J. Japanese Int. Economies 24 (2010) 552–568

Contents lists available at ScienceDirect

Journal of The Japanese and International Economies

journal homepage: www.elsevier.com/locate/jjie

International macroeconomic announcements and intraday euro exchange rate volatility

Kevin Evans [a], Alan Speight [b,*]

[a] Cardiff Business School, Cardiff University, CF10 3EU, UK

[b] Department of Economics, School of Business & Economics, Swansea University, SA2 8PP, UK

ARTICLE INFO

Article history:
Received 30 August 2009
Revised 9 May 2010
Available online 21 May 2010

Jel:
G12
E44
E32

Keywords:
Intraday volatility
Macroeconomic announcements
Exchange rates

ABSTRACT

Evans, Kevin, and Speight, Alan—International macroeconomic announcements and intraday euro exchange rate volatility

The short-run reaction of Euro returns volatility to a wide range of macroeconomic announcements is investigated using 5-min returns for spot Euro–Dollar, Euro–Sterling and Euro–Yen exchange rates. The marginal impact of each individual macroeconomic announcement on volatility is isolated whilst controlling for the distinct intraday volatility pattern, calendar effects, and a latent, longer run volatility factor simultaneously. Macroeconomic news announcements from the US are found to cause the vast majority of the statistically significant responses in volatility, with US monetary policy and real activity announcements causing the largest reactions of volatility across the three rates. ECB interest rate decisions are also important for all three rates, whilst UK Industrial Production and Japanese GDP cause large responses for the Euro–Sterling and Euro–Yen rates, respectively. Additionally, forward looking indicators and regional economic surveys, the release timing of which is such that they are the first indicators of macroeconomic performance that traders observe for a particular month, are also found to play a significant role. *J. Japanese Int. Economies* **24** (4) (2010) 552–568. Cardiff Business School, Cardiff University, CF10 3EU, UK; Department of Economics, School of Business & Economics, Swansea University, SA2 8PP, UK.

* Corresponding author. Fax: +44 1792 295872.
E-mail address: a.speight@swan.ac.uk (A. Speight).

0889-1583/$ - see front matter © 2010 Elsevier Inc. All rights reserved.
doi:10.1016/j.jjie.2010.05.003

1. Introduction

Investigation of the way in which news about macroeconomic fundamentals is incorporated into asset prices, and the consequent characterisation of the price discovery process, lies at the heart of empirical finance literature concerned with market efficiency and market microstructure. One of the most successful innovations in the empirical study of market microstructure and price discovery in recent years has followed from the availability and application of high frequency data. Much of the advance in empirical work on high frequency asset return volatility stems from a series of seminal papers by Andersen and Bollerslev (1997a,b, 1998) that identify a component structure to high frequency returns volatility and rationalizes the stylised patterns observed in asset price volatility in terms of a theory of public information arrival. In particular, Andersen and Bollerslev (1997a) propose a general methodology for the extraction of the intraday periodic component of return volatility, whilst Andersen and Bollerslev (1998) provide a robust econometric methodology for capturing distinct volatility components and isolating macroeconomic announcement effects simultaneously. Specifically, Andersen and Bollerslev (1998) model the intraday periodicity and long-run dependence found in DEM–USD returns and isolate macroeconomic news as the remaining component of volatility. This method has also been applied by Andersen et al. (2000), Bollerslev et al. (2000) to different market settings, including the Japanese stock market and the US Treasury bond market.[1] However, very few other studies tackle the full complexity involved in the simultaneous modelling of all components of intraday volatility, and many discard valuable information relating to macroeconomic announcements by grouping release events into categories according to the type of announcement, or consider only a limited range of announcements.[2]

This paper therefore seeks to extend and appraise the earlier results of Andersen and Bollerslev (1998) and others for the DEM–USD to 5-min bid-ask quotes of the EUR–USD, which constitutes a new market that has yet to be investigated in this econometric framework, and using a far wider range of individual macroeconomic announcements across countries and economic conditions than has been considered hitherto in the literature.[3] Thus, the dataset includes a broad selection of macroeconomic news

[1] Andersen and Bollerslev (1998) find that US news regarding the real economy are the most significant news releases, including the Employment Report, Trade Balance and Durable Goods orders, while the most important German announcements are monetary, namely Bundesbank meetings and M3 Money Supply figures. Bollerslev et al. (2000) separate volatility components in the US Treasury bond market. Regularly scheduled macroeconomic announcements are an important source of volatility at the intraday level, with the Humphrey–Hawkins testimony, the Employment Report, PPI, Employment Costs, Retail Sales and the National Association of Purchasing Managers (NAPM) Index having the greatest impact. Bollerslev et al. (2000) also uncover striking long memory volatility dependencies in the fixed income market. Andersen et al. (2000) characterise volatility in the Japanese stock market in a similar fashion. Again, they identify strong intraday patterns and interday persistence in 5 min Nikkei 225 returns, but find that Japanese macroeconomic news releases are of limited importance with only some announcements having a significant short term impact on volatility.

[2] Payne (1996) analyses the DEM–USD exchange rate and reports large volatility impacts associated with the release of the Employment Report and Trade figures. Markets are found to quieten in anticipation of news releases, but after the release there is a pronounced and persistent impact on volatility. The DEM–USD rate is also the subject of work by Almeida et al. (1998), who identify significant impacts of most macroeconomic news announcements within 15 min of the release. The strong, quick impact of macroeconomic news on the exchange rate reflects the anticipated policy reaction by monetary authorities to the piece of news just released, showing that the foreign exchange market's primary concern is with the future likely reaction of the monetary authorities. News from German announcements is found to be incorporated more slowly due to differences in the timing and scheduling arrangements of announcements between Germany and the US, and DEM–USD volatility is found to be driven more by US than German announcements. Chang and Taylor (2003) investigate the DEM–USD exchange rate and find that US and German macroeconomic news and German Bundesbank monetary policy news all have a significant impact on intra-day DEM–USD volatility. Ehrmann and Fratzscher (2005) analyse the link between economic fundamentals and exchange rates by investigating the importance of real-time data. They find that economic news in the US, Germany and Eurozone have been a driving force behind daily USD–DEM developments, with US news having the largest influence, particularly in periods of large market uncertainty and when negative or large shocks occur. DeGennaro and Shrieves (1997) investigate the USD–JPY rate and also conclude that news releases affect volatility levels and are important determinants of exchange rate volatility.

[3] In the only known study of this type for EUR–USD since European Monetary Union, Bauwens et al. (2005) analyse the impact of nine categories of news on high frequency EUR–USD volatility, filtered by the average intraday volatility pattern, in the framework of ARCH models. In related work, Sager and Taylor (2004) implement higher frequency data and concentrate on the impact of European Central Bank (ECB) Governing Council interest rate announcements, finding strong evidence that the policy announcements contain significant news content. Jansen and De Haan (2005) also focus on the ECB, but expand their coverage to include statements as well as policy announcements. The impact of the full range of international macroeconomic announcements on Euro exchange rate volatility therefore remains to be addressed.