

post_earnings_event_study

August 24, 2018

1 Post Earnings Event Study

In this notebook we explore the relationship between the post-earnings EPS surprise and the cumulative residual returns in the days following an earnings event.

Conclusions:

- There is a positive cumulative residual return when the EPS surprise is positive and vice versa
- Negative earnings surprises tend to produce a larger negative return than positive surprises
- After day 1, negative earnings surprises show a reversal in cumulative residual returns from negative to positive
- Estimate EPS deltas produced more alpha following an event than the Wall Street EPS deltas
- Sector analysis showed most sectors produced strong alpha with the exception of Consumer Staples, Healthcare and Utilities
- Market Cap analysis showed that Small and Mid Cap stocks produced the strongest alpha

1.1 Data and Methodology

Datasources:

- EPS Consensus values (Estimize consensus.csv)
- Asset historical prices (Zipline.io/Quandl prices dataset)
- SPY historical prices (Yahoo Finance)

Our first step is to generate the actual and Estimize weighted EPS deltas for each release:

$$EPSDelta = \frac{EPS_{actual} - EPS_{estimate}}{STDEV_{estimate} + 0.01}$$

Where $STDEV_{estimate}$ is the standard deviation of the release's estimate consensus.

After calculating the EPS deltas for all reported releases, we group them by quantile, with 1 being the lowest and 5 being the highest. This set of data represents the events we will plug into the event study.

The next step is to get the residual returns for each stock following an event. We calculate the residual returns using the CAPM with S&P500 index as the market portfolio:

$$E(R_{i,t}) = b_0 + b_1 \cdot E(R_{M,t})$$

$$ResidualReturn_{i,t} = R_{i,t} - E(R_{i,t})$$

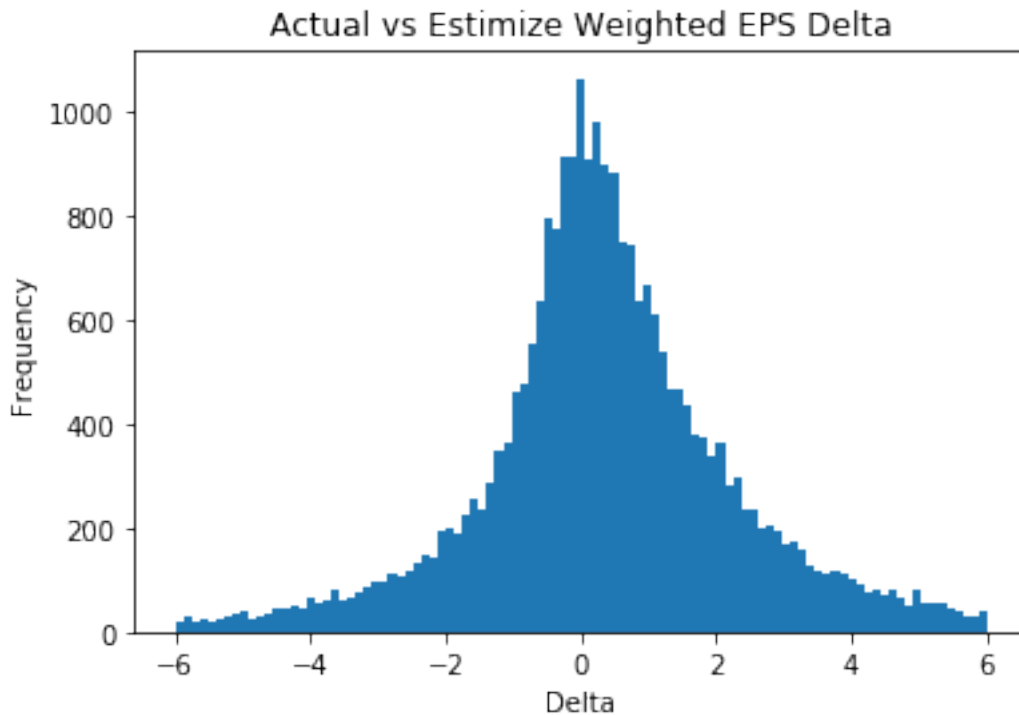
Usually returns are calculated from closing prices, however, due to the nature of earnings events, we are calculating using the open-to-open prices. If we didn't do this, we would be grouping the over-night returns and the intra-day returns into one event interval.

Finally, we take the cumulative residual returns over the days in the event study grouped by the EPS delta quantile.

Disclaimer:

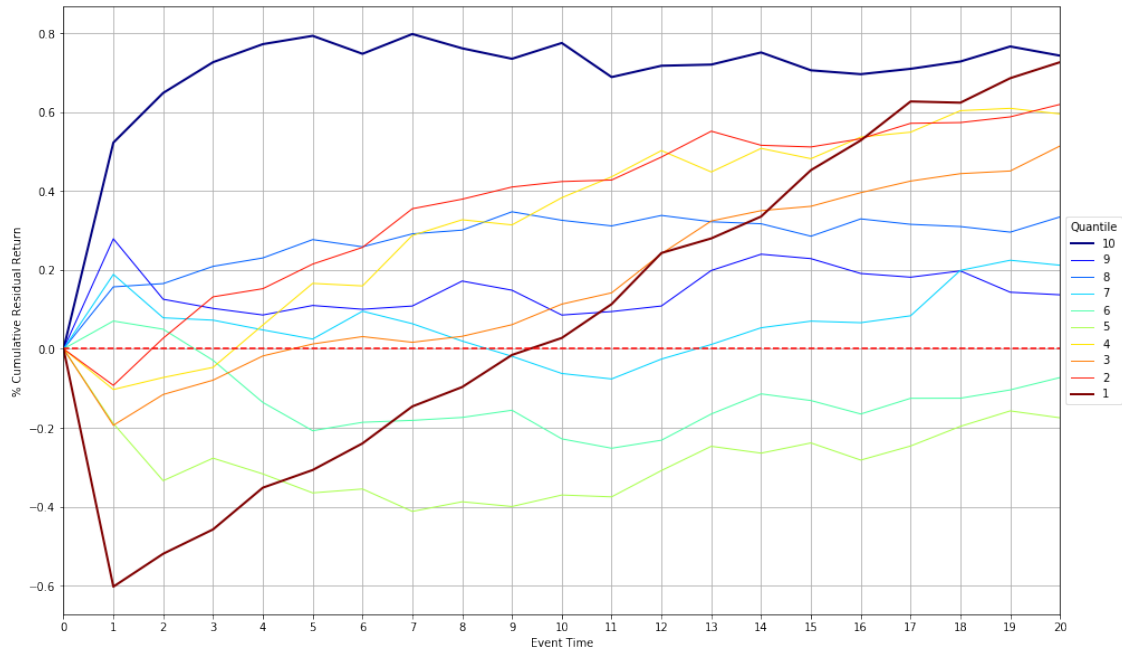
This event study was prepared in a fashion similar to other event studies and research done in this field. Since the decile calculations are done ex-post, it should be noted that any trading strategy using this factor should calculate the eps delta deciles in a rolling fashion.

1.2 EPS Deltas



1.2.1 All Stocks (All-time using WS EPS delta)

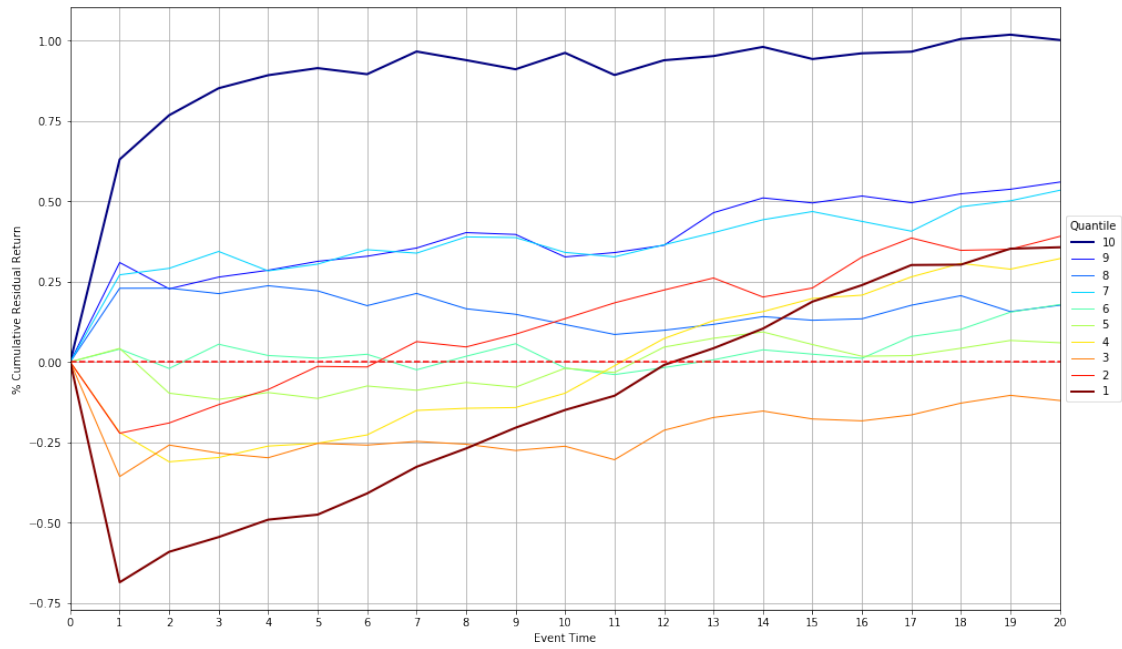
Num Events: 24,310



event_time	1	2	3	4	5	10	15	20
quantile								
1.0	-0.60%	-0.52%	-0.46%	-0.35%	-0.31%	0.03%	0.45%	0.73%
2.0	-0.09%	0.03%	0.13%	0.15%	0.21%	0.42%	0.51%	0.62%
3.0	-0.19%	-0.12%	-0.08%	-0.02%	0.01%	0.11%	0.36%	0.51%
4.0	-0.10%	-0.07%	-0.05%	0.06%	0.17%	0.38%	0.48%	0.60%
5.0	-0.19%	-0.33%	-0.28%	-0.32%	-0.36%	-0.37%	-0.24%	-0.17%
6.0	0.07%	0.05%	-0.03%	-0.14%	-0.21%	-0.23%	-0.13%	-0.07%
7.0	0.19%	0.08%	0.07%	0.05%	0.02%	-0.06%	0.07%	0.21%
8.0	0.16%	0.17%	0.21%	0.23%	0.28%	0.33%	0.29%	0.33%
9.0	0.28%	0.13%	0.10%	0.09%	0.11%	0.09%	0.23%	0.14%
10.0	0.52%	0.65%	0.73%	0.77%	0.79%	0.77%	0.71%	0.74%

1.2.2 All Stocks (All-time using default Estimate EPS delta)

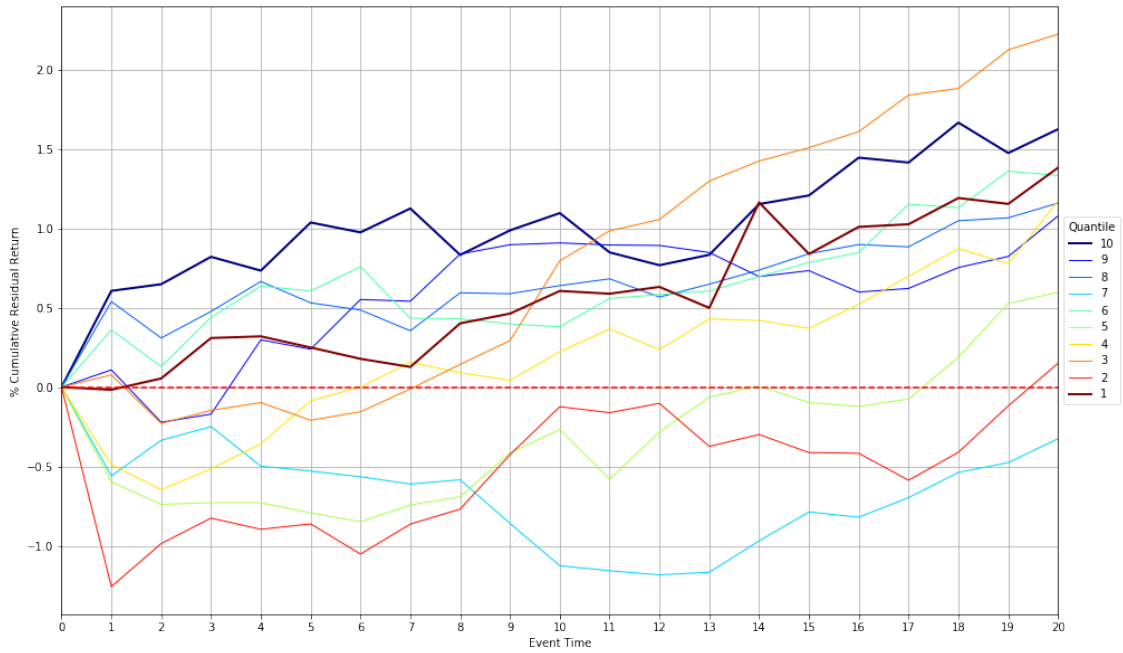
Num Events: 25,186



event_time	1	2	3	4	5	10	15	20
quantile								
1.0	-0.69%	-0.59%	-0.55%	-0.49%	-0.48%	-0.15%	0.19%	0.36%
2.0	-0.22%	-0.19%	-0.13%	-0.09%	-0.01%	0.13%	0.23%	0.39%
3.0	-0.36%	-0.26%	-0.28%	-0.30%	-0.25%	-0.26%	-0.18%	-0.12%
4.0	-0.22%	-0.31%	-0.30%	-0.26%	-0.25%	-0.10%	0.20%	0.32%
5.0	0.04%	-0.10%	-0.12%	-0.10%	-0.11%	-0.02%	0.05%	0.06%
6.0	0.04%	-0.02%	0.06%	0.02%	0.01%	-0.02%	0.02%	0.18%
7.0	0.27%	0.29%	0.34%	0.28%	0.30%	0.34%	0.47%	0.53%
8.0	0.23%	0.23%	0.21%	0.24%	0.22%	0.12%	0.13%	0.18%
9.0	0.31%	0.23%	0.26%	0.29%	0.31%	0.33%	0.49%	0.56%
10.0	0.63%	0.77%	0.85%	0.89%	0.91%	0.96%	0.94%	1.00%

1.2.3 All Stocks (up to Q1 2018)

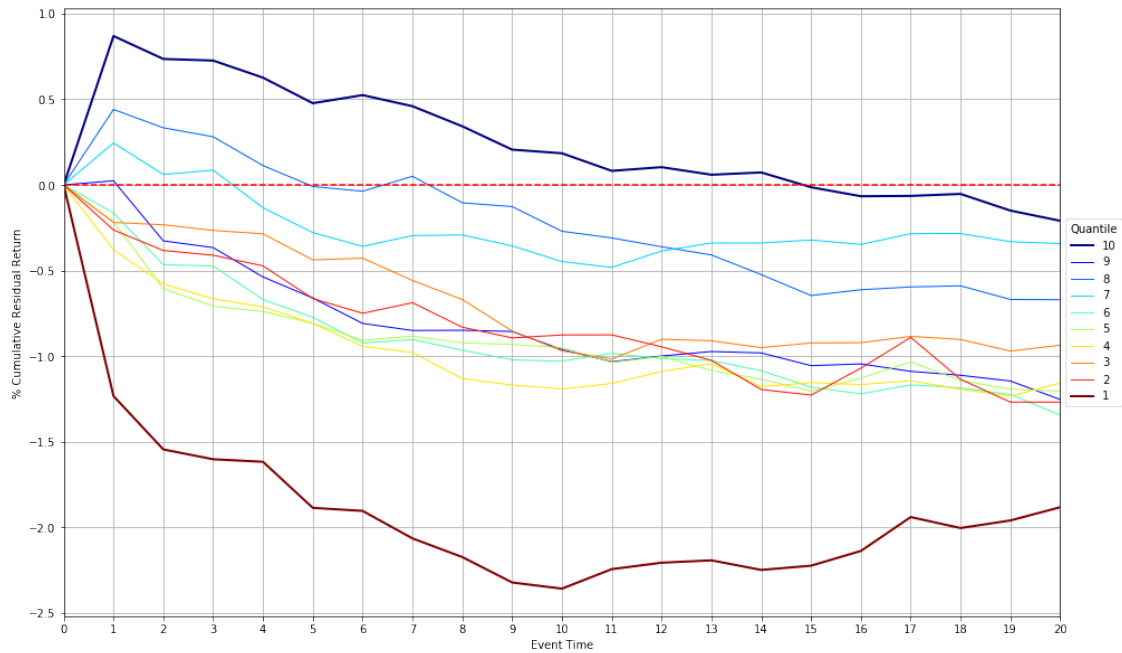
Num Events: 1,467



event_time	1	2	3	4	5	10	15	20
quantile								
1.0	-0.02%	0.05%	0.31%	0.32%	0.25%	0.61%	0.84%	1.38%
2.0	-1.26%	-0.99%	-0.83%	-0.90%	-0.86%	-0.12%	-0.41%	0.15%
3.0	0.08%	-0.23%	-0.15%	-0.10%	-0.21%	0.80%	1.51%	2.23%
4.0	-0.49%	-0.65%	-0.52%	-0.36%	-0.09%	0.22%	0.37%	1.17%
5.0	-0.60%	-0.74%	-0.73%	-0.73%	-0.79%	-0.27%	-0.10%	0.60%
6.0	0.36%	0.13%	0.44%	0.64%	0.61%	0.38%	0.79%	1.33%
7.0	-0.56%	-0.34%	-0.25%	-0.50%	-0.53%	-1.13%	-0.79%	-0.32%
8.0	0.54%	0.31%	0.48%	0.67%	0.53%	0.64%	0.84%	1.16%
9.0	0.11%	-0.22%	-0.17%	0.30%	0.24%	0.91%	0.73%	1.08%
10.0	0.61%	0.65%	0.82%	0.73%	1.04%	1.10%	1.21%	1.63%

1.2.4 All Stocks (2017)

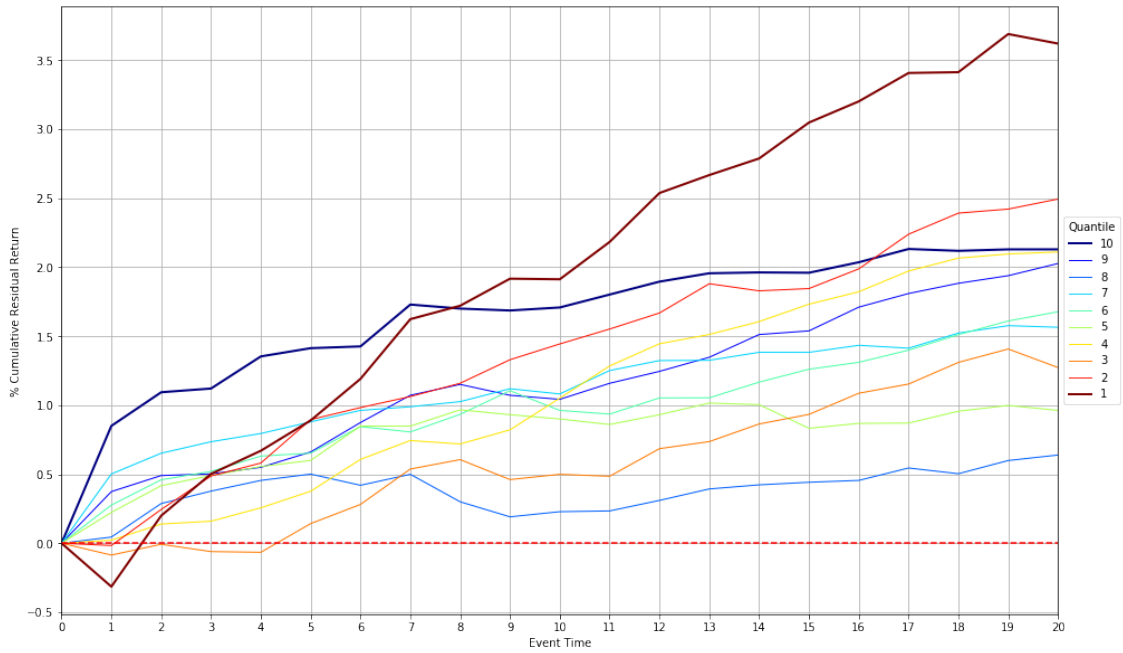
Num Events: 6,075



event_time	1	2	3	4	5	10	15	20
quantile								
1.0	-1.23%	-1.54%	-1.60%	-1.62%	-1.89%	-2.36%	-2.22%	-1.88%
2.0	-0.26%	-0.38%	-0.41%	-0.47%	-0.66%	-0.88%	-1.23%	-1.27%
3.0	-0.22%	-0.23%	-0.27%	-0.29%	-0.44%	-0.97%	-0.92%	-0.94%
4.0	-0.38%	-0.58%	-0.67%	-0.71%	-0.81%	-1.19%	-1.15%	-1.16%
5.0	-0.21%	-0.61%	-0.71%	-0.74%	-0.81%	-0.95%	-1.21%	-1.20%
6.0	-0.16%	-0.47%	-0.47%	-0.67%	-0.77%	-1.03%	-1.18%	-1.34%
7.0	0.24%	0.06%	0.09%	-0.13%	-0.28%	-0.45%	-0.32%	-0.34%
8.0	0.44%	0.33%	0.28%	0.11%	-0.01%	-0.27%	-0.65%	-0.67%
9.0	0.02%	-0.33%	-0.37%	-0.54%	-0.66%	-0.96%	-1.06%	-1.25%
10.0	0.87%	0.74%	0.73%	0.63%	0.48%	0.18%	-0.01%	-0.21%

1.2.5 All Stocks (2016)

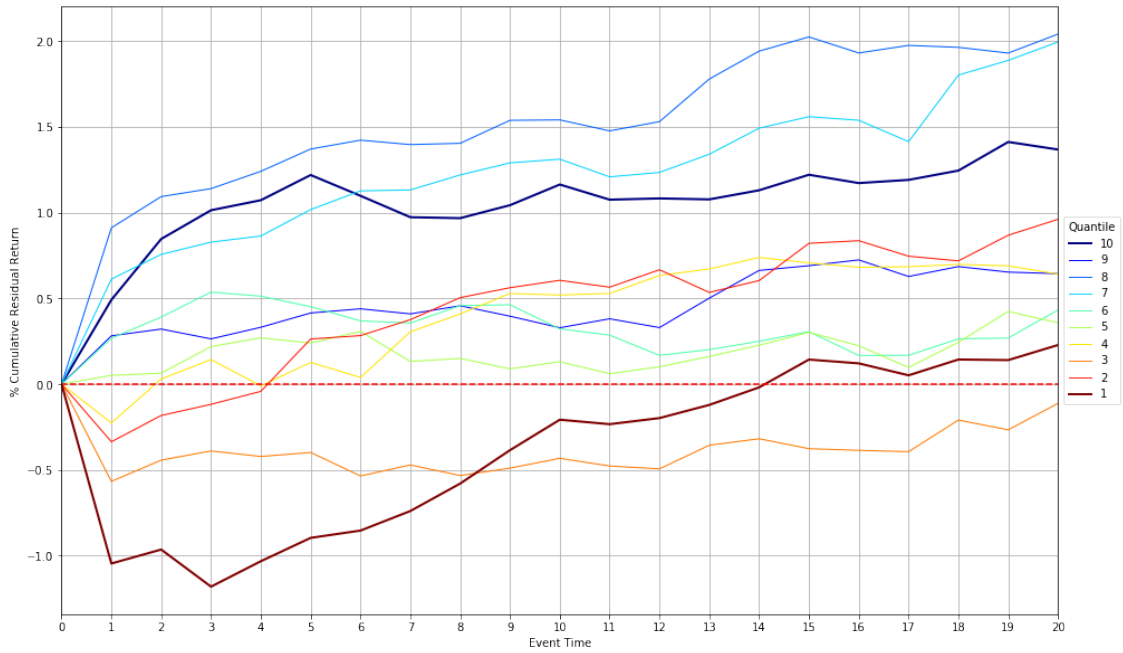
Num Events: 5,877



event_time	1	2	3	4	5	10	15	20
quantile								
1.0	-0.31%	0.20%	0.50%	0.67%	0.89%	1.91%	3.05%	3.62%
2.0	-0.02%	0.24%	0.49%	0.58%	0.90%	1.44%	1.84%	2.49%
3.0	-0.09%	-0.01%	-0.06%	-0.07%	0.14%	0.50%	0.93%	1.27%
4.0	0.02%	0.14%	0.16%	0.26%	0.38%	1.05%	1.73%	2.11%
5.0	0.22%	0.42%	0.49%	0.56%	0.60%	0.90%	0.83%	0.96%
6.0	0.28%	0.46%	0.52%	0.63%	0.65%	0.96%	1.26%	1.68%
7.0	0.50%	0.65%	0.74%	0.79%	0.88%	1.08%	1.38%	1.56%
8.0	0.04%	0.29%	0.38%	0.46%	0.50%	0.23%	0.44%	0.64%
9.0	0.37%	0.49%	0.50%	0.55%	0.66%	1.04%	1.54%	2.03%
10.0	0.85%	1.09%	1.12%	1.35%	1.41%	1.71%	1.96%	2.13%

1.2.6 All Stocks (2015)

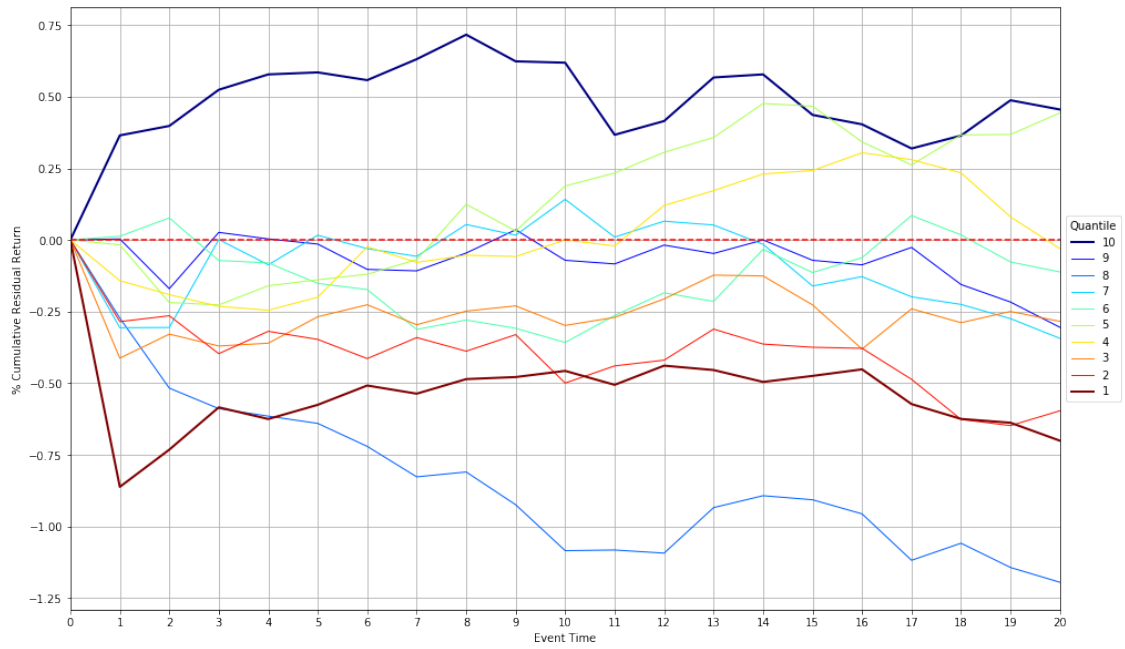
Num Events: 4,755



event_time	1	2	3	4	5	10	15	20
quantile								
1.0	-1.05%	-0.96%	-1.18%	-1.03%	-0.90%	-0.21%	0.14%	0.23%
2.0	-0.34%	-0.18%	-0.12%	-0.04%	0.26%	0.61%	0.82%	0.96%
3.0	-0.57%	-0.44%	-0.39%	-0.42%	-0.40%	-0.43%	-0.38%	-0.11%
4.0	-0.23%	0.03%	0.14%	-0.01%	0.13%	0.52%	0.71%	0.64%
5.0	0.05%	0.06%	0.22%	0.27%	0.24%	0.13%	0.30%	0.36%
6.0	0.27%	0.39%	0.54%	0.51%	0.45%	0.32%	0.31%	0.43%
7.0	0.61%	0.76%	0.83%	0.86%	1.02%	1.31%	1.56%	1.99%
8.0	0.91%	1.09%	1.14%	1.24%	1.37%	1.54%	2.02%	2.04%
9.0	0.28%	0.32%	0.26%	0.33%	0.41%	0.33%	0.69%	0.64%
10.0	0.49%	0.85%	1.01%	1.07%	1.22%	1.16%	1.22%	1.37%

1.2.7 All Stocks (2014)

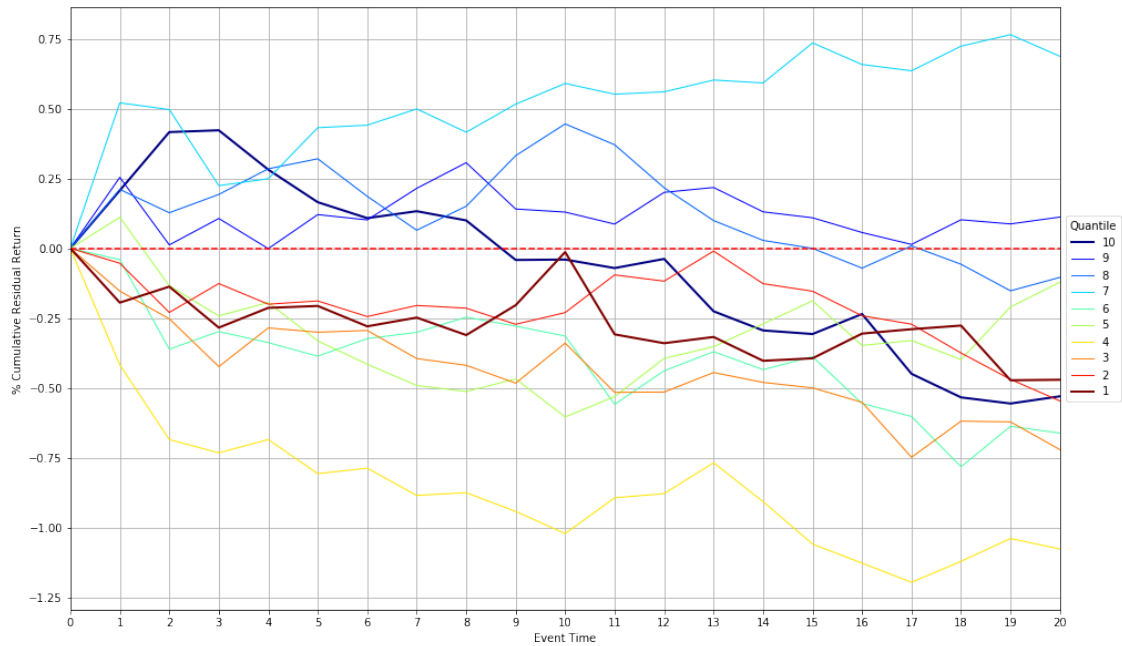
Num Events: 3,379



event_time	1	2	3	4	5	10	15	20
quantile								
1.0	-0.86%	-0.73%	-0.58%	-0.63%	-0.58%	-0.46%	-0.47%	-0.70%
2.0	-0.29%	-0.26%	-0.40%	-0.32%	-0.35%	-0.50%	-0.37%	-0.60%
3.0	-0.41%	-0.33%	-0.37%	-0.36%	-0.27%	-0.30%	-0.23%	-0.28%
4.0	-0.14%	-0.19%	-0.23%	-0.25%	-0.20%	-0.00%	0.24%	-0.03%
5.0	-0.02%	-0.22%	-0.23%	-0.16%	-0.14%	0.19%	0.47%	0.44%
6.0	0.01%	0.08%	-0.07%	-0.08%	-0.15%	-0.36%	-0.11%	-0.11%
7.0	-0.31%	-0.31%	0.00%	-0.09%	0.02%	0.14%	-0.16%	-0.34%
8.0	-0.27%	-0.52%	-0.59%	-0.61%	-0.64%	-1.08%	-0.91%	-1.19%
9.0	0.00%	-0.17%	0.03%	0.00%	-0.01%	-0.07%	-0.07%	-0.31%
10.0	0.37%	0.40%	0.52%	0.58%	0.58%	0.62%	0.44%	0.46%

1.2.8 All Stocks (2013)

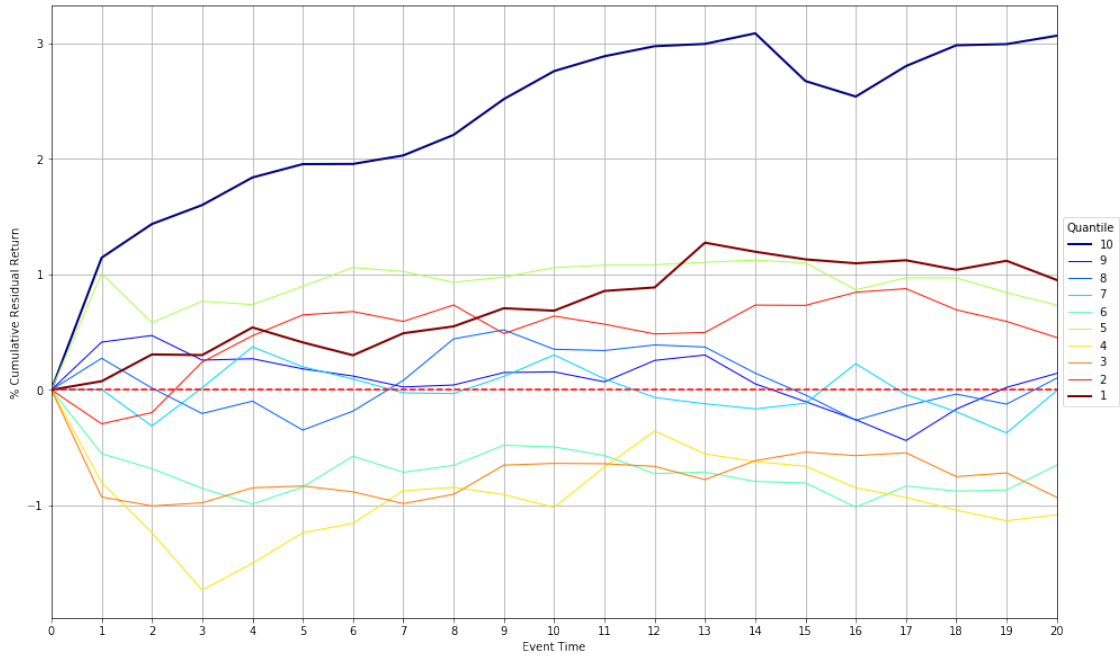
Num Events: 2,580



event_time	1	2	3	4	5	10	15	20
quantile								
1.0	-0.19%	-0.14%	-0.28%	-0.21%	-0.21%	-0.01%	-0.39%	-0.47%
2.0	-0.05%	-0.23%	-0.13%	-0.20%	-0.19%	-0.23%	-0.15%	-0.55%
3.0	-0.15%	-0.25%	-0.42%	-0.28%	-0.30%	-0.34%	-0.50%	-0.72%
4.0	-0.42%	-0.68%	-0.73%	-0.68%	-0.81%	-1.02%	-1.06%	-1.08%
5.0	0.11%	-0.13%	-0.24%	-0.19%	-0.33%	-0.60%	-0.19%	-0.12%
6.0	-0.04%	-0.36%	-0.30%	-0.34%	-0.39%	-0.31%	-0.39%	-0.66%
7.0	0.52%	0.50%	0.22%	0.25%	0.43%	0.59%	0.74%	0.69%
8.0	0.21%	0.13%	0.19%	0.28%	0.32%	0.45%	-0.00%	-0.10%
9.0	0.25%	0.01%	0.11%	-0.00%	0.12%	0.13%	0.11%	0.11%
10.0	0.21%	0.42%	0.42%	0.28%	0.17%	-0.04%	-0.31%	-0.53%

1.2.9 All Stocks (2012)

Num Events: 988

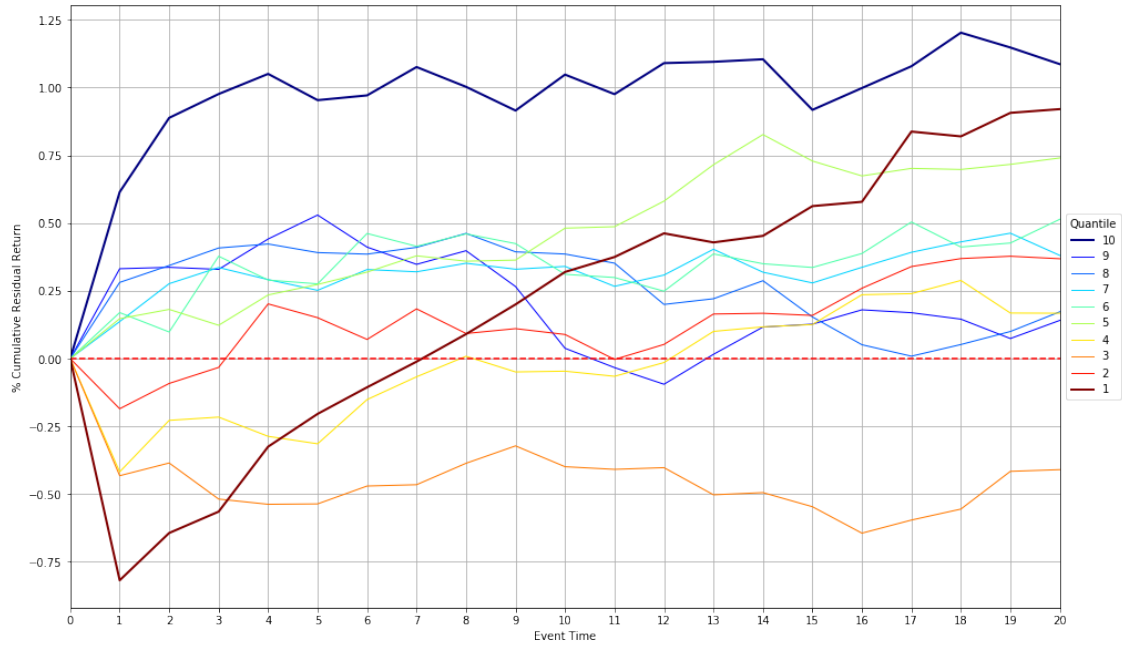


event_time	1	2	3	4	5	10	15	20
quantile								
1.0	0.07%	0.31%	0.30%	0.54%	0.41%	0.69%	1.13%	0.95%
2.0	-0.29%	-0.20%	0.24%	0.47%	0.65%	0.64%	0.73%	0.45%
3.0	-0.93%	-1.01%	-0.98%	-0.85%	-0.83%	-0.64%	-0.54%	-0.93%
4.0	-0.80%	-1.24%	-1.74%	-1.50%	-1.24%	-1.02%	-0.66%	-1.08%
5.0	1.01%	0.58%	0.77%	0.74%	0.90%	1.06%	1.10%	0.73%
6.0	-0.55%	-0.68%	-0.85%	-0.99%	-0.84%	-0.49%	-0.81%	-0.65%
7.0	0.00%	-0.31%	0.02%	0.37%	0.20%	0.30%	-0.12%	-0.01%
8.0	0.27%	0.02%	-0.21%	-0.10%	-0.35%	0.35%	-0.04%	0.10%
9.0	0.41%	0.47%	0.26%	0.27%	0.18%	0.16%	-0.10%	0.14%
10.0	1.14%	1.44%	1.60%	1.84%	1.96%	2.76%	2.67%	3.07%

1.3 Sector Analysis

1.3.1 Consumer Discretionary (All-Time)

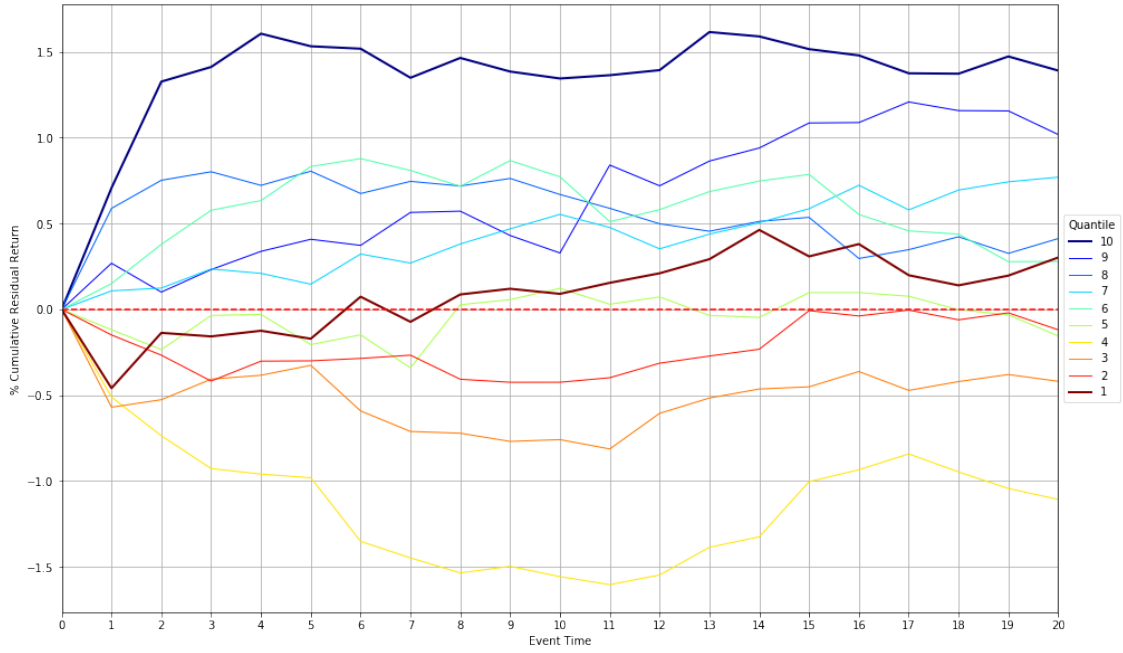
Num Events: 5,189



event_time	1	2	3	4	5	10	15	20
quantile								
1	-0.82%	-0.64%	-0.56%	-0.33%	-0.20%	0.32%	0.56%	0.92%
2	-0.19%	-0.09%	-0.03%	0.20%	0.15%	0.09%	0.16%	0.37%
3	-0.43%	-0.39%	-0.52%	-0.54%	-0.54%	-0.40%	-0.55%	-0.41%
4	-0.42%	-0.23%	-0.22%	-0.29%	-0.31%	-0.05%	0.13%	0.17%
5	0.15%	0.18%	0.12%	0.23%	0.27%	0.48%	0.73%	0.74%
6	0.17%	0.10%	0.38%	0.29%	0.28%	0.31%	0.34%	0.51%
7	0.14%	0.28%	0.34%	0.29%	0.25%	0.34%	0.28%	0.38%
8	0.28%	0.34%	0.41%	0.42%	0.39%	0.39%	0.15%	0.17%
9	0.33%	0.34%	0.33%	0.44%	0.53%	0.04%	0.13%	0.14%
10	0.61%	0.89%	0.98%	1.05%	0.95%	1.05%	0.92%	1.09%

1.3.2 Consumer Staples (All-Time)

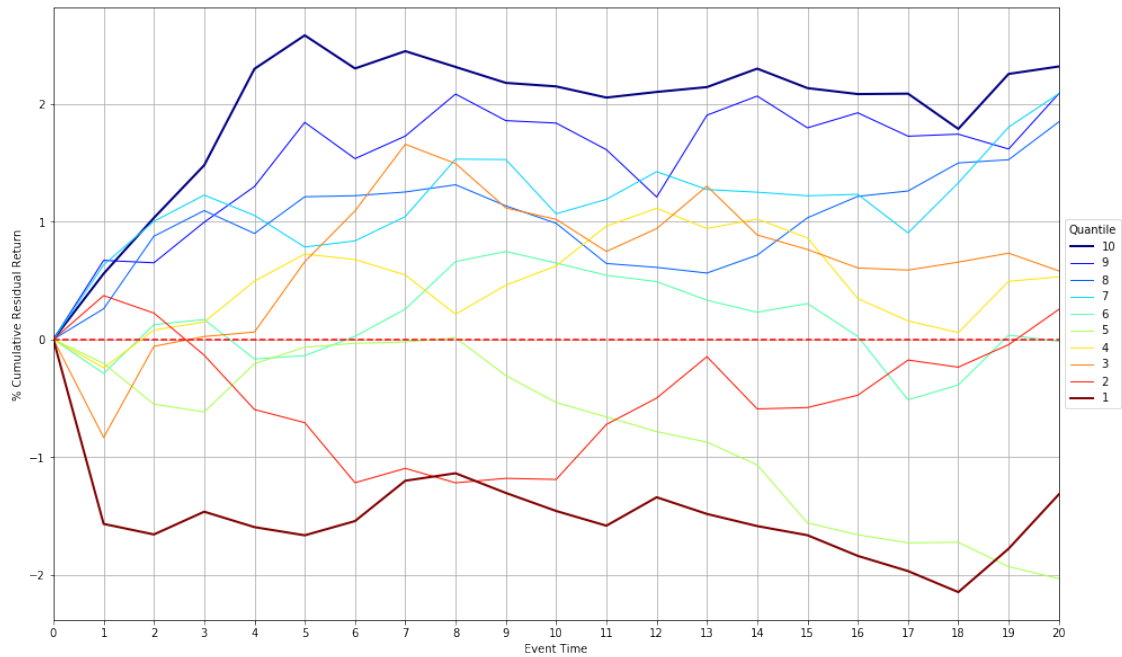
Num Events: 1,458



event_time	1	2	3	4	5	10	15	20
quantile								
1	-0.46%	-0.14%	-0.16%	-0.12%	-0.17%	0.09%	0.31%	0.30%
2	-0.15%	-0.27%	-0.42%	-0.30%	-0.30%	-0.42%	-0.01%	-0.12%
3	-0.57%	-0.53%	-0.41%	-0.38%	-0.33%	-0.76%	-0.45%	-0.42%
4	-0.51%	-0.74%	-0.93%	-0.96%	-0.98%	-1.56%	-1.00%	-1.11%
5	-0.12%	-0.23%	-0.04%	-0.03%	-0.21%	0.12%	0.10%	-0.15%
6	0.15%	0.38%	0.58%	0.63%	0.83%	0.77%	0.79%	0.28%
7	0.11%	0.12%	0.24%	0.21%	0.15%	0.55%	0.59%	0.77%
8	0.59%	0.75%	0.80%	0.72%	0.81%	0.67%	0.54%	0.41%
9	0.27%	0.10%	0.23%	0.34%	0.41%	0.33%	1.09%	1.02%
10	0.71%	1.33%	1.41%	1.61%	1.53%	1.35%	1.52%	1.39%

1.3.3 Energy (All-Time)

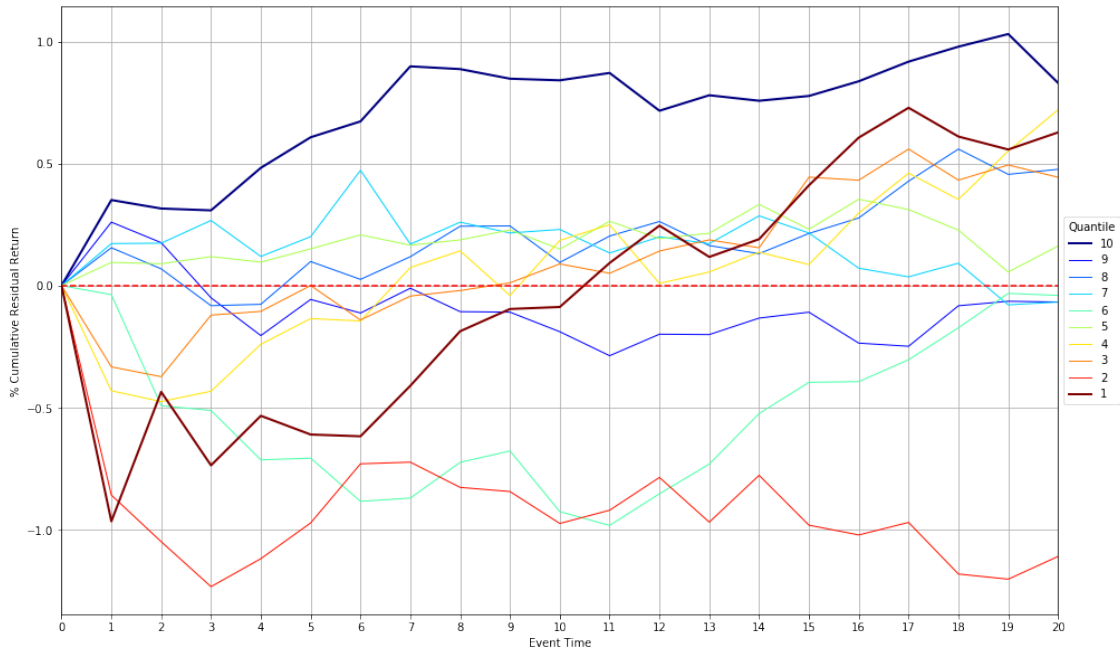
Num Events: 1,368



event_time	1	2	3	4	5	10	15	20
quantile								
1	-1.57%	-1.66%	-1.47%	-1.60%	-1.67%	-1.46%	-1.67%	-1.32%
2	0.37%	0.22%	-0.13%	-0.60%	-0.71%	-1.19%	-0.58%	0.25%
3	-0.83%	-0.06%	0.02%	0.06%	0.66%	1.02%	0.76%	0.58%
4	-0.24%	0.08%	0.15%	0.49%	0.72%	0.62%	0.86%	0.53%
5	-0.21%	-0.55%	-0.62%	-0.21%	-0.07%	-0.54%	-1.56%	-2.03%
6	-0.29%	0.13%	0.17%	-0.17%	-0.14%	0.65%	0.30%	-0.02%
7	0.63%	1.00%	1.23%	1.05%	0.78%	1.07%	1.22%	2.09%
8	0.26%	0.88%	1.09%	0.90%	1.21%	0.99%	1.03%	1.85%
9	0.67%	0.65%	1.00%	1.30%	1.84%	1.84%	1.80%	2.09%
10	0.56%	1.03%	1.48%	2.30%	2.58%	2.15%	2.14%	2.32%

1.3.4 Financials (All-Time)

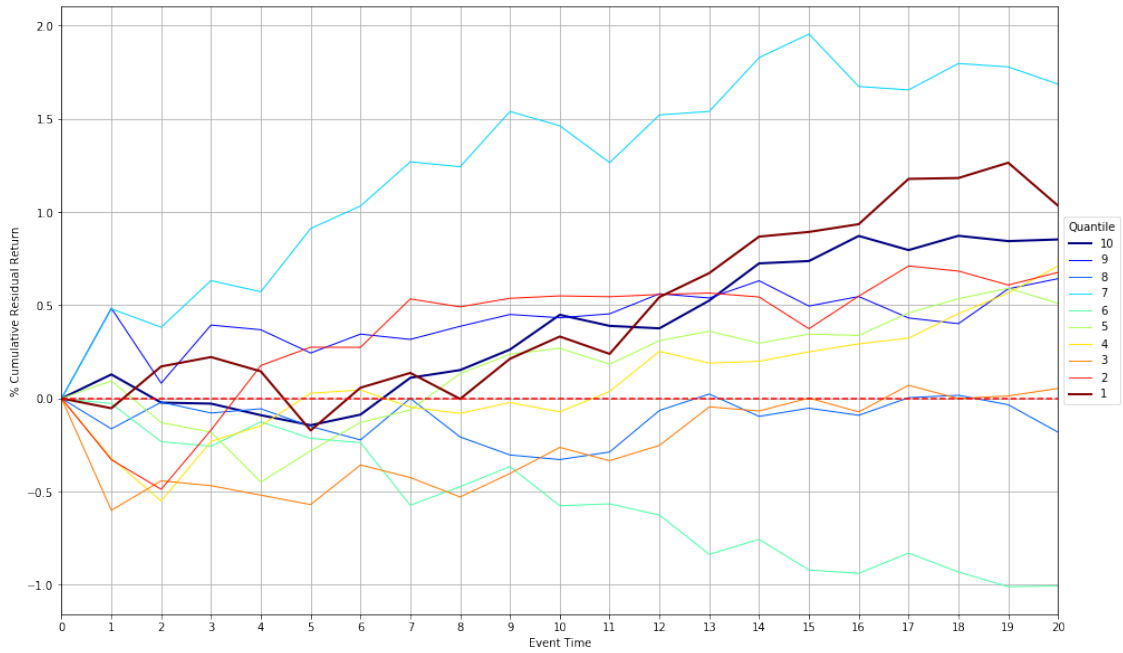
Num Events: 1,651



event_time	1	2	3	4	5	10	15	20
quantile								
1	-0.97%	-0.44%	-0.74%	-0.53%	-0.61%	-0.09%	0.41%	0.63%
2	-0.86%	-1.05%	-1.23%	-1.12%	-0.97%	-0.97%	-0.98%	-1.11%
3	-0.33%	-0.37%	-0.12%	-0.11%	0.00%	0.09%	0.44%	0.44%
4	-0.43%	-0.48%	-0.43%	-0.24%	-0.14%	0.19%	0.09%	0.72%
5	0.10%	0.09%	0.12%	0.10%	0.15%	0.15%	0.23%	0.16%
6	-0.04%	-0.49%	-0.51%	-0.71%	-0.71%	-0.93%	-0.40%	-0.04%
7	0.17%	0.17%	0.27%	0.12%	0.20%	0.23%	0.22%	-0.07%
8	0.16%	0.07%	-0.08%	-0.08%	0.10%	0.09%	0.21%	0.48%
9	0.26%	0.18%	-0.05%	-0.20%	-0.06%	-0.19%	-0.11%	-0.07%
10	0.35%	0.32%	0.31%	0.48%	0.61%	0.84%	0.78%	0.83%

1.3.5 Health Care (All-Time)

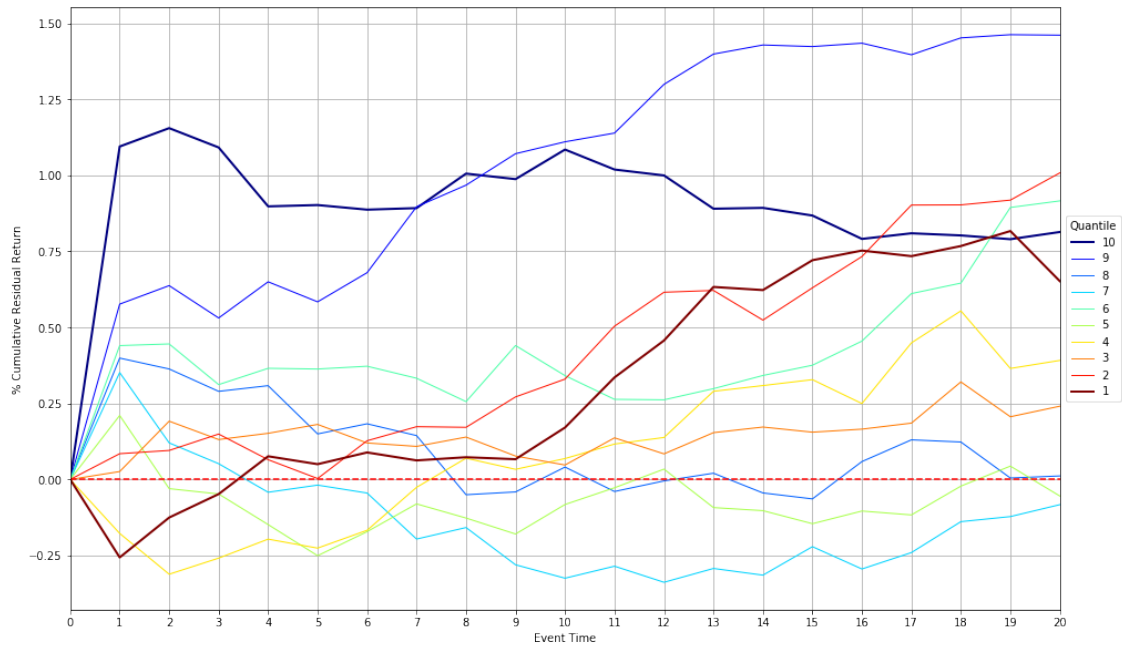
Num Events: 3,196



event_time	1	2	3	4	5	10	15	20
quantile								
1	-0.05%	0.17%	0.22%	0.15%	-0.17%	0.33%	0.89%	1.03%
2	-0.33%	-0.49%	-0.17%	0.18%	0.27%	0.55%	0.37%	0.68%
3	-0.60%	-0.44%	-0.47%	-0.52%	-0.57%	-0.26%	0.00%	0.05%
4	-0.32%	-0.55%	-0.23%	-0.15%	0.03%	-0.07%	0.25%	0.71%
5	0.09%	-0.13%	-0.18%	-0.45%	-0.28%	0.27%	0.34%	0.51%
6	-0.03%	-0.23%	-0.26%	-0.13%	-0.21%	-0.58%	-0.92%	-1.01%
7	0.48%	0.38%	0.63%	0.57%	0.91%	1.46%	1.96%	1.69%
8	-0.16%	-0.02%	-0.08%	-0.06%	-0.15%	-0.33%	-0.05%	-0.18%
9	0.48%	0.08%	0.39%	0.37%	0.24%	0.43%	0.50%	0.64%
10	0.13%	-0.02%	-0.03%	-0.09%	-0.14%	0.45%	0.74%	0.85%

1.3.6 Industrials (All-Time)

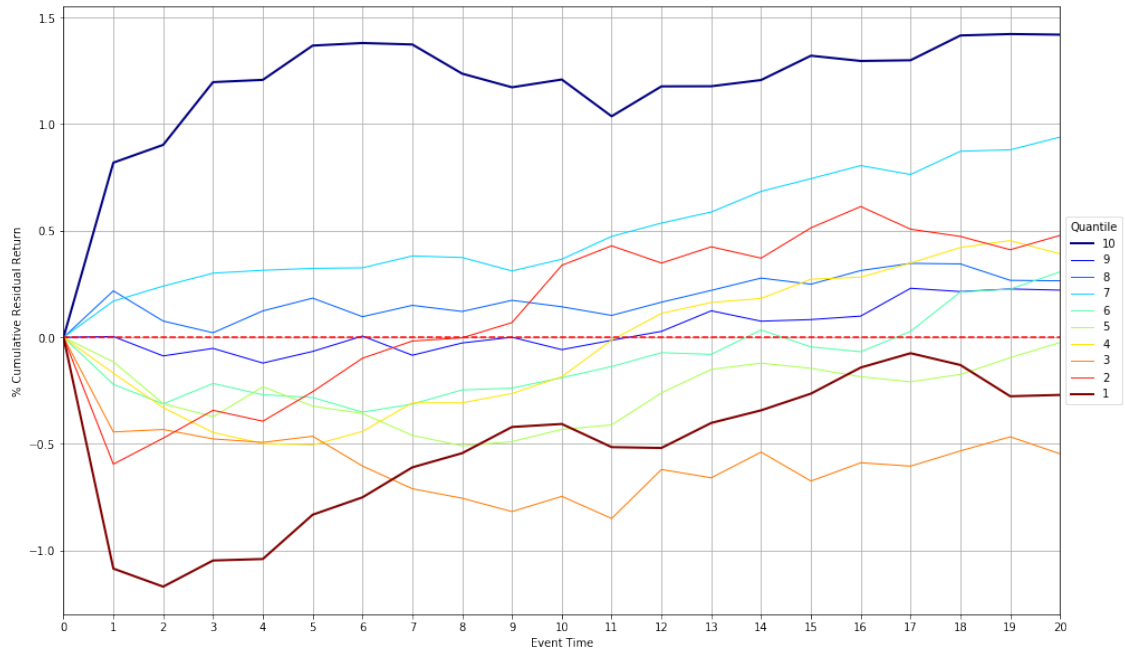
Num Events: 4,271



event_time	1	2	3	4	5	10	15	20
quantile								
1	-0.26%	-0.13%	-0.05%	0.08%	0.05%	0.17%	0.72%	0.65%
2	0.08%	0.10%	0.15%	0.07%	0.00%	0.33%	0.63%	1.01%
3	0.03%	0.19%	0.13%	0.15%	0.18%	0.05%	0.16%	0.24%
4	-0.18%	-0.31%	-0.26%	-0.20%	-0.23%	0.07%	0.33%	0.39%
5	0.21%	-0.03%	-0.05%	-0.15%	-0.25%	-0.08%	-0.15%	-0.05%
6	0.44%	0.45%	0.31%	0.37%	0.36%	0.34%	0.38%	0.92%
7	0.35%	0.12%	0.05%	-0.04%	-0.02%	-0.32%	-0.22%	-0.08%
8	0.40%	0.36%	0.29%	0.31%	0.15%	0.04%	-0.06%	0.01%
9	0.58%	0.64%	0.53%	0.65%	0.58%	1.11%	1.42%	1.46%
10	1.09%	1.16%	1.09%	0.90%	0.90%	1.08%	0.87%	0.81%

1.3.7 Information Technology (All-Time)

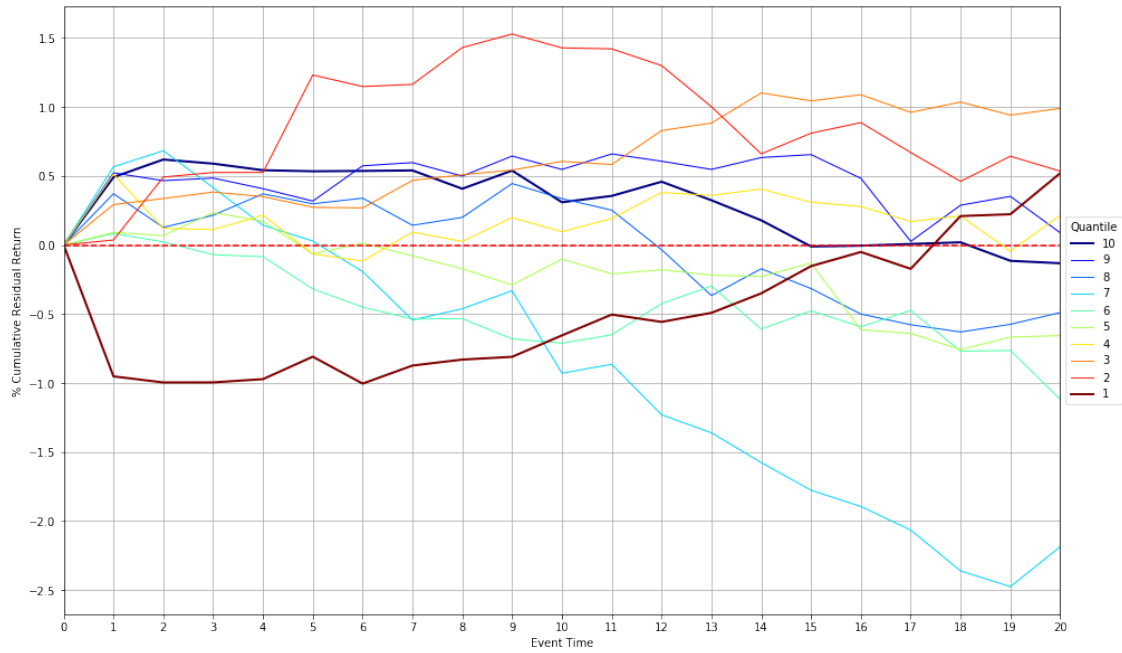
Num Events: 5,611



event_time	1	2	3	4	5	10	15	20
quantile								
1	-1.08%	-1.17%	-1.05%	-1.04%	-0.83%	-0.41%	-0.26%	-0.27%
2	-0.59%	-0.47%	-0.34%	-0.39%	-0.25%	0.34%	0.51%	0.48%
3	-0.44%	-0.43%	-0.48%	-0.49%	-0.46%	-0.75%	-0.67%	-0.55%
4	-0.17%	-0.33%	-0.45%	-0.50%	-0.51%	-0.18%	0.27%	0.39%
5	-0.11%	-0.31%	-0.37%	-0.23%	-0.32%	-0.43%	-0.15%	-0.02%
6	-0.22%	-0.31%	-0.22%	-0.27%	-0.28%	-0.19%	-0.04%	0.31%
7	0.17%	0.24%	0.30%	0.31%	0.32%	0.37%	0.74%	0.94%
8	0.22%	0.08%	0.02%	0.12%	0.18%	0.14%	0.25%	0.27%
9	0.00%	-0.09%	-0.05%	-0.12%	-0.07%	-0.06%	0.08%	0.22%
10	0.82%	0.90%	1.20%	1.21%	1.37%	1.21%	1.32%	1.42%

1.3.8 Materials (All-Time)

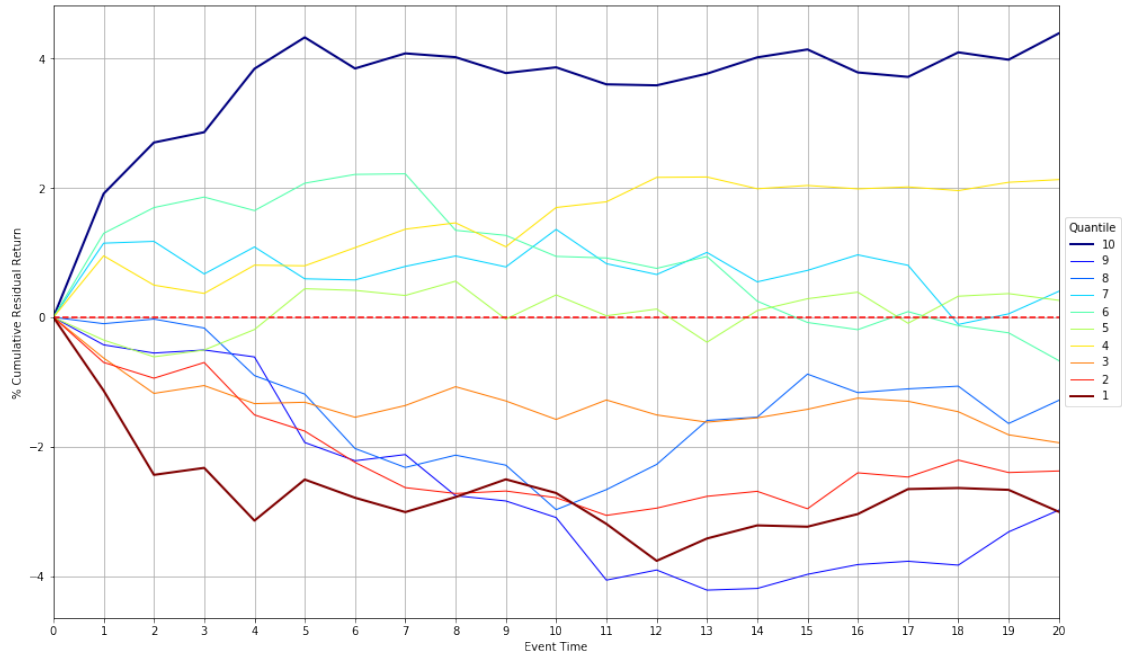
Num Events: 1,469



event_time	1	2	3	4	5	10	15	20
quantile								
1	-0.95%	-1.00%	-1.00%	-0.97%	-0.81%	-0.65%	-0.15%	0.52%
2	0.04%	0.49%	0.53%	0.53%	1.23%	1.43%	0.81%	0.53%
3	0.29%	0.34%	0.38%	0.35%	0.27%	0.61%	1.04%	0.99%
4	0.51%	0.12%	0.11%	0.22%	-0.06%	0.10%	0.31%	0.21%
5	0.09%	0.07%	0.23%	0.17%	-0.06%	-0.10%	-0.13%	-0.66%
6	0.08%	0.02%	-0.07%	-0.08%	-0.32%	-0.71%	-0.48%	-1.12%
7	0.57%	0.68%	0.42%	0.14%	0.03%	-0.93%	-1.78%	-2.19%
8	0.37%	0.13%	0.22%	0.37%	0.30%	0.34%	-0.32%	-0.49%
9	0.52%	0.47%	0.48%	0.41%	0.32%	0.55%	0.65%	0.09%
10	0.49%	0.62%	0.59%	0.54%	0.53%	0.31%	-0.01%	-0.13%

1.3.9 Telecommunication Services (All-Time)

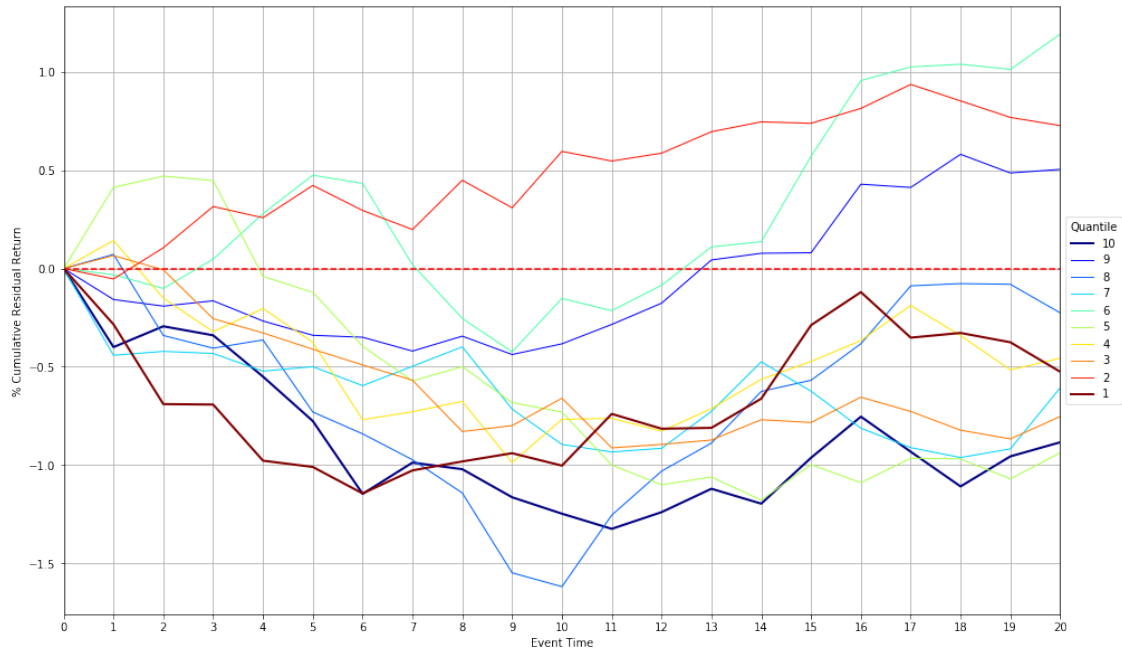
Num Events: 289



event_time	1	2	3	4	5	10	15	20
quantile								
1	-1.13%	-2.43%	-2.33%	-3.14%	-2.51%	-2.71%	-3.23%	-3.00%
2	-0.70%	-0.94%	-0.70%	-1.51%	-1.76%	-2.79%	-2.96%	-2.37%
3	-0.63%	-1.18%	-1.05%	-1.33%	-1.31%	-1.58%	-1.42%	-1.94%
4	0.95%	0.50%	0.37%	0.81%	0.80%	1.70%	2.04%	2.13%
5	-0.35%	-0.61%	-0.51%	-0.19%	0.44%	0.35%	0.29%	0.26%
6	1.30%	1.70%	1.86%	1.65%	2.07%	0.94%	-0.08%	-0.67%
7	1.15%	1.17%	0.67%	1.09%	0.59%	1.36%	0.72%	0.40%
8	-0.10%	-0.03%	-0.17%	-0.90%	-1.19%	-2.97%	-0.88%	-1.28%
9	-0.43%	-0.55%	-0.50%	-0.61%	-1.93%	-3.09%	-3.97%	-2.98%
10	1.91%	2.70%	2.86%	3.84%	4.33%	3.86%	4.14%	4.39%

1.3.10 Utilities (All-Time)

Num Events: 684

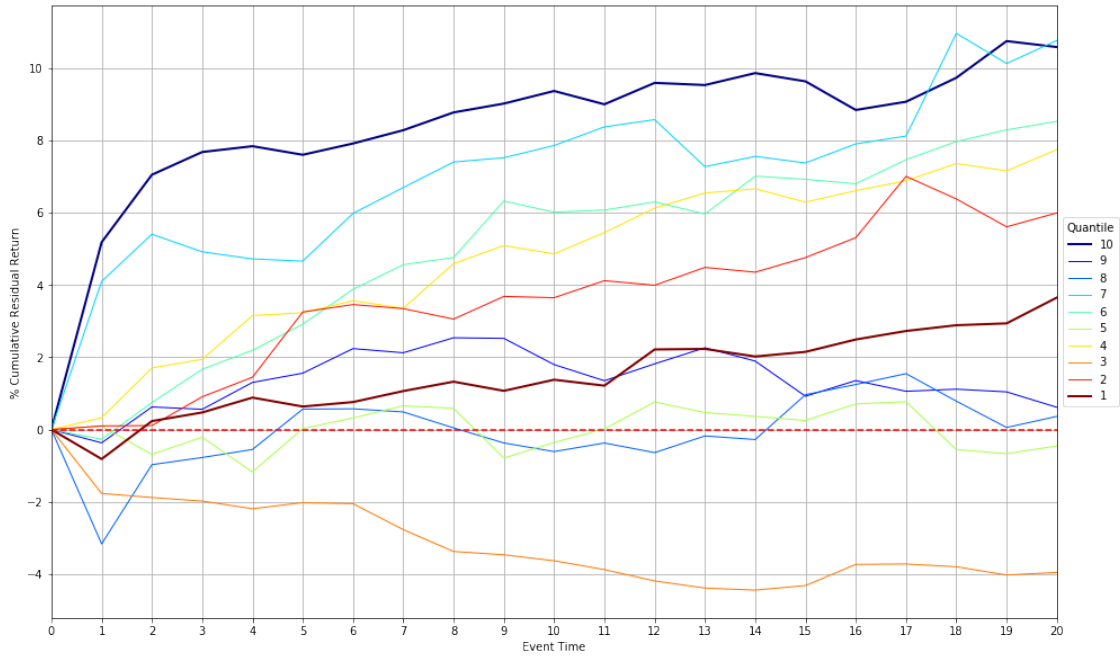


event_time	1	2	3	4	5	10	15	20
quantile								
1	-0.28%	-0.69%	-0.69%	-0.98%	-1.01%	-1.00%	-0.29%	-0.53%
2	-0.05%	0.11%	0.32%	0.26%	0.42%	0.60%	0.74%	0.73%
3	0.07%	-0.01%	-0.26%	-0.33%	-0.41%	-0.66%	-0.78%	-0.75%
4	0.14%	-0.15%	-0.32%	-0.20%	-0.38%	-0.77%	-0.47%	-0.46%
5	0.41%	0.47%	0.45%	-0.04%	-0.12%	-0.73%	-1.00%	-0.94%
6	-0.03%	-0.10%	0.05%	0.28%	0.48%	-0.15%	0.57%	1.19%
7	-0.44%	-0.42%	-0.43%	-0.52%	-0.50%	-0.90%	-0.62%	-0.61%
8	0.07%	-0.34%	-0.41%	-0.36%	-0.73%	-1.62%	-0.57%	-0.23%
9	-0.16%	-0.19%	-0.16%	-0.27%	-0.34%	-0.38%	0.08%	0.50%
10	-0.40%	-0.29%	-0.34%	-0.55%	-0.78%	-1.25%	-0.96%	-0.88%

1.4 Market Cap Analysis

1.4.1 Micro Cap (All-Time)

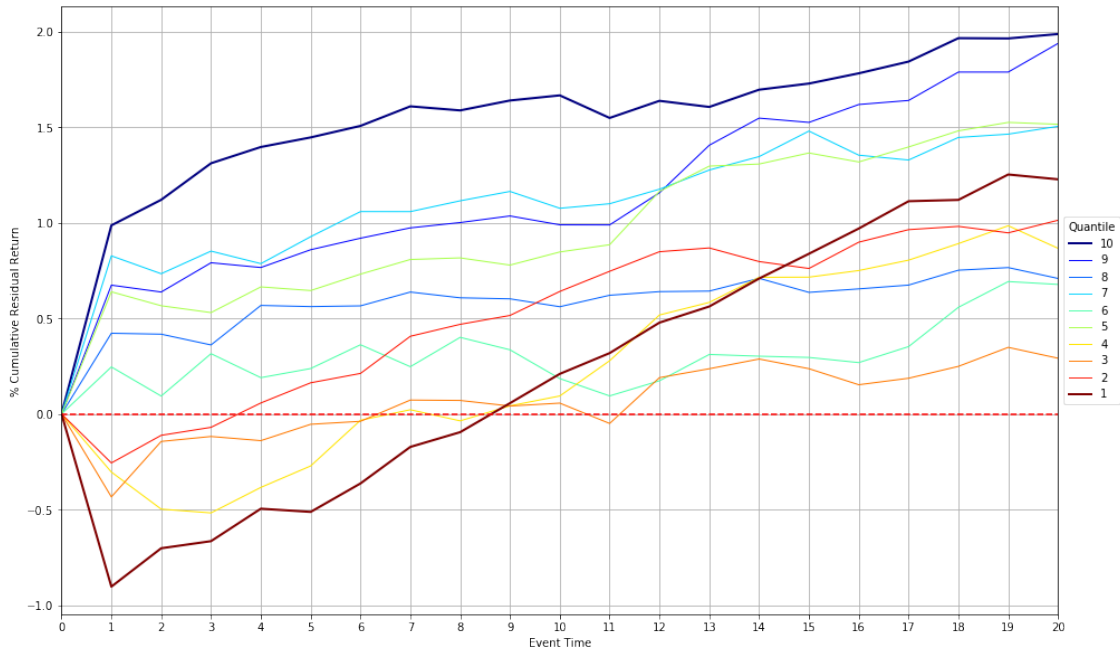
Num Events: 404



event_time	1	2	3	4	5	10	15	20
quantile								
1	-0.82%	0.23%	0.47%	0.88%	0.64%	1.38%	2.15%	3.65%
2	0.10%	0.11%	0.91%	1.45%	3.25%	3.65%	4.76%	5.99%
3	-1.77%	-1.88%	-1.98%	-2.19%	-2.02%	-3.63%	-4.31%	-3.95%
4	0.33%	1.70%	1.94%	3.15%	3.23%	4.86%	6.29%	7.74%
5	0.09%	-0.69%	-0.21%	-1.17%	0.03%	-0.36%	0.25%	-0.45%
6	-0.27%	0.75%	1.67%	2.19%	2.91%	6.01%	6.92%	8.52%
7	4.10%	5.40%	4.92%	4.72%	4.66%	7.86%	7.37%	10.76%
8	-3.16%	-0.97%	-0.77%	-0.55%	0.56%	-0.61%	0.96%	0.36%
9	-0.37%	0.62%	0.56%	1.30%	1.56%	1.80%	0.92%	0.61%
10	5.18%	7.05%	7.67%	7.84%	7.60%	9.36%	9.63%	10.58%

1.4.2 Small Cap (All-Time)

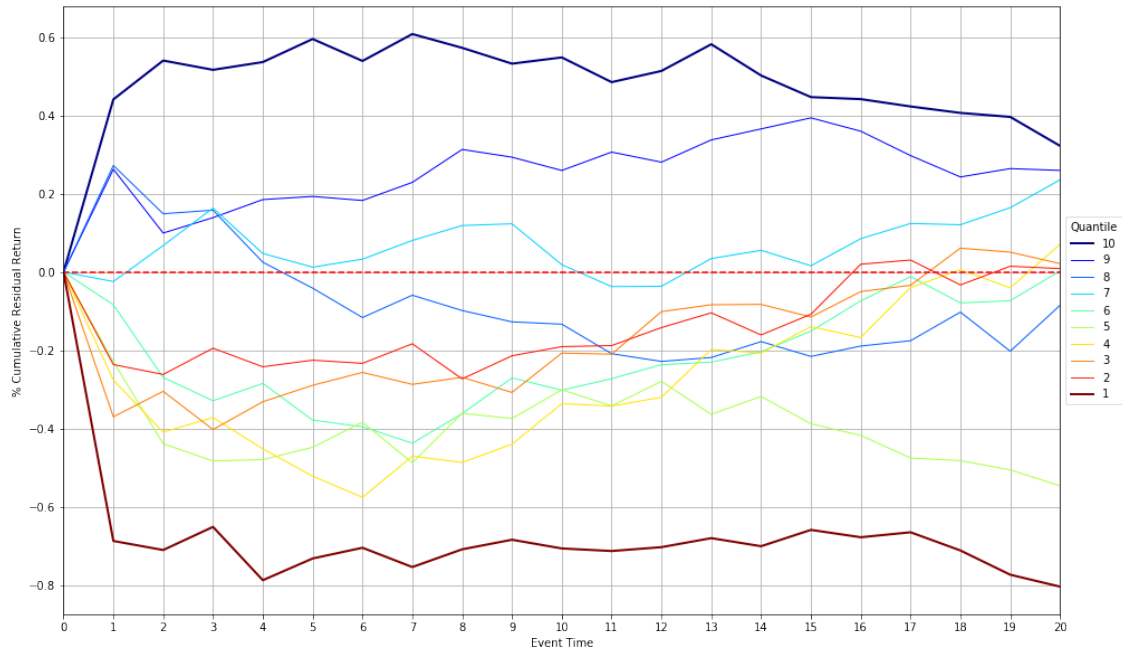
Num Events: 7,909



event_time	1	2	3	4	5	10	15	20
quantile								
1	-0.90%	-0.70%	-0.67%	-0.50%	-0.51%	0.21%	0.84%	1.23%
2	-0.26%	-0.11%	-0.07%	0.06%	0.16%	0.64%	0.76%	1.01%
3	-0.43%	-0.14%	-0.12%	-0.14%	-0.05%	0.06%	0.24%	0.29%
4	-0.30%	-0.50%	-0.52%	-0.38%	-0.27%	0.09%	0.72%	0.87%
5	0.64%	0.57%	0.53%	0.66%	0.65%	0.85%	1.37%	1.52%
6	0.25%	0.09%	0.32%	0.19%	0.24%	0.19%	0.30%	0.68%
7	0.83%	0.73%	0.85%	0.79%	0.93%	1.08%	1.48%	1.51%
8	0.42%	0.42%	0.36%	0.57%	0.56%	0.56%	0.64%	0.71%
9	0.67%	0.64%	0.79%	0.77%	0.86%	0.99%	1.53%	1.94%
10	0.99%	1.12%	1.31%	1.40%	1.45%	1.67%	1.73%	1.99%

1.4.3 Mid Cap (All-Time)

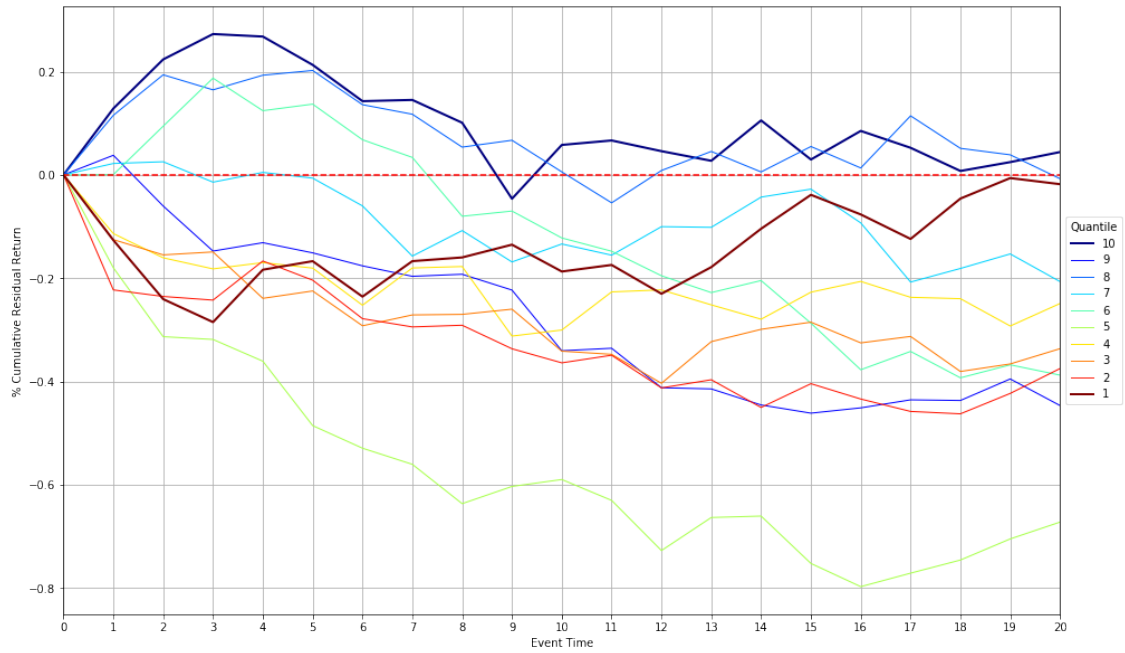
Num Events: 9,323



event_time	1	2	3	4	5	10	15	20
quantile								
1	-0.69%	-0.71%	-0.65%	-0.79%	-0.73%	-0.71%	-0.66%	-0.80%
2	-0.24%	-0.26%	-0.19%	-0.24%	-0.23%	-0.19%	-0.11%	0.01%
3	-0.37%	-0.30%	-0.40%	-0.33%	-0.29%	-0.21%	-0.11%	0.02%
4	-0.28%	-0.41%	-0.37%	-0.45%	-0.52%	-0.34%	-0.14%	0.07%
5	-0.23%	-0.44%	-0.48%	-0.48%	-0.45%	-0.30%	-0.39%	-0.55%
6	-0.08%	-0.27%	-0.33%	-0.28%	-0.38%	-0.30%	-0.15%	0.00%
7	-0.02%	0.07%	0.16%	0.05%	0.01%	0.02%	0.02%	0.24%
8	0.27%	0.15%	0.16%	0.03%	-0.04%	-0.13%	-0.22%	-0.09%
9	0.26%	0.10%	0.14%	0.19%	0.19%	0.26%	0.39%	0.26%
10	0.44%	0.54%	0.52%	0.54%	0.60%	0.55%	0.45%	0.32%

1.4.4 Large Cap (All-Time)

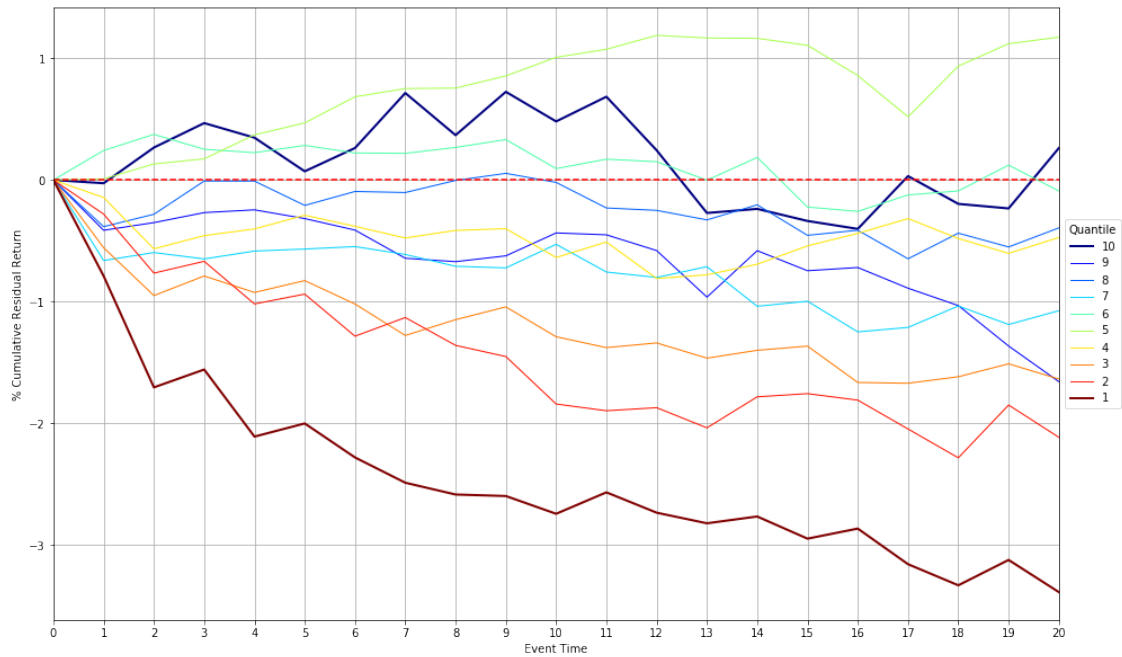
Num Events: 7,014



event_time	1	2	3	4	5	10	15	20
quantile								
1	-0.13%	-0.24%	-0.29%	-0.18%	-0.17%	-0.19%	-0.04%	-0.02%
2	-0.22%	-0.24%	-0.24%	-0.17%	-0.20%	-0.36%	-0.40%	-0.38%
3	-0.13%	-0.15%	-0.15%	-0.24%	-0.22%	-0.34%	-0.29%	-0.34%
4	-0.11%	-0.16%	-0.18%	-0.17%	-0.18%	-0.30%	-0.23%	-0.25%
5	-0.18%	-0.31%	-0.32%	-0.36%	-0.49%	-0.59%	-0.75%	-0.67%
6	0.00%	0.09%	0.19%	0.12%	0.14%	-0.12%	-0.29%	-0.39%
7	0.02%	0.03%	-0.01%	0.00%	-0.01%	-0.13%	-0.03%	-0.21%
8	0.12%	0.19%	0.16%	0.19%	0.20%	0.01%	0.05%	-0.01%
9	0.04%	-0.06%	-0.15%	-0.13%	-0.15%	-0.34%	-0.46%	-0.45%
10	0.13%	0.22%	0.27%	0.27%	0.21%	0.06%	0.03%	0.04%

1.4.5 Mega Cap (All-Time)

Num Events: 298



event_time	1	2	3	4	5	10	15	20
quantile								
1	-0.79%	-1.70%	-1.56%	-2.11%	-2.00%	-2.74%	-2.95%	-3.39%
2	-0.28%	-0.77%	-0.67%	-1.02%	-0.94%	-1.84%	-1.76%	-2.12%
3	-0.56%	-0.95%	-0.79%	-0.92%	-0.83%	-1.29%	-1.37%	-1.64%
4	-0.14%	-0.57%	-0.46%	-0.40%	-0.29%	-0.64%	-0.54%	-0.47%
5	0.01%	0.13%	0.17%	0.37%	0.47%	1.01%	1.11%	1.17%
6	0.24%	0.37%	0.25%	0.22%	0.28%	0.09%	-0.22%	-0.09%
7	-0.66%	-0.60%	-0.65%	-0.58%	-0.57%	-0.53%	-1.00%	-1.07%
8	-0.38%	-0.28%	-0.01%	-0.01%	-0.21%	-0.02%	-0.46%	-0.39%
9	-0.41%	-0.35%	-0.27%	-0.25%	-0.32%	-0.44%	-0.75%	-1.66%
10	-0.03%	0.27%	0.47%	0.35%	0.07%	0.48%	-0.34%	0.26%