

An Application of the High-Low Spread Estimator to Daily Event Studies: Stock Splits from 1926-1982

Shane A. Corwin and Paul Schultz
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Corwin and Schultz (2009) derive an estimator for the bid-ask spread based on daily high and low prices. One of the advantages of this spread estimator is that it can be used to produce spread estimates over relatively short time intervals, such as days or weeks. This makes it ideal for analyzing changes in spreads around specific events. Spreads, of course, provide information about the profitability of trading around events. In addition, spreads can be used as a measure of asymmetric information around events. The greater the informational disadvantage of the specialist and other liquidity providers, the wider the spread.

To illustrate this potential application of the estimator, we examine daily high-low spread estimates around stock splits over the period from 1926 to 1982. Notably, this period precedes the availability of intraday data through TAQ or ISSM. A number of previous studies, including Angel (1997), Conroy, Harris, and Benet (1990), and Schultz (2000), examine bid-ask spreads around stock splits and conclude that quoted and effective spreads rise following stock splits. All of these studies examine recent splits, because intraday spread data is unavailable before 1983.

We collect the full sample of stock splits for CRSP stocks from 1926-1982 (CRSP distribution code 5523). We include only those splits that increase shares outstanding by at least 20%. Using the high-low spread estimator, we calculate the cross-sectional average spread on each day from -10 to +10 around the split date. The high-low estimator involves comparing high and low price ranges over a single two-day period with the high-low price range over two one-day periods. In general, we estimate the spread on a particular day around the event by averaging the high-low spread estimates for the two overlapping intervals that include that day. For example, for day -5, we take the average of the spreads estimated over the two-day intervals from -6 to -5 and from -5 to -4. For the day before the split (day -1), we use just the spread estimated from days -2 to -1. For the first post-split day (day +1), we use just the spread estimated from days 0 to 1.

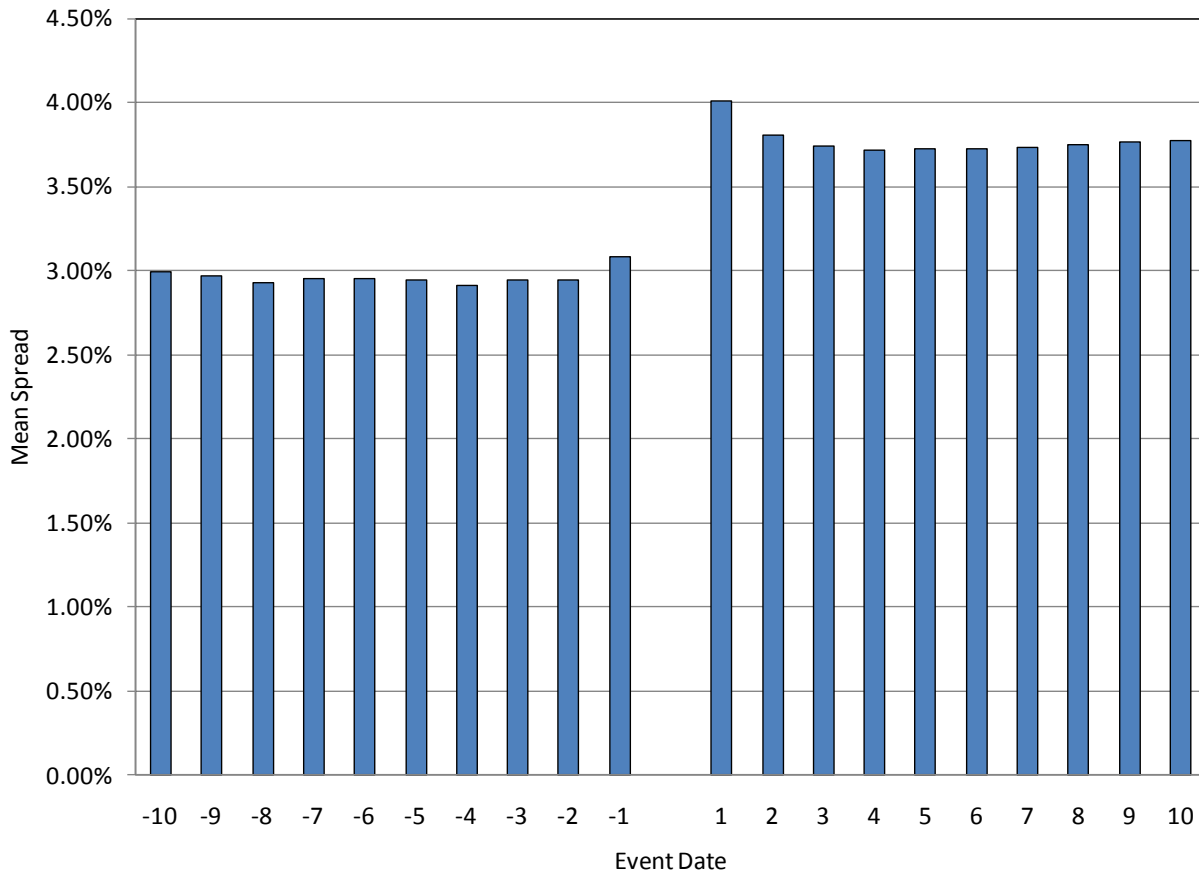
If a stock trades at just one price over a two day period, the high-low estimator for that period is not defined. We could restrict our sample to stocks with spread estimates every day around the split, but that would eliminate the less active stocks from our sample and we are interested in how their trading costs are affected by splits. Instead, we include stocks in our sample even if spreads cannot be estimated every day. Hence the number of cross-sectional observations varies from 2,924 to 3,150 over the 21-day event period, with only one day with less than 3,000 observations. As in Corwin and Schultz (2009),

negative two-day spread estimates are set to zero. However, the conclusions are similar if negative spreads are included.

The results of the event study analysis are depicted in Figure 1. Mean spreads show little variation day-to-day but increase sharply the day following a split. Prior to splits, the mean high-low spread ranges from 2.92% to 3.09%. In the ten days following the split, the mean spread ranges from 3.72% to 4.01%, with the maximum at day +1. Differences between post-split and pre-split spreads (measured from days -15 through -11) are highly statistically significant.

The stock split analysis illustrated here demonstrates the potential usefulness of the high-low spread estimator in measuring changes in trading costs or uncertainty around various events. In particular, this analysis demonstrates how the high-low estimator can be used to analyze spreads at the daily level.

Figure 1 - Average High-Low Spreads Around Stock Splits: 1926-1982



Corwin, Shane A., and Paul Schultz, 2009, A Simple Way to Estimate Bid-Ask Spreads from Daily High and Low Prices, working paper, University of Notre Dame.

http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1106193