
The provided dataset includes HSY which is the closing price of the class A shares of the Hershey company adjusted for stock splits and dividends, as well as similar data for three of Hershey’s competitors in the US chocolate market (CSG, RMCF, and TR). It also includes three proxies for the daily market return (CRSP which is the value weighted return for the Center for Research on Securities Prices which measures a mean return for all securities in the CRSP database weighted by market capitalization, SP500 which is the daily return for the Standard and Poor’s 500, and DJIA which is the daily return for the Dow Jones Industrial Average).

On July 25, 2002 (before the market opened for the day), the trustees who manage the Milton Hershey School Trust, whose portfolio contains all of Hershey’s Class B shares which controls 80 percent of the votes in the Hershey company, asked the company to find a buyer for the trust’s controlling interest. On September 18, 2002, the trust abandoned the sale due to pressure from the state Attorney General’s office (which didn’t want the sale to occur for political reasons).

1. Standard practice in applied finance performs an event study by estimating a market model (where firm returns are taken to be a linear function of a market index) in some period before the event of interest (generally using 100 trading days). This estimated model is then used to predict the return on the event day. Abnormal returns are then calculated as the difference between the observed return for a given day and the predicted return for that day. For the test statistic in the event study, this approach takes the abnormal return for the event day and standardizes it by dividing by the standard deviation of abnormal returns during the estimation period. Use this “standard” approach to determine whether the movements on the day the sale was announced and the day the sale was dropped were statistically significant.

2. Note that between July 25, 2002 and September 18, 2002, there were multiple court actions regarding the proposed sale. Given that, should these days be used to estimate the effect of abandonment of the sale? Why or why not?

3. How can the standard approach be effectively duplicated in a one-step regression approach? Explain intuitively why this one step approach is equivalent to the standard approach. Re-run the event studies from Q1 above to confirm that they yield the same analysis.

4. Is there any basis for preferring any of the market indexes available in the dataset for your analysis? Re-do the sale announcement event study with each of the indexes and observe whether your results are robust to the choice of market index.

5. What problems arise in using the event study approach to determine the statistical significance of your events in a setting like this? Can you think of any solutions?