The Impact of Earnings Surprises on Post-Announcement Drift in U.S. Equities

Abstract

This study investigates the phenomenon of post-earnings announcement drift (PEAD) in the U.S. equities market by examining the relationship between earnings surprises and subsequent stock price behavior. Using a dataset of quarterly earnings announcements for S&P 500 companies from 2018 to 2023, we quantify earnings surprises and analyze cumulative abnormal returns (CARs) over various event windows. The findings support the existence of PEAD and show that larger surprises are generally associated with stronger subsequent abnormal returns. This suggests a delayed market response to earnings information.

Background

Post-earnings announcement drift refers to the tendency of stock prices to continue moving in the direction of an earnings surprise for a period after the announcement. This phenomenon challenges the efficient market hypothesis (EMH), which asserts that prices should immediately reflect all available information. Prior literature documents the drift effect, but it remains an area of active research due to evolving market structures and trading behavior.

Data

- **Universe**: Big Tech Companies (AAPL, NVDA, GOOGL, PLTR) but can be altered
- **Period**: Q1 2018 to Q4 2023
- **Sources**: Earnings data from financial statement releases and consensus analyst forecasts; daily stock prices from Yahoo Finance; market returns from S&P 500 index.
- **Sample filtering**: Observations with missing data or extreme returns were excluded. The top and bottom 5% of CARs were removed to mitigate outlier influence.

Methodology

1. **Earnings Surprise Calculation**:
   - Surprise = (Actual EPS - Expected EPS) / Price prior to announcement (calculated via native function)
2. **Abnormal Return (AR)**:
   - AR = Stock Return - Market Return (daily)
3. **Cumulative Abnormal Return (CAR)**:
   - CARs calculated over event windows: [0, +1], [0, +5], [0, +10], etc.
4. **Regression Analysis**:
   - Model: CAR_i = alpha + beta * Surprise_i + epsilon
   - Run across different event windows
5. **Outlier Removal**:
   - Winsorized CAR values at 5th and 95th percentile.

Results

Plots:

- **Earnings Surprise Distribution**: Bell-shaped, slight positive skew.
- **CAR vs Earnings Surprise (Scatter)**: Positive slope, increasing variance with surprise size.
- **Average CAR by Surprise Quintile**: Monotonic increase from lowest to highest quintile.

Regression Table (Event Window: [0, +5]):

Variable	Coefficient	Std. Error	t-Statistic	p-Value
Intercept	0.0012	0.0003	4.00	<0.01
Surprise	0.0489	0.0071	6.89	<0.001

Similar significant positive coefficients are found across event windows [0, +1], [0, +5], and [0, +10].

Interpretation & Limitations

The analysis demonstrates a clear link between earnings surprises and post-announcement abnormal returns, reaffirming the existence of PEAD. However, several limitations exist:

- **Data quality**: Analyst expectations are approximated, and not all are consensus-based.
- **Market adjustments**: Macro events and sector-specific news may confound results.
- **Model simplicity**: Linear regression doesn't account for potential non-linearities or cross-sectional factors like firm size or momentum.

Future work can extend the model to include firm-level controls and test for persistence across different economic cycles.

This document serves as the final deliverable for the PEAD research project, and will be uploaded to the GitHub repository along with the supporting code and visualizations.