Post-Earnings Announcement Drift

Wharton Research Data Services

The purpose of this research application is to provide users with a sample methodology for calculating Earnings Surprises using Compustat and IBES data, and then constructing Post-Earnings Announcement Drift (PEAD) portfolios based on the estimates of earnings surprises.

Post-Earnings Announcement Drift

Post-earnings announcement drift (PEAD) is the tendency for a stock's cumulative abnormal returns to drift in the direction of an earnings surprise for a certain period of time (usually, several weeks) following the earnings announcement date (EAD). It is one of the best-documented and most-resilient capital market anomalies (along with momentum), which was first discovered by Ball and Brown (1968). The academic profession has subjected the drift anomaly to a battery of tests both in the US and abroad (Booth et al., 1996; Liu et al., 2003), but a rational, economic explanation for the drift remains elusive (Kothari, 2001).

This application follows the methodology outlined in Livnat and Mendenhall (JAR, 2006). Specifically, Compustat-based Earnings Surprise is based on the assumption that EPS follows a seasonal random walk, where the best expectation of the EPS in quarter t is the firm's reported EPS in the same quarter of the previous fiscal year. Hence, Compustat-based SUE1 is defined as follows:

$$SUE1_{jt} = \frac{X_{jt} - X_{jt-4}}{P_{jt}}$$

where X_{jt} is primary Earnings Per Share (EPS) before extraordinary items for firm j in quarter t , and P_{jt} is the price per share for firm j at the end of quarter t from Compustat. X_{jt} and P_{jt} are unadjusted for stock splits, but X_{jt-4} is adjusted for any stock splits and stock dividends during the period {t-4, t} using Compustat adjustment factor (AJEXQ). Depending on whether majority of analyst EPS forecasts are based on primary or diluted basis, we use Compustat's primary (EPSPXQ) or diluted (EPSFXQ) EPS figures in place of X_{jt} . To link Compustat and IBES, the application relies on 3 building blocks:

1) WRDS Link b/w CRSP Permno and IBES ticker with scores indicating accuracy of the match

2) CRSP-Compustat Merged product that provides a historical link between CRSP PERMCO/PERMNO and Compustat GVKEY

3) Header link between Compustat GVKEY and IBES Ticker (IBTIC) provides by Compustat in its SECURITY table.

Due to the fact that EPS reported in Compustat and IBES may differ due to the fact that Compustat's earnings are based on GAAP, but IBES reports "street" measures of earnings, we also calculate an alternative measure of earnings surprise, SUE2. It excludes special items from the Compustat reported actual and should be more closely aligned with the "street" reported actuals in IBES (Abarbanell and Lehavy (2002)). Special items in Compustat are defined as unusual or nonrecurring items and include, among other things, restructuring charges, asset impairments, M&A charges, nonrecurring profits or losses on sale of assets, and investments. To estimate SUE2, we subtract from the Compustat reported actual EPS the amount of special items (SPIQ) times 65%, divided by the number of shares used to calculate primary EPS (CSHPRQ) or diluted EPS (CSHFDQ) (the latter is used if most analyst predict diluted EPS; see Bradshaw and Sloan (2002) for more details on treatment of special items and justification on using "65%" factor).

Ideally, researchers would want to use Compustat Unrestated Quarterly (aka "As First Reported") data to estimate the earnings surprises and the magnitude of the drift. This application relies, however, on what most WRDS users have subscription to, Compustat Quarterly Restated data. This decision is justified by the fact that that restatements were found to have a very small effect on estimates of the drift (see Livnat and Mendenhall (2006), pp. 188). However, users with subscriptions to Compustat Unrestated data can easily modify the code to use "As First Reported" data instead of restated Compustat to more accurately estimate the Compustat-based earnings surprises.

The third IBES-based measure of earnings surprises, SUE3, is defined similarly to Compustat's SUE1, except X_{jt-4} and X_{jt} are replaced with a measure of analyst's expectations and IBES reported actual "street" earnings, respectively. The measure for analysts' expectations is the median of latest individual analysts forecasts issued within the 90 days prior to the EAD. In constructing IBES-Based earnings surprises (SUE3), the program uses IBES Unadjusted Detail History that does not have adjustments for stock splits and stock dividends. This is done to avoid the potential rounding issues in IBES Adjusted data described in Payne and Thomas (2003) (see more on this in the WRDS "Note on IBES Unadjusted Data). IBES Unadjusted data are rounded to 4 decimals and allows researchers to create their own split-adjusted forecasts and actuals without having to round to the nearest penny. The program shows users how to apply CRSP adjustment factor to put both the forecast and the actual in the IBES Unadjusted data on the same per share basis and to accurately calculate analyst-based SUE.

For all EADs that fall on non-trading days, the program adjusts them to the closest trading day using CRSP trading calendar derived from DSI file. This ensures that no earnings announcements are omitted from the sample unless they have a missing return in CRSP. Note that the application can be easily modified to use the returns data from Compustat. This will add to the analysis those firms that report their earnings in Compustat, but happen to list their stock outside of the exchange domain covered by CRSP (i.e., NYSE, AMEX, NASDAQ and ARCA). See the WRDS Research Application on Market-to-book ratio to get an idea of how many firms may be excluded from the analysis when a user uses CRSP returns as opposed to Compustat's security data.

For the sake of brevity and transparency, to gauge the performance of the PEAD portfolios we use abnormal returns (EXRET) defined as returns in excess of CRSP Value-weighted index, but researchers can plug in their own definitions of abnormal returns (e.g., either using DGTW characteristic-based adjustment or CARs/BHARs from running an event study).

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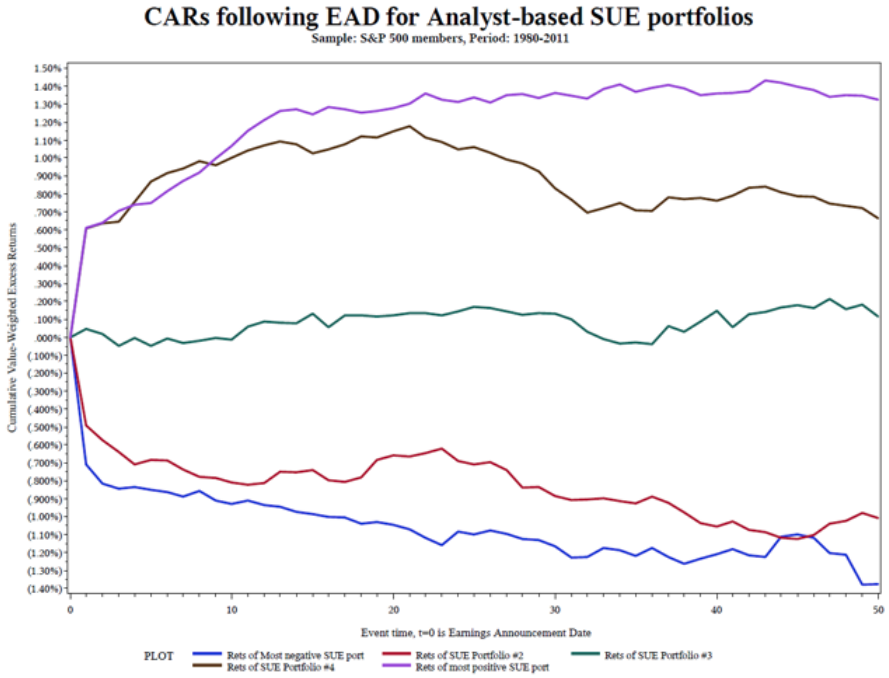
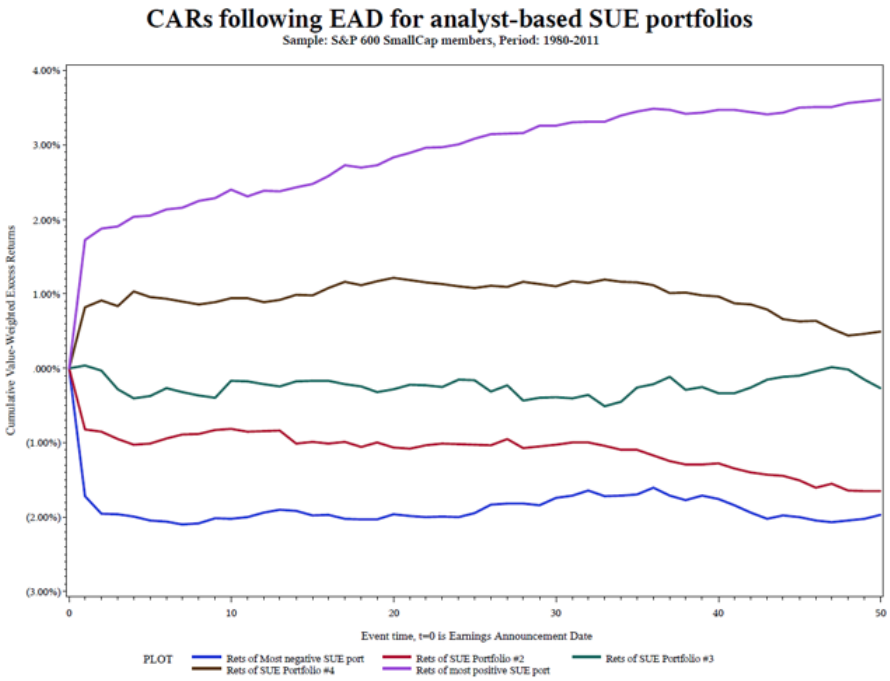
Results

The graph below shows the performance of PEAD portfolios formed based on SUE3 (analyst forecast-based) measure from day 0 (the day of the announcement) to the day +50 following the EAD for two sample of firms, one that contains firms that were members of S&P 500 index (generally, large cap stocks) at least once and another that contains firms that were members of S&P 600 Small Cap index at least once, and announced their earnings between Jan 1980 and June 2011.

S&P 500 firms



S&P 600 SmallCap firms

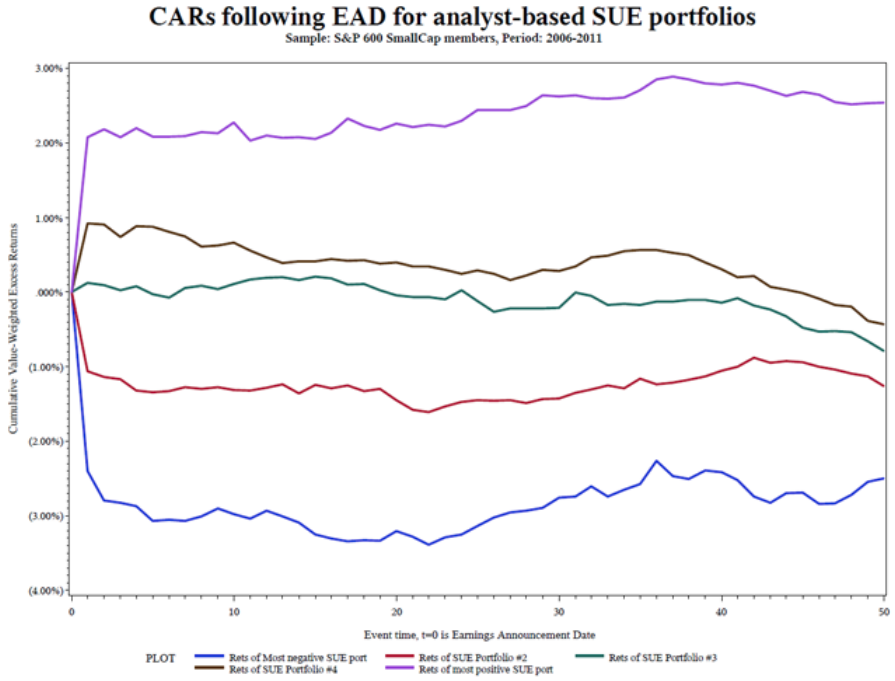


The evidence in the graphs is consistent with several stylized facts regarding the PEAD:

1. Abnormal returns to PEAD are concentrated in the period surrounding EAD for both large and small stocks. For instance, the CARs are -0.816% for the bottom and 0.637% for the top SUE3 portfolios in the first two days after EAD for a sample of S&P 500 firms.
2. Long side of PEAD strategy performs better than the short-side for analyst-based SUE (Doyle, Lundholm and Soliman, 2006). For a sample of S&P 500 firms, the total CAR [+2,+50] for top and bottom SUE quintile portfolios are 0.721% and -0.672%, respectively. This fact is even more

pronounced within the small cap universe, where you can see that abnormal returns are relatively flat for the bottom SUE portfolio starting from day +3 and steadily rising from around +2% to roughly 3.5% for the top SUE portfolio. Interestingly, when the sample is restricted to just 2006-2011, the time when the number of quantitative investment firms trading on PEAD increased substantially, the short-side of the strategy seemed to deliver greater abnormal returns compared with the long side.

3. PEAD anomaly is generally larger among smaller, lower-priced firms (Mendenhall, 2004). Indeed, the difference in CARs during [+2,+50] period accrued to zero-cost investment portfolio formed at the beginning of day +2 which is long top SUE quintile of stocks and short bottom quintile of stocks is 1.4% for S&P 500 firms and 1.9% for small cap stocks in S&P 600 SmallCap index.
4. Last, but not least, it appears that drifts diminished substantially in magnitude (i.e., most of the market reaction happens during the first day after the EAD) in the recent part of the sample (see the graph below). At least, this seems to be the case for the smaller stocks, where abnormal return lines are relatively flat from day 3 onwards both for the top and bottom SUE quintile portfolios.



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Link to Post-Earnings Announcement Drift (CIZ format)

- Post-Earnings Announcement Drift (CIZ format)

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References

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