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A calendar effect: Weekend overreaction (and subsequent reversal) in spot FX rates

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ABSTRACT

This paper investigates a calendar effect, namely the weekend overreaction, in spot foreign exchange markets of 8 major and 9 emerging currencies. We find that after a large price difference between Friday close and subsequent Monday open, most markets are likely to reverse in multiple horizons during the following week, which is consistent with the overreaction hypothesis. We develop a reversal trading strategy to exploit this effect which we show are robust to transaction costs and interest rates. In the out-of-sample test, the strategy is able to generate abnormal risk-adjusted returns, which suggests that these currency markets might be weak-form inefficient.

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1. Introduction

Our paper identifies a calendar effect which we observe in the world's largest market, the foreign exchange market. We call this effect 'weekend overreaction'. Specifically, we observe exchange rate behaviours after a large weekend gap (i.e. a large price difference between Friday close and subsequent Monday open) and find significant overreaction in the majority of our sample. After a large weekend gap, most currency markets are likely to reverse in multiple horizons during the following week, which is consistent with the overreaction hypothesis. Out of the 16 currency pairs we examine, only one shows no significant reversal. We develop a reversal trading strategy based on this effect which we show is able to generate abnormal risk-adjusted returns (net of costs) up to more than 10% per annum. This result suggests that these currency markets might be weak-form inefficient and our study may be of interest to both academics and practitioners. For academics, we document the weekend overreaction and provide evidence against market efficiency while for practitioners, we propose a profitable trading strategy. Our work is motivated by the literature on stock price predictability after large price changes (e.g. Amini et al., 2013) and the vast literature on calendar effects (e.g. Urquhart and McGroarty, 2014) as well as the literature on overreaction.

The seminal paper on overreaction by Debondt and Thaler (1985) studied NYSE stocks from 1926 to 1982 and they hypothesise that if markets overshoot systematically, reversals are predictable from past data. Additional research by Debondt and

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Thaler (1987) shows that the winner-loser effect (i.e. overreaction) is not because of risk change or firm size, which is supported by Alonso and Rubio (1990), who confirm that the overreaction hypothesis is not rejected after considering firm size which only explains a part of profitability. Conversely, Zarowin (1990) replicates Debondt and Thaler (1985) and maintains that overreaction is due to the size effect, yet conceding that although size effect can explain long-term reversals (i.e. several years), short-term overreaction remains unexplained.

In another paper, Fung et al. (2000) report reversals after large overnight price changes in S&P500 and Hang Seng Index stock futures between 1993 and 1996. The reversal magnitude is commensurate with the size of overnight price gaps and overreaction is a common effect. However, Atkins and Dyl (1990) warn that spreads may explain short-term reversals and lead to biased returns without careful consideration. Cox and Peterson (1994) study US stocks from 1963 to 1991 and find that in addition to spreads (i.e. bid-ask bounce), liquidity is important in reversals. Moreover, after a large daily price decline, they observe a momentum effect within 4–20 days instead of a reversal.

Potential reasons for overreaction include investors' misperception of future cash flows (Debondt and Thaler, 1987), firm-specific information or liquidity-motivated trades (Jegadeesh and Titman, 1995), analysts' extrapolation of past growth of earnings per share (Bauman et al., 1999), among others. In behavioural finance, attempts to explain reversals include the DHS model (Daniel et al., 2001) and BSV model (Barberis et al., 1998). The DHS model proposes that overreaction is caused by overconfident investors who believe that their information is more accurate than it actually is and the part of their signals reflecting true future price changes is more substantial than it objectively is. Meanwhile, the BSV model postulates that investors believe that earnings switch between mean-reversion and continuation regimes, and overreaction will occur if they believe that the current state is continuation. Although researchers disagree about causes of contrarian profitability, it is statistically and economically significant and not entirely attributable to risk or market frictions (Antoniou et al., 2005).

Regarding the overreaction literature in FX markets, using daily data, Larson and Madura (2001) confirm overreaction in five emerging currencies from 1988 to 1995 while Parikakis and Syriopoulos (2008) examine EUR pairs from 1999 to 2007 and conclude that USD tends to overreact and that contrarian strategies are profitable in FX. Additionally, Goodhart (1988) shows that the GBP/USD pair in the 1980s overshoots using hourly data while Rentzler et al. (2006) report intraday reversals in five currency futures on Chicago Mercantile Exchange from 1988 to 2003 after large one-day returns and opening gaps. In another paper, Ederington and Lee (1995) use tick data from 1988 to 1992 and discover that Deutschemark futures overreact to scheduled macroeconomic news releases in the first 40 s after the announcement and reverse in the next few minutes.

This paper contributes to the literature in two ways. Firstly, this is the first paper to identify the effect of weekend overreaction in spot FX rates. We are motivated by French and Roll (1986) and Ito et al. (1998), who find that asset prices behave differently during exchange trading hours compared to non-trading hours. Specifically, French and Roll (1986) examine US stocks from 1963 to 1982 and find that returns are much more volatile during the trading week than during the weekends. Meanwhile, Ito et al. (1998) analyse the Tokyo FX market from September 1994 to March 1995 and find that the variance of lunch-returns doubles since trading during the lunch break is allowed in December 1994. In our case, because the global FX markets are active around the clock during the weekdays, the natural choice of non-trading periods is the weekends. Our second contribution is that based on this weekend overreaction, we provide evidence against weak-form efficiency using a long dataset of various developed and emerging currencies.

The effect that we find is related to that of Menkhoff et al. (2012)[1] because we both observe future returns conditional on past returns. However, our effect is different in two ways. The first difference is the timescale of observation. While Menkhoff et al. (2012) observe monthly returns of the subsequent 12 months conditional on the previous 12 months, we observe returns of the subsequent week conditional on the previous weekends. The second difference is the observed directional behaviours of future returns. While Menkhoff et al. (2012) find a momentum effect; we find a reversal effect.

This paper proceeds as follows. Sections 2 and 3 present the data and methodology of tests for overreaction and our reversal trading strategy. Section 4 reports test results and strategy performance. Section 5 discusses the findings and concludes.

2. Data

We investigate 16 currency pairs including seven major pairs and nine emerging pairs.[2] We have daily spot exchange rates from 1 January 2002 to 31 May 2014 from Bloomberg. Tables 1 and 2 provide the descriptive statistics of daily and weekly returns where NZD/USD and TRY/USD have the highest and lowest mean return respectively. Regarding standard deviation, ZAR/USD is the highest and THB/USD is the lowest. Most pairs are negatively skew, all are leptokurtic and all are non-normal, which is confirmed by the Jarque-Bera statistic. Interest rates are also used to calculate the interest on overnight positions. Following Kho (1996) and Qi and Wu (2006), we employ the LIBOR rate (from Bloomberg) and for emerging currencies whose LIBORs are unavailable, we employ domestic bank rates from Datastream.

[1] We thank an anonymous reviewer for mentioning this point.

[2] The currencies are US dollar (USD), Euro (EUR), Japanese yen (JPY), British pound (GBP), Australian dollar (AUD), Swiss franc (CHF), Canadian dollar (CAD), New Zealand dollar (NZD), Brazilian real (BRL), Czech koruna (CZK), Indian rupee (INR), Indonesian rupiah (IDR), Mexican peso (MXN), Polish zloty (PLN), South African rand (ZAR), Thai baht (THB) and Turkish lira (TRY).

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