PRE- AND POST-MARKET TRADING FOR US STOCKS:

Are You Missing Out on Liquidity?

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Bloomberg Tradebook

Summary

For U.S.-listed stocks, a significant percentage of the day's volume trades are done in the pre-open and post-close sessions during earnings releases and other high-profile events. Below, we present some statistics that demonstrate that such events are not only associated with higher-than-average volume but also have significant price moves associated with them. These price moves are indicative of market-moving information and that the trading that transpires before the market open on the next day goes toward capturing a significant part of this move. We also believe that traders should not miss out on this volume and should employ tactical algorithms to trade intelligently in the post-close and pre-open time frame.

Pre- and Post-Market Trading Times

For U.S. equities, the time frame of 4 AM to 9:30 AM before the market officially opens (Continuous Trading) is considered pre-open and the 4 PM to 8 PM time frame is considered post-close.

Table 1. U.S. Market Hours Matrix

Exchange	Begin Order Acceptance	Pre-Market Trading	Regular Trading	Post Close Session
BATS	6 AM to 8:00 AM	8:00 AM to 9:30 AM	9:30 AM to 4 PM	4:00 PM to 5:00 PM
BATS Y	6 AM to 8:00 AM	8:00 AM to 9:30 AM	9:30 AM to 4 PM	4:00 PM to 5:00 PM
EDGA	6 AM to 8:00 AM	8:00 AM to 9:30 AM	9:30 AM to 4 PM	4:00 PM to 8:00 PM
EDGX	6 AM to 8:00 AM	8:00 AM to 9:30 AM	9:30 AM to 4 PM	4:00 PM to 8:00 PM
NYSE	-	-	9:30 AM to 4 PM	-
ARCA	3:30 AM to 4 AM	4 AM to 9:30 AM	9:30 AM to 4 PM	4:00 PM to 8:00 PM
NYSE MKT	-	-	9:30 AM to 4 PM	-
NASDAQ	-	4 AM to 9:30 AM	9:30 AM to 4 PM	4:00 PM to 8:00 PM
Tradebook (B-Smart Algo)	-	4 AM to 9:30 AM	9:30 AM to 4 PM	4:00 PM to 6:30 PM
Tradebook (ETF Blocks)	-	8:30 AM to 9:30 AM	9:30 AM to 4 PM	4:00 PM to 5:00 PM

Pre– and Post-Market Volume Statistics

To summarize the characteristics of trading in these sessions, we sampled 500 tickers from the Russell 3000 with equal representation across the market capitalization spectrum. We compute pre-open and post-close market share as a percent of daily volume and group stocks using an average 30-day daily volume number. In Table 2, we show data for selected percentile groups for ease of display. For example, a highlighted column in Table 2, Figure 1 shows that for Average Daily Volume (ADV) greater than 10M shares, pre- and post-market volume account for about 8% of the daily volume. And this happens on 5% of the days in the year—or about once a month. This represents significant trading volume and is not just an earnings-day release characteristic.

Table 2. Percent of Market Volume Traded in Pre- and Post-Market Sessions
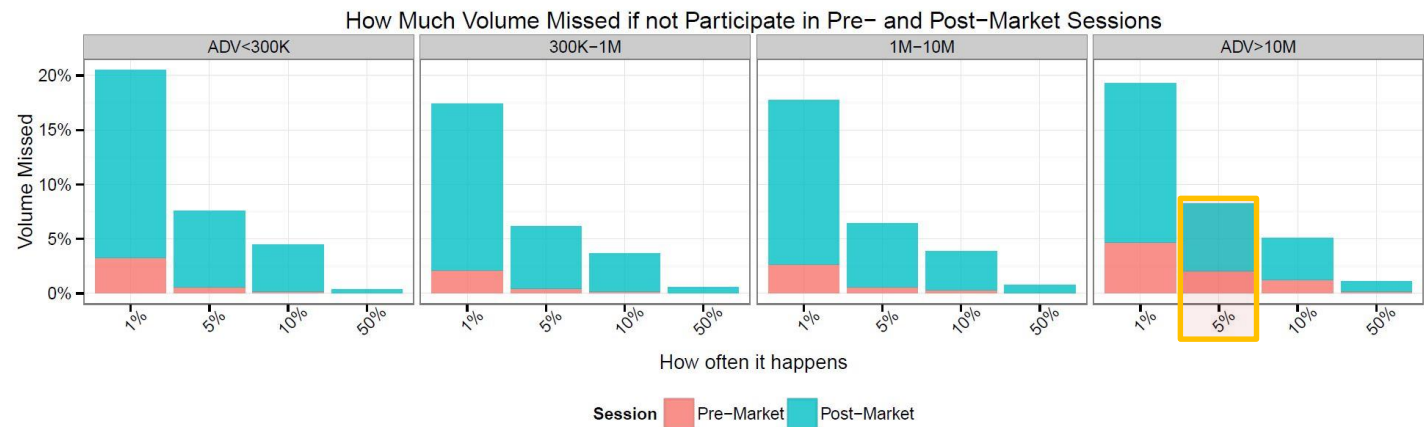

Table 2, Figure 1

In Table 2, Figure 2, we display price moves associated with these volumes; in the smallest of volume events, significant (in the order of multiples of 100bps) price moves are observed.
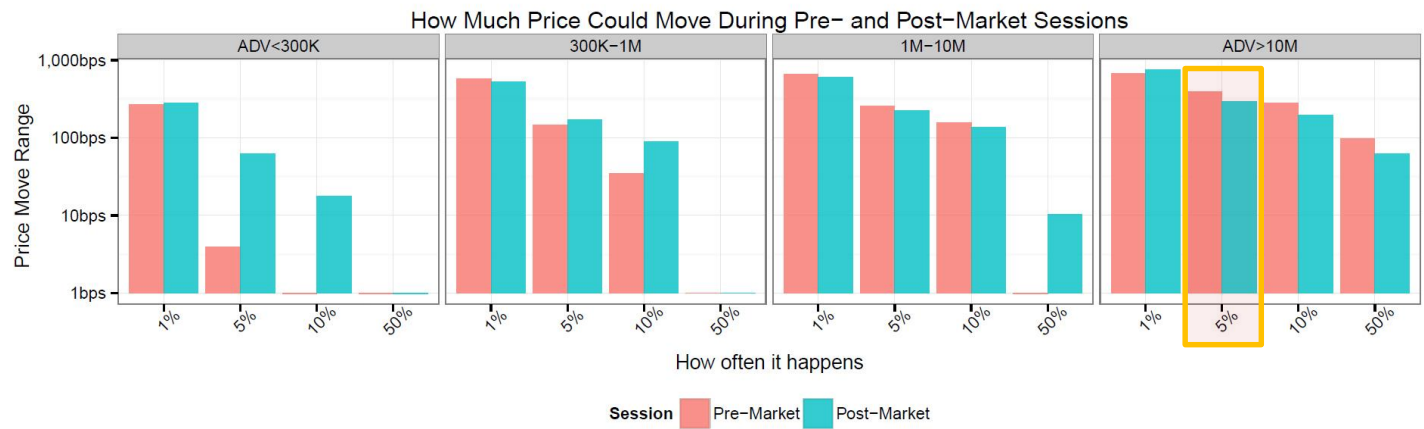

Table 2, Figure 2

Figure 3 shows an example of pre-open and post-close trading on a intraday price chart using the Bloomberg Professional® service. For this ticker, JC Penney, we observe a 17% jump in after-hours trading associated with about 64% of the Average Daily Volume (7.1M shares in the post-close session and 6.34M shares in the next day pre-open session). Although some might point to this trading being conducted in the upstairs market, only 17.4% of this activity was indicated on the TRFs, with the other 82.6% taking place on the exchanges, with NYSE ARCA trading 6.49MM shares before next day's official market open. Traders could have participated with this volume using tactical algorithms such as Bloomberg Tradebook's B-Smart algorithm.

Figure 3

Does Pre- and Post-Market Trading Provide Adequate Price Discovery Before the Next Session of Continuous Trading?

We examine the same dataset to understand price discovery in the post-close and the following pre-open session before the official open of the (Primary) exchange. For all tickers and days, we plot the trading range (High–Low, normalized by close price, measure of volatility) in the post-close to official open (includes pre-open) against the following day continuous trading range in Figure 4. This is broken down by Average Daily Volume groups denoting least-liquid (ADV < 300K shares) to most-liquid (ADV > 10M shares) sub-plots. Consider the sub-plot indicating ADV 300K–1M stocks, an increase in off-market session volatility associated with a corresponding increase in next day continuous trading volatility. This indicates that the potential information event has not been fully digested and incorporated into the pre- and post-market sessions. Trading activity persists at a higher-than-average rate of volatility as indicated by continuous session trading range. This indicates that market participants continue to price the event into the next day. However, for the most-liquid stocks (ADV > 10M), we see two different types of behaviour.

We observe a significant negative slope line segment (highlighted in orange-framed box) when off-market session volatility is relatively low, and a positive slope line segment (highlighted in blue-framed box) when off-market session volatility is relatively high. In the first scenario, when off-market session volatility is low, which might be caused by a mild after-hours event, off-market trading activity

is efficient enough to digest the information content of such mild event and establish an equilibrium price even before the next continuous trading session starts. In this scenario, the more intense the trading activity is before market open, the less undigested information is left for the continuous trading, thus we observe the negative relationship between off-market volatility and next continuous trading volatility as highlighted in the orange-framed box. In fact, Figure 4 is an example of this scenario. In the second scenario, when off-market session volatility is high, which might be caused by a significant after-hours event, off-market trading activity is no longer capable of digesting all information. Market participants have to follow the intensive trading process into the continuous trading session until a consensus is reached about the equilibrium price. In this scenario, the higher the off-market session volatility, the more undigested information is left to the next continuous trading session to resolve, which causes higher volatility in the next continuous trading session. Thus, we observe the positive relationship between off-market volatility and next continuous trading volatility as highlighted in the blue-framed box.
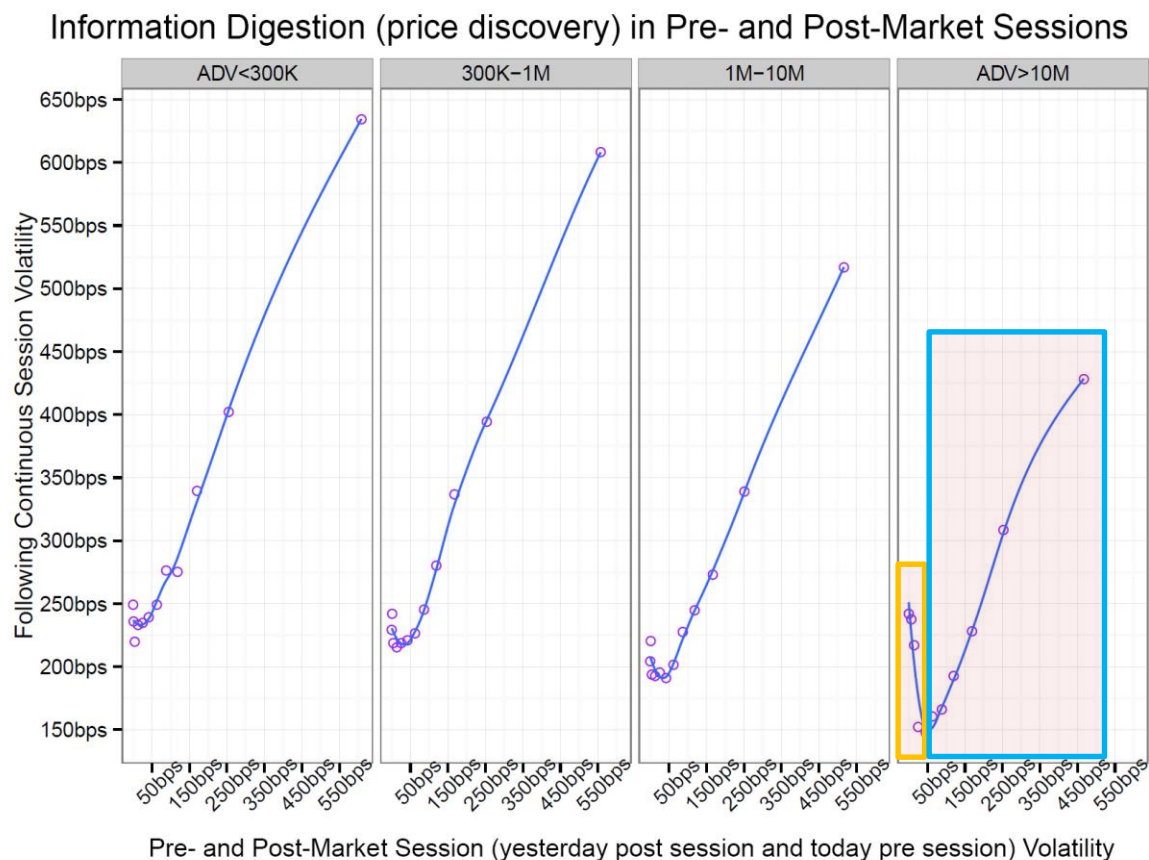

Figure 4

Algorithms for Pre- and Post-Market Trading

Limit orders can work in pre-open or post-close trading but have limitations: potentially giving up too much information or needing a lot of hand-holding and watching. Traders should use algorithms that adjust based on real-time information in the pre-/post-sessions. Tradebook, for example, has order types that are available for trading at 4 in the morning and that utilize real-time information with historical venue market share to engage all the smart features an order type would use in continuous

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trading. Tradebook's B-Smart algorithm, for example, lets a trader enter the shares and an urgency level; it will then completely manage pegging, auto-adjust display and hidden amounts, intelligently creating synthetic limit prices for layering the order book all on its own. This also works for Market Orders, although it requires that at least a bid and ask offer be in the market. B-Smart offers a purely hidden-only mode called Hide&B-Smart for less-liquid names. In Figure 5, we present some statistics for these order types—demonstrating the use of these tactical smart order types. The relative average order size is set at 100% for the average limit order. This shows that traders using tactical algorithms such as B-Smart Aggressive are able to enter a much larger order size into the algorithm because the algorithm will, in turn, slice the order intelligently for them.

Data 2015 YTD (10/26/15)	Pre-Session		Post-Session	
Order Type	Relative Average Order Size (Shares)	Participation Amount (%)	Relative Average Order Size (Shares)	Participation Amount (%)
Hide&B-Smart Aggressive	450%	59	142%	75
B-Smart Aggressive	342%	48	54%	66
Limit Order	100%	41	100%	64
Hide&B-Smart Normal	913%	38	184%	46
B-Smart Normal	714%	33	180%	32
Hide&B-Smart Passive	474%	25	273%	7
B-Smart Passive	325%	23	11%	4

Figure 5

Trading after the close and before the open is not trivial. Figure 6 shows the average spread (top plot) and the average BID/ASK size in the pre-open and post-close sessions for a single stock (NFLX). The spread and the NBBO sizes vary greatly over time and, hence, make the trading experience using direct LIMIT orders difficult to calibrate. B-Smart and its variations will account for variations in spread vs. average spread and size vs. average BID/ASK size in real-time trading and display an amount that hides the intention of the order.

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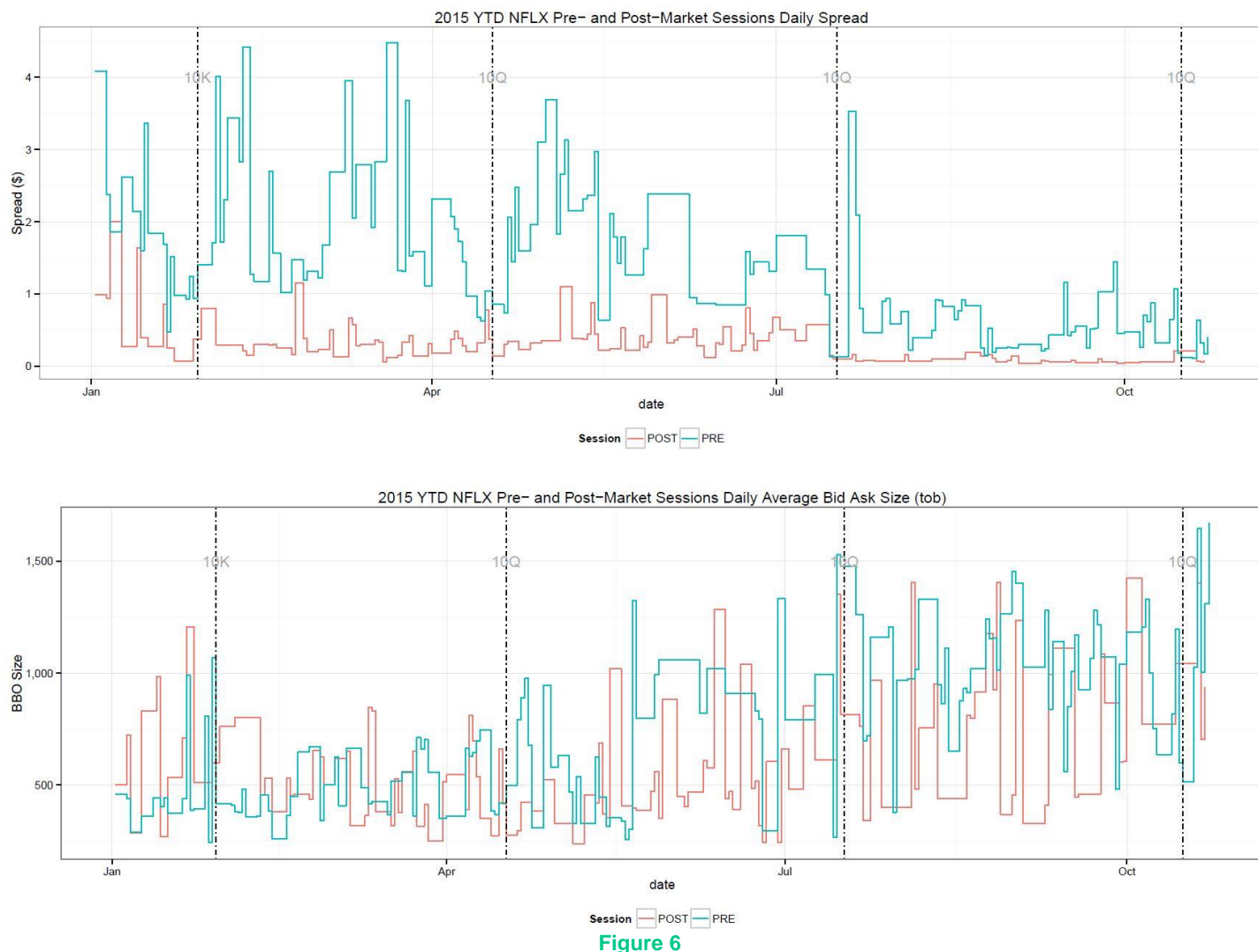

Figure 6

Getting Pre- and Post-Market Information on The Bloomberg Professional® service

Bloomberg Terminal functions are available to monitor the earnings report season. Here we highlight a few of them:

Earnings Analysis EA <GO>
EA provides a snapshot of aggregated company earnings for a selected group of securities, including data for both Sales and Earnings market measures. It also provides aggregated Sales and Earnings surprise and associated price change. Figure 7 shows the snapshot of earnings reporting for Russell 3000 Index. As of October 26, 2015, 656 (or roughly 22%) tickers have released earnings reports, with. 2,329 tickers' earnings reports yet to come in this busy season. This information, once available, might or might not cause significant price reactions.
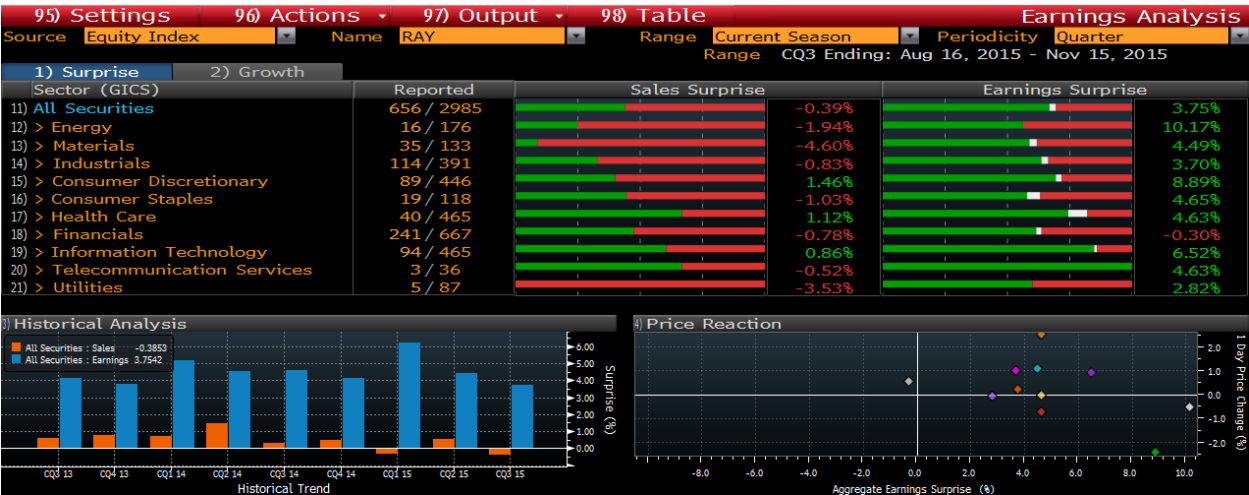
Pre- and Post-Market Trading For US Stocks

Figure 7

Events Calendar EVTS <GO>

EVTS displays a calendar of corporate events and corresponding details so you can keep abreast of the upcoming earnings reporting events. Figure 8 shows the most recent 20 upcoming events for Russell 3000 Index component tickers. The majority of them are scheduled in the morning before market open. To better follow up on these events, alerts can be set up in EVTS as well in the Actions tab.
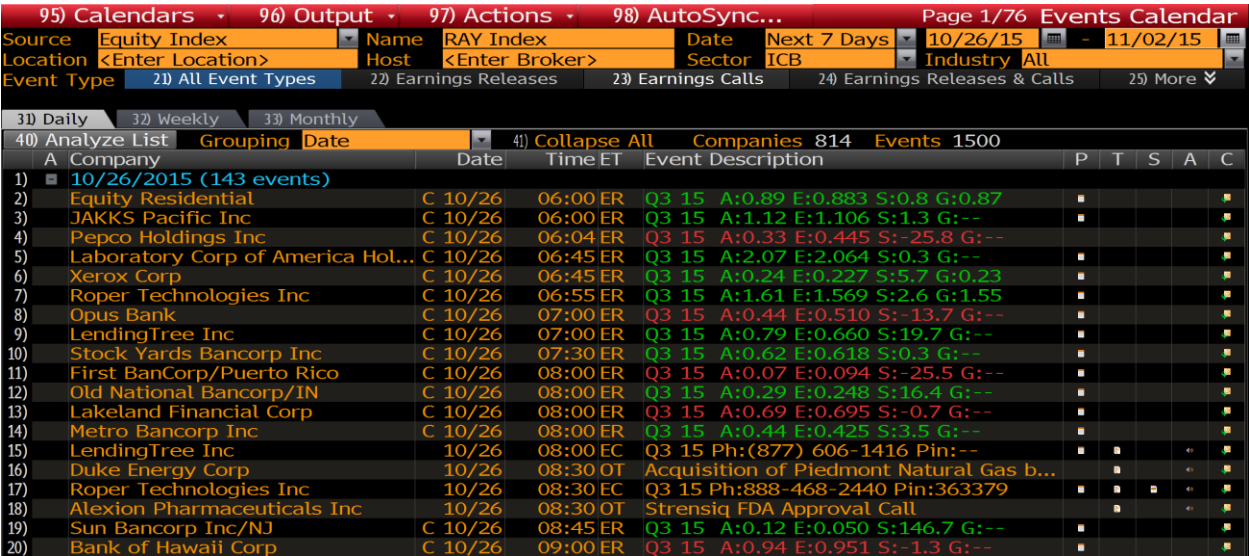

Figure 8

Pre and Post Market Trading Chart

The Bloomberg Intraday Price chart can be customized to show pre and post market trading.
Example AAPL <Equity> GIP PRE <GO> and AAPL <Equity> GIP POST <GO>.

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Appendix

Exchange Hours links

- https://www.nyse.com/markets/hours-calendars
- https://www.batstrading.com/support/hours/
- http://www.nasdaq.com/about/trading-schedule.aspx

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