

Chapter 2

Conservatism Bias and Asset Price Overreaction or Underreaction to New Information in a Competitive Securities Market

2.1 Introduction

This chapter proves that conservatism bias is capable of causing the asset price to overreact or underreact to good news or bad news. These results are obtained in a static equilibrium model of a competitive securities market. In the market, there are two types of assets: risk-free asset and risky asset. The payoff for the risk-free asset is one and the payoff for the risky asset is normally distributed. There are three types of traders: rational traders, conservatism traders and noise traders. Noise traders trade for liquidity reasons and hence, their demand for the risky asset is assumed to be random. Before any trade takes place, rational and conservatism traders receive an informational signal about the asset payoff. Due to the conservatism bias, conservatism traders are slow to update their beliefs about the asset payoff relative to rational traders after receiving the new information.

In this competitive securities market, the asset price overreaction to the new information occurs if in responding to the new information, rational traders buy (sell) the asset and at the same time, the asset price is higher (lower) than what it would in the market with rational traders and noise traders. In addition, the asset price underreaction to the new information occurs if rational traders buy (sell) the asset and at the same time, the asset price is not as high (low) as it would in the market with rational traders and noise traders.

For the sake of the following discussions, an informational signal is considered as good news (bad news) if the signal is greater (smaller) than the expected payoff of the asset. In addition, based on how far the signal is greater (smaller) than the expected payoff of the asset, the good news (bad news) is classified into three types of good news (bad news): slightly good news (slightly bad news), very good news (very bad news) and extremely good news (extremely bad news). Specifically, an informational signal is considered as slightly good news (slightly bad news) if the signal is very close to and bigger (smaller) than the expected payoff of the asset. On the other hand, if the signal is much larger (smaller) than the expected payoff of the asset, then the informational signal is considered as extremely good news (extremely bad news). If the signal is not very close to and also not much larger (smaller) than the expected payoff of the asset, then the signal is considered as very good news (very bad news).

Due to the conservatism bias, if the signal indicates good news (bad news), a conservatism trader has a smaller (larger) conditional mean of the asset payoff than a rational trader does; and in addition, for any given signal, a conservatism trader has a larger conditional variance of the asset payoff than a rational trader does.

The following discusses how the conservatism bias causes the asset price to overreact or underreact to the good news or bad news in the case of noise traders being net sellers or buyers of the asset.

If noise traders are net sellers of the asset, then the asset price underreacts to all types of good news. The intuition behind this result is as follows. Note that in the case of noise traders being net sellers of the asset, in responding to all types of good news, rational traders view the asset as undervalued and consequently buy the asset. On the other hand, in responding to all types of good news, conservatism traders can either buy or sell the asset. If conservatism traders buy the asset, then they do not take trading positions as large as rational traders do. This is because in the case of the signal suggesting the good news, a conservatism trader has a smaller conditional mean of the asset payoff than a rational trader does; and also, a conservatism trader has a larger conditional variance of the asset payoff than a rational trader does. In addition, if conservatism traders sell the asset in responding to all types of good news, then conservatism traders take trading positions opposite to rational traders. In either case, the asset price is not as high as it would be in the market with rational traders and noise traders. That is, the asset price underreacts to all types of good news.

However, if noise traders are net buyers of the asset, then the asset price can overreact to one type of good news and underreact to the others. The intuition for these results is as follows. In the case of noise traders being net buyers of the asset, conservatism traders sell the asset in response to the slightly good news. The reason for conservatism traders selling the asset is that in the case of the signal suggesting the good news, a conservatism trader has a smaller conditional mean of the asset payoff than a rational trader does and as a result, conservatism traders view the asset as overvalued. In addition, in responding to the slightly good news, rational traders view the asset as overvalued and sell the asset. However, conservatism traders take smaller positions in selling the asset than rational traders. Consequently, the asset price is not as low as it would be in the market with rational traders and noise traders. That is, the asset price underreacts to the slightly good news. However, if the signal suggests very good news, then conservatism traders take larger positions in selling the asset than rational traders. Hence, in the case of the signal suggesting very good news, conservatism traders' aggressive selling of the asset on the same side of the market as rational traders drives the asset price lower than what it would be in the market with rational traders and noise traders. That is, the asset price overreacts to the very good news.

In addition, in the case of noise traders being net buyers of the asset, if the signal suggests extremely good news, then rational traders buy the asset. The reason for rational traders buying the asset is that a rational trader has a larger conditional mean of the asset payoff than a conservatism trader does and consequently, rational traders view the asset as undervalued. However, conservatism traders sell the asset in response to the extremely good news. Hence, rational and conservatism traders take opposite trading positions, and the asset price is not as high as it would be in

the market with rational traders and noise traders. Thus, the asset price underreacts to the extremely good news.

This chapter also proves that in the case of noise traders being net buyers of the asset, the asset price underreacts to all types of bad news; in addition, in the case of noise traders being net sellers of the asset, the asset price overreacts to one type of bad news and underreacts to the others. Similar intuition to the above can be applied to explaining these results.

The remainder of this chapter consists of three sections. The next section describes the model. Section 3 presents how the conservatism bias causes the asset price to overreact or underreact to the good news or bad news. The concluding remarks are in Sect. 4.

2.2 The Model

To illustrate how conservatism bias causes the asset price to overreact or underreact to good news or bad news in a competitive securities market, an extension to Grossman and Stiglitz (1980) is used. Specifically, consider a static model of a competitive securities market with one risk-free asset and one risky asset. The payoff of the risk-free asset is one and the payoff of the risky asset (denoted as θ) is normally distributed with the mean of $\bar{\theta}$ and standard deviation of σ_θ . In the market, there are three types of investors: rational traders, conservatism traders, and noise traders. Conservatism traders exhibit conservatism bias. Noise traders trade for their liquidity reasons and hence, their demand of the asset is assumed to be random¹.

Before any trade takes place, rational and conservatism traders receive an informational signal about the asset payoff. The informational signal is modeled as:

$$S = \theta + \epsilon, \quad (2.1)$$

where the residual error ϵ is normally distributed with the mean zero and standard deviation of σ_ϵ ; in addition, ϵ is independent of θ . Since θ and ϵ are independently and normally distributed, rational traders update their beliefs about the mean and standard deviation of the asset payoff according to:

$$E_r(\theta | S) = \bar{\theta} + \frac{\sigma_\theta^2}{\sigma_\theta^2 + \sigma_\epsilon^2} (S - \bar{\theta}), \quad (2.2)$$

and

$$Var_r(\theta | S) = \sigma_\theta^2 - \frac{\sigma_\theta^4}{\sigma_\theta^2 + \sigma_\epsilon^2} = \frac{\sigma_\theta^2 \sigma_\epsilon^2}{\sigma_\theta^2 + \sigma_\epsilon^2}, \quad (2.3)$$

respectively, where subscript r indicates a rational trader. Since θ and ϵ are independently and normally distributed, Eqs. (2.2) and (2.3) follow from the results of Theorem 1 in the appendix.

¹ Noise traders provide the liquidity to the market.

Due to the conservatism bias, conservatism traders are slow to update their beliefs about the mean and variance of the asset payoff. Hence, conservatism traders' conditional mean and variance of the asset payoff are modeled as:

$$E_c(\theta | S) = \bar{\theta} + m(E_r(\theta | S) - \bar{\theta}), \quad (2.4)$$

and

$$Var_c(\theta | S) = \sigma_\theta^2 + m(Var_r(\theta | S) - \sigma_\theta^2), \quad (2.5)$$

respectively, where subscript c indicates a conservatism trader and m is an adjustment parameter and $m \in (0, 1)$. The closer to one the adjustment parameter m , the less is the conservatism bias. If the adjustment parameter is one, then conservatism traders become indistinguishable from rational traders.

Substituting Eq. (2.2) into (2.4) results in:

$$E_c(\theta | S) = \bar{\theta} + \frac{m\sigma_\theta^2}{\sigma_\theta^2 + \sigma_\epsilon^2}(S - \bar{\theta}). \quad (2.6)$$

Note from Eq. (2.6) that if the signal is larger than the expected payoff of the asset, then a conservatism trader has a smaller conditional mean of the asset payoff than a rational trader does; in addition, if the signal is smaller than the expected payoff of the asset, then a conservatism trader has a larger conditional mean of the asset payoff than a rational trader does.

In addition, substituting Eq. (2.3) into (2.5) gives rise to:

$$Var_c(\theta | S) = \sigma_\theta^2 - \frac{m\sigma_\theta^4}{\sigma_\theta^2 + \sigma_\epsilon^2}. \quad (2.7)$$

Note from Eq. (2.7) that for any given signal, a conservatism trader has a larger conditional variance of the asset payoff than a rational trader does.

The initial wealth for each trader is assumed to be w , where $w > 0$. Since the payoff of the risk-free asset is one, it follows that there is no gain or loss from trading this asset. In the competitive market, traders take the risky asset price as given. Denote the risky asset price as p and the demand for the risky asset by trader i (where $i = r, c$) as X_i . Hence, trader i 's wealth (where $i = r, c$) (denoted as w_i) is the summation of his initial wealth and profit from trading the asset. That is, $w_i = w + X_i(\theta - p)$. Each trader is assumed to have an exponential utility function. That is, for trader i (where $i = r, c$), $U(w_i) = -e^{-aw_i}$, where a is the coefficient of absolute risk aversion and $a > 0$. Since the random variables θ and ϵ are independently and normally distributed, the demand function of trader i (where $i = r, c$) can be solved from:

$$\begin{aligned} \max_{X_i} E_i(w_i | S) - \frac{a}{2} Var_i(w_i | S), \\ s.t. \quad w_i = w + X_i(\theta - p). \end{aligned} \quad (2.8)$$

In other words, with Eqs. (2.2), (2.3), (2.6) and (2.7), optimization problem (2.8) is solved to give rise to the demand functions for rational and conservatism traders as:

$$X_r = \frac{\bar{\theta} + \eta(S - \bar{\theta}) - p}{a\sigma_\theta^2(1 - \eta)}, \quad (2.9)$$

and

$$X_c = \frac{\bar{\theta} + m\eta(S - \bar{\theta}) - p}{a\sigma_\theta^2(1 - m\eta)}, \quad (2.10)$$

where $\eta = \frac{\sigma_\theta^2}{\sigma_\theta^2 + \sigma_\epsilon^2} < 1$, respectively.

Among a population of rational traders and conservatism traders, λ denotes the fraction of this population being rational traders and $1 - \lambda$ denotes the fraction of this population being conservatism traders.

Noise traders' demand for the asset is normally distributed with the mean of zero and variance of σ_x^2 . In addition, it is assumed that the total supply of the asset in the market is zero.

Hence, using Eqs. (2.9) and (2.10), the market clearing condition that equals the total demand for the asset to the total supply of the asset is described by:

$$\lambda \frac{\bar{\theta} + \eta(\theta + \epsilon - \bar{\theta}) - p}{a\sigma_\theta^2(1 - \eta)} + (1 - \lambda) \frac{\bar{\theta} + m\eta(\theta + \epsilon - \bar{\theta}) - p}{a\sigma_\theta^2(1 - m\eta)} + x = 0. \quad (2.11)$$

In addition, the asset price is solved from Eq. (2.11) as:

$$p = \frac{-(\bar{\theta} + a\sigma_\theta^2)(1 - \eta)(1 - m\eta) + S\eta(m\eta - 1) - \lambda(1 - m)}{\eta - 1 + \lambda\eta(m - 1)}. \quad (2.12)$$

Note from Eq. (2.12) that $E(p) = \bar{\theta}$.

From Eqs. (2.9), (2.10) and (2.12), the demand functions of rational and conservatism traders are computed as:

$$X_r = \frac{1}{a\sigma_\theta^2(\eta - 1 + \lambda\eta(m - 1))} (ax\sigma_\theta^2(1 - m\eta) - \eta(1 - m)(1 - \lambda)(S - \bar{\theta})), \quad (2.13)$$

and

$$X_c = \frac{1}{a\sigma_\theta^2(\eta - 1 + \lambda\eta(m - 1))} (ax\sigma_\theta^2(1 - \eta) + \lambda\eta(1 - m)(S - \bar{\theta})), \quad (2.14)$$

respectively².

In this model, the definition of the asset price overreaction or underreaction to new information is specified relative to the perfectly rational benchmark. Specifically,

² Equations (2.13) and (2.14) imply that $E(X_i) = 0$ for $i = r, c$.

the asset price overreaction to the new information occurs if in response to the new information, rational traders buy (sell) the asset and at the same time, the asset price is higher (lower) than what it would be in the market with rational traders and noise traders. In addition, the asset price underreaction to the new information occurs if in response to the new information, rational traders buy (sell) the asset and at the same time, the asset price is not as high (low) as it would be in the market with rational traders and noise traders.

2.3 The Asset Price Overreaction or Underreaction to New Information

This section analyzes how the conservatism bias causes the asset price to overreact or underreact to the good news or bad news.

Note from Eqs. (2.13) and (2.14) that if there are no noise traders in the market, then in responding to any informational signal, conservatism traders take trading positions opposite to rational traders (due to their conservatism biases). Hence, the asset price underreacts to the new information. With the presence of noise traders in the market, conservatism traders may not take trading positions opposite to rational traders. Depending on the realization of the signal and whether noise traders are net buyers or sellers of the asset, conservatism traders can take the trading positions on the same side as rational traders, and take larger trading positions than rational traders. Consequently, the asset price can overreact to the new information.

To ease the analysis to be conducted in the latter part of this section, the equations for $p - E_r(\theta | S)$ and $p - E_c(\theta | S)$ are computed from Eqs. (2.2), (2.6) and (2.12) as:

$$p - E_r(\theta | S) = \frac{\eta - 1}{\eta - 1 + \lambda\eta(m - 1)} (ax\sigma_\theta^2(1 - m\eta) - \eta(1 - m)(1 - \lambda)(S - \bar{\theta})), \quad (2.15)$$

and

$$p - E_c(\theta | S) = \frac{m\eta - 1}{\eta - 1 + \lambda\eta(m - 1)} (ax\sigma_\theta^2(1 - \eta) + \lambda\eta(1 - m)(S - \bar{\theta})), \quad (2.16)$$

respectively.

In addition, taking the derivative with respect to m of Eq. (2.14) results in:

$$\frac{dX_c}{dm} = \frac{\lambda\eta(\eta - 1)(ax\sigma_\theta^2 - S + \bar{\theta})}{a\sigma_\theta^2(\eta - 1 + \lambda\eta(m - 1))^2}. \quad (2.17)$$

Equation (2.17) shows how the change in the conservatism bias parameter affects the trading positions of conservatism traders. This equation is used in the analysis to be conducted later.

In addition, an informational signal is defined as good news if the informational signal is greater than or equal to the expected payoff of the asset, otherwise, it is defined as bad news. In addition, based on how far the informational signal is greater than the expected payoff of the asset, the good news is further classified as slightly good news if $\bar{\theta} \leq S < \bar{\theta} + a|x|\sigma_\theta^2$; very good news if $\bar{\theta} + a|x|\sigma_\theta^2 \leq S < \bar{\theta} + \frac{a|x|\sigma_\theta^2(1-m\eta)}{\eta(1-m)(1-\lambda)}$, where $\frac{1-m\eta}{\eta(1-m)(1-\lambda)} > 1$; and extremely good news if $S \geq \bar{\theta} + \frac{a|x|\sigma_\theta^2(1-m\eta)}{\eta(1-m)(1-\lambda)}$. Similarly, according to how far the informational signal is smaller than the expected payoff of the asset, bad news is further defined as slightly bad news if $\bar{\theta} - a|x|\sigma_\theta^2 \leq S < \bar{\theta}$; very bad news if $\bar{\theta} - \frac{a|x|\sigma_\theta^2(1-m\eta)}{\eta(1-m)(1-\lambda)} \leq S < \bar{\theta} - a|x|\sigma_\theta^2$; and extremely bad news if $S < \bar{\theta} - \frac{a|x|\sigma_\theta^2(1-m\eta)}{\eta(1-m)(1-\lambda)}$.

The following discusses how conservatism bias causes the asset price to overreact or underreact to different types of good news or bad news in the case of noise traders being net buyers or sellers of the asset. It begins with analyzing how the asset price reacts to the good news in the case of noise traders being net sellers of the asset.

If noise traders are net sellers (i.e., $x < 0$) of the asset, then in response to the good news, the asset price is priced below rational traders' conditional mean of the asset payoff (see Eq. (2.15)). Hence, rational traders buy the asset in response to the good news (due to Eq. (2.9)). On the other hand, conservatism traders may take trading positions either in the opposite direction to rational traders or on the same side as rational traders. If conservatism traders take trading positions opposite to rational traders, then the asset price is not as high as it would be in the market with rational traders and noise traders. If conservatism traders take a trading position on the same side as rational traders, then conservatism traders take smaller positions in buying the asset than rational traders (due to $X_c < X_r$ for $x < 0$ and $S \geq \bar{\theta}$ (see Eq. (2.17))). Consequently, the asset price is not as high as it would for the market with rational traders and noise traders. Thus, the asset price underreacts to the good news in the case of noise traders being net sellers of the asset.

On the other hand, if noise traders are net buyers of the asset, then conservatism traders sell the asset in response to all types of good news. However, whether conservatism traders take larger or smaller positions in selling the asset than rational traders depends on the type of good news. In addition, rational traders react differently to different types of good news. Hence, the following discussions are classified according to the type of good news into three cases: case (a), where the signal suggests slightly good news; case (b), where the signal suggests very good news and case (c), where the signal suggests extremely good news. In each case, detailed analysis is provided on how the asset price overreacts or underreacts to good news in the case of noise traders being net buyers of the asset. The following begins with the analysis in case (a).

Case (a): If the signal suggests slightly good news (i.e., $\bar{\theta} < S < \bar{\theta} + ax\sigma_\theta^2$), then the asset is priced above the conservatism traders' conditional mean of the asset payoff (see Eq. (2.16)). Hence, conservatism traders sell the asset in responding to slightly good news (see Eq. (2.10)). In addition, since $\frac{dX_c}{dm} < 0$ for $\bar{\theta} < S < \bar{\theta} + ax\sigma_\theta^2$ (see Eq. (2.17)), it follows that $0 > X_c > X_r$. Hence, in responding to the slightly good news, rational traders take larger positions in selling the asset than conservatism

traders and the asset price is not as low as it would be in the market with rational traders and noise traders. That is, the asset price underreacts to the slightly good news in the case of noise traders being net buyers of the asset.

Case (b): If the signal suggests very good news (i.e., $\bar{\theta} + ax\sigma_{\theta}^2 < S < \bar{\theta} + \frac{ax\sigma_{\theta}^2(1-m\eta)}{\eta(1-m)(1-\lambda)}$, where $\frac{1-m\eta}{\eta(1-m)(1-\lambda)} > 1$), then the asset is priced above both rational and conservatism traders' conditional mean of the asset payoff (see Eqs. (2.15) and (2.16)). Hence, both rational and conservatism traders view the asset as overvalued and consequently, they both sell the asset (see Eqs. (2.9) and (2.10)). In addition, since $\frac{dX_c}{dm} > 0$ for $S > \bar{\theta} + ax\sigma_{\theta}^2$ (see Eq. (2.17)), it follows that $X_c < X_r$. Hence, conservatism traders take the larger positions in selling the asset than rational traders. It is the conservatism traders' aggressive selling the asset that pushes the asset price lower than what it would be in the market with rational traders and noise traders. That is, the asset price overreacts to very good news in the case of noise traders being net buyers.

Case (c): If the signal suggests extremely good news (i.e., $S > \bar{\theta} + \frac{ax\sigma_{\theta}^2(1-m\eta)}{\eta(1-m)(1-\lambda)}$), then rational traders buy the asset and conservatism traders sell the asset (see Eqs. (2.9), (2.10), (2.15) and (2.16)). Hence, conservatism traders' trading in a direction opposite to rational traders prevents the asset price from rising as high as it would in the market with rational traders and noise traders. That is, asset price underreacts to extremely good news in the case of noise traders being net buyers.

The following analyzes how conservatism traders cause the asset price to overreact or underreact to bad news. It begins with analysis in the case of noise traders being net buyers of the asset.

If noise traders are net buyers of the asset, then for all types of bad news, the asset is priced above rational traders' conditional mean of the asset payoff (see Eq. (2.15)). Hence, rational traders sell the asset for all types of bad news (see Eq. (2.9)). In addition, since $\frac{dX_c}{dm} < 0$ (see Eq. (2.17)), it follows that $X_c > X_r$. Also, note that conservatism traders either buy the asset or sell the asset. If conservatism traders buy the asset, then conservatism traders take trading positions opposite to rational traders. If conservatism traders sell the asset, then conservatism traders take smaller trading positions than rational traders (due to the inequality of $X_c > X_r$). In either case, conservatism traders prevent the asset price from being driven as low as it would in the market with rational traders and noise traders. That is, the asset price underreacts to all types of bad news in the case of noise traders being net buyers.

In addition, if noise traders are net sellers of the asset, then conservatism traders buy the asset in responding to all types of bad news. However, depending on the type of bad news, conservatism traders may take larger or smaller trading positions than rational traders do. Consequently, the asset price can overreact to one type of bad news and underreact to other types of bad news. Hence, based on the type of bad news, the following discussions are classified into three cases: case (d), where the signal suggests slightly bad news; case (e), where the signal suggests very bad news and case (f), where the signal suggests extremely bad news. In each case, detailed analysis is presented on how the conservatism bias causes the asset price to overreact or underreact to the bad news. The following begins with the analysis in case (d).

Case (d): If the signal suggests slightly bad news (i.e., $\bar{\theta} + ax\sigma_\theta^2 \leq S < \bar{\theta}$), then the asset is priced below the conservatism traders' conditional mean of the asset payoff (see Eq. (2.16)). Hence, conservatism traders buy the asset in response to slightly bad news (see Eq. (2.10)). In addition, since $\frac{dX_c}{dm} > 0$ (Eq. (2.17)), it follows that $0 < X_c < X_r$. Hence, in response to the slightly bad news, conservatism traders take smaller positions in buying the asset than rational traders. As a result, the asset price is not as high as it would be in the market with rational traders and noise traders. That is, the asset price underreacts to slightly bad news.

Case (e): If the signal suggests very bad news (i.e., $\bar{\theta} + \frac{ax\sigma_\theta^2(1-m\eta)}{\eta(1-m)(1-\lambda)} \leq S < \bar{\theta} + ax\sigma_\theta^2$), then the asset is priced below conservatism traders' conditional mean of the asset payoff (see Eq. (2.16)). Hence, in response to very bad news, conservatism traders buy the asset (see Eq. (2.10)). In addition, rational traders buy the asset in response to very bad news (see Eqs. (2.9) and (2.15)). Also, since $\frac{dX_c}{dm} < 0$ (see Eq. (2.17)), it follows that $X_c > X_r$. Hence, conservatism traders take larger positions in buying the asset than rational traders and the asset price is higher than what it would be in the market with rational traders and noise traders. That is, the asset price overreacts to very bad news.

Case (f): If the signal suggests extremely bad news (i.e., $S < \bar{\theta} + \frac{ax\sigma_\theta^2(1-m\eta)}{\eta(1-m)(1-\lambda)}$), then the asset is priced above the rational traders' conditional mean of the asset payoff (see Eq. (2.15)). Hence, rational traders sell the asset in responding to extremely bad news (see Eq. (2.9)). In addition, Eqs. (2.10) and (2.16) imply that conservatism traders buy the asset in response to extremely bad news. By trading in a direction opposite to rational traders, conservatism traders prevent the asset price from going as low as it would in the market with rational traders and noise traders. Hence, the asset price underreacts to extremely bad news.

The above results are formally stated in the proposition below:

Proposition 1 *In the competitive securities market, the following are true: (i) If noise traders are net sellers, then the asset price underreacts to all good news. (ii) If noise traders are net buyers, then the asset price underreacts to slightly good news and extremely good news; but overreacts to very good news. (iii) If noise traders are net buyers, then the asset price underreacts to all bad news. (iv) If noise traders are net sellers, then the asset price underreacts to slightly bad news and extremely bad news; but overreacts to very bad news.*

As can be seen from all above analyses, conservatism bias is the cause for the asset price to underreact or overreact to good news or bad news. In addition, more conservatism bias and/or larger subpopulation of conservatism traders (i.e., smaller m and/or smaller λ) can only exaggerate the impact on the asset price of conservatism bias in the same direction as it was with larger values of the parameters m and λ . As a result, the asset price underreaction or overreaction to new information becomes more severe.

2.4 Concluding Remarks

This chapter proves that conservatism bias is capable of generating asset price overreaction or underreaction to good news or bad news. These results are obtained in a static model of a competitive securities market with rational and conservatism traders and noise traders. The payoff of the asset is unknown, but rational and conservatism traders receive an informational signal about the asset payoff before any trade occurs. However, due to the conservatism bias, conservatism traders are slow to update their beliefs about the asset payoff relative to rational traders. In other words, if the informational signal is larger than the expected payoff of the asset, then a conservatism trader has a smaller conditional mean of the asset payoff than a rational trader does; in addition, if the informational signal is smaller than the expected payoff of the asset, then a conservatism trader has a larger conditional mean of the asset payoff than a rational trader does. As a result, with certain model parameter conditions, conservatism traders take the trading positions on the same side of the market as rational traders and, at the same time, take larger trading positions than rational traders. This results in the occurrence of asset price overreaction to the new information. On the other hand, with other model parameter conditions, conservatism traders take trading positions in a direction opposite to rational traders or on the same side of the market as rational traders, but take smaller trading positions than rational traders. This generates the occurrence of asset price underreaction to the new information.

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