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# Revisiting calendar anomalies: Three decades of multicurrency evidence



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## ABSTRACT

We examine the day-of-the-week, the January, and the turn-of-month effects in developed, advanced and emerging currencies from 1985 to 2014. The returns on Monday, Tuesday and Wednesday are found to be positive and significantly different from zero. The returns on Thursday and Friday are negative and significantly smaller than the returns during first three days of the week. January returns are higher than the returns during the rest of the year. TOM returns are negative and significantly lower than that of non-TOM returns. The calendar anomalies are found to be stronger for emerging currencies compared to advanced and developed currencies. The subsample analysis shows that the calendar anomalies are stronger during the initial subsample and gradually diminish by the last subsample. We also show that for each calendar anomaly, our implied trading strategy can outperform the buy-and-hold strategy in the initial subsamples not so in the last subsamples. Overall, our results indicate that the calendar anomalies have disappeared in the recent times and the markets have become efficient.

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## 1. Introduction

Several studies have documented the presence of various calendar anomalies which violates the well-known theories of asset-pricing models. Among them, the day-of-the-week (DOW), the January, and the turn-of-month (TOM) effects are well-known and have attracted much attention equally from

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academicians and practitioners (Alt, Fortin, & Weinberger, 2011). While these calendar anomalies in equity markets have been explored in large body of literature, currency markets have received very little attention (Yamori & Kurihara, 2004). The documentation and explanation of calendar anomalies in the currency markets has noticeably been absent. In this paper, therefore, we attempt to fill the void and examine the DOW, the January and the TOM effect in the currency markets.

The DOW effect is associated with different returns across different days of the week (Alt et al., 2011). The January effect is a calendar anomaly reported in the financial markets wherein the returns in the month of January are higher than the returns during any other month of the year (Lynch, Puckett, & Yan, 2014; Moller & Zilca, 2008; Rozeff & Kinney, 1976). Many researchers argue that the performance of securities during the first month of the year often predicts their performances for the entire year (e.g., see, Brown & Luo, 2006; Cooper, McConnell, & Ovtchinnikov, 2006; Sturm, 2009). TOM effect is a price anomaly found in the certain time of the month or when one security is carried over from one month to the next which is a well studied phenomenon in the equity markets (Kumar, 2015; Moller & Zilca, 2008).<sup>1</sup>

Our study is motivated by the presence of these calendar anomalies which contradicts the Efficient Market Hypothesis (EMH). These anomalies suggest that the returns are systematically higher or lower depending upon the day of the week or month of the year. According to EMH, all information would already be incorporated in the prices and the calendar anomalies should not persist. Owing to the impossibility of perfect market efficiency, Campbell, Lo, and MacKinlay (1997) put forward the concept of relative efficiency which shifted testing market efficiency from all-or-nothing condition to evaluating the market efficiency over time. Urquhart and McGroarty (2014) build upon the argument of Campbell et al. (1997) that market efficiency is not all-or-nothing condition and that it varies over time because calendar anomalies would induce new profit making opportunities continually. In the foreign exchange market, McFarland, Pettit, and Sung (1982) report that American investors enjoy high returns on Monday and Wednesday and low on Tuesday and Friday which has been confirmed in other studies as well (e.g., see, Cornett, Schwarz, & Szakmary, 1995; So, 1987).

The objective of our study is to analyze the calendar anomalies for twelve foreign currencies market—four developed currencies, the Australian dollar (AUD), the Swiss franc (CHF), the British pound (GBP) and the Japanese yen (JPY); four advanced (Asian Tigers) currencies as Singapore dollar (SGD), South Korean won (KRW), Taiwanese dollar (TWD) and Hong Kong dollar (HKD), and four emerging market currencies, the Indian rupee (INR), the Malaysian ringgit (MYR), the South African rand (ZAR) and the Thai baht (THB) – all against the US dollar (USD).<sup>2</sup>

We contribute to the existing literature in several ways. *First*, we provide a pioneer study on the presence of calendar anomalies (DOW, TOM and the January effect) across a wide range of currencies using 30 years of data from January 1985 to December 2014. We perform the analysis for the full sample as well as three equal length subsamples of ten years each in order to explore the dynamic time-varying behavior of the calendar anomalies as suggested by Hiraki and Maberly (2003) and Urquhart and McGroarty (2014). Although, some studies<sup>3</sup> examine the calendar anomalies in foreign exchange markets, they limit their work up to DOW effect only. We, therefore, extend the previous studies by examining the other calendar anomalies (TOM and January effect) as well. So far, no study has examined the presence of January effect in the currency market; therefore we provide the first study in which January effect in a number of currencies is investigated. *Second*, unlike many previous studies, we examine the calendar anomalies for exchange rate returns and their effect on the returns volatility during 1985–2014. To do so, we use the GARCH (1,1) model to allow for the time-varying volatility in the exchange rate returns. *Third*, we provide robustness check for the results using non-parametric technique (the Kruskal–Wallis statistic) given the returns may not be normally distributed similar to Urquhart and McGroarty (2014). *Finally*, we develop an implied trading strategy based on which the investors could time the market and take long and short positions, as indicated by the

<sup>1</sup> The hypotheses for these calendar anomalies are dealt in detail in the next section.

<sup>2</sup> The classification of developed, emerging and advanced currencies has been adapted from Loring and Lucey (2013) who follow the World Bank classification of economies.

<sup>3</sup> For instance, see, Yamori and Mourdoukoutas (2003), Yamori and Kurihara (2004), Ke et al. (2007), and Berument et al. (2007).

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