

How is macro news transmitted to exchange rates? [☆]

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Abstract

Macro news can affect currency prices directly and indirectly via order flow. Past research shows that the direct effects of scheduled macro news account for less than 10% of daily price variance. This paper shows that the arrival of macro news can account for more than 30% of daily price variance. Two features of our analysis account for this finding: (1) We consider the broad spectrum of macro news items that market participants observe, not just scheduled announcements. (2) We allow the arrival of news to affect prices indirectly via its impact on the volatility of order flow. Our analysis shows that order flow variations contribute more to currency price dynamics following the arrival of public macro news than at other times. This is not consistent with news effects being common knowledge that is impounded in price directly. Roughly two-thirds of the total effect of macro news on the DM/\$ exchange rate is transmitted via order flow.

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1. Introduction

All textbook models of currency pricing imply that public news determines prices directly: Currency demand shifts are common knowledge and any related transactions play no role in causing the change. In microeconomic models of asset prices, transactions do affect prices causally (e.g., [Glosten and Milgrom, 1985](#);

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Kyle, 1985). The causal role arises because transactions convey information that is not common knowledge. This paper examines whether transactions transmit macroeconomic news to currency prices and how this channel compares with the direct channel.

We examine the impact of macro news on currency prices at intradaily and daily frequencies. We begin at the five-minute frequency. Estimates of our intraday model using interdealer order flows show that, while order flow contributes significantly to changing currency prices at all times, it contributes more to changing prices immediately after news arrival.¹ This is inconsistent with the textbook view that macro news effects are common knowledge and therefore impounded in currency prices without any order flow role. It suggests, instead, that macro news triggers trading that reveals dispersed information, which in turn affects currency prices.

Our daily analysis provides further evidence that trading on news reveals incremental information. The daily model distinguishes three sources of currency price variation. The first source mirrors traditional models—macro news that is impounded immediately and directly. The second source is the indirect effect of news on price via induced order flow. The third source is order flow that affects price but is unrelated to public news (possibly induced by banks' changing risk tolerances, firms' changing hedging demands, or individuals' changing liquidity demands; see, e.g., Evans and Lyons, 2002a). We find that all three sources of deutchemark/dollar price variation are significant. The arrival of macro news increases order flow variance significantly, with the result that roughly two-thirds of the effect of macro news on currency prices is transmitted via order flow, the remainder being the direct effect of news. This is consistent with the intraday finding that order flow is most important for determining currency prices during periods immediately following news arrival. With both the direct and indirect channels operating, we find that macro news accounts for 36% of total daily price variance. This is more than three times the explanatory power found in previous studies.

Though the literature on news and currency prices is long-standing, until recently it had not used quantities (order flow) to sort out the relation. The literature has two branches: a first-moment branch that addresses price-change direction and a second-moment branch that addresses price volatility. A common finding of the first-moment branch is that directional price effects from scheduled macro announcements are difficult to detect at the daily frequency; they are swamped by other factors. Intraday event studies, such as Andersen, Bollerslev, Diebold, and Vega (2003), do find statistically significant effects, particularly for employment and money-supply announcements.² The second-moment branch on volatility effects from news is partly a response to difficulty in finding news effects on return first moments.³ This work finds that announcements do produce the largest price changes.

Our analysis differs from both branches of the literature in two important respects. First, we consider the full set of news items that are observed on news screens by market participants (the set constituting Reuters Money Market Headline News). This set includes the scheduled announcements concerning macroeconomic variables that have been the focus of earlier research and unscheduled news that account for the majority of items appearing on news screens each day. Second, we model in detail how information in a news item can be transmitted to prices via its affects on order flow and, more specifically, on order flow volatility. This indirect transmission mechanism is new to the literature and turns out to be empirically important.

The distinguishing feature of our analysis is easily understood with the aid of an example. Suppose a scheduled macro economic announcement on US Gross Domestic Product (GDP) growth is greater than the

¹Order flow is the cumulation over time of signed trades, where trades are signed according to whether the initiator is buying or selling (the marketmaker posting the quote is the noninitiating side). Order flow's role in determining currency prices is documented by Payne (2003), Rime (2000), Evans and Lyons (2002a, b), and Evans (2002), among many others. Flows from individual end-user segments in currency markets are addressed in Lyons (2001), Froot and Ramadorai (2005), and Evans and Lyons (2007), among others. Order flow is similarly important for prices in bond markets, which share many informational and structural features with currency markets (see, e.g., Green, 2004; Fleming, 2003; Brandt and Kavajecz, 2004).

²See also, for example, Cornell (1982), Engel and Frankel (1984), Hakkio and Pearce (1985), Ito and Roley (1987), Hardouvelis (1988), Klein (1991), and Ederington and Lee (1995). For bond markets, see Fleming and Remolona (1997) and Balduzzi, Elton, and Green (2001).

³See, for example, Goodhart, Hall, Henry, and Pesaran (1993), DeGennaro and Shrieves (1997), Andersen and Bollerslev (1998), and Melvin and Yin (2000). For bond markets, see Fleming and Remolona (1999), Bollerslev, Cai, and Song (2000), and Huang, Cai, and Wang (2002).

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