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Is there a Friday the 13th effect in emerging Asian stock markets?

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ABSTRACT

In this article, we revisit the Friday the 13th effect discussed by Kolb and Rodriguez (1987) that has received increased interest in recent research. Using a dummy-augmented GARCH model, we investigate whether the occurrence of this superstitious calendar day has significant impact on the conditional means and variances of returns in the seven emerging Asian stock markets India, Indonesia, Malaysia, the Philippines, South Korea, Taiwan and Thailand. Results obtained for the period from July 1996 to August 2013 indicate no systematic pattern across countries. We can detect a significant Friday the 13th effect only for mean returns in the Philippines and an inverse Friday the 13th effect for South Korea. Volatilities are significantly affected only in Indonesia and the Philippines. They tend to be reduced by the occurrence of Friday the 13th. In an additional analysis of tetraphobia that is characteristic for most Asian countries, we find no evidence that the unlucky 4 negatively influences emerging Asian stock markets in a significant way.

1. Introduction

In the past decades, considerable research effort has been directed to the scientific analysis of calendar effects in stock market returns because their identification may allow the implementation of profitable investment strategies (see Lucey and Pardo, 2005; Ariss et al., 2011). Probably the most prominent of these effects are the Monday effect (see French, 1980; Pettengill, 2003; Keef et al., 2009), where Mondays' returns are much lower than other days of the week, the January effect (see Gultekin and Gultekin, 1983; Keim, 1983; Yao, 2012), where returns are much higher during the month of January than in any other month, and the turn-of-the-month effect (see Ariel, 1987; Kunkel et al., 2003), where returns at the end and at the beginning of a month tend to be higher than on other days. Recent research also considers Halloween effects (see Bouman and Jacobsen, 2002; Haggard and Witte, 2010) and even calendar phases exhibiting certain climate patterns (see Dowling and Lucey, 2005, 2008).

However, there is one effect that has received only limited attention — the superstitious Friday the 13th effect that attributes bad luck and thus low or negative returns to this specific calendar day. In their seminal article, published in the prestigious Journal of Finance, Kolb and Rodriguez (1987) found evidence in favour of this effect. Specifically, they showed that for the CRSP equal and value weighted indices, mean returns for Friday the 13th were significantly lower than for other Fridays. This result quickly prompted further research. In an examination of the S&P 500 index, Dyl and Maberly (1988) concluded that the mean return for Friday the 13th is higher than for

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regular Fridays. However, the differences were not statistically significant.[1] Chamberlain et al. (1991) found negative mean Friday the 13th returns but highlighted that after considering the turn-of-the-month effect, there is no evidence implying that Friday the 13th influences market returns. In an analysis of 18 countries, Agrawal and Tandon (1994) state that while the typical Friday the 13th return is positive it is statistically insignificant. However, nine of their 18 non-US indices reveal a lower mean return on Fridays the 13th compared to other Fridays. For the FTSE indices and FT-30 index, Mills and Coutts (1995) and Coutts (1999) observe a higher mean return on Friday the 13th compared to all other Fridays.

Lucey (2000, 2001), Patel (2009) and Botha (2013) point out that all Friday the 13th papers noted above have chosen to employ classic t-tests casting some doubt on the statistical reliability of their results because it is well-known that their use is critical in the presence of typical stock return characteristics (e.g., non-normality). Using a non-parametric Kruskal–Wallis test, Lucey (2000, 2001) finds that for 9 out of 19 developed stock markets, Friday the 13th mean returns are significantly greater than on regular Fridays. In only one country, South Africa, the mean return on Fridays the 13th is lower than on other Fridays. Patel (2009) employs the non-parametric Mann–Whitney test for the S&P 500 and the NASDAQ index and finds that stock returns on Friday the 13th are not significantly lower than those of other Fridays. Applying the Kruskal–Wallis test, Botha (2013) also finds no evidence for the Friday the 13th effect in five African countries. Two other recent papers also use more sophisticated statistical methodology. Peltomäki and Peni (2010) apply a dummy-variable approach within standard autoregressive time series regression models for the S&P 500 and the Dow Jones Industrial Average index to analyse a slightly modified definition of the phenomenon. They suggest that returns on trading days prior to (after) Friday the 13th should be lower (higher) than on average because of fear-related selling (relief-related buying) but find only limited and not robust evidence for this hypothesis. Keef and Khaled (2011) estimate a basic dummy- and GDP-augmented panel regression model for 62 international stock indices and come to the conclusion that the depressed Friday the 13th effect is present (absent) when the return on the prior day is negative (positive) and that the effect is independent of a country's GDP.

Our article contributes to this line of research in several ways. First, prior research mainly concentrates on the US and other developed stock markets. By focusing on the countries India, Indonesia, Malaysia, the Philippines, South Korea, Taiwan and Thailand, we test for the Friday the 13th effect in emerging Asian stock markets. Second, we are the first to not only analyse the impact of Friday the 13th on mean stock returns, but also on stock market volatility.[2] This is because the bad luck may also manifest itself in the form of higher volatility on that specific calendar day. Third, our empirical analysis is conducted on the basis of a more adequate statistical framework than used in previous studies. Specifically, we use a dummy-augmented GARCH specification that can capture important empirical features like leptokurtosis and volatility clustering observed in stock return data.[3] Most studies dealing with calendar effects are usually carried out (with the usual linear regression model) under the assumption that error terms, and hence the returns, follow a normal distribution with constant variance (see de Jong et al., 1992). If these assumptions are violated, t-statistics will be biased towards finding calendar effects (see Connolly, 1989). The GARCH model applied in our study is capable of dealing with those problems and it makes the interpretation of t-statistics more robust. Furthermore, it is a natural choice for studying the direct effect of events on stock return volatility (see Choudhry, 2000).

The remainder of the article is organised as follows: Section 2 starts by briefly discussing the cultural background of Friday the 13th and summarises related human perceptions of unlucky numbers. Section 3 continues with a description of the econometric framework for testing the Friday the 13th effect. Section 4 presents the data set that is used in our study and provides a first descriptive analysis of Friday returns in emerging Asian stock markets. Section 5 contains the empirical analysis, including reported results, while Section 6 concludes.

2. Unlucky numbers

It is a well-known fact that human psychology influences markets in a significant way (see Akerlof and Shiller, 2009). Fear, greed, curiosity, pleasure and other urges determine consumers' and investors' actions and shape economies and cultures. One specific form of human fear is related to the superstitious believe that bad luck is associated with certain numbers which should be avoided.

Probably the best-known unlucky number is 13. The irrational fear of bad things associated with this number is called triskaidekaphobia (from Greek 'tris', 'kai', 'deka' and 'phobos' meaning '3', 'and', '10' and 'fear', respectively) and, as argued by Lachenmeyer (2004), impacts today's Western societies in some interesting ways.[4] For example, it has become common to skip the 13th floor in high-rises and hotels. In France, you can even hire a quatorzien (fourteener) to avoid a dinner party with only 13 guests. This is said to be because some Christian traditions have it that the Last Supper involved 13 dinner guests, with Judas Iscariot, the disciple who betrayed Jesus, being the 13th. Additionally, in numerology, the number 12 is considered the number of divine organisational arrangement or chronological completeness, as reflected by the 12 h (months) of the clock day (a year), the 12 gods of Olympus, the 12 tribes of Israel, the 12 Apostles of Jesus, the 12 signs of Zodiac,

[1] Similarly, Maberly (1988) fails to find the effect for S&P 500 futures contracts and argues that what has been documented is actually a "Friday the 13th bear market effect".

[2] There is only a limited number of studies that analyses the effects of any seasonality on volatility in Asian stock markets (see, for example, Ho and Cheung, 1994; Choudhry, 2000; Bhattacharya et al., 2003).

[3] Mandelbrot (1963) and Fama (1965) were among the first researchers that documented these typical stock return properties.

[4] Note that pagans and ancient Egyptians considered the number 13 lucky. For pagans, it corresponds with the number of full moons in a year, and the ancient Egyptians associated it with immortality (see Leasca, 2013).