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Friday the Thirteenth: 'Part VII'—A Note

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SUPERSTITION HAS A LONG history as an influential and deep-rooted force in many societies. Stories concerning sorcery, black cats, witches, Halloween, and other such topics continue to attract the interest of the general public, as witnessed by the popularity of recent books and movies, such as *Friday the Thirteenth Part I, Part II, . . . , Part VI* (so far!). Given these scary facts, it seems natural to ask whether superstition may play a role in the performance of the securities market. From an empirical perspective, Friday the Thirteenth presents itself as an obvious vehicle to study this question.

Many empirical studies have shown that average returns differ for each day of the week, although the underlying reasons remain a mystery. In particular, Friday returns are typically large relative to other days.¹ In our context, this brings up the question of whether Friday the Thirteenth returns differ from the returns of other Fridays.

This paper studies whether the mean return for Friday the Thirteenth is statistically different from the mean return for other Fridays. Given the negative connotation associated with Friday the Thirteenth, we test the null hypothesis of equal means for Friday the Thirteenth versus other Fridays against the alternative hypothesis of a lower mean return for Friday the Thirteenth. Our one-sided test results indicate that, in fact, the returns for Friday the Thirteenth have been significantly lower than the returns for all other Fridays over a long period.

I. Testing the Hypothesis

Our sample period consists of all trading days between July 1, 1962, and December 31, 1985, which includes thirty-nine occurrences of Friday the Thirteenth.² It is interesting to note that there must be at least one, but no more than three, Friday the Thirteenth in each year. Furthermore, the thirteenth day of the month is more likely to be a Friday than any other day of the week, a fact proven by Baxter [1].

Daily returns from the CRSP value- and equally weighted indices, with and

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¹ See, e.g., Cross [2], Dyl and Martin [3], and French [4]. Most studies have found mean returns for Mondays to be negative, and positive for the rest of the week. Friday's returns are usually either the highest or second highest of the week.

² While there are a total of forty Friday the Thirteenth in the sample period, the NYSE was closed on Friday, April 13, 1979. For similar reasons, there are only 1141 observations for the other Fridays in our sample.

without dividends, constitute the primary data for the analysis. Table I summarizes the sample means (μ) and standard deviations (s) for all Fridays, for Friday the Thirteenth, and for all other Fridays in the sample for each of the four indices.

Interestingly, while the literature on the day-of-the-week effect reports a positive, and unusually large, mean return for Fridays, Table I indicates that value-weighted index returns have been negative for Friday the Thirteenth.

We may now state our null and alternate hypotheses as follows:

$H_0: \mu(\text{Friday the Thirteenth}) = \mu(\text{other Fridays})$

$H_a: \mu(\text{Friday the Thirteenth}) < \mu(\text{other Fridays})$

Table II below shows the t -statistic values arising from testing equality of the means between various subsamples.³

Panel A in Table II shows that Fridays have higher mean returns than the other days of the week, as expected. However, Panel B indicates that the mean

Table I
Average Daily Percentage Returns for Fridays

		Value-Weighted Index		Equally Weighted Index	
		w Div. ^a	w/o Div. ^b	w Div.	w/o Div.
All Fridays	μ	0.001116	0.000970	0.002246	0.002142
(1180 obs.)	s	0.006981	0.006971	0.006949	0.006941
Friday the 13th	μ	-0.000980	-0.001040	0.000406	0.000347
(39 obs.)	s	0.006639	0.006648	0.006350	0.006249
Other Fridays ^c	μ	0.001188	0.001039	0.002309	0.002203
(1141 obs.)	s	0.006984	0.006975	0.006966	0.006958

^a With dividends.

^b Without dividends.

^c By "Other Fridays", we refer to Fridays not falling on a 13th.

Table II
Testing For Equality of the Means between Various Subsamples

Panel	t -Statistics			
	Value-Weighted Index		Equally Weighted Index	
	w Div. ^a	w/o Div. ^b	w Div.	w/o Div.
A: Non-Fridays vs. All Fridays	3.4559*	3.5028*	8.6840*	7.5980*
B: Other Fridays vs. Friday the 13th	-1.9093*	-1.8331*	-1.6829*	-1.6432**

^a With dividends.

^b Without dividends.

* Significant at the 5 percent level.

** Significant at the 10 percent level.

³ The table is constructed so that, if we are testing, say, " μ_1 vs. μ_2 ," then a positive t indicates that $\mu_2 > \mu_1$.

return for Friday the Thirteenth is significantly lower than for other Fridays. This result holds across all four indices, although it is stronger for the value-weighted index.⁴

The empirical evidence presented in this paper supports the hypothesis that the market may be affected by superstition. In particular, mean returns for Friday the Thirteenth are lower than those of other Fridays in our sample. Increasing evidence suggests the existence of some disturbing phenomena in the market, such as the day-of-the-week effect, the January effect, the small-firm effect, and various other "effects." This paper has uncovered the frightening "Friday the Thirteenth" effect.

⁴ We also tested the mean return for Mondays following Friday the Thirteenth against all other Mondays. For each index, the mean return for Mondays following Friday the Thirteenth was higher than the mean return for other Mondays. In fact, the computed Monday the 16th mean return was positive for the value-weighted indices. This phenomenon contrasts with the typical finding of generally negative Monday returns. While Monday the 16th mean returns exceeded mean returns on other Mondays for all indices, none of the differences was significant at the five-percent level.

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