

THE RELATIONSHIP BETWEEN THE  
MAGNITUDE OF SINGLE-DAY STOCK PRICE  
DECLINES AND SUBSEQUENT ABNORMAL  
RETURNS

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# The Beginning

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# Background

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- Contrarian Investing
- Investor Overreaction Hypothesis
- “Buying the Dip”

# What IS Abnormal Return?

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Actual  
Return



Predicted  
Return



Abnormal  
Return

# Prior Literature

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## Profits Possible Utilizing this Strategy

- Atkins & Dyl (1990)
- Benou & Richie (2003)
- Bremer & Sweeney (1991)
- **Ma, Tang, & Hasan (2005)**

## No Profits Possible Utilizing this Strategy

- Himmemann & Schiereck (2010)
- Larson & Madura (2003)
- Park, J. (1995)
- **Ma, Tang, & Hasan (2005)**

# Primary Research Question and Hypothesis

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## Question:

Does the magnitude of a stock's "large" single-day price decline display an inverse relationship to the stocks subsequent abnormal return?

## Hypothesis:

Yes, an inverse relationship between the magnitude of initial decline and subsequent abnormal return will be observed.

# Methodology

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1. Define Date Range
2. Gather Sample
3. Calculate Predicted Returns
4. Calculate CAR
5. Perform Regression Analysis

# Methodology: Date Range and Data Sample

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Observation Date Range:

July 1, 2017-June 30, 2018

Cumulative Abnormal Return (CAR)

Observation Time Periods:

- 10 Trading Days
- 1 Month
- 3 Months
- 6 Months

Nasdaq	NYSE
<ul style="list-style-type: none"><li>• Lower listing requirements</li><li>• More volatile</li><li>• High concentration of technology stocks</li></ul>	<ul style="list-style-type: none"><li>• <b>Higher listing requirements</b></li><li>• <b>Less volatile</b></li><li>• <b>Lower concentration of technology stocks</b></li></ul>



# Methodology: Data Sample (Cont.)

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	<b>Total Events</b>	<b>Events Excluding Beginning Share prices &lt;\$10</b>	<b>Adjustment for Unavailable Betas</b>
July 2017	72	38	36
August 2017	116	69	57
September 2017	35	21	19
October 2017	54	33	28
November 2017	133	72	61
December 2017	44	17	15
January 2018	57	30	25
February 2018	117	73	63
March 2018	81	38	35
April 2018	60	37	31
May 2018	119	68	58
June 2018	72	25	16
<b>Totals:</b>	960	521	444

# Methodology: Calculating Predicted Returns

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Capital Asset Pricing Model:

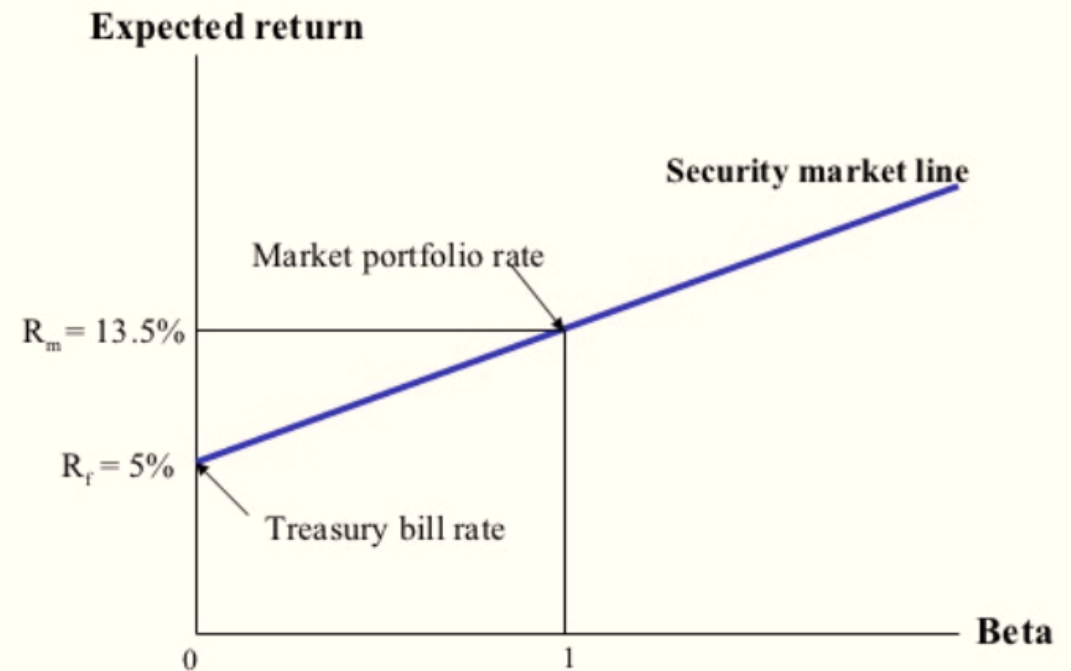
$$R_{jt} = R_{ft} + \beta_j(R_{mt} - R_{ft})$$

$R_{jt}$  = Expected Return on stock "j" over time "t"

$R_{ft}$  = Risk-free rate of return over time "t"

$\beta_j$  = Beta of stock "j"

$R_{mt}$  = Return of the market over time "t"



# Methodology: Calculating Cumulative Abnormal Returns

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1. Calculated the Abnormal Return for each trading day up to six months subsequent to each event in sample
2. Summed up daily abnormal returns for each time period observed:
  - 10 Trading Days
  - 1 Month
  - 3 Months
  - 6 Months

# Methodology: Regression Model

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Regression Model:

$$CAR = a + b(M_{djt}) + \varepsilon$$

$CAR$  = Cumulative Abnormal Return

$M_{djt}$  = Magnitude of initial single-day stock price decline

$\varepsilon$  = Error term

- Ran model four times—once for each time period subsequent to initial price decline over which CAR was calculated.

# Results

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Time Period	CAR	t-Value
10-day	-0.0086 (0.082812)	-1.04
1-Month	-0.0067 (0.119205)	-0.056
3-Month	0.14 (0.193432)	0.73
6-Month	0.08 (0.259122)	0.31

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N = 444

## Results (Cont.)

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Time Period	CAR	t-Value
10-day	-0.157 (0.167867)	-0.93
1-Month	0.0373 (0.211428)	0.176
3-Month	0.177 (0.343332)	0.515
6-Month	-0.18 (0.473798)	-0.383

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N = 167

# Discussion

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- Statistical significance not achieved
  - We cannot recommend that investors design their strategies utilizing the magnitude of single-day stock price declines as a dominant factor
- Economically speaking, the results provide insight into potential further research and possible investor considerations.
  - Coefficients were only negative (in-line with expectations) for the 10-day and 1-month time periods for the initial set of regressions
  - Coefficients for 6-month timeframe switched from positive to negative with second set of regressions

# Further Research

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- Further research is warranted to examine further both short-term and long-term relationships between the magnitude of initial decline and subsequent abnormal return
  - 10-trading day time frame exhibited the highest T-Values
  - Coefficient for the 6-month time frame switched to negative when only events with initial price declines of greater than 15 percent were included
    - Higher Threshold for “large price declines”
    - Larger sample size



# Acknowledgements

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Dr. Alan Kirkpatrick

Dr. Lucile Sabas

Office of Research and Creative Scholarship

J.N. Andrews Honors Program

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