

Event study analysis using high-frequency data

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Exchange rates are influenced by many variables—not only economic but political—and some of which causes a sudden jump in the exchange rate level. These changes could be either temporary (noises) or persistent (jumps to a new equilibrium). What triggers the price change and how big the effect is have been something many economists are very much interested and have theoretically and empirically analyzed.

One of the factors that cause price changes in foreign exchange markets is due to the intraday seasonality. As shown in several literatures (Goodhart and Payne (1996), Goodhart, Ito and Payne (1996), Andersen and Bollerslev (1997, 1998), Admati and Pfleiderer (1988), Chaboud et al. (2004), and Ito and Hashimoto (2004, 2006, 2007), among others for example), intraday patterns in activities have natural ups and downs—a hike in activities during the market opening hours and a sharp decline during a lunch time and/or after business hours.

The other relates price changes to a “news impact”. That is, roughly speaking, the rational expectation says the preceded part of information arrivals is incorporated into the price discovery and it has no impact on returns. On the other hand, any unexpected component, “surprise,” could decide the direction of prices. To which extent exchange rates respond to this surprise component is examined using regularly released macroeconomic indicators. To list a few among many, Andersen, Bollerslev, Chaboud et al. (2004), Diebold and Vega (2003, 2005), and Faust et al. (2003) studied US news release and its impact on foreign exchange markets; Ehrmann and Fratzscher (2004) examined U.S. and Germany news releases on the foreign exchange markets. The empirical findings by these studies confirm that U.S. and European news releases have significant effects on pricing of the financial markets.

As the availability of high-frequency exchange rate data for researchers has improved in recent years, the examination of news surprise effects becomes more “super high-frequent”—“daily” or “weekly” observations, once regarded as “high frequent”, in the empirical study in macroeconomics and international finance is now gradually replaced by “minute by minute” data. And questions have shifted from “Is a surprise impact significantly seen in the market?” to “How long the surprise impact lasts? One minute? 20 minutes?” These questions are answered by Chaboud et al. (2004) for the US macroeconomics news announcements and Ito and Hashimoto (2009) for Japanese news releases based on the examination of EBS exchange rate data.