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# Intraday price reversals in the US stock index futures market: A 15-year study

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## Abstract

This paper gives a long-term assessment of intraday price reversals in the US stock index futures market following large price changes at the market open. We find highly significant intraday price reversals over a 15-year period (November 1987–September 2002) as well as significant intraday reversals in our yearly and day-of-the-week investigations. Moreover, the strength of the intraday overreaction phenomenon seems more pronounced following large positive price changes at the market open. That being said, the question of whether a trader can consistently profit from this information remains open as the significance of intraday price reversals is sharply reduced when gross trading results are adjusted by a bid–ask proxy for transactions costs.

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## 1. Introduction and literature review

One of the benefits of using stock index futures to assess market anomalies is that the phenomena can be studied in a relatively low transactions cost environment (Cornell (1985) and reiterated by Fung et al. (2000)). In this study, we use the “lead” contract on S&P 500 Futures to assess the question of intraday price reversals following large price changes at the market open. We use a time period (November 1987–September 2002) which is considerably longer than that used before to study the intraday overreaction hypothesis. We test for consistency of intraday price reversals on both a yearly basis and a day-of-the-week basis. Moreover, we examine whether it is “profitable” to execute an intraday contrarian strategy on stock index futures after consideration of a bid–ask proxy for transaction costs.

Intraday price reversals following large price changes at the market open have been studied in several papers: Atkins and Dyl (1990) find evidence of strong price reversals on common stocks after a large change in price before considering transaction costs. Fabozzi et al. (1995) use large price changes as proxies for the arrival of unobservable information and employ a standard event study methodology to examine the theory. Also, Fung et al. (2000) find strong support for the intraday overreaction theory on the Hong Kong HSI Futures, but less significant support on the S&P 500 Futures contract using a considerably shorter period of time than our study.<sup>1</sup>

Ederington and Lee (1995) examine investor reaction to information in the futures markets from a different perspective. They investigate the intraday price movement after scheduled macroeconomic news releases. In effect, their study examines how efficiently the market incorporates the new publicly available information into futures prices, Ederington and Lee find that prices are adjusted in a series of small but speedy steps, and that the whole price adjustment process is completed within 1 minute of the news release.

Intraday price movements after the market open may also relate to uncertainty involved in determining the opening price. Most studies find the existence of higher volatility associated with market openings and closings. Ekman (1992) provides evidence on the S&P 500 Futures contract. Daigler (1997) further demonstrates the existence of such a pattern not only on the S&P 500, but also on the MMI (Major Market Index) and the T-bond futures contracts. French and Roll (1986) use stock market data to demonstrate the link between return variances and the arrival of information as well as the subsequent reaction of traders. Moreover, Webb and Smith (1994) argue that the existence of higher variance during the opening is attributable to the use of the open outcry auction system without market makers.

One testable implication of the overreaction theory is that any “significant” change in security price should be followed by a correction. By focusing on the S&P 500 Futures contract, we hypothesize that any significant movement between

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<sup>1</sup> Specifically, we use a 15-year time period to study the consistency and trading implications of intraday price reversals in US stock index futures compared with 2.75 years studied in Fung et al., 2000.

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