

African Review of Economics and Finance, Vol. 4, No.2, June 2013

©The Author(s)

Journal compilation ©2013 African Centre for Economics and Finance. Published by Print Services, Rhodes University, P.O. Box 94, Grahamstown, South Africa.

## **Stock returns and Friday the 13th effect in five African countries**

Ferdi Botha

Department of Economics and Economic History, Rhodes University, P.O. Box 94, Grahamstown, 6140, South Africa. Email: [f.botha@ru.ac.za](mailto:f.botha@ru.ac.za)

### **Abstract**

This study is concerned with Friday the 13th and daily stock market returns in five African countries. Using the MSCI Global Equity Indices during various periods, the evidence overwhelmingly suggests that there is no Friday the 13th effect.

**Keywords:** Friday the 13<sup>th</sup>, stock returns, anomalies, Africa

### **1. Introduction**

A belief in superstitions such as horoscopes, fortune-tellers, black cats and witches may influence individual behaviour and the stock market (Kolb and Rodriguez, 1987; Torgler, 2007). Another interesting and directly testable superstition within a stock market framework concerns Friday the 13th, which some view as being ‘unlucky’ or associated with the possibility of negative events such as greater incidents of traffic accidents (Togler, 2007) or even as ‘frightening’ (Kolb and Rodriguez, 1987:1387).

The ability of Friday the 13th to influence stock returns has received some attention in the literature concerned with stock market anomalies since Kolb and Rodriguez (1987) first investigated the Friday the 13th anomaly. Using CRSP stock exchange data from 1 July 1962 to 31 December 1985, Kolb and Rodriguez (1987) found that average returns were significantly lower on Friday the 13th as compared to all other Fridays, suggesting a likely superstition effect in stock return data. In contrast to Kolb and Rodriguez (1987), Dyl and Maberly (1988) found that mean returns to the S&P500 during the period 1940-1987 were higher, albeit not statistically significant, during Friday the 13th

relative to all other Fridays. The results were consistent across various sub-samples, with Friday the 13th returns being significantly higher compared to other Fridays in one of the sub-samples. Dyl and Maberly (1988:1286) therefore concluded that the Friday the 13th effect is non-existent and that Kolb and Rodriguez's (1987) finding was simply "a chance occurrence and not the harbinger of yet another puzzling anomaly".

Nevertheless, there are subsequent studies that have aimed to determine whether the Friday the 13th effect really exists. Coutts (1999) employed FT30 data for the period July 1935 to December 1994 and reported that returns on Friday the 13th were in fact higher when compared to all other Fridays, though the difference was not significant. The results were also relatively robust across various sub-samples, with most of the sub-samples showing greater, but insignificant, returns on Friday the 13th. On the other hand, Lucey (2001) reported the existence of a Friday the 13th anomaly using FTSE World Indices for 19 countries. Lucey (2001) found that Friday the 13th returns were higher than returns on other Fridays, the difference being statistically significant in most of the countries. Evidence of lower returns on Friday the 13th was only present for South Africa, although these did not differ significantly relative to other Fridays. Analysing S&P500 returns over 56 years, Chamberlain *et al.* (1991) found no evidence of a Friday the 13th effect when also accounting for turn-of-the-month effects. Patel (2009) employed S&P500 and NASDAQ data and found that Friday the 13th returns were in general higher than returns on other Fridays. There was, however, no evidence of a significant Friday the 13th effect in U.S. stock market returns.

Whether there is in fact a Friday the 13th effect in stock returns is fairly unclear, although the majority of existing evidence seems to refute the existence of such an anomaly. This study extends the existing literature by examining the Friday the 13th effect in five African countries. In general, the results indicate that the Friday the 13th anomaly does not exist.

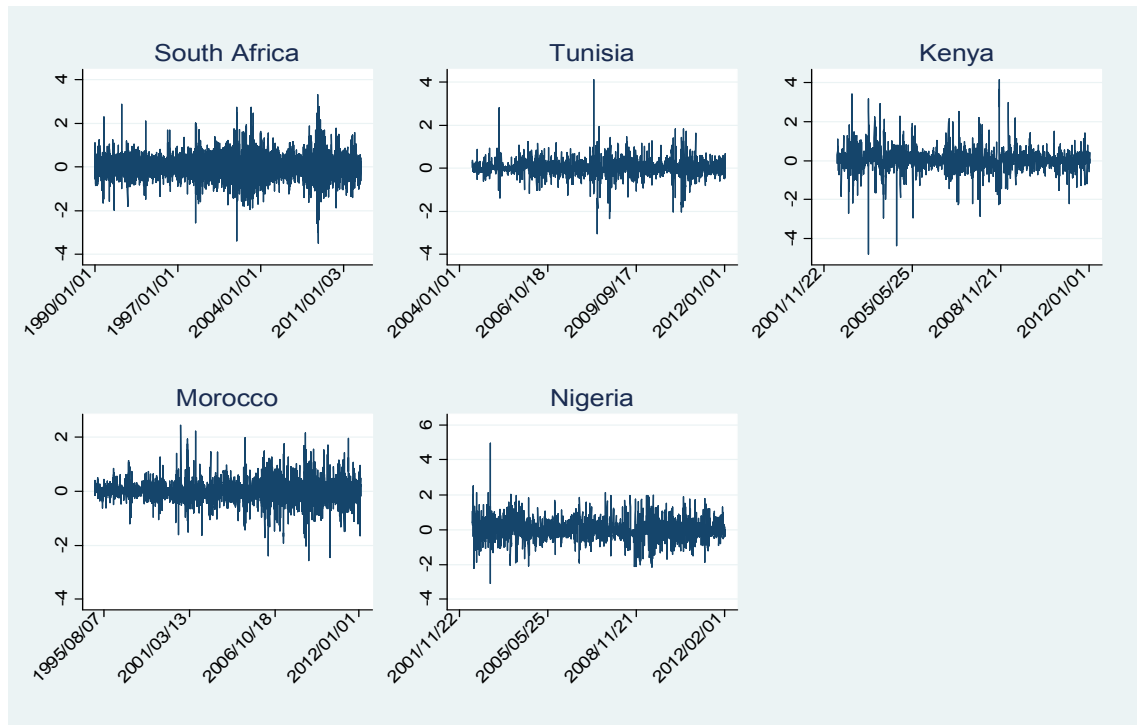
## 2. The data and methods

The data comprise daily stock returns for South Africa, Nigeria, Morocco, Kenya, and Tunisia, obtained from the MSCI Global Equity Indices. These countries were selected subject to data availability over sufficiently long periods. For each country, the daily stock return for country  $i$  at time  $t$  was calculated as  $R_{it} = \ln(P_t/P_{t-1}) * 100$ , where  $\ln$  is the natural logarithm and  $P_t$  is the stock index level for the  $i$ -th country at time  $t$ . Since data were not available over the same sample period in each country, the starting sample date varies by country. For all countries, however, the sample goes up to 31 May 2012. The returns series and overall sample periods for each country are shown in Fig. 1 and Table 1, respectively.

Country	Sample
South Africa	1990/01/01 – 2012/05/31
Nigeria	2002/06/03 – 2012/05/31
Morocco	1995/01/03 – 2012/05/31
Kenya	2002/06/03 – 2012/05/31
Tunisia	2004/06/01 – 2012/05/31

**Table 1: Overall sample sizes, by country**

To determine whether mean returns are significantly different between Friday the 13th and Fridays not falling on the 13th (i.e. regular Fridays), this study employs parametric and non-parametric tests. Consistent with existing research (Kolb and Rodriguez, 1987; Dyl and Maberly, 1988; Coutts, 1999; Lucey, 2001; Patel, 2009), the parametric approach is a two-tailed  $t$ -test to test for equality of mean returns on Friday the 13th and regular Fridays. The  $t$ -test is two-tailed since there exists no rationale for Friday the 13th returns to be higher or lower than returns on regular Fridays (Dyl and Maberly, 1988; Lucey, 2001). As correctly noted by Lucey (2001), standard  $t$ -tests, apart from performing poorly in smaller samples, assume an underlying normal distribution while stock returns generally do not follow a normal distribution. As such, this study also uses the non-parametric Kruskal-Wallis  $H$ -statistic, which is deemed more powerful than standard  $F$ -tests and also allows for comparison of mean returns on Friday the 13th and regular Fridays.



**Figure 1: Rates of return (%) in each country's MSCI**

### 3. Results

Tables 2 to 6 present the overall and sub-sample results for each country, where values in square brackets denote  $p$ -values. The vast majority of the evidence suggests that there is no Friday the 13th effect. There is no evidence of any significant differences in stock returns on Friday the 13th and regular Fridays for Nigeria, Morocco, and Tunisia. In South Africa, there is no significant Friday the 13th effect in the overall sample and four of the five sub-samples. During 2000-2004, there is some evidence of returns being negative on Friday the 13th, although these returns are not significantly different from that of regular Fridays. The Kruskal-Wallis statistic indicates that Friday the 13th returns are significantly higher than returns on regular Fridays during 1995-1999 in South Africa, while the  $t$ -statistic suggests no significant difference during this period. For Morocco, Friday the 13th is associated with negative returns in the overall sample and three sub-samples, but these returns do not differ significantly from returns on regular Fridays. Roughly the same is true in

Tunisia, where negative returns are observed on Friday the 13th. Again, stock return differences on Friday the 13th and regular Fridays are not statistically significant. Kenyan returns during the 2002-2012 and 2002-2005 periods were significantly higher on Friday the 13th as compared to regular Fridays based on the *t*-test. The Kruskal-Wallis statistic, however, presents conflicting evidence for these two sample periods as the differences are shown not to be significant. Except for Morocco and Tunisia, Friday the 13th returns are, although generally insignificant, higher relative to regular Fridays. In addition, there is no conclusive and convincing evidence to support the Friday the 13th effect. These two findings support the majority of existing research (Dyl and Maberly, 1988; Coutts, 1999; Lucey, 2001; Patel, 2009).

	1990-2012	1990-1994	1995-1999	2000-2004	2005-2009	2010-2012
<b>Regular Fridays</b>						
Mean	0.0117	0.0101	0.0394	0.0173	0.0164	-0.0679
Standard deviation	0.5178	0.4257	0.4446	0.6433	0.5798	0.3889
Observations	1131	253	252	253	252	122
<b>Friday the 13th</b>						
Mean	0.0968	0.0630	0.2028	-0.1144	0.2041	0.1068
Standard deviation	0.4004	0.3461	0.2252	0.4838	0.5177	0.2706
Observations	38	8	9	8	9	4
<i>t</i> -statistic	1.0034 [0.3159]	0.3475 [0.7285]	1.0945 [0.2747]	-0.5732 [0.5670]	0.9574 [0.3392]	0.8892 [0.3756]
Kruskal-Wallis	2.2070 [0.1374]	0.0880 [0.7663]	3.6820 [0.0550]	0.1790 [0.6720]	0.7520 [0.3858]	0.8180 [0.3657]

**Table 2: Daily returns for regular Fridays and Friday the 13th in South Africa**

	2002-2012	2002-2005	2006-2009	2010-2012
<b>Regular Fridays</b>				
Mean	0.0885	0.0691	0.0996	0.0987
Standard deviation	0.6361	0.6689	0.6461	0.5808
Observations	503	180	184	139
<b>Friday the 13th</b>				
Mean	0.0777	0.1394	-0.0282	0.1520
Standard deviation	0.3698	0.5505	0.2704	0.2459
Observations	18	6	7	5
<i>t</i> -statistic	-0.0710 [0.9434]	0.2544 [0.7995]	-0.5206 [0.6033]	0.2039 [0.8387]
Kruskal-Wallis	0.0500 [0.8223]	0.2260 [0.6346]	0.2980 [0.5849]	0.2920 [0.5891]

**Table 3: Daily returns for regular Fridays and Friday the 13th in Nigeria**

	1995-2012	1995-1999	2000-2004	2005-2009	2010-2012
<b>Regular Fridays</b>					
Mean	0.0194	0.0623	-0.0113	0.0292	-0.0259
Standard deviation	0.3507	0.2050	0.3010	0.4295	0.4755
Observations	878	251	252	252	122
<b>Friday the 13th</b>					
Mean	-0.0096	0.1274	-0.0695	-0.0050	-0.2086
Standard deviation	0.2653	0.1513	0.2660	0.2960	0.3191
Observations	30	9	8	9	4
<i>t</i> -statistic	-0.4481 [0.6542]	0.9424 [0.3469]	-0.5393 [0.5901]	-0.2368 [0.8130]	-0.7614 [0.4778]
Kruskal-Wallis	0.0190 [0.8906]	1.9780 [0.1596]	0.1280 [0.7202]	0.0450 [0.8328]	1.2390 [0.2656]

**Table 4: Daily returns for regular Fridays and Friday the 13th in Morocco**

	2002-2012	2002-2005	2006-2009	2010-2012
<b>Regular Fridays</b>				
Mean	0.0311	0.0524	0.0206	0.0175
Standard deviation	0.5609	0.0479	0.6128	0.0281
Observations	503	180	184	139
<b>Friday the 13th</b>				
Mean	0.2997	0.5342	0.3261	-0.0185
Standard deviation	1.0086	1.2285	1.1940	0.2977
Observations	18	6	7	5
<i>t</i> -statistic	1.9270 [0.0273]	1.7445 [0.0827]	1.2404 [0.2164]	-0.2391 [0.8114]
Kruskal-Wallis	0.0030 [0.9541]	0.5030 [0.4782]	0.0940 [0.7592]	0.0220 [0.8829]

**Table 5: Daily returns for regular Fridays and Friday the 13th in Kenya**

	2004-2012	2004-2006	2007-2009	2010-2012
<b>Regular Fridays</b>				
Mean	0.0677	0.0574	0.0900	0.0516
Standard deviation	0.3793	0.3182	0.0351	0.3759
Observations	403	131	150	122
<b>Friday the 13th</b>				
Mean	-0.0510	0.1067	-0.1015	-0.1299
Standard deviation	0.2982	0.1128	0.4322	0.0600
Observations	14	4	6	4
<i>t</i> -statistic	-1.1581 [0.2475]	0.3087 [0.7580]	-1.0818 [0.2810]	-0.9608 [0.3385]
Kruskal-Wallis	1.8520 [0.1736]	0.9610 [0.3268]	1.8380 [0.1752]	2.6740 [0.1020]

**Table 6: Daily returns for regular Fridays and Friday the 13th in Tunisia**

#### 4. Conclusion

This study examined the possibility that stock market returns on Friday the 13th differ from returns on all other Fridays in five African countries. There is very weak evidence of a Friday the 13th effect in South Africa and Kenya. In

general, however, there are no significant differences between stock returns on regular Fridays and Friday the 13th. Superstition therefore, at least regarding Friday the 13th, does not seem to play any role in the five countries' stock markets: There is no Friday the 13th effect.

**Ferdi Botha** is a Lecturer in the Department of Economics and Economic History at Rhodes University, Grahamstown, South Africa. He holds an M.Com (Applied Econometrics) degree. His research interests are within the fields of financial volatility, economic sociology, behavioural economics, and microeconometrics. He can be contacted at [f.botha@ru.ac.za](mailto:f.botha@ru.ac.za)

## References

- Chamberlain, T.W., Cheung, C.S., Kwan, C.C.Y. (1991). 'The Friday the thirteenth effect: Myth or reality?', *Quarterly Journal of Business and Economics*, vol. 30, no. 2, pp. 111-117.
- Coutts, J.A. (1999). 'Friday the thirteenth and the Financial Times Ordinary Shares Index 1935-9', *Applied Economics Letters*, vol. 6, no. 1, pp. 35-37.
- Dyl, E.A., Maberly, E.D. (1988). 'The anomaly that isn't there: A comment on Friday the thirteenth', *Journal of Finance*, vol. 43, no. 5, pp. 1285-1286.
- Kolb, R.W., Rodriguez, R.J. (1987). 'Friday the thirteenth: 'Part VII' – A note', *Journal of Finance*, vol. 42, no. 5, pp. 1385-1387.
- Lucey, B.M. (2001). 'Friday the 13th: International evidence', *Applied Economics Letters*, vol. 8, no. 9, pp. 577-579.
- Patel, J.B. (2009). 'Recent evidence on Friday the thirteenth effect in U.S. stock returns', *Journal of Economics and Business Research*, vol. 7, no. 3, pp. 55-58.
- Torgler, B. (2007). 'Determinants of superstition', *Journal of Socio-Economics*, vol. 36, no. 5, pp. 713-733.