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## Fake news <sup>☆</sup>



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### ABSTRACT

This analysis uses Twitter stock and options prices sampled at a 30 s frequency around the fake news announcement, of a bid for a controlling stake in Twitter stock, to investigate how noise trading and informed trading is disseminated into equity and option markets. We find reaction to the fake news occurred in the equity market, and the option market reacted with a delay. This differs from many analyses of actual news events, which found informed traders prefer the options market, and information from their trades then leaks into the equity market. We conclude uninformed traders, and those aware of the hoax, prefer to trade in equity over option markets. This result has implications for isolating informed trading around actual news events.

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## 1. Introduction

In cases of actual news releases of a takeover, there may be both informed and noise traders bidding for shares. However, these cases of fake news are interesting because they cause pure noise trading. So by watching the reaction of the market to fake news, we can assess the effect of noise trading, uncluttered by simultaneous effects of informed trading. In the recent past we've witnessed other tender offer hoaxes such as American Airlines, Rocky Mountain Chocolate, and Avon amongst others that were unsophisticated tender filings where investors recognized the hoax before the target of the hoax could make an announcement. The most recent case of Avon, as in prior hoaxes, trading was suspended during the information discovery. The Twitter hoax is vastly different in that information discovery and the medium for the hoax all reacted via Twitter! Therefore, a very clear record of events from the tender announcement till the hoax was avowed, and importantly trading was not suspended as in the case of Avon. To our knowledge we are the first to study such an event free of confounding trades (see [Table 1](#)).

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**Table 1**  
Timeline of the fake news announcement. Times are accurate to the minute.

11:36	Fake Bloomberg website appears online.
11:39	First known tweet by @openOutcrier.
11:40	Carl Quintanilla tweets about takeover.
11:44	First article posted that news is a possible hoax.
11:45	Bloomberg news spokesman says story is fake
11:51	Bloomberg news spokesman reiterated story is fake.

### 1.1. Series of events

At approximately 11:39 am on Tuesday July 14 2015 Twitter common stock jumped nearly 8 percent on news of a \$31 billion bid for the company. The news was posted on the website <http://bloomberg.market>, which was made to look much like the Bloomberg News website (<http://bloomberg.com>). Within one minute Carl Quintanilla of CNBC and many others tweet on the takeover bid. Approximately five minutes after Quintanilla's tweet, Ty Trippet of Bloomberg News tweets that the bloomberg.market site is a hoax and the market reacts.

The domain bloomberg.market was registered the previous Friday (7/10/2015), and the identity of the registrant is unknown. The news release on bloomberg.market also made mistakes such as misspelling former Twitter CEO Richard Costolo's name. By late afternoon, the bloomberg.market site had been removed with the message "account suspended" being posted.

## 2. Literature review

Equities or options? This long running question of where do informed and uninformed investors decide to trade is hotly debated in the finance literature and the resulting studies tend to only contribute more questions than at inception. Financial theory states that in a friction-less efficient market, price discovery will occur in equities and the option price is a subsequent function of the underlying asset that provides no information—that is the option is redundant. However, a great number of studies posit that there are rational well informed traders who may at times employ options to optimize wealth (Amin & Lee, 1997; Black, 1975; Black & Scholes, 1973; Jayaraman, Frye, & Sabherwal, 2001; Ni, Pan, & Potesman, 2008). These informed traders exist due to market inefficiencies and it is thought that their actions in either equity or derivative markets signal information on future price movements to the uninformed (Chakravarty, Gulen, & Mayhew, 2004). When markets are incomplete informed traders may be motivated to bypass equity markets to trade in options due to financial leverage exposure and lower transaction cost *vis-a-vis* short-sale costs as well as long equity purchase (Black, 1975; Easley, O'hara, & Srinivas, 1998). If informed traders provide information on future price movements, then where do informed traders prefer to use their information? That is, where do informed traders trade? And correspondingly, where do uninformed traders respond to new information? To date, we are unaware of any prior studies that assess hoaxes to understand the trading methods of uninformed and informed traders.

The extant literature of informed and uninformed trades can be summarized into two streams; models of information based trading and empirical investigation of trades made by informed investors. The prior provide motivation and rationale for informed trading in option markets, where options are non-redundant. The latter assess the process of price discovery or the information signaling of option volume relative to equity.

### 2.1. Models of information based trading

Models of information based trading are consistent in proposing that the venue of informed trading is subject to the depth and liquidity of option market as well as the underlying asset, such that thin or non-existent option markets motivate informed trading in stock (Biais & Hillion, 1994; Easley et al., 1998, Easley, Engle, O'Hara, & Wu, 2008; Glosten & Milgrom, 1985; John, Koticha, Subrahmanyam, & Narayanan, 2003; Takayama, 2013). An interesting point noted by Biais and Hillion (1994) is that option provides a greater number of trading strategies and the information content of option trades may seem enigmatic to the uninformed, naturally lending to noise. Biais and Hillion also note that the option may subsequently "reduce the informational efficiency of the market." Other issues of noise purposeful hindering information flow have been described in Kyle's (1985) model of insider trading as well as Collin-Dufresne and Fos (2016). Like Kyle, Collin-Dufresne and Fos posit that informed traders will prefer to trade when noise traders are more active to obscure their actions subsequently concealing their private information. Collin-Dufresne and Fos (2015) review trades made by 13D filers finding that these informed traders prefer to purchase during high volume sessions, thereby concealing their activities within noise. Similar findings trade concealment have also been noted in options markets (Anand & Chakravarty, 2007). Berkman, Koch, and Westerholm (2014) report that informed investor will also trade through their children's accounts to conceal their activities. This evidence suggests that those with private information follows noise to stay private in equity markets as well as employ varying option strategies to create a subterfuge, these finding highlight some of the difficulty in separating noise

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