p_L)^2 \lambda q \left\{ \lambda q \left[2(\theta(3,3) - \theta(2,3))^2 \right.\right. \\ &+ \left.\left. [q(\theta(3,3) - \theta(2,3)) + (2-q)(\theta(2,3) - \theta(1,3))]^2 \right] \right. \\ &+ \left. (2\theta - 1)(2-q)(\theta(3,3) + \theta(1,3) - 2\theta(2,3)) \right\}.\end{aligned}$$

Now, setting $\theta = \frac{1}{2} + \eta$ and making an expansion of $\mathrm{Var}(P_3) - \mathrm{Var}(P_3^*)$ in a neighborhood of $\frac{1}{2}$, we get:

$$\mathrm{Var}(P_3) - \mathrm{Var}(P_3^*) = \frac{1}{4}(p_H - p_L)^2 \lambda q (q(1+4\lambda) - 2)\eta + o(\eta).$$

This expression is positive if $q(1+4\lambda) > 2$. This shows that there is a parameter region for which there is excess volatility in the price at date 3.

Momentum. Assume that $t = 1$. The random event $\{P_1 - P_0 > 0\}$ coincides with the event $\{s_1 = 1\}$. Therefore, we have to prove that $\mathbb{E}(P_2 - P_1 | s_1 = 1) > 0$. But,

$$\begin{aligned}\mathbb{E}(P_2 - P_1 | s_1 = 1) &= \mathbb{E}(P_2(1,1)\mathbb{1}_{s_2=1} + P_2(1,-1)\mathbb{1}_{s_2=-1} | s_1 = 1) - ((p_H - p_L)\theta + p_L) \\ &= (p_H - p_L)[\theta(2,2)\mathbb{P}(s_2 = 1 | s_1 = 1) + ((1 - \lambda q)\theta(1,2) \\ &+ \lambda q \theta(2,2))\mathbb{P}(s_2 = -1 | s_1 = 1)) - \theta] \\ &= (p_H - p_L)\lambda q(\theta(2,2) - \theta(1,2))\mathbb{P}(s_2 = -1 | s_1 = 1) > 0\end{aligned}$$

where the last equality follows from the martingale property of the belief process μ_t.
There is thus always momentum at date 1.

To prove momentum at $t = 2$, we need to know the histories that yield $P_2 - P_1 > 0$. Clearly, on the event $\{s_1 = 1; s_2 = 1\}$, the return $P_2 - P_1$ is positive. On the event

$\{s_1 = 1; s_2 = -1\}$, this return equals:

$$P_2(1,-1) - P_1 = (p_H - p_L)(\lambda q(\theta(2,2) - \theta(1,2)) + \theta(1,2) - \theta).$$

This is positive if and only if $\lambda q \geq \frac{\theta - \theta(1,2)}{\theta(2,2) - \theta(1,2)} = \theta^2 + (1-\theta)^2$.

Therefore, two cases have to be considered. When $\lambda q \geq \theta^2 + (1-\theta)^2$, we have:

$$\begin{aligned}
\mathbb{E}(P_3 - P_2 | P_2 - P_1 > 0) &= \mathbb{E}(P_3 - P_2 | s_1 = 1; s_2 = 1) \frac{\mathbb{P}(s_1 = 1; s_2 = 1)}{\mathbb{P}(P_2 - P_1 > 0)} \\
&+ \mathbb{E}(P_3 - P_2 | s_1 = 1; s_2 = -1) \frac{\mathbb{P}(s_1 = 1; s_2 = -1)}{\mathbb{P}(P_2 - P_1 > 0)} \\
&= \mathbb{E}(P_3 - P_2 | s_1 = 1; s_2 = 1)(\theta^2 + (1-\theta)^2) \\
&+ \mathbb{E}(P_3 - P_2 | s_1 = 1; s_2 = -1) 2\theta(1-\theta).
\end{aligned}$$

Now:

$$\begin{aligned}
\mathbb{E}(P_3 - P_2 | s_1 = 1; s_2 = 1) &= (P_3(1,1,1) - P_2(1,1)) \mathbb{P}(s_3 = 1 | s_1 = 1; s_2 = 1) \\
&+ (P_3(1,1,-1) - P_2(1,1)) \mathbb{P}(s_3 = -1 | s_1 = 1; s_2 = 1) \\
&= \lambda q (p_H - p_L) \mathbb{P}(s_3 = -1 | s_1 = 1; s_2 = 1)(\theta(3,3) - \theta(2,3)),
\end{aligned}$$

where the last equality uses the martingale property of μ_t, that is:

$$\theta(2,2) = \mathbb{P}(s_3 = 1 | s_1 = 1; s_2 = 1)\theta(3,3) + \mathbb{P}(s_3 = -1 | s_1 = 1; s_2 = 1)\theta(2,3).$$

Similarly, we have:

$$\mathbb{E}(P_3 - P_2 | s_1 = 1; s_2 = -1) = \frac{\lambda q (p_H - p_L)}{2} \left((1+q)\theta(3,3) + 2(1-q)\theta(2,3) - (1-q)\theta(1,3) - 2\theta(2,2) \right).$$

Finally:

$$\begin{aligned}\mathbb{E}(P_3 - P_2|P_2 - P_1 > 0) &= \lambda q(p_H - p_L)\theta(1-\theta)((2+q)\theta(3,3) \\ &+ (2(1-q)-1)\theta(2,3) - (1-q)\theta(1,3) - 2\theta(2,2)) \\ &= \lambda q(p_H - p_L)\theta(1-\theta)[2(\theta(3,3) - \theta(2,2)) + q(\theta(3,3) - \theta(2,3)) \\ &+ (1-q)(\theta(2,3) - \theta(1,3))] > 0.\end{aligned}$$

There is thus momentum at date 2 when $\lambda q \geq \theta^2 + (1-\theta)^2$.

In the second case in which $\lambda q < \theta^2 + (1-\theta)^2$, we have:

$$\begin{aligned}\mathbb{E}(P_3 - P_2|P_2 - P_1 > 0) &= \mathbb{E}(P_3 - P_2|s_1 = 1; s_2 = 1)\frac{\mathbb{P}(s_1 = 1; s_2 = 1)}{\mathbb{P}(P_2 - P_1 > 0)} \\ &+ \mathbb{E}(P_3 - P_2|s_1 = -1; s_2 = 1)\frac{\mathbb{P}(s_1 = 1; s_2 = -1)}{\mathbb{P}(P_2 - P_1 > 0)} \\ &= \mathbb{E}(P_3 - P_2|s_1 = 1; s_2 = 1)(\theta^2 + (1-\theta)^2) \\ &+ \mathbb{E}(P_3 - P_2|s_1 = -1; s_2 = 1)2\theta(1-\theta).\end{aligned}$$

By symmetry, we deduce from the first case:

$$\mathbb{E}(P_3 - P_2|s_1 = -1; s_2 = 1) = \frac{\lambda q(p_H - p_L)}{2}\left((1+q)\theta(0,3) + 2(1-q)\theta(1,3) - (1-q)\theta(2,3) - 2\theta(0,2)\right).$$

Therefore:

$$\begin{aligned}\mathbb{E}(P_3 - P_2|P_2 - P_1 > 0) &= \lambda q(p_H - p_L)\theta(1-\theta)((2-q)\theta(1,3) \\ &+ (1-q)(\theta(1,3) - \theta(2,3)) + q\theta(0,3) - 2\theta(0,2)) \\ &= \lambda q(p_H - p_L)\theta(1-\theta)(2(\theta(1,3) - \theta(0,2)) + \theta(1,3) - \theta(2,3) \\ &+ q\left(\theta(0,3) + \theta(2,3) - 2\theta(1,3)\right)).\end{aligned}$$

Observe that $\mathbb{E}(P_3 - P_2 | P_2 - P_1 > 0)$ is an increasing function of q because $\theta(0,3) + \theta(2,3) - 2\theta(1,3) \geq 0$. Moreover, using Equation (A.3.7) and rearranging terms, we obtain:

$$2(\theta(1,3) - \theta(0,2)) + \theta(1,3) - \theta(2,3) = (2\theta - 1)\left(\frac{1}{\theta^2 + (1-\theta)^2} - 2\right) \leq 0.$$

As a consequence, when $\lambda q \leq \theta^2 + (1-\theta)^2$ there is momentum only if:

$$q \geq \bar{q} = \frac{2(\theta(1,3) - \theta(0,2)) + \theta(1,3) - \theta(2,3)}{\theta(0,3) + \theta(2,3) - 2\theta(1,3)}.$$

Bubble. We have proved above that: $\mathbb{E}(P_2 - P_1 | s_1 = 1) > 0$ which is equivalent to $\mathbb{E}(P_2 | s_1 = 1) \geq \mathbb{E}(P_1 | s_1 = 1) = p_L + (p_H - p_L)\theta$.
Moreover, we have:

$$\mathbb{E}(P_3 - P_2 | s_1 = 1) = \mathbb{E}(P_3 - P_2 | s_1 = 1, s_2 = 1)\mathbb{P}(s_2 = 1 | s_1 = 1) + \mathbb{E}(P_3 - P_2 | s_1 = 1, s_2 = -1)\mathbb{P}(s_2 = 1 | s_1 = 1)$$

We have already proved that:

$$\mathbb{E}(P_3 - P_2 | s_1 = 1, s_2 = 1) > 0 \text{ and } \mathbb{E}(P_3 - P_2 | s_1 = 1, s_2 = -1) > 0.$$

Therefore:

$$\mathbb{E}(P_3 | s_1 = 1) \geq \mathbb{E}(P_2 | s_1 = 1).$$

$\diamond$

A.3.2 Novel empirical predictions

We now prove that the following proposition holds:

Proposition 3.4". Novel predictions (Extreme bias). When some traders are

prone to the confirmatory bias (that is, when $\lambda q > 0$),

- Beliefs dispersion is higher when past signals have different signs:

$$\mathbb{E}\left(\mathrm{Var}\left[\nu_2|_{s_1 s_2<0}\right]\right) > \mathbb{E}\left(\mathrm{Var}\left[\nu_2|_{s_1 s_2>0}\right]\right),$$

$$\mathbb{E}\left(\mathrm{Var}\left[\nu_3|_{s_1 s_2<0 \text{ or } s_2 s_3<0}\right]\right) > \mathbb{E}\left(\mathrm{Var}\left[\nu_3|_{s_1 s_2>0 \text{ and } s_2 s_3>0}\right]\right),$$

  where ν_t is the probability measure characterizing beliefs distribution at date t.

- There are less beliefs revisions when signals have different signs. For example, after a positive signal, the proportion of upward beliefs revisions is lower if at least one of the previous signals was negative:

$$\int_0^1 \mathbb{P}(\mu_2^j - \mu_1^j > 0 | s_1 > 0, s_2 > 0) dj > \int_0^1 \mathbb{P}(\mu_2^j - \mu_1^j > 0 | s_1 < 0, s_2 > 0) dj$$

$$\int_0^1 \mathbb{P}(\mu_3^j - \mu_2^j > 0 | s_1 > 0, s_2 > 0, s_3 > 0) dj > \int_0^1 \mathbb{P}(\mu_3^j - \mu_2^j > 0 | s_1 < 0 \text{ or } s_2 < 0, s_3 > 0) dj$$

- A trader tends to revise his belief less often when signals have a sign that is different from the sign of his last belief revision. For example, after a positive signal, the probability that a trader revises upward his belief is larger if his last belief revision was positive than if it was negative:

$$\int_0^1 \mathbb{P}(\mu_2^j - \mu_1^j > 0 | \mu_1^j - \mu_0^j > 0, s_2 > 0) dj > \int_0^1 \mathbb{P}(\mu_2^j - \mu_1^j > 0 | \mu_1^j - \mu_0^j < 0, s_2 > 0) dj$$

$$\int_0^1 \mathbb{P}(\mu_3^j - \mu_2^j > 0 | \mu_2^j - \mu_1^j > 0, s_3 > 0) dj > \int_0^1 \mathbb{P}(\mu_3^j - \mu_2^j > 0 | \mu_2^j - \mu_1^j < 0, s_3 > 0) dj$$

Proof of Proposition 3.4". Beliefs dispersion. We will describe the dynamics of

the belief dispersion in the Rabin and Schrag model in order to show that the proof of Proposition is similar to the main model. Let us define by ν_t traders' belief dispersion. For each history h_t, $\nu_t(h_t)$ is a probability measure on the finite space $\theta(x,t)$ for $x \in \{0,1,\ldots,t\}$ representing traders' belief distribution function. We will define the average belief dispersion as the average variance of each probability measure $\nu_t(h_t)$ and the conditional average belief dispersion as the average of the conditional variance of each probability measure.
Let us write precisely traders' belief dispersion for $t \in \{0,1,2,3\}$. Clearly:

$$\nu_0 = \delta_{\frac{1}{2}},$$

where δ stands for the Dirac measure. Because all traders have the same perception of date 1 signal, the distribution of biased traders' beliefs at date 1 is:

$$\nu_1 = \frac{1}{2}(\delta_\theta + \delta_{1-\theta}).$$

In particular, $\nu_1(1) = \delta_\theta$ and $\nu_1(-1) = \delta_{1-\theta}$ and therefore Var $\nu_1(1) =$ Var $\nu_1(-1) = 0$. The average belief dispersion is thus $\mathbb{E}(\text{Var } \nu_1) = 0$.

From date 2 onward, belief dispersion depends on the public signal's path. More precisely, we have:

$$\begin{aligned}\nu_2 &= \mathbb{P}(s_1 = 1; s_2 = 1)\nu_2(1;1) + \mathbb{P}(s_1 = 1; s_2 = -1)\nu_2(1;-1) \\ &+ \mathbb{P}(s_1 = -1; s_2 = 1)\nu_2(-1;1) + \mathbb{P}(s_1 = -1; s_2 = -1)\nu_2(-1;-1)\end{aligned}$$

where

$$\nu_2(1;1) = \delta_{\theta(2,2)}, \nu_2(1;-1) = q\delta_{\theta(2,2)} + (1-\lambda q)\delta_{\theta(1,2)},$$

$$\nu_2(-1;-1) = \delta_{\theta(0,2)}, \nu_2(-1;1) = q\delta_{\theta(0,2)} + (1-\lambda q)\delta_{\theta(1,2)}.$$

At date 3, we have:

$$\begin{aligned}
\nu_3 &= \mathbb{P}(s_1=1;s_2=1;s_3=1)\nu_3(1;1;1)+\mathbb{P}(s_1=1;s_2=1;s_3=-1)\nu_3(1;1;-1)\\
&+ \mathbb{P}(s_1=1;s_2=-1;s_3=1)\nu_3(1;-1;1)+\mathbb{P}(s_1=1;s_2=-1;s_3=-1)\nu_2(1;-1;-1)\\
&+ \mathbb{P}(s_1=-1;s_2=-1;s_3=-1)\nu_3(-1;-1;-1)+\mathbb{P}(s_1=-1;s_2=-1;s_3=1)\nu_3(-1;-1;1)\\
&+ \mathbb{P}(s_1=-1;s_2=1;s_3=-1)\nu_3(-1;1;-1)+\mathbb{P}(s_1=-1;s_2=1;s_3=1)\nu_2(-1;1;1),
\end{aligned}$$

where

$$\nu_3(1;1;1)=\delta_{\theta(3,3)},\nu_3(1;1;-1)=q\delta_{\theta(3,3)}+(1-\lambda q)\delta_{\theta(2,3)},$$

$$\nu_3(1;-1;1)=q\delta_{\theta(3,3)}+(1-\lambda q)\delta_{\theta(2,3)};\nu_3(1;-1;-1)=q^2\delta_{\theta(3,3)}+2q(1-q)\delta_{\theta(2,3)}+((1-\lambda)+\lambda(1-q)^2)\delta_{\theta(1,3)},$$

$$\nu_3(-1;-1;-1)=\delta_{\theta(0,3)},\nu_3(-1;-1;1)=q\delta_{\theta(0,3)}+(1-\lambda q)\delta_{\theta(1,3)},$$

$$\nu_3(-1;1;-1)=q\delta_{\theta(0,3)}+(1-\lambda q)\delta_{\theta(1,3)};\nu_3(-1;1;1)=q^2\delta_{\theta(0,3)}+2q(1-q)\delta_{\theta(1,3)}+((1-\lambda)+\lambda(1-q)^2)\delta_{\theta(2,3)}.$$

Because the probability distribution of ν_t in the model of Rabin and Schrag are of the same type as our main model (linear combination of Dirac measures) then the proof follows directly.

Belief revision. We focus on date 2 because the proof is similar to the model developed in the paper. We want to prove that:

$$\int_0^1 \mathbb{P}(\mu_2^j-\mu_1^j>0|s_1>0,s_2>0)\,dj>\int_0^1 \mathbb{P}(\mu_2^j-\mu_1^j>0|s_1<0,s_2>0)\,dj.$$

On the set $\{s_1>0,s_2>0\}$, $\mu_1^j=\theta$ and $\mu_2^j=\theta(2,2)$ for every j. Therefore, for every j, $\mathbb{P}(\mu_2^j-\mu_1^j>0|s_1>0,s_2>0)=1$, which implies

$$\int_0^1 \mathbb{P}(\mu_2^j-\mu_1^j>0|s_1>0,s_2>0)\,dj=1.$$

On the other hand, on the set $\{s_1 < 0, s_2 > 0\}$, $\mu_1^j = 1 - \theta$ and $\mu_2^j = \theta(0, 2)$ for every j that misperceived the signal s_2. The proportion of that traders are λq. Therefore, for every agent j that misperceived the signal s_2, we have: $\mathbb{P}(\mu_2^j - \mu_1^j > 0 | s_1 < 0, s_2 > 0) = 0$, which implies:

$$\int_0^1 \mathbb{P}(\mu_2^j - \mu_1^j > 0 | s_1 < 0, s_2 > 0)\, dj = 1 - \lambda q,$$

and yields the result.

$\diamond$

Appendix to the empirical analysis

Table A.1. FORECAST REVISION - INTERACTION WITH MACROECONOMIC VOLATILITY

This Table presents variants of the regressions in Table 2 in which we interact the variable SUE SIGN CHANGE(Q-1,Q-2) in columns [1] to [3], and the variable SUE SIGN CHANGE(Q-1,Q-2,Q-3) in columns [4] to [6] with a dummy, MACROVOL(HIGH), that equals one if macroeconomic volatility lies in the highest tercile of its empirical distribution, and the MACROVOL(HIGH) dummy is included as additional control variable. Following Bloom (2009), we define macroeconomic volatility as the Chicago Board of Options Exchange VXO index of percentage implied volatility, on a hypothetical at the money S&P100 option 30 days to expiration, from 1986 onward; and over the Pre-1986 period for which the VXO index is unavailable, as the monthly standard deviation of the daily S&P500 index normalized to the same mean and variance as the VXO index when they overlap from 1986 onward. SUE SIGN CHANGE(Q-1,Q-2) is a dummy that equals one if there is a change in the sign of SUEs over the previous two quarters. SUE SIGN CHANGE(Q-1,Q-2,Q-3) is a dummy that equals one if there is one change in the sign of SUEs among the previous three quarters. ABS SUE(Q-1) is the absolute value of standardized unexpected earnings in year-quarter Q-1. COVERAGE is the number of analysts who covered the stock in the current fiscal year. LN(MKTCAP) is the logarithm of the stock total market capitalization (Compustat item CSHO × item PRCC_F) at the end of the current fiscal year. SIGMA is the standard deviation of daily raw returns of the stock in the current fiscal year. Return on assets, ROA, is defined as operating income after depreciation (item OIBDP - item DP) over total assets (item AT) computed at the end of the current fiscal year. All regressions include year-quarter fixed effects, fiscal-quarter fixed effects and analyst fixed effects. Columns [2] and [5] also include industry fixed effects. Columns [3] and [6] also include stock fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1982 to December 2014.

	REVISION IN THE SAME DIRECTION AS THE LATEST SUE					
	[1]	[2]	[3]	[4]	[5]	[6]
SUE SIGN CHANGE(Q-1,Q-2)	-0.008**	-0.008**	-0.006			
	(0.004)	(0.004)	(0.004)			
SUE SIGN CHANGE(Q-1,Q-2)×MACROVOL(HIGH)	-0.036***	-0.036***	-0.033***			
	(0.006)	(0.006)	(0.006)			
SUE SIGN CHANGE(Q-1,Q-2,Q-3)				-0.006	-0.006	-0.006
				(0.004)	(0.004)	(0.004)
SUE SIGN CHANGE(Q-1,Q-2,Q-3)×MACROVOL(HIGH)				-0.034***	-0.034***	-0.030***
				(0.006)	(0.006)	(0.006)
MACROVOL(HIGH)	-0.009	-0.008	-0.013	-0.005	-0.004	-0.010
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.013)
ABS SUE(Q-1)	0.057***	0.057***	0.055***	0.057***	0.057***	0.054***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
SIZE	-0.009***	-0.009***	0.005	-0.009***	-0.009***	0.005
	(0.002)	(0.002)	(0.004)	(0.002)	(0.002)	(0.004)
COVERAGE	0.000	0.000	-0.000	0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SIGMA	0.013***	0.014***	0.015***	0.013***	0.013***	0.015***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
LNBM	0.000	-0.001	-0.001	0.000	-0.000	-0.001
	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)	(0.004)
ROA	0.202***	0.208***	0.159*	0.201***	0.208***	0.159*
	(0.067)	(0.068)	(0.090)	(0.067)	(0.068)	(0.090)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Analyst FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Stock FE	No	No	Yes	No	No	Yes
Observations	996129	996129	996129	996129	996129	996129
R^2	0.038	0.039	0.076	0.038	0.039	0.076

Table A.2. FORECAST REVISION - INTERACTION WITH MACROECONOMIC VOLATILITY - ROBUSTNESS

This Table presents variants of the regressions in Table 2 in which we interact the variable SUE SIGN CHANGE(Q-1,Q-2) in columns [1] to [3], and the variable SUE SIGN CHANGE(Q-1,Q-2,Q-3) in columns [4] to [6] with a dummy, MACROVOL(HIGH), that equals one if macroeconomic volatility lies in the highest tercile of its empirical distribution, and the MACROVOL(HIGH) dummy is included as additional control variable. Following Bloom (2009), we define macroeconomic volatility as the Chicago Board of Options Exchange VXO index of percentage implied volatility, on a hypothetical at the money S&P100 option 30 days to expiration. SUE SIGN CHANGE(Q-1,Q-2) is a dummy that equals one if there is a change in the sign of SUEs over the previous two quarters. SUE SIGN CHANGE(Q-1,Q-2,Q-3) is a dummy that equals one if there is one change in the sign of SUEs among the previous three quarters. ABS SUE(Q-1) is the absolute value of standardized unexpected earnings in year-quarter Q-1. COVERAGE is the number of analysts who covered the stock in the current fiscal year. LN(MKTCAP) is the logarithm of the stock total market capitalization (Compustat item CSHO × item PRCC_F) at the end of the current fiscal year. IMPLIEDVOL is the average of 30-day implied volatility of all at-the-money stock i options issued in the current fiscal year. LNBM is book-to-market defined as in Fama and French (2008) in the current year. Return on assets, ROA, is defined as operating income after depreciation (item OIBDP - item DP) over total assets (item AT) computed at the end of the current fiscal year. All regressions include year-quarter fixed effects, fiscal-quarter fixed effects and analyst fixed effects. Columns [2] and [5] also include industry fixed effects. Columns [3] and [6] also include stock fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1996 to December 2014.

	REVISION IN THE SAME DIRECTION AS THE LATEST SUE					
	[1]	[2]	[3]	[4]	[5]	[6]
SUE SIGN CHANGE(Q-1,Q-2)	-0.006	-0.006	-0.002			
	(0.006)	(0.006)	(0.006)			
SUE SIGN CHANGE(Q-1,Q-2)×MACROVOL(HIGH)	-0.037***	-0.037***	-0.032***			
	(0.009)	(0.009)	(0.009)			
SUE SIGN CHANGE(Q-1,Q-2,Q-3)				-0.009	-0.009	-0.006
				(0.006)	(0.006)	(0.006)
SUE SIGN CHANGE(Q-1,Q-2,Q-3)×MACROVOL(HIGH)				-0.028***	-0.028***	-0.023***
				(0.008)	(0.008)	(0.009)
MACROVOL(HIGH)	-0.001	-0.001	-0.004	0.000	0.001	-0.003
	(0.018)	(0.018)	(0.019)	(0.018)	(0.018)	(0.019)
ABS SUE(Q-1)	0.048***	0.048***	0.048***	0.048***	0.048***	0.047***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
SIZE	-0.007***	-0.008***	-0.015**	-0.007***	-0.008***	-0.015**
	(0.003)	(0.003)	(0.006)	(0.003)	(0.003)	(0.006)
COVERAGE	0.000	0.000	-0.000	0.000	0.000	-0.000
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)
IMPLIEDVOL	0.118***	0.119***	0.137***	0.119***	0.119***	0.137***
	(0.020)	(0.020)	(0.026)	(0.020)	(0.020)	(0.026)
LNBM	-0.002	-0.003	-0.007	-0.002	-0.003	-0.007
	(0.003)	(0.003)	(0.006)	(0.003)	(0.003)	(0.006)
ROA	0.242***	0.243***	0.102	0.243***	0.244***	0.106
	(0.091)	(0.090)	(0.120)	(0.091)	(0.090)	(0.120)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Analyst FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Stock FE	No	No	Yes	No	No	Yes
Observations	517979	517979	517979	517979	517979	517979
R^2	0.041	0.042	0.083	0.041	0.042	0.083

Table A.3. FORECAST REVISION - ROBUSTNESS - DIFFERENT CHOICES FOR CONTROL VARIABLES

This Table presents variants of the regression in Table 2, column [1], in which we include or not a log specification for each control variable. All regressions include year-quarter fixed effects, fiscal-quarter fixed effects and analyst fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1982 to December 2014.

	REVISION IN THE SAME DIRECTION AS THE LAST SUE				
	[1]	[2]	[3]	[4]	[5]
SUE SIGN CHANGE(Q-1,Q-2)	-0.021***	-0.021***	-0.021***	-0.021***	-0.019***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
ABS SUE(Q-1)	0.057***	0.057***	0.057***	0.057***	0.056***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
LN(MKTCAP)		-0.007***	-0.007***	-0.009***	-0.007***
		(0.002)	(0.002)	(0.002)	(0.002)
COVERAGE	-0.000*		0.000	0.000	0.000
	(0.000)		(0.000)	(0.000)	(0.000)
SIGMA	0.017***	0.014***		0.013***	0.014***
	(0.002)	(0.002)		(0.002)	(0.002)
LNBM	0.002	0.000	0.001		-0.002
	(0.003)	(0.003)	(0.003)		(0.003)
ROA	0.173**	0.198***	0.197***	0.206***	
	(0.068)	(0.068)	(0.067)	(0.067)	
MKTCAP	-0.000				
	(0.000)				
LN(COVERAGE)		-0.000			
		(0.004)			
LN(SIGMA)			0.051***		
			(0.005)		
BM				0.002	
				(0.004)	
LN(ROA)					0.003
					(0.003)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes
Analyst FE	Yes	Yes	Yes	Yes	Yes
Observations	996129	996129	996129	996129	940571
R^2	0.038	0.038	0.038	0.038	0.037

Table A.4. FORECAST REVISION - ROBUSTNESS - DIFFERENT CHOICES FOR CONTROL VARIABLES (2)

This Table presents variants of the regression in Table 2, column [4], in which we include or not a log specification for each control variable. All regressions include year-quarter fixed effects, fiscal-quarter fixed effects and analyst fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1982 to December 2014.

	REVISION IN THE SAME DIRECTION AS THE LAST SUE				
	[1]	[2]	[3]	[4]	[5]
SUE SIGN CHANGE(Q-1,Q-2,Q-3)	-0.018***	-0.018***	-0.018***	-0.018***	-0.016***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
ABS SUE(Q-1)	0.057***	0.057***	0.057***	0.057***	0.056***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
LN(MKTCAP)		-0.007***	-0.007***	-0.009***	-0.007***
		(0.002)	(0.002)	(0.002)	(0.002)
COVERAGE	-0.000*		0.000	0.000	0.000
	(0.000)		(0.000)	(0.000)	(0.000)
SIGMA	0.017***	0.014***		0.013***	0.014***
	(0.002)	(0.002)		(0.002)	(0.002)
LNBM	0.002	0.000	0.001		-0.002
	(0.003)	(0.003)	(0.003)		(0.003)
ROA	0.172**	0.198***	0.197***	0.205***	
	(0.068)	(0.068)	(0.067)	(0.067)	
MKTCAP	-0.000				
	(0.000)				
LN(COVERAGE)		-0.000			
		(0.004)			
LN(SIGMA)			0.052***		
			(0.005)		
BM				0.002	
				(0.004)	
LN(ROA)					0.003
					(0.003)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes
Analyst FE	Yes	Yes	Yes	Yes	Yes
Observations	996129	996129	996129	996129	940571
R^2	0.038	0.038	0.038	0.038	0.037

Table A.5. FORECAST REVISION - HETEROGENEOUS BEHAVIOR ACROSS ANALYSTS - ROBUSTNESS - DIFFERENT CHOICES FOR CONTROL VARIABLES

This Table presents variants of the regression in Table 6, column [1], in which we include or not a log specification for each control variable. All regressions include year-quarter fixed effects, fiscal-quarter fixed effects and analyst fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1982 to December 2014.

	REVISION IN THE SAME DIRECTION AS THE LAST SUE				
	[1]	[2]	[3]	[4]	[5]
SIGN REV(Q-1) $\neq$ SIGN SUE(Q-1)	-0.220***	-0.220***	-0.220***	-0.220***	-0.218***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
POSREV(Q-1)	0.022***	0.023***	0.023***	0.023***	0.027***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
ABS SUE(Q-1)	0.044***	0.044***	0.044***	0.044***	0.044***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
LN(MKTCAP)		-0.007***	-0.007***	-0.009***	-0.007***
		(0.002)	(0.002)	(0.002)	(0.002)
COVERAGE	-0.000*		0.000	0.000	0.000
	(0.000)		(0.000)	(0.000)	(0.000)
SIGMA	0.014***	0.011***		0.010***	0.011***
	(0.002)	(0.002)		(0.002)	(0.002)
LNBM	0.002	0.000	0.000		-0.002
	(0.003)	(0.003)	(0.003)		(0.003)
ROA	0.089	0.114*	0.114*	0.122*	
	(0.066)	(0.066)	(0.066)	(0.065)	
MKTCAP	-0.000				
	(0.000)				
LN(COVERAGE)		-0.000			
		(0.004)			
LN(SIGMA)			0.041***		
			(0.005)		
BM				0.003	
				(0.004)	
LN(ROA)					-0.001
					(0.003)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes
Analyst FE	Yes	Yes	Yes	Yes	Yes
Observations	602209	602209	602209	602209	567167
R^2	0.090	0.090	0.090	0.090	0.089

Table A.6. DISPERSION IN ANALYST FORECASTS - ROBUSTNESS - DIFFERENT CHOICES FOR CONTROL VARIABLES

This Table presents variants of the regression in Table 9, column [1], in which we include or not a log specification for each control variable. All regressions include year-quarter fixed effects and fiscal-quarter fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than $5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1982 to December 2014.

	DISP(Q)				
	[1]	[2]	[3]	[4]	[5]
SUE SIGN CHANGE(Q-1,Q-2)	0.048***	0.048***	0.050***	0.044***	0.050***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)
ABS SUE(Q-1)	0.085***	0.086***	0.089***	0.086***	0.076***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
LN(MKTCAP)		-0.023***	-0.019***	-0.029***	-0.017***
		(0.007)	(0.007)	(0.007)	(0.006)
COVERAGE	0.003***		0.007***	0.007***	0.006***
	(0.001)		(0.001)	(0.001)	(0.001)
SIGMA	0.286***	0.275***		0.252***	0.240***
	(0.008)	(0.010)		(0.009)	(0.009)
LNBM	0.311***	0.305***	0.307***		0.281***
	(0.012)	(0.012)	(0.013)		(0.011)
ROA	-4.545***	-4.479***	-5.061***	-4.323***	
	(0.197)	(0.198)	(0.200)	(0.199)	
MKTCAP	0.000**				
	(0.000)				
LN(COVERAGE)		0.084***			
		(0.013)			
LN(SIGMA)			0.748***		
			(0.024)		
BM				0.612***	
				(0.031)	
LN(ROA)					-0.086***
					(0.007)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes
Observations	140950	140950	140950	140950	130614
R^2	0.211	0.211	0.206	0.233	0.190

Table A.7. DISPERSION IN ANALYST FORECASTS - ROBUSTNESS - DIFFERENT CHOICES FOR CONTROL VARIABLES (2)

This Table presents variants of the regression in Table 9, column [4], in which we include or not a log specification for each control variable. All regressions include year-quarter fixed effects and fiscal-quarter fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than $5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1982 to December 2014.

	DISP(Q)				
	[1]	[2]	[3]	[4]	[5]
SUE SIGN CHANGE(Q-1,Q-2,Q-3)	0.051***	0.051***	0.052***	0.047***	0.051***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)
ABS SUE(Q-1)	0.086***	0.087***	0.091***	0.087***	0.077***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
LN(MKTCAP)		-0.023***	-0.018***	-0.029***	-0.017***
		(0.007)	(0.007)	(0.007)	(0.006)
COVERAGE	0.003***		0.007***	0.007***	0.006***
	(0.001)		(0.001)	(0.001)	(0.001)
SIGMA	0.286***	0.275***		0.253***	0.240***
	(0.008)	(0.010)		(0.009)	(0.009)
LNBM	0.310***	0.305***	0.307***		0.280***
	(0.012)	(0.012)	(0.013)		(0.011)
ROA	-4.538***	-4.473***	-5.055***	-4.316***	
	(0.197)	(0.198)	(0.200)	(0.198)	
MKTCAP	0.000**				
	(0.000)				
LN(COVERAGE)		0.084***			
		(0.013)			
LN(SIGMA)			0.747***		
			(0.024)		
BM				0.612***	
				(0.031)	
LN(ROA)					-0.086***
					(0.007)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes
Observations	140950	140950	140950	140950	130614
R^2	0.211	0.211	0.207	0.233	0.190

Table A.8. FORECAST REVISION - ROBUSTNESS - END OF FISCAL QUARTERS VERSUS EARNINGS ANNOUNCEMENT DATES

This Table present variants of the regressions in Table 2 in which individual analysts' revisions are computed as the difference between the last annual earnings forecast made before the end date of two consecutive fiscal quarters (instead of the difference between the last annual earnings forecast made before the announcement dates of two consecutive quarterly earnings). SUE SIGN CHANGE(Q-1,Q-2) is a dummy that equals one if there is a change in the sign of SUEs over the previous two quarters. SUE SIGN CHANGE(Q-1,Q-2,Q-3) is a dummy that equals one if there is one change in the sign of SUEs among the previous three quarters. ABS SUE(Q-1) is the absolute value of standardized unexpected earnings in year-quarter Q-1. COVERAGE is the number of analysts who covered the stock in the current fiscal year. LN(MKTCAP) is the logarithm of the stock total market capitalization (Compustat item CSHO × item PRCC_F) at the end of the current fiscal year. SIGMA is the standard deviation of daily raw returns of the stock in the current fiscal year. LNBM is book-to-market defined as in Fama and French (2008) in the current year. Return on assets, ROA, is defined as operating income after depreciation (item OIBDP - item DP) over total assets (item AT) computed at the end of the current fiscal year. All regressions include year-quarter fixed effects, fiscal-quarter fixed effects and analyst fixed effects. Columns [2] and [5] also include industry fixed effects. Columns [3] and [6] also include stock fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1982 to December 2014.

	REVISION IN THE SAME DIRECTION AS THE LAST SUE					
	[1]	[2]	[3]	[4]	[5]	[6]
SUE SIGN CHANGE(Q-1,Q-2)	-0.020***	-0.020***	-0.017***			
	(0.003)	(0.003)	(0.003)			
SUE SIGN CHANGE(Q-1,Q-2,Q-3)				-0.018***	-0.018***	-0.016***
				(0.003)	(0.003)	(0.003)
ABS SUE(Q-1)	0.057***	0.057***	0.054***	0.057***	0.057***	0.054***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
LN(MKTCAP)	-0.009***	-0.009***	0.005	-0.009***	-0.009***	0.005
	(0.002)	(0.002)	(0.004)	(0.002)	(0.002)	(0.004)
COVERAGE	0.000	0.000	-0.000	0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SIGMA	0.014***	0.014***	0.015***	0.014***	0.014***	0.015***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
LNBM	-0.000	-0.001	-0.001	0.000	-0.000	-0.001
	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)	(0.004)
ROA	0.204***	0.211***	0.161*	0.204***	0.211***	0.161*
	(0.068)	(0.069)	(0.091)	(0.068)	(0.069)	(0.091)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Analyst FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Stock FE	No	No	Yes	No	No	Yes
Observations	981903	981903	981903	981903	981903	981903
R^2	0.038	0.039	0.076	0.038	0.039	0.076

Table A.9. FORECAST REVISION - HETEROGENEOUS BEHAVIOR ACROSS ANALYSTS - ROBUSTNESS - END OF FISCAL QUARTERS VERSUS EARNINGS ANNOUNCEMENT DATES

This Table present variants of the regressions in Table 6 in which individual analysts' revisions are computed as the difference between the last annual earnings forecast made before the end of two consecutive fiscal quarters (instead of the difference between the last annual earnings forecast made before the announcement dates of two consecutive quarterly earnings). SIGN REV(Q-1) $\neq$ SIGN SUE(Q-1) is a dummy that equals one if the analyst's annual earnings forecast revision for a given stock, if any, made between the end of the Q-2 and Q-1 fiscal quarters has a different sign than SUE(Q-1). POSREV(Q-1) is a dummy that equals one if the analyst has revised his/her annual earnings forecast upward between the end of the Q-2 and Q-1 fiscal quarters. ABS SUE(Q-1) is the absolute value of standardized unexpected earnings in year-quarter Q-1. COVERAGE is the number of analysts who covered the stock in the current fiscal year. LN(MKTCAP) is the logarithm of the stock total market capitalization (Compustat item CSHO $\times$ item PRCC_F) at the end of the current fiscal year. SIGMA is the standard deviation of daily raw returns of the stock in the current fiscal year. IMPLIEDVOL is the average of 30-day implied volatility of all at-the-money stock i options issued in the current fiscal year. LNBM is book-to-market defined as in Fama and French (2008) in the current year. Return on assets, ROA, is defined as operating income after depreciation (item OIBDP - item DP) over total assets (item AT) computed at the end of the current fiscal year. All regressions include year-quarter fixed effects, fiscal-quarter fixed effects and analyst fixed effects. Columns [2] and [5] also include industry fixed effects. Columns [3] and [6] also include stock fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1982 to December 2014 in columns [1] to [3], and from January 1996 to December 2014 in columns [4] to [6].

	REVISION IN THE SAME DIRECTION AS THE LAST SUE					
	[1]	[2]	[3]	[4]	[5]	[6]
SIGN REV(Q-1) $\neq$ SIGN SUE(Q-1)	-0.218***	-0.217***	-0.195***	-0.197***	-0.196***	-0.173***
	(0.003)	(0.003)	(0.003)	(0.005)	(0.005)	(0.005)
POSREV(Q-1)	0.023***	0.023***	0.026***	0.027***	0.028***	0.031***
	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)
ABS SUE(Q-1)	0.044***	0.044***	0.042***	0.038***	0.038***	0.038***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
LN(MKTCAP)	-0.009***	-0.009***	0.000	-0.008***	-0.008***	-0.013**
	(0.002)	(0.002)	(0.004)	(0.003)	(0.003)	(0.006)
COVERAGE	0.000	0.000	-0.000	0.001	0.001	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
SIGMA	0.010***	0.010***	0.012***			
	(0.002)	(0.002)	(0.002)			
IMPLIEDVOL				0.098***	0.098***	0.115***
				(0.020)	(0.020)	(0.028)
LNBM	-0.000	-0.000	-0.000	0.000	-0.000	-0.007
	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)	(0.006)
ROA	0.113*	0.117*	0.118	0.201**	0.198**	0.135
	(0.067)	(0.067)	(0.093)	(0.094)	(0.093)	(0.128)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Analyst FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Stock FE	No	No	Yes	No	No	Yes
Observations	589314	589314	589314	330289	330289	330289
R^2	0.089	0.090	0.124	0.085	0.086	0.125

Table A.10. DISPERSION IN ANALYST FORECASTS - ROBUSTNESS - END OF FISCAL QUARTERS VERSUS EARNINGS ANNOUNCEMENT DATES

This Table present variants of the regressions in Table 9 in which DISP(Q) is measured using the latest earnings forecast of each analyst covering the stock between the end of two consecutive fiscal quarters (instead of using the latest earnings forecast of each analyst covering the stock between the announcement dates of two consecutive quarterly earnings). SUE SIGN CHANGE(Q-1,Q-2) is a dummy that equals one if there is a change in the sign of SUEs over the previous two quarters. SUE SIGN CHANGE(Q-1,Q-2,Q-3) is a dummy that equals one if there is one change in the sign of SUEs among the previous three quarters. ABS SUE(Q-1) is the absolute value of standardized unexpected earnings in year-quarter Q-1. COVERAGE is the number of analysts who covered the stock in the current fiscal year. LN(MKTCAP) is the logarithm of the stock total market capitalization (Compustat item CSHO × item PRCC_F) at the end of the current fiscal year. SIGMA is the standard deviation of daily raw returns of the stock in the current fiscal year. LNBM is book-to-market defined as in Fama and French (2008) in the current year. Return on assets, ROA, is defined as operating income after depreciation (item OIBDP - item DP) over total assets (item AT) computed at the end of the current fiscal year. All regressions include year-quarter fixed effects, fiscal-quarter fixed effects and analyst fixed effects. Columns [2] and [5] also include industry fixed effects. Columns [3] and [6] also include stock fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1982 to December 2014.

	DISP(Q)					
	[1]	[2]	[3]	[4]	[5]	[6]
SUE SIGN CHANGE(Q-1,Q-2)	0.048***	0.045***	0.038***			
	(0.007)	(0.006)	(0.006)			
SUE SIGN CHANGE(Q-1,Q-2,Q-3)				0.051***	0.047***	0.040***
				(0.007)	(0.007)	(0.006)
ABS SUE(Q-1)	0.085***	0.081***	0.069***	0.087***	0.083***	0.070***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
LN(MKTCAP)	-0.023***	-0.030***	-0.202***	-0.023***	-0.030***	-0.202***
	(0.007)	(0.007)	(0.013)	(0.007)	(0.007)	(0.013)
COVERAGE	0.007***	0.006***	0.004***	0.007***	0.006***	0.004***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
SIGMA	0.274***	0.264***	0.219***	0.274***	0.264***	0.219***
	(0.010)	(0.010)	(0.012)	(0.010)	(0.010)	(0.012)
LNBM	0.303***	0.278***	0.304***	0.303***	0.278***	0.304***
	(0.012)	(0.012)	(0.014)	(0.012)	(0.012)	(0.014)
ROA	-4.474***	-4.562***	-3.068***	-4.468***	-4.557***	-3.067***
	(0.200)	(0.219)	(0.290)	(0.200)	(0.219)	(0.290)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Stock FE	No	No	Yes	No	No	Yes
Observations	139436	139436	139436	139436	139436	139436
R^2	0.212	0.230	0.448	0.212	0.230	0.448

Table A.11. FORECAST REVISION - ROBUSTNESS - ALTERNATIVE MEASURE OF FORECAST REVISION

This Table present variants of the regressions in Table 2 in which the dependent variable, the dummy REVISION IN THE SAME DIRECTION AS THE LAST SUE, is computed for each analyst that covered the stock before the earnings announcement of quarter Q-1 (instead of considering only analysts that have issued a forecast both before and after the announcement date of quarter Q-1). SUE SIGN CHANGE(Q-1,Q-2) is a dummy that equals one if there is a change in the sign of SUEs over the previous two quarters. SUE SIGN CHANGE(Q-1,Q-2,Q-3) is a dummy that equals one if there is one change in the sign of SUEs among the previous three quarters. ABS SUE(Q-1) is the absolute value of standardized unexpected earnings in year-quarter Q-1. COVERAGE is the number of analysts who covered the stock in the current fiscal year. LN(MKTCAP) is the logarithm of the stock total market capitalization (Compustat item CSHO × item PRCC_F) at the end of the current fiscal year. SIGMA is the standard deviation of daily raw returns of the stock in the current fiscal year. LNBM is book-to-market defined as in Fama and French (2008) in the current year. Return on assets, ROA, is defined as operating income after depreciation (item OIBDP - item DP) over total assets (item AT) computed at the end of the current fiscal year. All regressions include year-quarter fixed effects, fiscal-quarter fixed effects and analyst fixed effects. Columns [2] and [5] also include industry fixed effects. Columns [3] and [6] also include stock fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1982 to December 2014.

	REVISION IN THE SAME DIRECTION AS THE LAST SUE (considering all analysts covering the stock before the earnings announcement)					
	[1]	[2]	[3]	[4]	[5]	[6]
SUE SIGN CHANGE(Q-1,Q-2)	-0.018***	-0.018***	-0.012***			
	(0.003)	(0.003)	(0.003)			
SUE SIGN CHANGE(Q-1,Q-2,Q-3)				-0.016***	-0.016***	-0.011***
				(0.003)	(0.003)	(0.004)
ABS SUE(Q-1)	0.056***	0.056***	0.053***	0.056***	0.056***	0.053***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
SIZE	-0.009***	-0.009***	0.002	-0.009***	-0.009***	0.002
	(0.002)	(0.002)	(0.004)	(0.002)	(0.002)	(0.004)
COVERAGE	0.000	0.000	-0.001	0.000	0.000	-0.001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SIGMA	0.013***	0.013***	0.014***	0.013***	0.013***	0.014***
	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.003)
LNBM	0.000	-0.000	-0.001	0.000	-0.000	-0.001
	(0.003)	(0.003)	(0.005)	(0.003)	(0.003)	(0.005)
ROA	0.238***	0.243***	0.233**	0.238***	0.244***	0.234**
	(0.075)	(0.075)	(0.100)	(0.075)	(0.075)	(0.100)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Analyst FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Stock FE	No	No	Yes	No	No	Yes
Observations	673626	673626	673626	673626	673626	673626
R^2	0.044	0.045	0.088	0.044	0.045	0.088

Table A.12. FORECAST REVISION - HETEROGENEOUS BEHAVIOR ACROSS ANALYSTS - ROBUSTNESS - ALTERNATIVE MEASURE OF FORECAST REVISION

This Table present variants of the regressions in Table 6 the dependent variable, the dummy REVISION IN THE SAME DIRECTION AS THE LAST SUE, is computed for each analyst that covered the stock before the earnings announcement of quarter Q-1 (instead of considering only analysts that have issued a forecast both before and after the announcement date of quarter Q-1). SIGN REV(Q-1) $\neq$ SIGN SUE(Q-1) is a dummy that equals one if the analyst's annual earnings forecast revision for a given stock, if any, made between the end of the Q-2 and Q-1 fiscal quarters has a different sign than SUE(Q-1). POSREV(Q-1) is a dummy that equals one if the analyst has revised his/her annual earnings forecast upward between the end of the Q-2 and Q-1 fiscal quarters. ABS SUE(Q-1) is the absolute value of standardized unexpected earnings in year-quarter Q-1. COVERAGE is the number of analysts who covered the stock in the current fiscal year. LN(MKTCAP) is the logarithm of the stock total market capitalization (Compustat item CSHO $\times$ item PRCC_F) at the end of the current fiscal year. SIGMA is the standard deviation of daily raw returns of the stock in the current fiscal year. SIGMA is the standard deviation of daily raw returns of the stock in the current fiscal year. IMPLIEDVOL is the average of 30-day implied volatility of all at-the-money stock i options issued in the current fiscal year. LNBM is book-to-market defined as in Fama and French (2008) in the current year. Return on assets, ROA, is defined as operating income after depreciation (item OIBDP - item DP) over total assets (item AT) computed at the end of the current fiscal year. All regressions include year-quarter fixed effects, fiscal-quarter fixed effects and analyst fixed effects. Columns [2] and [5] also include industry fixed effects. Columns [3] and [6] also include stock fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1982 to December 2014 In columns [1] to [3], and from January 1996 to December 2014 in columns [4] to [6].

	REVISION IN THE SAME DIRECTION AS THE LAST SUE (considering all analysts covering the stock before the earnings announcement)					
	[1]	[2]	[3]	[4]	[5]	[6]
SIGN REV(Q-1) $\neq$ SIGN SUE(Q-1)	-0.221***	-0.220***	-0.198***	-0.199***	-0.198***	-0.175***
	(0.003)	(0.003)	(0.004)	(0.005)	(0.005)	(0.005)
POSREV(Q-1)	0.024***	0.024***	0.027***	0.028***	0.028***	0.031***
	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)
ABS SUE(Q-1)	0.045***	0.045***	0.043***	0.038***	0.038***	0.038***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
LN(MKTCAP)	-0.009***	-0.009***	-0.001	-0.007***	-0.008***	-0.015**
	(0.002)	(0.002)	(0.004)	(0.003)	(0.003)	(0.006)
COVERAGE	0.000	0.000	-0.000	0.001	0.001	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
SIGMA	0.010***	0.010***	0.012***			
	(0.002)	(0.002)	(0.002)			
IMPLIEDVOL				0.100***	0.101***	0.122***
				(0.020)	(0.020)	(0.028)
LNBM	0.001	0.000	0.001	0.001	0.000	-0.005
	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)	(0.006)
ROA	0.115*	0.119*	0.123	0.189**	0.185**	0.126
	(0.066)	(0.067)	(0.092)	(0.093)	(0.093)	(0.126)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Analyst FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Stock FE	No	No	Yes	No	No	Yes
Observations	582219	582219	582219	325443	325443	325443
R^2	0.091	0.092	0.126	0.086	0.087	0.126

Table A.13. FORECAST REVISION - ROBUSTNESS - ALTERNATIVE VOLATILITY MEASURE

This Table presents variants of the regressions in Table 2 in which we use the standard deviation of monthly returns of each stock in the current fiscal year as an alternative measure of volatility. In columns [1] to [6], the dependent variable is a dummy that equals one if the analyst's annual earnings forecast revision for a given stock, if any, made between the announcement dates of the Q-1 and Q quarterly earnings has the same sign as SUE(Q-1), the unexpected earnings in quarter Q-1. Individual revisions are computed as the difference between the last annual earnings forecast made between the announcement dates of the Q-1 and Q quarterly earnings and the last annual earnings forecast, if any, made before the announcement date of the Q-1 quarterly earnings. SUE SIGN CHANGE(Q-1,Q-2) is a dummy that equals one if there is a change in the sign of SUEs over the previous two quarters. SUE SIGN CHANGE(Q-1,Q-2,Q-3) is a dummy that equals one if there is one change in the sign of SUEs among the previous three quarters. ABS SUE(Q-1) is the absolute value of standardized unexpected earnings in year-quarter Q-1. COVERAGE is the number of analysts who covered the stock in the current fiscal year. LN(MKTCAP) is the logarithm of the stock total market capitalization (Compustat item CSHO × item PRCC_F) at the end of the current fiscal year. SIGMA(MONTHLY) is the standard deviation of monthly raw returns of the stock in the current fiscal year. LNBM is book-to-market defined as in Fama and French (2008) in the current year. Return on assets, ROA, is defined as operating income after depreciation (item OIBDP - item DP) over total assets (item AT) computed at the end of the current fiscal year. All regressions include year-quarter fixed effects, fiscal-quarter fixed effects and analyst fixed effects. Columns [2] and [5] also include industry fixed effects. Columns [3] and [6] also include stock fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than $5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1982 to December 2014.

	REVISION IN THE SAME DIRECTION AS THE LAST SUE					
	[1]	[2]	[3]	[4]	[5]	[6]
SUE SIGN CHANGE(Q-1,Q-2)	-0.024***	-0.024***	-0.020***			
	(0.003)	(0.003)	(0.003)			
SUE SIGN CHANGE(Q-1,Q-2,Q-3)				-0.021***	-0.021***	-0.019***
				(0.003)	(0.003)	(0.003)
ABS SUE(Q-1)	0.059***	0.059***	0.056***	0.059***	0.059***	0.056***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
LN(MKTCAP)	-0.010***	-0.010***	0.005	-0.010***	-0.010***	0.005
	(0.002)	(0.002)	(0.004)	(0.002)	(0.002)	(0.004)
COVERAGE	0.000	0.000*	-0.000	0.000	0.000*	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SIGMA(MONTHLY)	0.210***	0.209***	0.208***	0.209***	0.208***	0.206***
	(0.035)	(0.035)	(0.042)	(0.035)	(0.035)	(0.042)
LNBM	-0.000	-0.001	0.001	-0.000	-0.001	0.001
	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)	(0.004)
ROA	0.256***	0.262***	0.224**	0.255***	0.262***	0.225**
	(0.070)	(0.071)	(0.094)	(0.070)	(0.071)	(0.094)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Analyst FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Stock FE	No	No	Yes	No	No	Yes
Observations	938322	938322	938322	938322	938322	938322
R^2	0.039	0.040	0.078	0.039	0.040	0.078

Table A.14. FORECAST REVISION - HETEROGENEOUS BEHAVIOR ACROSS ANALYSTS - ROBUSTNESS - ALTERNATIVE VOLATILITY MEASURE)

This Table present variants of the regressions in Table 6 in which we use the standard deviation of monthly returns of each stock in the current fiscal year as an alternative measure of volatility. SIGN REV(Q-1) $\neq$ SIGN SUE(Q-1) is a dummy that equals one if the analyst's annual earnings forecast revision for a given stock, if any, made between the end of the Q-2 and Q-1 fiscal quarters has a different sign than SUE(Q-1). POSREV(Q-1) is a dummy that equals one if the analyst has revised his/her annual earnings forecast upward between the end of the Q-2 and Q-1 fiscal quarters. ABS SUE(Q-1) is the absolute value of standardized unexpected earnings in year-quarter Q-1. COVERAGE is the number of analysts who covered the stock in the current fiscal year. LN(MKTCAP) is the logarithm of the stock total market capitalization (Compustat item CSHO $\times$ item PRCC_F) at the end of the current fiscal year. SIGMA(MONTHLY) is the standard deviation of monthly raw returns of the stock in the current fiscal year. LNBM is book-to-market defined as in Fama and French (2008) in the current year. Return on assets, ROA, is defined as operating income after depreciation (item OIBDP - item DP) over total assets (item AT) computed at the end of the current fiscal year. All regressions include year-quarter fixed effects, fiscal-quarter fixed effects and analyst fixed effects. Columns [2] and [5] also include industry fixed effects. Columns [3] and [6] also include stock fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1982 to December 2014 in columns [1] to [3], and from January 1996 to December 2014 in columns [4] to [6].

	REVISION IN THE SAME DIRECTION AS THE LAST SUE		
	[1]	[2]	[3]
SIGN REV(Q-1) $\neq$ SIGN SUE(Q-1)	-0.227***	-0.226***	-0.204***
	(0.003)	(0.003)	(0.003)
POSREV(Q-1)	0.021***	0.021***	0.023***
	(0.003)	(0.003)	(0.003)
ABS SUE(Q-1)	0.045***	0.045***	0.043***
	(0.002)	(0.002)	(0.002)
LN(MKTCAP)	-0.009***	-0.010***	0.001
	(0.002)	(0.002)	(0.004)
COVERAGE	0.000	0.001*	-0.000
	(0.000)	(0.000)	(0.000)
SIGMA(MONTHLY)	0.164***	0.163***	0.180***
	(0.034)	(0.035)	(0.045)
LNBM	0.000	-0.000	0.003
	(0.003)	(0.003)	(0.004)
ROA	0.185***	0.187***	0.202**
	(0.069)	(0.070)	(0.097)
Fiscal-Quarter FE	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes
Analyst FE	Yes	Yes	Yes
Industry FE	No	Yes	No
Stock FE	No	No	Yes
Observations	559656	559656	559656
R^2	0.094	0.095	0.130

Table A.15. DISPERSION IN ANALYST FORECASTS - ROBUSTNESS - ALTERNATIVE VOLATILITY MEASURE

This Table presents variants of the regressions in Table 9 in which we use the standard deviation of monthly returns of each stock in the current fiscal year as an alternative measure of volatility. SUE SIGN CHANGE(Q-1,Q-2) is a dummy that equals one if there is a change in the sign of SUEs over the previous two quarters. SUE SIGN CHANGE(Q-1,Q-2,Q-3) is a dummy that equals one if there is one change in the sign of SUEs among the previous three quarters. ABS SUE(Q-1) is the absolute value of standardized unexpected earnings in year-quarter Q-1. COVERAGE is the number of analysts who covered the stock in the current fiscal year. LN(MKTCAP) is the logarithm of the stock total market capitalization (Compustat item CSHO × item PRCC_F) at the end of the current fiscal year. SIGMA(MONTHLY) is the standard deviation of monthly raw returns of the stock in the current fiscal year. LNBM is book-to-market defined as in Fama and French (2008) in the current year. Return on assets, ROA, is defined as operating income after depreciation (item OIBDP - item DP) over total assets (item AT) computed at the end of the current fiscal year. All regressions include year-quarter fixed effects, fiscal-quarter fixed effects and analyst fixed effects. Columns [2] and [5] also include industry fixed effects. Columns [3] and [6] also include stock fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1982 to December 2014.

	DISP(Q)					
	[1]	[2]	[3]	[4]	[5]	[6]
SUE SIGN CHANGE(Q-1,Q-2)	0.046***	0.044***	0.038***			
	(0.007)	(0.007)	(0.006)			
SUE SIGN CHANGE(Q-1,Q-2,Q-3)				0.048***	0.046***	0.040***
				(0.007)	(0.007)	(0.006)
ABS SUE(Q-1)	0.098***	0.093***	0.077***	0.099***	0.094***	0.078***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
LN(MKTCAP)	-0.069***	-0.074***	-0.257***	-0.069***	-0.074***	-0.257***
	(0.007)	(0.007)	(0.015)	(0.007)	(0.007)	(0.015)
COVERAGE	0.010***	0.009***	0.007***	0.010***	0.009***	0.007***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
SIGMA(MONTHLY)	4.542***	4.312***	3.115***	4.541***	4.311***	3.117***
	(0.177)	(0.185)	(0.200)	(0.177)	(0.185)	(0.200)
LNBM	0.285***	0.264***	0.294***	0.285***	0.264***	0.293***
	(0.012)	(0.013)	(0.014)	(0.012)	(0.013)	(0.014)
ROA	-4.877***	-4.970***	-3.181***	-4.871***	-4.966***	-3.180***
	(0.205)	(0.226)	(0.298)	(0.205)	(0.226)	(0.298)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Stock FE	No	No	Yes	No	No	Yes
Observations	133814	133814	133814	133814	133814	133814
R^2	0.201	0.221	0.445	0.201	0.221	0.445

Table A.16. FORECAST REVISION - ROBUSTNESS - CONTROLLING FOR IMPLIED VOL (FROM 60 DAYS OPTIONS)

This Table presents variants of the regressions in Table 3 in which implied volatility is computed from 60-day at-the-money stock i options issued in the current fiscal year. In columns [1] to [6], the dependent variable is a dummy that equals one if the analyst's annual earnings forecast revision for a given stock, if any, made between the announcement dates of the Q-1 and Q quarterly earnings has the same sign as SUE(Q-1), the unexpected earnings in quarter Q-1. Individual revisions are computed as the difference between the last annual earnings forecast made between the announcement dates of the Q-1 and Q quarterly earnings and the last annual earnings forecast, if any, made before the announcement date of the Q-1 quarterly earnings. SUE SIGN CHANGE(Q-1,Q-2) is a dummy that equals one if there is a change in the sign of SUEs over the previous two quarters. SUE SIGN CHANGE(Q-1,Q-2,Q-3) is a dummy that equals one if there is one change in the sign of SUEs among the previous three quarters. ABS SUE(Q-1) is the absolute value of standardized unexpected earnings in year-quarter Q-1. COVERAGE is the number of analysts who covered the stock in the current fiscal year. LN(MKTCAP) is the logarithm of the stock total market capitalization (Compustat item CSHO × item PRCC_F) at the end of the current fiscal year. IMPLIEDVOL is the average of 60-day implied volatility of all at-the-money stock i options issued in the current fiscal year. LNBM is book-to-market defined as in Fama and French (2008) in the current year. Return on assets, ROA, is defined as operating income after depreciation (item OIBDP - item DP) over total assets (item AT) computed at the end of the current fiscal year. All regressions include year-quarter fixed effects, fiscal-quarter fixed effects and analyst fixed effects. Columns [2] and [5] also include industry fixed effects. Columns [3] and [6] also include stock fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1996 to December 2014.

	REVISION IN THE SAME DIRECTION AS THE LAST SUE					
	[1]	[2]	[3]	[4]	[5]	[6]
SUE SIGN CHANGE(Q-1,Q-2)	-0.023***	-0.023***	-0.016***			
	(0.004)	(0.004)	(0.004)			
SUE SIGN CHANGE(Q-1,Q-2,Q-3)				-0.022***	-0.022***	-0.016***
				(0.004)	(0.004)	(0.004)
ABS SUE(Q-1)	0.048***	0.048***	0.048***	0.048***	0.048***	0.047***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
LN(MKTCAP)	-0.007***	-0.007***	-0.014**	-0.007***	-0.007***	-0.014**
	(0.003)	(0.003)	(0.006)	(0.003)	(0.003)	(0.006)
COVERAGE	0.000	0.000	-0.000	0.000	0.000	-0.000
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)
IMPLIEDVOL (60 DAYS OPTION)	0.124***	0.124***	0.147***	0.124***	0.125***	0.147***
	(0.020)	(0.020)	(0.027)	(0.020)	(0.020)	(0.027)
LNBM	-0.002	-0.003	-0.007	-0.002	-0.003	-0.007
	(0.003)	(0.003)	(0.006)	(0.003)	(0.003)	(0.006)
ROA	0.249***	0.250***	0.110	0.250***	0.251***	0.112
	(0.091)	(0.091)	(0.120)	(0.091)	(0.091)	(0.120)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Analyst FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Stock FE	No	No	Yes	No	No	Yes
Observations	517317	517317	517317	517317	517317	517317
R^2	0.041	0.042	0.083	0.041	0.042	0.083

Table A.17. FORECAST REVISION - ROBUSTNESS - CONTROLLING FOR IMPLIED VOL (FROM 90 DAYS OPTIONS)

This Table presents variants of the regressions in Table 3 in which implied volatility is computed from 90-day at-the-money stock i options issued in the current fiscal year. In columns [1] to [6], the dependent variable is a dummy that equals one if the analyst's annual earnings forecast revision for a given stock, if any, made between the announcement dates of the Q-1 and Q quarterly earnings has the same sign as SUE(Q-1), the unexpected earnings in quarter Q-1. Individual revisions are computed as the difference between the last annual earnings forecast made between the announcement dates of the Q-1 and Q quarterly earnings and the last annual earnings forecast, if any, made before the announcement date of the Q-1 quarterly earnings. SUE SIGN CHANGE(Q-1,Q-2) is a dummy that equals one if there is a change in the sign of SUEs over the previous two quarters. SUE SIGN CHANGE(Q-1,Q-2,Q-3) is a dummy that equals one if there is one change in the sign of SUEs among the previous three quarters. ABS SUE(Q-1) is the absolute value of standardized unexpected earnings in year-quarter Q-1. COVERAGE is the number of analysts who covered the stock in the current fiscal year. LN(MKTCAP) is the logarithm of the stock total market capitalization (Compustat item CSHO × item PRCC_F) at the end of the current fiscal year. IMPLIEDVOL is the average of 90-day implied volatility of all at-the-money stock i options issued in the current fiscal year. LNBM is book-to-market defined as in Fama and French (2008) in the current year. Return on assets, ROA, is defined as operating income after depreciation (item OIBDP - item DP) over total assets (item AT) computed at the end of the current fiscal year. All regressions include year-quarter fixed effects, fiscal-quarter fixed effects and analyst fixed effects. Columns [2] and [5] also include industry fixed effects. Columns [3] and [6] also include stock fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1996 to December 2014.

	REVISION IN THE SAME DIRECTION AS THE LAST SUE					
	[1]	[2]	[3]	[4]	[5]	[6]
SUE SIGN CHANGE(Q1,Q2)	-0.024***	-0.023***	-0.020**			
	(0.007)	(0.007)	(0.009)			
SUE SIGN CHANGE(Q-1,Q-2,Q-3)				-0.012**	-0.011*	-0.013*
				(0.006)	(0.006)	(0.007)
ABS SUE(Q2)	0.070***	0.071***	0.076***			
	(0.004)	(0.004)	(0.005)			
ABS SUE(Q3)				0.045***	0.045***	0.047***
				(0.003)	(0.003)	(0.004)
COVERAGE	0.000	0.000	-0.000	0.000	0.000	-0.001
	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)
SIZE	-0.016***	-0.015***	-0.005	-0.011***	-0.011***	-0.020**
	(0.003)	(0.004)	(0.009)	(0.003)	(0.003)	(0.009)
IMPLIEDVOL (90 DAYS OPTION)	0.027	0.034	0.074*	0.031	0.044	0.033
	(0.026)	(0.027)	(0.044)	(0.026)	(0.027)	(0.044)
LNBM	0.007*	0.005	0.016*	0.007*	0.002	0.005
	(0.004)	(0.005)	(0.009)	(0.004)	(0.004)	(0.008)
ROA	0.344***	0.266***	0.082	0.030	-0.076	-0.106
	(0.083)	(0.091)	(0.171)	(0.078)	(0.087)	(0.161)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Stock FE	No	No	Yes	No	No	Yes
Observations	18379	18379	18379	19614	19614	19614
R^2	0.027	0.031	0.227	0.016	0.020	0.211

Table A.18. FORECAST REVISION - ROBUSTNESS - CONTROLLING FOR IMPLIED VOL (FROM 30 DAYS CALLS)

This Table presents variants of the regressions in Table 3 in which implied volatility is computed from 30-day at-the-money stock i calls issued in the current fiscal year. In columns [1] to [6], the dependent variable is a dummy that equals one if the analyst's annual earnings forecast revision for a given stock, if any, made between the announcement dates of the Q-1 and Q quarterly earnings has the same sign as SUE(Q-1), the unexpected earnings in quarter Q-1. Individual revisions are computed as the difference between the last annual earnings forecast made between the announcement dates of the Q-1 and Q quarterly earnings and the last annual earnings forecast, if any, made before the announcement date of the Q-1 quarterly earnings. SUE SIGN CHANGE(Q-1,Q-2) is a dummy that equals one if there is a change in the sign of SUEs over the previous two quarters. SUE SIGN CHANGE(Q-1,Q-2,Q-3) is a dummy that equals one if there is one change in the sign of SUEs among the previous three quarters. ABS SUE(Q-1) is the absolute value of standardized unexpected earnings in year-quarter Q-1. COVERAGE is the number of analysts who covered the stock in the current fiscal year. LN(MKTCAP) is the logarithm of the stock total market capitalization (Compustat item CSHO × item PRCC_F) at the end of the current fiscal year. IMPLIEDVOL is the average of 30-day implied volatility of all at-the-money stock i calls issued in the current fiscal year. LNBM is book-to-market defined as in Fama and French (2008) in the current year. Return on assets, ROA, is defined as operating income after depreciation (item OIBDP - item DP) over total assets (item AT) computed at the end of the current fiscal year. All regressions include year-quarter fixed effects, fiscal-quarter fixed effects and analyst fixed effects. Columns [2] and [5] also include industry fixed effects. Columns [3] and [6] also include stock fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1996 to December 2014.

	REVISION IN THE SAME DIRECTION AS THE LAST SUE					
	[1]	[2]	[3]	[4]	[5]	[6]
SUE SIGN CHANGE(Q-1,Q-2)	-0.023***	-0.023***	-0.016***			
	(0.004)	(0.004)	(0.004)			
SUE SIGN CHANGE(Q-1,Q-2,Q-3)				-0.022***	-0.022***	-0.016***
				(0.004)	(0.004)	(0.004)
ABS SUE(Q-1)	0.048***	0.048***	0.048***	0.048***	0.048***	0.047***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
LN(MKTCAP)	-0.007***	-0.007***	-0.015**	-0.007***	-0.008***	-0.014**
	(0.003)	(0.003)	(0.006)	(0.003)	(0.003)	(0.006)
COVERAGE	0.000	0.000	-0.000	0.000	0.000	-0.000
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)
IMPLIEDVOL (30 DAYS CALL)	0.121***	0.121***	0.141***	0.121***	0.122***	0.141***
	(0.020)	(0.020)	(0.026)	(0.020)	(0.020)	(0.026)
LNBM	-0.002	-0.003	-0.007	-0.002	-0.003	-0.007
	(0.003)	(0.003)	(0.006)	(0.003)	(0.003)	(0.006)
ROA	0.244***	0.245***	0.107	0.245***	0.246***	0.110
	(0.091)	(0.091)	(0.120)	(0.091)	(0.090)	(0.120)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Analyst FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Stock FE	No	No	Yes	No	No	Yes
Observations	517979	517979	517979	517979	517979	517979
R^2	0.041	0.042	0.083	0.041	0.042	0.083

Table A.19. FORECAST REVISION - ROBUSTNESS - CONTROLLING FOR IMPLIED VOL (FROM 30 DAYS PUTS)

This Table presents variants of the regressions in Table 3 in which implied volatility is computed from 30-day at-the-money stock i puts issued in the current fiscal year. In columns [1] to [6], the dependent variable is a dummy that equals one if the analyst's annual earnings forecast revision for a given stock, if any, made between the announcement dates of the Q-1 and Q quarterly earnings has the same sign as SUE(Q-1), the unexpected earnings in quarter Q-1. Individual revisions are computed as the difference between the last annual earnings forecast made between the announcement dates of the Q-1 and Q quarterly earnings and the last annual earnings forecast, if any, made before the announcement date of the Q-1 quarterly earnings. SUE SIGN CHANGE(Q-1,Q-2) is a dummy that equals one if there is a change in the sign of SUEs over the previous two quarters. SUE SIGN CHANGE(Q-1,Q-2,Q-3) is a dummy that equals one if there is one change in the sign of SUEs among the previous three quarters. ABS SUE(Q-1) is the absolute value of standardized unexpected earnings in year-quarter Q-1. COVERAGE is the number of analysts who covered the stock in the current fiscal year. LN(MKTCAP) is the logarithm of the stock total market capitalization (Compustat item CSHO × item PRCC_F) at the end of the current fiscal year. IMPLIEDVOL is the average of 30-day implied volatility of all at-the-money stock i puts issued in the current fiscal year. LNBM is book-to-market defined as in Fama and French (2008) in the current year. Return on assets, ROA, is defined as operating income after depreciation (item OIBDP - item DP) over total assets (item AT) computed at the end of the current fiscal year. All regressions include year-quarter fixed effects, fiscal-quarter fixed effects and analyst fixed effects. Columns [2] and [5] also include industry fixed effects. Columns [3] and [6] also include stock fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1996 to December 2014.

	REVISION IN THE SAME DIRECTION AS THE LAST SUE					
	[1]	[2]	[3]	[4]	[5]	[6]
SUE SIGN CHANGE(Q-1,Q-2)	-0.023***	-0.023***	-0.016***			
	(0.004)	(0.004)	(0.004)			
SUE SIGN CHANGE(Q-1,Q-2,Q-3)				-0.022***	-0.022***	-0.016***
				(0.004)	(0.004)	(0.004)
ABS SUE(Q-1)	0.048***	0.048***	0.048***	0.048***	0.048***	0.047***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
LN(MKTCAP)	-0.007***	-0.008***	-0.015**	-0.008***	-0.008***	-0.015**
	(0.003)	(0.003)	(0.006)	(0.003)	(0.003)	(0.006)
COVERAGE	0.000	0.000	-0.000	0.000	0.000	-0.000
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)
IMPLIEDVOL (30 DAYS PUT)	0.116***	0.117***	0.134***	0.117***	0.117***	0.134***
	(0.019)	(0.019)	(0.026)	(0.019)	(0.019)	(0.026)
LNBM	-0.002	-0.003	-0.007	-0.002	-0.003	-0.007
	(0.003)	(0.003)	(0.006)	(0.003)	(0.003)	(0.006)
ROA	0.242***	0.243***	0.105	0.243***	0.244***	0.108
	(0.091)	(0.090)	(0.120)	(0.091)	(0.090)	(0.120)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Analyst FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Stock FE	No	No	Yes	No	No	Yes
Observations	517979	517979	517979	517979	517979	517979
R^2	0.041	0.042	0.083	0.041	0.042	0.083

Table A.20. DISPERSION IN ANALYST FORECASTS - ROBUSTNESS - CONTROLLING FOR IMPLIED VOL (FROM 60 DAYS OPTIONS)

This Table presents variants of the regressions in Table 10 in which implied volatility is computed from 60-day at-the-money stock i options issued in the current fiscal year. SUE SIGN CHANGE(Q-1,Q-2) is a dummy that equals one if there is a change in the sign of SUEs over the previous two quarters. SUE SIGN CHANGE(Q-1,Q-2,Q-3) is a dummy that equals one if there is one change in the sign of SUEs among the previous three quarters. ABS SUE(Q-1) is the absolute value of standardized unexpected earnings in year-quarter Q-1. COVERAGE is the number of analysts who covered the stock in the current fiscal year. LN(MKTCAP) is the logarithm of the stock total market capitalization (Compustat item CSHO × item PRCC_F) at the end of the current fiscal year. IMPLIEDVOL is the average of 60-day implied volatility of all at-the-money stock i options issued in the current fiscal year. LNBM is book-to-market defined as in Fama and French (2008) in the current year. Return on assets, ROA, is defined as operating income after depreciation (item OIBDP - item DP) over total assets (item AT) computed at the end of the current fiscal year. All regressions include year-quarter fixed effects and fiscal-quarter fixed effects. Columns [2] and [5] also include industry fixed effects. Columns [3] and [6] also include stock fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1996 to December 2014.

	DISP(Q)					
	[1]	[2]	[3]	[4]	[5]	[6]
SUE SIGN CHANGE(Q-1,Q-2)	0.040***	0.032***	0.025***			
	(0.009)	(0.009)	(0.007)			
SUE SIGN CHANGE(Q-1,Q-2,Q-3)				0.044***	0.036***	0.029***
				(0.009)	(0.009)	(0.008)
ABS SUE(Q-1)	0.060***	0.056***	0.043***	0.062***	0.057***	0.044***
	(0.006)	(0.006)	(0.005)	(0.006)	(0.006)	(0.005)
SIZE	0.034***	0.022**	-0.161***	0.034***	0.022**	-0.161***
	(0.011)	(0.011)	(0.020)	(0.011)	(0.011)	(0.020)
COVERAGE	0.002	0.001	0.001	0.002	0.001	0.001
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)
IMPLIEDVOL (60 DAYS OPTION)	2.125***	2.080***	1.801***	2.125***	2.080***	1.802***
	(0.116)	(0.123)	(0.162)	(0.116)	(0.123)	(0.162)
LNBM	0.261***	0.228***	0.259***	0.261***	0.227***	0.259***
	(0.016)	(0.015)	(0.019)	(0.016)	(0.015)	(0.019)
ROA	-3.182***	-3.125***	-1.921***	-3.179***	-3.123***	-1.921***
	(0.268)	(0.286)	(0.406)	(0.268)	(0.286)	(0.406)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Stock FE	No	No	Yes	No	No	Yes
Observations	62683	62683	62683	62683	62683	62683
R^2	0.206	0.230	0.486	0.206	0.230	0.486

Table A.21. DISPERSION IN ANALYST FORECASTS - ROBUSTNESS - CONTROLLING FOR IMPLIED VOL (FROM 90 DAYS OPTIONS)

This Table presents variants of the regressions in Table 10 in which implied volatility is computed from 90-day at-the-money stock i options issued in the current fiscal year. SUE SIGN CHANGE(Q-1,Q-2) is a dummy that equals one if there is a change in the sign of SUEs over the previous two quarters. SUE SIGN CHANGE(Q-1,Q-2,Q-3) is a dummy that equals one if there is one change in the sign of SUEs among the previous three quarters. ABS SUE(Q-1) is the absolute value of standardized unexpected earnings in year-quarter Q-1. COVERAGE is the number of analysts who covered the stock in the current fiscal year. LN(MKTCAP) is the logarithm of the stock total market capitalization (Compustat item CSHO × item PRCC_F) at the end of the current fiscal year. IMPLIEDVOL is the average of 90-day implied volatility of all at-the-money stock i options issued in the current fiscal year. LNBM is book-to-market defined as in Fama and French (2008) in the current year. Return on assets, ROA, is defined as operating income after depreciation (item OIBDP - item DP) over total assets (item AT) computed at the end of the current fiscal year. All regressions include year-quarter fixed effects and fiscal-quarter fixed effects. Columns [2] and [5] also include industry fixed effects. Columns [3] and [6] also include stock fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1996 to December 2014.

	DISP(Q)					
	[1]	[2]	[3]	[4]	[5]	[6]
SUE SIGN CHANGE(Q-1,Q-2)	0.040***	0.032***	0.026***			
	(0.009)	(0.009)	(0.007)			
SUE SIGN CHANGE(Q-1,Q-2,Q-3)				0.044***	0.036***	0.029***
				(0.009)	(0.009)	(0.008)
ABS SUE(Q-1)	0.060***	0.055***	0.042***	0.061***	0.057***	0.043***
	(0.006)	(0.006)	(0.005)	(0.006)	(0.006)	(0.005)
SIZE	0.037***	0.024**	-0.158***	0.037***	0.024**	-0.158***
	(0.011)	(0.011)	(0.019)	(0.011)	(0.011)	(0.019)
COVERAGE	0.001	0.000	0.001	0.001	0.000	0.001
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)
IMPLIEDVOL (90 DAYS OPTION)	2.215***	2.176***	1.914***	2.215***	2.176***	1.915***
	(0.121)	(0.129)	(0.172)	(0.121)	(0.129)	(0.172)
LNBM	0.267***	0.232***	0.261***	0.266***	0.232***	0.261***
	(0.016)	(0.015)	(0.020)	(0.016)	(0.015)	(0.020)
ROA	-3.099***	-3.018***	-1.873***	-3.096***	-3.017***	-1.873***
	(0.268)	(0.287)	(0.406)	(0.268)	(0.286)	(0.406)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Stock FE	No	No	Yes	No	No	Yes
Observations	62513	62513	62513	62513	62513	62513
R^2	0.208	0.232	0.487	0.208	0.232	0.487

Table A.22. DISPERSION IN ANALYST FORECASTS - ROBUSTNESS - CONTROLLING FOR IMPLIED VOL (FROM 30 DAYS CALLS)

This Table presents variants of the regressions in Table 10 in which implied volatility is computed from 30-day at-the-money stock i calls issued in the current fiscal year. SUE SIGN CHANGE(Q-1,Q-2) is a dummy that equals one if there is a change in the sign of SUEs over the previous two quarters. SUE SIGN CHANGE(Q-1,Q-2,Q-3) is a dummy that equals one if there is one change in the sign of SUEs among the previous three quarters. ABS SUE(Q-1) is the absolute value of standardized unexpected earnings in year-quarter Q-1. COVERAGE is the number of analysts who covered the stock in the current fiscal year. LN(MKTCAP) is the logarithm of the stock total market capitalization (Compustat item CSHO $\times$ item PRCC_F) at the end of the current fiscal year. IMPLIEDVOL is the average of 30-day implied volatility of all at-the-money stock i calls issued in the current fiscal year. LNBM is book-to-market defined as in Fama and French (2008) in the current year. Return on assets, ROA, is defined as operating income after depreciation (item OIBDP - item DP) over total assets (item AT) computed at the end of the current fiscal year. All regressions include year-quarter fixed effects and fiscal-quarter fixed effects. Columns [2] and [5] also include industry fixed effects. Columns [3] and [6] also include stock fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1996 to December 2014.

	DISP(Q)					
	[1]	[2]	[3]	[4]	[5]	[6]
SUE SIGN CHANGE(Q-1,Q-2)	0.039***	0.032***	0.025***			
	(0.009)	(0.009)	(0.007)			
SUE SIGN CHANGE(Q-1,Q-2,Q-3)				0.044***	0.036***	0.028***
				(0.009)	(0.009)	(0.008)
ABS SUE(Q-1)	0.062***	0.058***	0.044***	0.064***	0.059***	0.045***
	(0.006)	(0.006)	(0.005)	(0.006)	(0.006)	(0.005)
LN(MKTCAP)	0.028***	0.017	-0.165***	0.028***	0.017	-0.165***
	(0.011)	(0.011)	(0.020)	(0.011)	(0.011)	(0.020)
COVERAGE	0.002*	0.001	0.001	0.002*	0.001	0.001
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)
IMPLIEDVOL (30 DAYS CALL)	2.016***	1.963***	1.677***	2.015***	1.963***	1.678***
	(0.111)	(0.118)	(0.153)	(0.111)	(0.118)	(0.153)
LNBM	0.252***	0.221***	0.256***	0.252***	0.220***	0.256***
	(0.016)	(0.015)	(0.019)	(0.016)	(0.015)	(0.020)
ROA	-3.360***	-3.317***	-1.982***	-3.357***	-3.316***	-1.982***
	(0.270)	(0.287)	(0.409)	(0.270)	(0.287)	(0.409)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Stock FE	No	No	Yes	No	No	Yes
Observations	62830	62830	62830	62830	62830	62830
R^2	0.200	0.225	0.484	0.200	0.225	0.484

Table A.23. DISPERSION IN ANALYST FORECASTS - ROBUSTNESS - CONTROLLING FOR IMPLIED VOL (FROM 30 DAYS PUTS)

This Table presents variants of the regressions in Table 10 in which implied volatility is computed from 30-day at-the-money stock i puts issued in the current fiscal year. SUE SIGN CHANGE(Q-1,Q-2) is a dummy that equals one if there is a change in the sign of SUEs over the previous two quarters. SUE SIGN CHANGE(Q-1,Q-2,Q-3) is a dummy that equals one if there is one change in the sign of SUEs among the previous three quarters. ABS SUE(Q-1) is the absolute value of standardized unexpected earnings in year-quarter Q-1. COVERAGE is the number of analysts who covered the stock in the current fiscal year. LN(MKTCAP) is the logarithm of the stock total market capitalization (Compustat item CSHO $\times$ item PRCC_F) at the end of the current fiscal year. IMPLIEDVOL is the average of 30-day implied volatility of all at-the-money stock i puts issued in the current fiscal year. LNBM is book-to-market defined as in Fama and French (2008) in the current year. Return on assets, ROA, is defined as operating income after depreciation (item OIBDP - item DP) over total assets (item AT) computed at the end of the current fiscal year. All regressions include year-quarter fixed effects and fiscal-quarter fixed effects. Columns [2] and [5] also include industry fixed effects. Columns [3] and [6] also include stock fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1996 to December 2014.

	DISP(Q)					
	[1]	[2]	[3]	[4]	[5]	[6]
SUE SIGN CHANGE(Q-1,Q-2)	0.039***	0.032***	0.025***			
	(0.009)	(0.009)	(0.007)			
SUE SIGN CHANGE(Q-1,Q-2,Q-3)				0.044***	0.036***	0.029***
				(0.009)	(0.009)	(0.008)
ABS SUE(Q-1)	0.062***	0.057***	0.044***	0.063***	0.058***	0.045***
	(0.006)	(0.006)	(0.005)	(0.006)	(0.006)	(0.005)
LN(MKTCAP)	0.028***	0.017	-0.164***	0.028***	0.017	-0.164***
	(0.011)	(0.011)	(0.020)	(0.011)	(0.011)	(0.020)
COVERAGE	0.003**	0.002	0.001	0.003**	0.002	0.001
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)
IMPLIEDVOL (30 DAYS PUT)	2.019***	1.965***	1.689***	2.019***	1.965***	1.690***
	(0.112)	(0.117)	(0.152)	(0.112)	(0.118)	(0.152)
LNBM	0.254***	0.223***	0.256***	0.253***	0.223***	0.256***
	(0.016)	(0.015)	(0.019)	(0.016)	(0.015)	(0.019)
ROA	-3.314***	-3.280***	-1.970***	-3.311***	-3.279***	-1.970***
	(0.270)	(0.286)	(0.408)	(0.270)	(0.286)	(0.408)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Stock FE	No	No	Yes	No	No	Yes
Observations	62830	62830	62830	62830	62830	62830
R^2	0.202	0.227	0.485	0.202	0.227	0.485

Table A.24. FORECAST REVISION - HETEROGENEOUS BEHAVIOR ACROSS ANALYSTS - ROBUSTNESS - CONTROLLING FOR IMPLIED VOL (FROM 60 DAYS AND 90 DAYS OPTIONS)

This Table present variants of the regressions in Table 6 in which implied volatility is computed from 60-day and 90-day at-the-money stock i options issued in the current fiscal year. SIGN REV(Q-1) $\neq$ SIGN SUE(Q-1) is a dummy that equals one if the analyst's annual earnings forecast revision for a given stock, if any, made between the end of the Q-2 and Q-1 fiscal quarters has a different sign than SUE(Q-1). POSREV(Q-1) is a dummy that equals one if the analyst has revised his/her annual earnings forecast upward between the end of the Q-2 and Q-1 fiscal quarters. ABS SUE(Q-1) is the absolute value of standardized unexpected earnings in year-quarter Q-1. COVERAGE is the number of analysts who covered the stock in the current fiscal year. LN(MKTCAP) is the logarithm of the stock total market capitalization (Compustat item CSHO $\times$ item PRCC_F) at the end of the current fiscal year. IMPLIEDVOL is the average of 60-day implied volatility of all at-the-money stock i options issued in the current fiscal year in columns [1] to [3], and the average of 90-day implied volatility of all at-the-money stock i options issued in the current fiscal year in columns [4] to [6]. LNBM is book-to-market defined as in Fama and French (2008) in the current year. Return on assets, ROA, is defined as operating income after depreciation (item OIBDP - item DP) over total assets (item AT) computed at the end of the current fiscal year. All regressions include year-quarter fixed effects, fiscal-quarter fixed effects and analyst fixed effects. Columns [2] and [5] also include industry fixed effects. Columns [3] and [6] also include stock fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1996 to December 2014.

	REVISION IN THE SAME DIRECTION AS THE LAST SUE					
	[1]	[2]	[3]	[4]	[5]	[6]
SIGN REV(Q-1) $\neq$ SIGN SUE(Q-1)	-0.198***	-0.198***	-0.174***	-0.198***	-0.198***	-0.174***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
POSREV(Q-1)	0.027***	0.028***	0.031***	0.027***	0.028***	0.031***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
ABS SUE(Q-1)	0.038***	0.038***	0.038***	0.038***	0.038***	0.038***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
LN(MKTCAP)	-0.007***	-0.008***	-0.013**	-0.008***	-0.008***	-0.014**
	(0.002)	(0.003)	(0.006)	(0.002)	(0.003)	(0.006)
COVERAGE	0.000	0.001	0.000	0.000	0.001	-0.000
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)
IMPLIEDVOL (60 DAYS OPTION)	0.105***	0.106***	0.133***			
	(0.020)	(0.020)	(0.028)			
IMPLIEDVOL (90 DAYS OPTION)				0.108***	0.108***	0.139***
				(0.021)	(0.021)	(0.029)
LNBM	0.000	-0.000	-0.006	-0.000	-0.001	-0.006
	(0.003)	(0.003)	(0.006)	(0.003)	(0.003)	(0.006)
ROA	0.204**	0.201**	0.142	0.212**	0.209**	0.146
	(0.093)	(0.093)	(0.126)	(0.093)	(0.093)	(0.126)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Analyst FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Stock FE	No	No	Yes	No	No	Yes
Observations	334395	334395	334395	333899	333899	333899
R^2	0.085	0.086	0.125	0.085	0.086	0.125

Table A.25. FORECAST REVISION - HETEROGENEOUS BEHAVIOR ACROSS ANALYSTS - ROBUSTNESS - CONTROLLING FOR IMPLIED VOL (FROM 30 DAYS CALLS AND PUTS)

This Table present variants of the regressions in Table 6 in which implied volatility is computed from 60-day and 90-day at-the-money stock i options issued in the current fiscal year. SIGN REV(Q-1) $\neq$ SIGN SUE(Q-1) is a dummy that equals one if the analyst's annual earnings forecast revision for a given stock, if any, made between the end of the Q-2 and Q-1 fiscal quarters has a different sign than SUE(Q-1). POSREV(Q-1) is a dummy that equals one if the analyst has revised his/her annual earnings forecast upward between the end of the Q-2 and Q-1 fiscal quarters. ABS SUE(Q-1) is the absolute value of standardized unexpected earnings in year-quarter Q-1. COVERAGE is the number of analysts who covered the stock in the current fiscal year. LN(MKTCAP) is the logarithm of the stock total market capitalization (Compustat item CSHO $\times$ item PRCC_F) at the end of the current fiscal year. IMPLIEDVOL is the average of 30-day implied volatility of all at-the-money stock i calls issued in the current fiscal year in columns [1] to [3], and the average of 30-day implied volatility of all at-the-money stock i puts issued in the current fiscal year in columns [4] to [6]. LNBM is book-to-market defined as in Fama and French (2008) in the current year. Return on assets, ROA, is defined as operating income after depreciation (item OIBDP - item DP) over total assets (item AT) computed at the end of the current fiscal year. All regressions include year-quarter fixed effects, fiscal-quarter fixed effects and analyst fixed effects. Columns [2] and [5] also include industry fixed effects. Columns [3] and [6] also include stock fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1996 to December 2014.

	REVISION IN THE SAME DIRECTION AS THE LAST SUE					
	[1]	[2]	[3]	[4]	[5]	[6]
SIGN REV(Q-1) $\neq$ SIGN SUE(Q-1)	-0.198***	-0.198***	-0.175***	-0.198***	-0.198***	-0.175***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
POSREV(Q-1)	0.027***	0.028***	0.031***	0.027***	0.028***	0.031***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
ABS SUE(Q-1)	0.038***	0.038***	0.038***	0.038***	0.038***	0.038***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
LN(MKTCAP)	-0.008***	-0.008***	-0.014**	-0.008***	-0.008***	-0.014**
	(0.003)	(0.003)	(0.006)	(0.002)	(0.003)	(0.006)
COVERAGE	0.000	0.001	0.000	0.001	0.001	0.000
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)
IMPLIEDVOL (30 DAYS CALL)	0.103***	0.103***	0.127***			
	(0.020)	(0.020)	(0.028)			
IMPLIEDVOL (30 DAYS PUT)				0.099***	0.099***	0.121***
				(0.020)	(0.020)	(0.027)
LNBM	-0.000	-0.001	-0.006	-0.000	-0.001	-0.006
	(0.003)	(0.003)	(0.006)	(0.003)	(0.003)	(0.006)
ROA	0.200**	0.197**	0.140	0.198**	0.194**	0.138
	(0.093)	(0.093)	(0.126)	(0.093)	(0.093)	(0.126)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Analyst FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Stock FE	No	No	Yes	No	No	Yes
Observations	334837	334837	334837	334837	334837	334837
R^2	0.085	0.086	0.125	0.085	0.086	0.125

Table A.26. FORECAST REVISION - HETEROGENOUS BEHAVIOR ACROSS ANALYSTS - ROBUSTNESS - PAST REVISIONS OVER THE PREVIOUS TWO QUARTERS

This Table present variants of the regressions in Table 6 in which the variable of interest is SIGN REV(Q-1,Q-2) $\neq$ SIGN SUE(Q-1) is a dummy that equals one if the last analyst's annual earnings forecast revision made in one of the two quarters before the announcement of the Q-1 earnings has a different sign than SUE(Q-1). POSREV(Q-1) (respectively POSREV(Q-2)) is a dummy that equals one if the analyst has revised his/her annual earnings forecast upward between the announcement dates of the Q-2 and Q-1 quarterly earnings (respectively Q-3 and Q-2 quarterly earnings) . ABS SUE(Q-1) is the absolute value of standardized unexpected earnings in year-quarter Q-1. COVERAGE is the number of analysts who covered the stock in the current fiscal year. LN(MKTCAP) is the logarithm of the stock total market capitalization (Compustat item CSHO $\times$ item PRCC_F) at the end of the current fiscal year. SIGMA is the standard deviation of daily raw returns of the stock in the current fiscal year. IMPLIEDVOL is the average of 30-day implied volatility of all at-the-money stock i options issued in the current fiscal year. LNBM is book-to-market defined as in Fama and French (2008) in the current year. Return on assets, ROA, is defined as operating income after depreciation (item OIBDP - item DP) over total assets (item AT) computed at the end of the current fiscal year. All regressions include year-quarter fixed effects, fiscal-quarter fixed effects and analyst fixed effects. Columns [2] and [5] also include industry fixed effects. Columns [3] and [6] also include stock fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1982 to December 2014 in columns [1] to [3], and from January 1996 to December 2014 in columns [4] to [6].

	REVISION IN THE SAME DIRECTION AS THE LATEST SUE					
	[1]	[2]	[3]	[4]	[5]	[6]
SIGN REV(Q-1,Q-2) $\neq$ SIGN SUE(Q-1)	-0.215***	-0.214***	-0.194***	-0.195***	-0.194***	-0.172***
	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)
POSREV(Q-1)	0.019***	0.020***	0.022***	0.023***	0.023***	0.025***
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
POSREV(Q-2)	0.005**	0.005**	0.008***	0.008***	0.008***	0.012***
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
ABS SUE(Q-1)	0.045***	0.045***	0.043***	0.039***	0.039***	0.039***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
LN(MKTCAP)	-0.007***	-0.008***	0.002	-0.007***	-0.007***	-0.013**
	(0.002)	(0.002)	(0.004)	(0.002)	(0.002)	(0.006)
COVERAGE	0.000	0.000	-0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
SIGMA	0.011***	0.011***	0.013***			
	(0.002)	(0.002)	(0.002)			
IMPLIEDVOL				0.100***	0.099***	0.126***
				(0.019)	(0.019)	(0.027)
LNBM	0.001	0.001	0.002	0.000	-0.000	-0.004
	(0.002)	(0.002)	(0.004)	(0.003)	(0.003)	(0.006)
ROA	0.139**	0.140**	0.137	0.181**	0.176**	0.107
	(0.063)	(0.063)	(0.087)	(0.088)	(0.088)	(0.120)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Analyst FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Stock FE	No	No	Yes	No	No	Yes
Observations	744285	744285	744285	401880	401880	401880
R^2	0.084	0.084	0.116	0.080	0.081	0.117

Table A.27. FORECAST REVISION - STANDARD ERRORS CLUSTERED AT THE ANALYST LEVEL

The dependent variable is a dummy that equals one if the analyst's annual earnings forecast revision for a given stock, if any, made between the announcement dates of the Q-1 and Q quarterly earnings has the same sign as SUE(Q-1), the unexpected earnings in quarter Q-1. Individual revisions are computed as the difference between the last annual earnings forecast made between the announcement dates of the Q-1 and Q quarterly earnings and the last annual earnings forecast, if any, made before the announcement date of the Q-1 quarterly earnings. SUE SIGN CHANGE(Q-1,Q-2) is a dummy that equals one if there is a change in the sign of SUEs over the previous two quarters. SUE SIGN CHANGE(Q-1,Q-2,Q-3) is a dummy that equals one if there is one change in the sign of SUEs among the previous three quarters. ABS SUE(Q-1) is the absolute value of standardized unexpected earnings in year-quarter Q-1. COVERAGE is the number of analysts who covered the stock in the current fiscal year. LN(MKTCAP) is the logarithm of the stock total market capitalization (Compustat item CSHO × item PRCC_F) at the end of the current fiscal year. SIGMA is the standard deviation of daily raw returns of the stock in the current fiscal year. LNBM is book-to-market defined as in Fama and French (2008) in the current year. Return on assets, ROA, is defined as operating income after depreciation (item OIBDP - item DP) over total assets (item AT) computed at the end of the current fiscal year. All regressions include year-quarter fixed effects, fiscal-quarter fixed effects and analyst fixed effects. Columns [2] and [5] also include industry fixed effects. Columns [3] and [6] also include stock fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1982 to December 2014.

	REVISION IN THE SAME DIRECTION AS THE LATEST SUE					
	[1]	[2]	[3]	[4]	[5]	[6]
SUE SIGN CHANGE(Q-1,Q-2)	-0.021***	-0.021***	-0.018***			
	(0.001)	(0.001)	(0.001)			
SUE SIGN CHANGE(Q-1,Q-2,Q-3)				-0.018***	-0.018***	-0.017***
				(0.001)	(0.001)	(0.001)
ABS SUE(Q-1)	0.057***	0.057***	0.055***	0.057***	0.057***	0.054***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
SIZE	-0.009***	-0.009***	0.005***	-0.009***	-0.009***	0.005***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
COVERAGE	0.000***	0.000***	-0.000**	0.000***	0.000***	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SIGMA	0.013***	0.014***	0.015***	0.013***	0.014***	0.015***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
LNBM	0.000	-0.000	-0.001	0.000	-0.000	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
ROA	0.200***	0.207***	0.158***	0.200***	0.207***	0.159***
	(0.023)	(0.023)	(0.030)	(0.023)	(0.023)	(0.030)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Analyst FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Stock FE	No	No	Yes	No	No	Yes
Observations	996129	996129	996129	996129	996129	996129
R^2	0.038	0.039	0.076	0.038	0.039	0.076

Table A.28. POSITIVE REVISION - STANDARD ERRORS CLUSTERED AT THE ANALYST LEVEL

This Table presents variants of the regressions in Table A.27 in which we focus on analysts' positive revisions that follow positive earnings surprises. In columns [1] to [6], the dependent variable is for a given analyst and a given stock a dummy that equals one if the analyst covered the stock before the announcement date of the Q-1 quarterly earnings and has revised his/her annual earnings forecast upward between the announcement dates of the Q-1 and Q quarterly earnings. The sample is restricted to analyst-stock-year-quarter observations for which SUE(Q-1), the unexpected earnings in quarter Q-1, is positive. NEG SUE (Q-2) is a dummy that equals one if standardized unexpected earnings were negative two quarters ago. NEG SUE (Q-2,Q-3) is a dummy that equals one if standardized unexpected earnings were negative two and/or three quarters ago. ABS SUE(Q-1) is the absolute value of standardized unexpected earnings in year-quarter Q-1. COVERAGE is the number of analysts who covered the stock in the current fiscal year. LN(MKTCAP) is the logarithm of the stock total market capitalization (Compustat item CSHO × item PRCC_F) at the end of the current fiscal year. SIGMA is the standard deviation of daily raw returns of the stock in the current fiscal year. LNBM is book-to-market defined as in Fama and French (2008) in the current year. Return on assets, ROA, is defined as operating income after depreciation (item OIBDP - item DP) over total assets (item AT) computed at the end of the current fiscal year. All regressions include year-quarter fixed effects, fiscal-quarter fixed effects and analyst fixed effects. Columns [2] and [5] also include industry fixed effects. Columns [3] and [6] also include stock fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1982 to December 2014.

	POSREV(Q) (Sample with SUE(Q-1)> 0 only)					
	[1]	[2]	[3]	[4]	[5]	[6]
NEG SUE(Q-2)	-0.017***	-0.018***	-0.019***			
	(0.002)	(0.002)	(0.002)			
NEG SUE(Q-2,Q-3)				-0.014***	-0.014***	-0.017***
				(0.002)	(0.002)	(0.002)
ABS SUE(Q-1)	0.048***	0.048***	0.047***	0.048***	0.048***	0.047***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
SIZE	0.056***	0.057***	0.133***	0.056***	0.057***	0.133***
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)
COVERAGE	-0.006***	-0.006***	-0.009***	-0.006***	-0.006***	-0.009***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SIGMA	0.010***	0.010***	0.004***	0.010***	0.010***	0.004***
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)
LNBM	0.019***	0.019***	0.049***	0.019***	0.019***	0.049***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
ROA	3.190***	3.243***	4.029***	3.189***	3.242***	4.025***
	(0.053)	(0.054)	(0.063)	(0.053)	(0.054)	(0.063)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Analyst FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Stock FE	No	No	Yes	No	No	Yes
Observations	476208	476208	476208	476208	476208	476208
R^2	0.137	0.138	0.208	0.136	0.138	0.208

Table A.29. NEGATIVE REVISION - STANDARD ERRORS CLUSTERED AT THE ANALYST LEVEL

This Table presents variants of the regressions in Table A.27 in which we focus on analysts' negative revisions that follow negative earnings surprises. In columns [1] to [6], the dependent variable is for a given analyst and a given stock a dummy that equals one if the analyst covered the stock before the announcement date of the Q-1 quarterly earnings and has revised his/her annual earnings forecast downward between the announcement dates of the Q-1 and Q quarterly earnings. The sample is restricted to analyst-stock-year-quarter observations for which SUE(Q-1), the unexpected earnings in quarter Q-1, is negative. POS SUE (Q-2) is a dummy that equals one if standardized unexpected earnings were positive two quarters ago. POS SUE (Q-2,Q-3) is a dummy that equals one if standardized unexpected earnings were positive two and/or three quarters ago. ABS SUE(Q-1) is the absolute value of standardized unexpected earnings in year-quarter Q-1. COVERAGE is the number of analysts who covered the stock in the current fiscal year. LN(MKTCAP) is the logarithm of the stock total market capitalization (Compustat item CSHO $\times$ item PRCC_F) at the end of the current fiscal year. SIGMA is the standard deviation of daily raw returns of the stock in the current fiscal year. LNBM is book-to-market defined as in Fama and French (2008) in the current year. Return on assets, ROA, is defined as operating income after depreciation (item OIBDP - item DP) over total assets (item AT) computed at the end of the current fiscal year. All regressions include year-quarter fixed effects, fiscal-quarter fixed effects and analyst fixed effects. Columns [2] and [5] also include industry fixed effects. Columns [3] and [6] also include stock fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1982 to December 2014.

	NEGREV(Q) (Sample with SUE(Q-1)< 0 only)					
	[1]	[2]	[3]	[4]	[5]	[6]
POS SUE(Q-2)	-0.025***	-0.025***	-0.026***			
	(0.002)	(0.002)	(0.002)			
POS SUE(Q-2,Q-3)				-0.023***	-0.023***	-0.024***
				(0.002)	(0.002)	(0.002)
ABS SUE(Q-1)	0.050***	0.050***	0.045***	0.050***	0.049***	0.045***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
SIZE	-0.055***	-0.056***	-0.133***	-0.055***	-0.056***	-0.133***
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)
COVERAGE	0.005***	0.005***	0.007***	0.005***	0.005***	0.007***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SIGMA	0.005***	0.005***	0.008***	0.005***	0.005***	0.008***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
LNBM	-0.017***	-0.018***	-0.044***	-0.017***	-0.018***	-0.045***
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)
ROA	-2.369***	-2.383***	-2.961***	-2.365***	-2.379***	-2.955***
	(0.041)	(0.041)	(0.053)	(0.041)	(0.041)	(0.053)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Analyst FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Stock FE	No	No	Yes	No	No	Yes
Observations	519921	519921	519921	519921	519921	519921
R^2	0.138	0.140	0.206	0.138	0.140	0.206

Table A.30. FORECAST REVISION - HETEROGENEOUS BEHAVIOR ACROSS ANALYSTS - STANDARD ERRORS CLUSTERED AT THE ANALYST LEVEL

The dependent variable is a dummy that equals one if the analyst's annual earnings forecast revision for a given stock, if any, made between the announcement dates of the Q-1 and Q quarterly earnings has the same sign as SUE(Q-1), the unexpected earnings in quarter Q-1. Individual revisions are computed as the difference between the last annual earnings forecast made between the announcement dates of the Q-1 and Q quarterly earnings and the last annual earnings forecast, if any, made before the announcement date of the Q-1 quarterly earnings. SIGN REV(Q-1) $\neq$ SIGN SUE(Q-1) is a dummy that equals one if the analyst's annual earnings forecast revision for a given stock, if any, made between the announcement dates of the Q-2 and Q-1 quarterly earnings has a different sign than SUE(Q-1). POSREV(Q-1) is a dummy that equals one if the analyst has revised his/her annual earnings forecast upward between the announcement dates of the Q-2 and Q-1 quarterly earnings. ABS SUE(Q-1) is the absolute value of standardized unexpected earnings in year-quarter Q-1. COVERAGE is the number of analysts who covered the stock in the current fiscal year. LN(MKTCAP) is the logarithm of the stock total market capitalization (Compustat item CSHO $\times$ item PRCC_F) at the end of the current fiscal year. SIGMA is the standard deviation of daily raw returns of the stock in the current fiscal year. IMPLIEDVOL is the average of 30-day implied volatility of all at-the-money stock i options issued in the current fiscal year. LNBM is book-to-market defined as in Fama and French (2008) in the current year. Return on assets, ROA, is defined as operating income after depreciation (item OIBDP - item DP) over total assets (item AT) computed at the end of the current fiscal year. All regressions include year-quarter fixed effects, fiscal-quarter fixed effects and analyst fixed effects. Columns [2] and [5] also include industry fixed effects. Columns [3] and [6] also include stock fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1982 to December 2014 in columns [1] to [3], and from January 1996 to December 2014 in columns [4] to [6].

	REVISION IN THE SAME DIRECTION AS THE LATEST SUE					
	[1]	[2]	[3]	[4]	[5]	[6]
SIGN REV(Q-1) $\neq$ SIGN SUE(Q-1)	-0.220***	-0.219***	-0.198***	-0.198***	-0.198***	-0.175***
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
POSREV(Q-1)	0.023***	0.024***	0.027***	0.027***	0.028***	0.031***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
ABS SUE(Q-1)	0.044***	0.044***	0.042***	0.038***	0.038***	0.038***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
SIZE	-0.009***	-0.009***	-0.001	-0.008***	-0.008***	-0.014***
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.003)
COVERAGE	0.000***	0.000***	-0.000	0.001***	0.001***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SIGMA	0.010***	0.010***	0.012***			
	(0.001)	(0.001)	(0.001)			
IMPLIEDVOL				0.102***	0.102***	0.125***
				(0.009)	(0.009)	(0.012)
LNBM	0.000	-0.000	0.000	-0.000	-0.000	-0.006**
	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
ROA	0.115***	0.118***	0.125***	0.200***	0.196***	0.140***
	(0.028)	(0.028)	(0.037)	(0.039)	(0.039)	(0.052)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Analyst FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Stock FE	No	No	Yes	No	No	Yes
Observations	602187	602187	602187	334821	334821	334821
R^2	0.090	0.091	0.125	0.085	0.086	0.125

Table A.31. POSITIVE REVISION - HETEROGENEOUS BEHAVIOR ACROSS ANALYSTS - STANDARD ERRORS CLUSTERED AT THE ANALYST LEVEL

This Table presents variants of the regressions in Table A.30 in which we focus on analysts' positive revisions (in year-quarter Q) that follow positive earnings surprises. In columns [1] to [6], the dependent variable is for a given analyst and a given stock a dummy that equals one if the analyst covered the stock before the announcement date of the Q-1 quarterly earnings and has revised his/her annual earnings forecast upward between the announcement dates of the Q-1 and Q quarterly earnings. The sample is restricted to analyst-stock-year-quarter observations for which SUE(Q-1), the unexpected earnings in quarter Q-1, is positive. NEGREV(Q-1) is a dummy that equals one if the analyst has revised his/her annual earnings forecast downward between the announcement dates of the Q-2 and Q-1 quarterly earnings. ABS SUE(Q-1) is the absolute value of standardized unexpected earnings in year-quarter Q-1. COVERAGE is the number of analysts who covered the stock in the current fiscal year. LN(MKTCAP) is the logarithm of the stock total market capitalization (Compustat item CSHO $\times$ item PRCC_F) at the end of the current fiscal year. SIGMA is the standard deviation of daily raw returns of the stock in the current fiscal year. IMPLIEDVOL is the average of 30-day implied volatility of all at-the-money stock i options issued in the current fiscal year. LNBM is book-to-market defined as in Fama and French (2008) in the current year. Return on assets, ROA, is defined as operating income after depreciation (item OIBDP - item DP) over total assets (item AT) computed at the end of the current fiscal year. All regressions include year-quarter fixed effects, fiscal-quarter fixed effects and analyst fixed effects. Columns [2] and [5] also include industry fixed effects. Columns [3] and [6] also include stock fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1982 to December 2014 in columns [1] to [3], and from January 1996 to December 2014 in columns [4] to [6].

	POSREV(Q) (Sample with SUE(Q-1)> 0 only)					
	[1]	[2]	[3]	[4]	[5]	[6]
NEGREV(Q-1)	-0.152***	-0.151***	-0.095***	-0.131***	-0.129***	-0.060***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
NEGREV(Q-2)						
ABS SUE(Q-1)	0.040***	0.040***	0.041***	0.035***	0.035***	0.037***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)
SIZE	0.048***	0.048***	0.117***	0.048***	0.048***	0.136***
	(0.001)	(0.001)	(0.003)	(0.002)	(0.002)	(0.004)
COVERAGE	-0.005***	-0.005***	-0.008***	-0.004***	-0.004***	-0.007***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SIGMA	0.008***	0.007***	0.007***			
	(0.001)	(0.001)	(0.002)			
IMPLIEDVOL				0.043***	0.041***	0.078***
				(0.015)	(0.015)	(0.021)
LNBM	0.019***	0.019***	0.052***	0.013***	0.012***	0.048***
	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.004)
ROA	2.898***	2.944***	3.864***	2.789***	2.812***	3.747***
	(0.057)	(0.058)	(0.074)	(0.071)	(0.072)	(0.100)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Analyst FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Stock FE	No	No	Yes	No	No	Yes
Observations	282360	282360	282360	146731	146731	146731
R^2	0.177	0.179	0.245	0.174	0.175	0.258

Table A.32. NEGATIVE REVISION - HETEROGENEOUS BEHAVIOR ACROSS ANALYSTS - STANDARD ERRORS CLUSTERED AT THE ANALYST LEVEL

This Table presents variants of the regressions in Table A.30 in which we focus on analysts' negative revisions (in year-quarter Q) that follow negative earnings surprises. In columns [1] to [6], the dependent variable is for a given analyst and a given stock a dummy that equals one if the analyst covered the stock before the announcement date of the Q-1 quarterly earnings and has revised his/her annual earnings forecast downward between the announcement dates of the Q-1 and Q quarterly earnings. The sample is restricted to analyst-stock-year-quarter observations for which SUE(Q-1), the unexpected earnings in quarter Q-1, is negative. POSREV(Q-1) is a dummy that equals one if the analyst has revised his/her annual earnings forecast upward between the announcement dates of the Q-2 and Q-1 quarterly earnings. ABS SUE(Q-1) is the absolute value of standardized unexpected earnings in year-quarter Q-1. COVERAGE is the number of analysts who covered the stock in the current fiscal year. LN(MKTCAP) is the logarithm of the stock total market capitalization (Compustat item CSHO $\times$ item PRCC_F) at the end of the current fiscal year. SIGMA is the standard deviation of daily raw returns of the stock in the current fiscal year. IMPLIEDVOL is the average of 30-day implied volatility of all at-the-money stock i options issued in the current fiscal year. LNBM is book-to-market defined as in Fama and French (2008) in the current year. Return on assets, ROA, is defined as operating income after depreciation (item OIBDP - item DP) over total assets (item AT) computed at the end of the current fiscal year. All regressions include year-quarter fixed effects, fiscal-quarter fixed effects and analyst fixed effects. Columns [2] and [5] also include industry fixed effects. Columns [3] and [6] also include stock fixed effects. All continuous variables are windsorized at the first and ninety-ninth percentiles. We exclude all observations with stock price lower than \$5. *, **, and *** denote significance at the 10%, 5%, and 1%, respectively. The sample period is from January 1982 to December 2014 in columns [1] to [3], and from January 1996 to December 2014 in columns [4] to [6].

	NEGREV(Q) (Sample with SUE(Q-1)< 0 only)					
	[1]	[2]	[3]	[4]	[5]	[6]
POSREV(Q-1)	-0.125***	-0.123***	-0.066***	-0.118***	-0.116***	-0.055***
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
ABS SUE(Q-1)	0.042***	0.042***	0.039***	0.041***	0.041***	0.038***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
SIZE	-0.049***	-0.050***	-0.122***	-0.051***	-0.052***	-0.143***
	(0.001)	(0.001)	(0.003)	(0.002)	(0.002)	(0.004)
COVERAGE	0.004***	0.004***	0.007***	0.004***	0.004***	0.006***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SIGMA	0.006***	0.006***	0.007***			
	(0.001)	(0.001)	(0.002)			
IMPLIEDVOL				0.053***	0.051***	0.040**
				(0.014)	(0.014)	(0.019)
LNBM	-0.019***	-0.020***	-0.047***	-0.022***	-0.022***	-0.057***
	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.004)
ROA	-2.219***	-2.236***	-2.866***	-2.093***	-2.092***	-2.690***
	(0.048)	(0.048)	(0.065)	(0.064)	(0.065)	(0.092)
Fiscal-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Analyst FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	Yes	No	No	Yes	No
Stock FE	No	No	Yes	No	No	Yes
Observations	319827	319827	319827	188090	188090	188090
R^2	0.170	0.171	0.234	0.166	0.168	0.237