



# The impact of ECB macro-announcements on bid–ask spreads of European blue chips



Tobias R. Rühl, Michael Stein \*

Faculty of Economics and Business Administration, University of Duisburg-Essen, Germany

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## ABSTRACT

Bid–ask spreads using intraday data reveal significant sensitivity to European Central Bank (ECB) macro-announcements. Effects are strongest for announcements that comprise unexpected information or a change in interest rates, and spreads rise sharply during the minutes surrounding interest rate or other important macroeconomic announcements by the ECB. Both Euro area stocks (of German DAX 30 and French CAC 40) and non-Euro area stocks (of FTSE 100) have been used for comparative reasons. All results are robust to changes in specification and when being controlled for normal daytime-dependent frictions and stock-specific characteristics.

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## 1. Introduction

Macroeconomic announcements and their effects on security prices are of crucial importance for the understanding of market behavior. This became even more obvious in recent years, as the financial market crisis and the subsequent global economic slump have shown that market participants do base their decisions on major economic news and information. In this study, we focus on the immediate effects of announcements made by the European Central Bank (ECB). Using intraday data that consists of tick-by-tick information for the securities used, we investigate whether and how bid–ask spreads of European stocks are affected by ECB decisions and announcements.

Our findings reveal a temporary but sharp rise in effective spreads of stocks traded at high frequency around a macroeconomic announcement by the ECB. This is of particular interest to policy-makers, institutions and market participants, as enhanced knowledge of the spread formation helps to improve market and trading efficiency, as well as exchange competitiveness. Since the bid–ask spread can be seen as a measure of certain transaction costs (Demsetz, 1968)<sup>1</sup>, knowledge concerning structurally higher spreads surrounding ECB announcements even helps investors who are not interested in day trading. Avoiding periods of high transaction costs for portfolio adjustments thus leads to better medium- or long-term performance.

Bid–ask spreads play a substantial role in the evaluation of market functioning and behavior, and have accordingly been well researched in previous market microstructure investigations. For more than four decades researchers have analyzed the

\* Corresponding author at: Faculty of Economics and Business Administration, University of Duisburg-Essen, Universitätsstr. 12, 45117 Essen, Germany.

E-mail addresses: [tobias.ruehl@uni-due.de](mailto:tobias.ruehl@uni-due.de) (T.R. Rühl), [michael.stein@uni-due.de](mailto:michael.stein@uni-due.de) (M. Stein).

<sup>1</sup> The costs for a round trip transaction in one stock.

microstructural behavior of markets in an effort to reveal the driving factors behind observable differences in buy and sell prices for immediate trade executions. Market microstructure literature concerning bid–ask spreads is the most important background for our approach and study setup. Existing studies mostly discuss dealer markets that are among the quote-driven types of market structure, as opposed to order-driven markets, and can be broadly classified into three categories.

The first deals with the pure measurement of spreads and includes among others the seminal studies by Choi et al. (1988) and Roll (1984). These try, essentially, to measure the spread by using the covariance in price changes, which must be negative if there are differences between ask and bid prices<sup>2</sup>.

The second category of papers aims at further understanding the drivers of spreads and suggests an order-processing component and an inventory component, on either theoretical or empirical basis. An order-processing component reflects the compensation for the dealer with respect to his expenditures for service provision. Such expenditures may arise from salaries for employees, costs of technical equipment or office rental, among other things. The inventory component describes the influence of a dealer's inventory position in the relevant asset. Holding a specific inventory induces holding costs such as opportunity costs or costs of carrying the price risk. If the number of shares a dealer holds exceeds his equilibrium amount, he will lower both bid and ask prices to attract more buyers and fewer sellers, pushing his position back to the equilibrium level. So the inventory component will (temporarily) influence the position of the bid and ask prices – but not necessarily the size of the spread. Papers in this category include those of Amihud and Mendelson (1980), Hasbrouck and Sofianos (1993), Hansch et al. (1998), Ho and Macris (1984), Ho and Stoll (1981), Madhavan and Smidt (1993), Madhavan and Sofianos (1998), Stoll (1978) and Stoll (1989), among others. The findings concerning the importance of the inventory component are, however, mixed.

The final category of classical microstructure papers also employs order processing components, but additionally deals with the role of information. An information component captures the influence of asymmetric information in the market on the spread. If some investors are better informed than the market maker, they are able to make arbitrage profits by buying stocks that are currently underpriced and selling stocks that are overpriced (relative to their view reflecting the information). In order to offset those losses at least partially, market makers are expected to set a higher spread. Given that information asymmetry in the market rises and all other influences remain constant, the spreads also have to rise accordingly. Studies in this category are provided by Easley and O'Hara (1987); Easley et al. (1996); Glosten (1987); Glosten and Milgrom (1985); and Hasbrouck (1991). There are also some mixed models which incorporate inventory and asymmetric information effects; these include the studies by Glosten and Harris (1988); Hasbrouck (1988); Lyons (1995) and Madhavan and Smidt (1991), among others.

While microstructure literature of the category that uses information effects is of particular importance to our study, so are general studies including information effects from announcements. Most literature on market microstructure with a focus on macroeconomic announcements investigates impacts on foreign exchange markets rather than on stock prices. Andersen et al. (2007); Bollerslev and Melvin (1994) and Bossaerts and Hillion (1991) for example provide studies in that area. Several authors have focused particularly on the influence of (monetary) news announcements on the microstructure of foreign exchange markets (e.g. Bauwens et al. (2005); DeGennaro and Shrieves (1997) and Ederington and Lee (1993)).

Empirical evidence on other markets is mixed, depending on which type of announcement is under investigation. Erenburg and Lasser (2009); Fleming and Remolona (1999) and Frino and Hill (2001) are examples of where effects on spreads are found, at least for some kinds of announcements. However, they mostly focus on quoted bid–ask spreads rather than on effective spreads, as well as on other markets than stock markets (i.e. US treasury market, futures markets and other derivatives markets). Morse and Ushman (1983), on the other hand, do not find significant changes in spreads connected with earnings announcements, but surrounding large price changes which are used as an indicator for new information. Bomfim (2003) and Jubinski and Tomljanovich (2013) analyze the effect of federal fund rate announcements on intraday returns controlled for volatility, and Kurov (2012) investigates how the effects of monetary announcements depend on the state of the business cycle. A long-term study by Savor and Wilson (2013) identifies a significantly higher stock market return for days with scheduled macroeconomic announcements using daily returns.

Altogether there is a huge body of literature concerning announcement effects and market microstructure revealing interesting insights into the functioning of markets. However, from our point of view there is still a large research gap when it comes to the investigation of intraday (effective) bid–ask spreads on stock markets. To the best of our knowledge there is no study directly investigating the consequences of ECB announcements on the bid–ask spread using intraday data. Considering the effects of major announcements as highly important in the context of stock market pricing, we analyze the impact of both interest rate decisions and press conferences by the ECB. As noted above, we use tick-by-tick stock data and estimate the effects of ECB announcements, investigating reactions of the effective bid–ask spread rather than those of the (middle) price. The next section describes the theoretical reasoning for our empirical analysis and restates the classical spread-driving factors. Section 3 is about our empirical model and estimation procedure. The methodology for identifying the spread size and announcement effects is described in Section 4, along with the data used. Section 5 discusses the results and Section 6 provides economic implications and discussions. Section 7 gives additional insights beyond pure spread-size effects, and concluding remarks follow in Section 8.

<sup>2</sup> Trades can be executed either at the ask or bid price. Assuming all other variables, including the equilibrium price, are constant, then if the last trade is at the ask (bid), the next trade can only be at the same price or below (above). So after a positive price change (from bid to ask) the price can stay the same or decrease (from ask to bid). This should lead to negative autocorrelation in price changes. This assumption became the standard for trade-by-trade analysis.

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