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# What's in the Price?



By Joel Peress , INSEAD

## **How uncertainty about what information is incorporated in the stock price shapes trading behaviour, returns and price informativeness.**

“Am I too late?” This is the question that plagues traders trying to make gains from “novel” information. After all, there is always a chance that the signal that they are about to trade on has already been priced in by the market.

When speculators contemplate trading based on a particular signal, can they tell if their signal is truly novel (on which it would be profitable to trade) or if other investors have already traded on this information (rendering it stale)? While many financial models assume that market participants share a clear understanding of a stock’s information environment, this is unrealistic in real-world scenarios.

A myriad of factors can influence price – from demand to competition, takeover opportunities, technological changes and regulation. It’s impossible for investors to know the precise extent to which a recent price movement is driven by this or that piece of information.

## **The impact of uncertainty in trading behaviour**

In a [study](#) with my co-author [Daniel Schmidt](#) from HEC Paris, we examined the concept of uncertainty about what's incorporated in the stock price. We developed a simple trading model in which speculators face uncertainty when they trade based on signals. The model reveals that in equilibrium, speculators rely on recent price movements to assess if their trading signal is novel and adjust their trading aggressiveness accordingly.

Consider an investor who receives positive information about a stock. Uncertain if this information is already reflected in the stock price, the investor looks at recent price changes for guidance: If the price has just gone up, the odds that other investors might have already acted on the same information are high, implying that the information is more likely to be stale. In contrast, if the stock price has gone down, there must be another explanation, leading the investor to conclude that the information they have is more likely to be novel.

As such, an investor with positive news about a stock is more likely to trade more aggressively after recent price downturns, and more cautiously after price increases.

### **Market makers' response to uncertainty**

Trades in financial markets are facilitated by market makers such as dealers and brokers. These market makers are well aware that they might be transacting with better-informed traders. They recognise that traders are more likely to buy assets they believe are undervalued and sell assets they believe are overvalued. To manage this information asymmetry, market makers adjust their quoted prices accordingly: raising prices in response to buy orders they perceive as informed and lowering them in response to sell orders they deem informed.

In our context, market makers assess whether speculators might be trading on stale news. They recognise that this is more likely for buy orders following a price increase and sell orders following a price decrease. As such, they quote prices that are asymmetric to recent price movements, resulting in stock returns being more negatively skewed – meaning that extreme losses are more likely than extreme gains – following price increases, and positively skewed after price decreases, where the reverse is true.

To illustrate this, consider how, after recent price increases, market makers view buy orders as more likely to come from investors trading on stale news.

They therefore raise their ask prices in response to buy orders less than they lower their bid prices in response to sell orders. This results in smaller price adjustments for buys and larger price adjustments for sales if the price went up recently (i.e. returns are more negatively skewed.) Conversely, returns are more positively skewed after price decreases because market makers raise prices more in response to buy orders than they reduce them in response to sell orders.

While asymmetry in stock returns is a well-known fact, our proposed model explains both directions of returns skewness: negative skew following rising returns and positive skew following falling returns. It shows that equilibrium prices, return skewness and trading strategies are asymmetric across buy and sell orders and depend on prior price movements.

### **Empirical evidence**

We found strong support for our predictions when we tested them empirically using daily order flow data for a comprehensive panel of NYSE-traded stocks from 1993 to 2014. We found that the skewness of stock returns is negatively related to lagged returns, as consistent with the model. As for market makers' price quotations, we observed that buys elicit a lower price change after the price rises, consistent with market makers' assessment that investors may be buying based on stale news. For the same reason, sells elicit a lower price impact after the price falls.

These findings are robust across various trading environments. However, they are further influenced by factors that affect the ease of assessing news staleness, such as the availability of public information and firm complexity. Stocks with a large market capitalisation, more analyst coverage or that are part of the S&P 500 index receive greater public scrutiny, resulting in less pronounced skewness and price impact. Similarly, the effects weaken immediately after a company's earnings announcement, when there is less uncertainty about what information is already factored in stock prices.

Conversely, for companies that are more complex to analyse, such as conglomerates operating in multiple segments, the effects are more pronounced. Finally, the asymmetry in price adjustments between buys and sells is weaker for orders originating from retail traders because they are less likely to possess novel private information.

### **Effects on market efficiency**

Overall, our results strongly suggest that uncertainty about what is incorporated in the stock price is a common and widespread concern for stock market participants. It also explains why stock returns are asymmetrically skewed based on past price trends – a phenomenon not fully explained by existing theories. We argue that this type of asymmetric dependence arises naturally when there is uncertainty about what is incorporated in the price, making it a distinct “footprint” in empirical data.

The effect on price informativeness also has wider implications. If speculators are risk-averse, this uncertainty makes them more reluctant to trade on their information. In other words, uncertainty can reduce the information content of prices. This can affect decision makers in different scenarios, such as those preparing for a merger or those using stock prices simply as guides to learn about a company’s future prospects.

By acknowledging that investors often trade under uncertainty about what information is already priced in, this study offers a more realistic perspective on market behaviour, challenging traditional assumptions in asset pricing models. It sheds light on how such uncertainty affects trading strategies, market efficiency and price dynamics, and enriches our understanding of the way markets function.

#### **Find article at**

<https://knowledge.insead.edu/economics-finance/whats-price>

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#### **About the research**

“[Uncertainty About What Is in the Price](#)” is published in the *Journal of Financial Economics*.