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Order imbalance, market returns and macroeconomic news Evidence from the Australian interest rate futures market

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ARTICLE INFO

Article history:

Received 17 November 2011

Received in revised form 2 April 2012

Accepted 3 April 2012

Available online 18 April 2012

JEL classification:

G10

G14

G15

Keywords:

Futures markets

Order imbalance

Macroeconomic news announcements

Australian financial markets

ABSTRACT

The relationship between order imbalance, market returns and macroeconomic news is examined in the context of the Australian interest rate futures market. Contemporaneous order imbalance exerts a significant impact on market returns in the expected direction i.e. excess buy (sell) orders drive up (down) prices. Order imbalances are related to past market returns with market participants acting in a contrarian manner across all products following market rallies. Nine major macroeconomic announcements are identified with order imbalance, and returns, reacting to such announcements in a manner that correctly reflects the news component. Following a scheduled macroeconomic announcement there is an increase in the level of information asymmetry within the interest rate futures market, demonstrated by an increased sensitivity to order flow. Finally, the pattern of order imbalance immediately prior to scheduled announcements suggests that there is no information leakage.

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1. Introduction

The relationship between trading activity and the returns of financial assets has been examined by an array of literature. Many early studies measure trading activity by volume. Foster and Viswanathan (1990), Hiemstra and Jones (1994) and Lo and Wang (2000) study the US equity market and find that volume is positively related to returns, and closely linked to liquidity. Bissoondoyal-Bheenick and Brooks (2010) and Hussain (2011) examine the relationship between trading volume and stock

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returns in Australian and Europe respectively. However, measuring trading activity by volume may create problems and may actually conceal information. Trading volume can be high either due to a preponderance of buyer-initiated or seller-initiated trades, or because there is a large amount of trading interest on a given day, which is evenly distributed between buyers and sellers, each possibility having implications for prices and liquidity.

Order imbalance, defined as the difference between buyer-initiated and seller-initiated trades, is a measure of trading activity that has been suggested as been more informative than volume. The impact of order imbalance on returns and liquidity may be the result of information asymmetry, or inventory adjustment. [Glosten and Milgrom \(1985\)](#) and [Kyle \(1985\)](#) develop theoretical models which assume that the trades of market participants will reveal information to the market when they have private information about the value of an asset. In equilibrium, the sensitivity of prices, and prevailing liquidity, will depend on the level of information asymmetry. The inventory models of [Stoll \(1978\)](#) and [Ho and Stoll \(1983\)](#) provide an alternative explanation; a large order imbalance may exacerbate the inventory problem faced by market-makers who will respond by changing bid-ask spreads and amending price quotations. More extreme order imbalances should have a greater effect on prices and liquidity owing to the possibility of asymmetric information, and inventory adjustment problems.

A number of articles have considered order imbalances around specific events; [Blume et al. \(1989\)](#) study order flow around the October 1987 crash and find a strong relation between order imbalances and stock price movements together with evidence of subsequent reversals, whilst [Lee \(1992\)](#) considers earnings announcements and find that good news triggers brief but intense buying pressure. [Chan et al. \(1999\)](#), [Chan and Fong \(2000\)](#), and [Hasbrouck and Seppi \(2001\)](#), study order imbalance in US equity markets over relatively short periods and find that there is a strong predictive ability for subsequent stock returns. [Chordia et al. \(2002\)](#) conducted the first extended study using order imbalance on NYSE stocks and found that order imbalances are strongly related to contemporaneous absolute returns, as well as past market returns, and that investors exhibit contrarian behaviour in aggregate.

Order imbalance methodology has also been applied to the investigation of financial market reaction to macroeconomic data announcements. [Evans and Lyons \(2002\)](#) show that foreign exchange order flow predicts macroeconomic surprises. [Green \(2004\)](#) develops a structural model to examine the informational content of trading in the US Treasury market surrounding US macroeconomic announcements. Sensitivity of prices to order flow is lower than usual before announcements, which is consistent with no information leakage; following the announcements there is an increased sensitivity to order flow, suggesting the release of public information increases the level of information asymmetry. [Pasquariello and Vega \(2007\)](#) employ a parsimonious model of speculative trading to analyse the response of two-year, five-year, and ten-year US bond prices to order flow and macroeconomic news over the period 1992–2000 and find that unanticipated order flow has a significant impact on daily bond price changes, this effect is greater when the dispersion of beliefs among market participants is high. [Brandt and Kavajecz \(2004\)](#) and [Brandt et al. \(2006\)](#) examine price discovery in the US Treasury market, finding that order-flow drives price movements, accounting for up to 26% of the variation in yields on days without macroeconomic announcements. [Green \(2004\)](#) considers the impact of trading on the prices of five-year US Treasury notes around scheduled macroeconomic releases and finds a significant increase in the informational role of trading following economic announcements. This suggests the release of public information increases the level of information asymmetry; the effect is greater after announcements with a bigger surprise component and thus a larger initial price impact. [Underwood \(2009\)](#) looks at the cross-market relationship between equities and bonds and notes that aggregate order imbalances play a strong role in explaining returns.

In addition to the research which has considered aspects of order-flow in response to macroeconomic announcements, other features of financial market price action have been examined. [Andersson et al. \(2006\)](#) examine German Bond Futures and find a spill-over effect whereby German bond markets respond more strongly to the surprise component in US macroeconomic releases than Euro-area releases. Intriguingly they also find that German employment data is consistently leaked prior to the official release. [Kim and Nguyen \(2008\)](#) examine the spill-over effects of US interest rate news on the Australian financial markets. [Kuttner \(2001\)](#) and [Fatum and Scholnick \(2008\)](#) find that asset

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