



Speech by SEC Staff: Volatility, Price Discovery and Markets

by

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1. Introduction

It is a great pleasure to speak this evening at the Wilton Park Conference on "Capital Flows and the Safety of Markets." This is an important venue for discussion of regulatory issues and perspectives that span the Atlantic. As we address concerns about the "Safety of Markets," I think that it important to highlight the role of markets, the nature of volatility in our marketplace and the price discovery process. Consequently, I'd like to focus my remarks this evening on this issue. At the onset of my remarks I should emphasize, that of course, the views and perspectives that I am expressing today are my own and not those of the Commission or my colleagues on the staff of the United States Securities and Exchange Commission.

One of the fundamental themes in examining the safety of markets is the nature of volatility, how risk premium is earned in the marketplace and how information gets reflected in pricing. The risk that investors face can vary over time and reflect both market-wide as well as firm-specific risks and shocks. Incidentally, my own view is that current systematic volatility is rather low now; specifically, I view the implied volatility conveyed by option prices on indices such as the S&P 500 as a good way to measure anticipated volatility and, indeed, the VIX is near a record low.

Given the risk aversion of investors in the marketplace, the resolution of market-wide uncertainty is associated with the earning of risk premium to compensate the investor for bearing these underlying risks. In light of the presence of this risk premium, even relatively risk-averse investors should be anxious to bear at least small amounts of these aggregate risks as financial theory teaches that investors who do not bear substantial risks should optimally act as if they are risk neutral over very small incremental risks and add some risks that compensate with a positive risk premium. This does not fully determine the allocation of these aggregate or systematic risks, but emphasizes that investors should be comfortable bearing at least small risks given the local or immediate risk-return tradeoff. I should note that volatility per se and the resolution of uncertainty are not unhealthy in our markets. Interestingly, studies of risk premium in the United States have suggested that the risk premium for holding equity is surprisingly large, i.e., a very high level of risk aversion would be needed to rationalize the observed substantial risk premium for standard expected-utility preference models. Raj Mehra and Nobel Prize winner Ed Prescott [1988] identified this interesting finding in a classical paper, calling it "the equity premium puzzle."

In contrast, the nature of the demand for firm-specific risks in the marketplace is quite different. Because investors can effectively diversify away these risks, substantial idiosyncratic risks need not be borne in market equilibrium so there's not a substantial need to pay investors a risk premium for bearing these risks. Indeed, the basic form of modern financial theory

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suggests that the appropriate expected risk premium for bearing diversifiable or idiosyncratic risk is zero and views as somewhat anomalous the empirical evidence that suggests that such risks are priced.¹ Financial theory predicts that firm-specific risks should be widely held and diversified throughout the economy.

A crucial aspect of the role of trading is the generation and discovery of asset values through the marketplace. While specific identifiable announcements are the trigger for some valuation changes, much of the valuation changes in the marketplace just emerge as a consequence of trading. Though the release of public information and the immediate reaction to those releases are important, much of the information generated in the marketplace occurs through the trading process, reflecting not only the market's reaction to various public announcements, but also the transmission of private information to the capital market.

I now would like to describe several examples that illustrate in different ways how information gets impounded in prices. First, I'll highlight a few points from the classic analysis in the early 1980s by Richard Roll of the relationship between orange juice prices and freezes and more recent analysis of this market by Boudoukh, Richardson, Shen and Whitelaw.² The supply of orange juice in the United States is largely determined by the weather in the relevant portions of Florida and more specifically the anticipated supply is greatly influenced by the likelihood of a freeze. The futures price reflects the weather forecasts and interestingly, the futures prices provide better forecasts than the weather forecasts themselves (e.g., Roll (1984, p. 871)). In effect, the weather forecasters could improve their assessment by using the information in prices in their forecasts. The intuition that underlies this finding is that the weather forecasts are a subset of the market's information set.

The second example uses an interesting event in the United States highlighted in a study by Kenneth French and Richard Roll [1986] when the stock market closed on a number of Wednesdays in 1968 to allow the equity market's clearance and settlement procedures to catch up with an explosion of trading activity. Consequently, on those Wednesdays there was no trading, but unlike holidays, corporate America was largely open and producing fundamental information. Yet the overnight volatility from the Tuesday close to Thursday close during this period was only slightly greater than the daily volatility on other days. This illustrates that the information production is largely related to the trading process and that little incremental volatility occurred during the period on Wednesdays in which the capital market was closed. More generally, this suggests that the volatility in markets is closely related to price discovery through the trading process.

My next example of price discovery builds upon some of my own research, jointly with French researchers Bruno Biais and Pierre Hillion, on the role of a virtual pre-opening market in the Paris Bourse in determining prices.³ In the market we studied orders are non-binding prior to the opening of the market, but during the last 10 minutes prior to the opening the virtual or indicative pricing predicts the future value of the asset. This illustrates how non-binding communications can be useful in price discovery, how information can get impounded in trading prices and the potential role of a deadline in promoting price discovery.

The potential contribution to price discovery of ex-post transparency is illustrated by the case of corporate bond market trading in the United States. Surprisingly, in these markets spreads have often been much larger for small transaction than for larger ones, suggesting the possibility of market power by intermediaries restricting the price discovery process. Interestingly, several forthcoming and recently published studies in the major academic journals in financial economics document that the introduction of ex-post trade reporting in the United States substantially reduced bond spreads,⁴ thereby enhancing the price discovery process. I think that this offers important insight to markets around the globe. As we discussed at this afternoon's panel, while the specific market designs differ among different bond markets, I think that studies of the United States experience point to the power for empirical analysis of designing the initiation of post-trade transparency through carefully structured natural experiments.

My final example concerns the pricing of financial assets around the globe. Of course, the absence of arbitrage ensures consistency of pricing of assets in different global markets. To the extent that local assets from one financial market have returns correlated with assets from other markets there is considerable predictable power from open markets for forecasting changes in prices after the closed markets reopen due to the staleness in those prices. This staleness and the absence of a sufficiently forward-looking benchmark for assessing the transaction prices for mutual fund transactions were arguably at the heart of the market-timing scandals in the United States in recent years. Indeed, these two features bear much in common with the current options back-dating scandal in the United States.

What are my takeaways from these examples more generally? Volatility in the marketplace often reflects fundamentals and the transmission of information through the market price system is crucial. A key way in which

information is communicated to less sophisticated investors is through the price system, so suppressing price information will reduce the efficiency of price information that is available in the marketplace.⁵ Market efficiency in the context of our competitive capital markets is a tremendous source of investor protection. Competition among sophisticated investors can help ensure fair prices for unsophisticated investors, while barriers to competition can indirectly harm investors.

Of course, there are a number of examples in which regulations motivated by other benefits arguably have the indirect effect of suppressing price discovery. For concreteness, I will point to situations from the United States regulatory context. A variety of circuit breakers is used to restrict program trading when there have been large intraday price moves to allow traders the opportunity to adjust their orders in response to the large change in the state of the market. The New York Stock Exchange also has historically used trading halts when there are large changes in value on individual securities so that investors are not caught by their own stale limit orders that are executed away from the future market valuation. In this context, the trading halt limits the cost to limit-order investors due to the ex ante adverse selection associated with a limit order that ultimately would have been executed on a stale basis. Daily price limits are used for some futures contracts, which reduce the informativeness of large price changes. Under some circumstances, this reduction in informativeness would lead to the benefit of helping to ensure contract performance.⁶ The stabilizing activities of underwriters in IPO offerings to support prices can lead to a perception by uninformed investors that the offering is worth relatively more than the market transactions would suggest. Pricing restrictions on short-sale transactions prevent executions on the New York Stock Exchange for short sales on declining ticks, retarding price discovery in the small.

The case for regulation to protect the safety of markets hinges on the presence of important externalities. While some barriers to price discovery serve useful objectives, such impediments should be imposed somewhat cautiously in light of the importance of the price discovery process.

I welcome your questions.

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Endnotes

¹For example, see Campbell, Lettau, Malkiel and Xu (2001), Goyal and Santa Clara (2003), Lehmann (1990) and Malkiel and Xu (2006).

²See, Roll (1984) and Boudoukh, Richardson, Shen and Whitelaw (2005).

³See Biais, Hillion and Spatt (1999).

⁴ See Bessembinder, Maxwell and Venkataraman (2006), Edwards, Harris and Piwowar (2005) and Goldstein, Hotchkiss and Sirri (2005).

⁵Note that this does not require the market to be fully efficient informationally.

⁶This theme is developed in Brennan (1986).

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[Home](#) | [Previous Page](#)

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