An Automated Trading Strategy Using Triad IPO & Secondary Issue Data

By: The Deltix Quantitative Research Team

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Summary

This research study examines data pertaining to company IPOs and secondary issues ("Secondaries") provided by Triad Securities (Triad). Triad specializes in collecting publicly available IPO and Secondaries data, which it augments with their own custom data. It delivers the data and events affecting the data as reports to clients, which are all time stamped and thus available for back-testing.

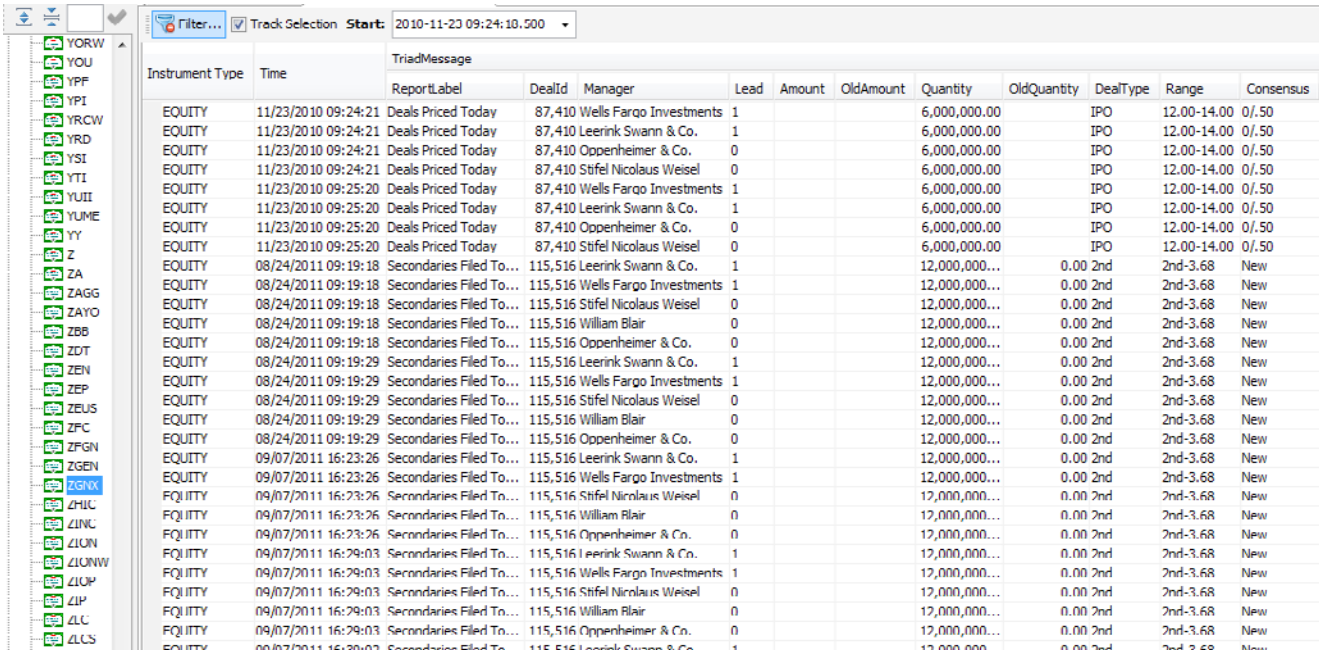
The purpose of the research described here is to determine if there are opportunities to generate alpha in US equities, using Triad data as a basis for market movement prediction after IPO events or after Secondaries pricing.

We started by loading Triad data and associated market data for over 1000 US stocks into Deltix TimeBase, for the period Jan 1, 2008 to December 31, 2015. Then we developed, tested and refined candidate trading strategies in Deltix QuantOffice. The strategies were back-tested on in-sample data for the years 2008-2014, while 2015 data was included for out-of-sample testing.

For the first strategy, based on Triad Consensus data on IPOs, we entered long or short positions one week after the IPO. For the second strategy, based on Triad Consensus data for Secondaries, we entered long positions only but hedged with the SPY ETF. Back-testing showed that the two strategies (the first for IPOs, the second for Secondaries) had Sharpe Ratios of 2.11 and 2.73 with average profits per share of $0.20 and $0.09 respectively for the eight years of 2008 to 2015.

Triad IPO and Secondaries Data

The Triad data set contains numerous attributes and date-stamped modifications of those attributes (see Annex). An example of the data after loading into TimeBase is shown below:



Filter... Track Selection Start: 2010-11-23 09:24:10.500

Instrument Type	Time	TriadMessage										
		ReportLabel	DealId	Manager	Lead	Amount	OldAmount	Quantity	OldQuantity	DealType	Range	Consensus
EQUITY	11/23/2010 09:24:21	Deals Priced Today	87,410	Wells Fargo Investments	1			6,000,000.00		IPO	12.00-14.00	0/.50
EQUITY	11/23/2010 09:24:21	Deals Priced Today	87,410	Leerink Swann & Co.	1			6,000,000.00		IPO	12.00-14.00	0/.50
EQUITY	11/23/2010 09:24:21	Deals Priced Today	87,410	Oppenheimer & Co.	0			6,000,000.00		IPO	12.00-14.00	0/.50
EQUITY	11/23/2010 09:24:21	Deals Priced Today	87,410	Stifel Nicolaus Weisel	0			6,000,000.00		IPO	12.00-14.00	0/.50
EQUITY	11/23/2010 09:25:20	Deals Priced Today	87,410	Wells Fargo Investments	1			6,000,000.00		IPO	12.00-14.00	0/.50
EQUITY	11/23/2010 09:25:20	Deals Priced Today	87,410	Leerink Swann & Co.	1			6,000,000.00		IPO	12.00-14.00	0/.50
EQUITY	11/23/2010 09:25:20	Deals Priced Today	87,410	Oppenheimer & Co.	0			6,000,000.00		IPO	12.00-14.00	0/.50
EQUITY	11/23/2010 09:25:20	Deals Priced Today	87,410	Stifel Nicolaus Weisel	0			6,000,000.00		IPO	12.00-14.00	0/.50
EQUITY	08/24/2011 09:19:18	Secondaries Filed To...	115,516	Leerink Swann & Co.	1			12,000,000...	0.00	2nd	2nd-3.68	New
EQUITY	08/24/2011 09:19:18	Secondaries Filed To...	115,516	Wells Fargo Investments	1			12,000,000...	0.00	2nd	2nd-3.68	New
EQUITY	08/24/2011 09:19:18	Secondaries Filed To...	115,516	Stifel Nicolaus Weisel	0			12,000,000...	0.00	2nd	2nd-3.68	New
EQUITY	08/24/2011 09:19:18	Secondaries Filed To...	115,516	William Blair	0			12,000,000...	0.00	2nd	2nd-3.68	New
EQUITY	08/24/2011 09:19:18	Secondaries Filed To...	115,516	Oppenheimer & Co.	0			12,000,000...	0.00	2nd	2nd-3.68	New
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EQUITY	08/24/2011 09:19:29	Secondaries Filed To...	115,516	Wells Fargo Investments	1			12,000,000...	0.00	2nd	2nd-3.68	New
EQUITY	08/24/2011 09:19:29	Secondaries Filed To...	115,516	Stifel Nicolaus Weisel	0			12,000,000...	0.00	2nd	2nd-3.68	New
EQUITY	08/24/2011 09:19:29	Secondaries Filed To...	115,516	William Blair	0			12,000,000...	0.00	2nd	2nd-3.68	New
EQUITY	08/24/2011 09:19:29	Secondaries Filed To...	115,516	Oppenheimer & Co.	0			12,000,000...	0.00	2nd	2nd-3.68	New
EQUITY	09/07/2011 16:23:26	Secondaries Filed To...	115,516	Leerink Swann & Co.	1			12,000,000...	0.00	2nd	2nd-3.68	New
EQUITY	09/07/2011 16:23:26	Secondaries Filed To...	115,516	Wells Fargo Investments	1			12,000,000...	0.00	2nd	2nd-3.68	New
EQUITY	09/07/2011 16:23:26	Secondaries Filed To...	115,516	Stifel Nicolaus Weisel	0			12,000,000...	0.00	2nd	2nd-3.68	New
EQUITY	09/07/2011 16:23:26	Secondaries Filed To...	115,516	William Blair	0			12,000,000...	0.00	2nd	2nd-3.68	New
EQUITY	09/07/2011 16:23:26	Secondaries Filed To...	115,516	Oppenheimer & Co.	0			12,000,000...	0.00	2nd	2nd-3.68	New
EQUITY	09/07/2011 16:29:03	Secondaries Filed To...	115,516	Leerink Swann & Co.	1			12,000,000...	0.00	2nd	2nd-3.68	New
EQUITY	09/07/2011 16:29:03	Secondaries Filed To...	115,516	Wells Fargo Investments	1			12,000,000...	0.00	2nd	2nd-3.68	New
EQUITY	09/07/2011 16:29:03	Secondaries Filed To...	115,516	Stifel Nicolaus Weisel	0			12,000,000...	0.00	2nd	2nd-3.68	New
EQUITY	09/07/2011 16:29:03	Secondaries Filed To...	115,516	William Blair	0			12,000,000...	0.00	2nd	2nd-3.68	New
EQUITY	09/07/2011 16:29:03	Secondaries Filed To...	115,516	Oppenheimer & Co.	0			12,000,000...	0.00	2nd	2nd-3.68	New

YORW YOU YPF YPI YRCW YRD YSI YTI YUII YUME YY Z ZA ZAGG ZAYO ZBB ZDT ZEN ZEP ZEUS ZFC ZFGN ZGEN ZGNX ZHIC ZINC ZION ZIONW ZIOP ZIP ZLC ZLCS

The data subset on which we based our research were:

- Deal Sizes Change: price and shares;
- Lock-up dates on IPOs and Secondaries;
- Secondaries Filed Today, Expected Tonight
- Consensus Changes.

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Triad Consensus

"Consensus" is proprietary Triad data. For IPOs, Consensus is the dollar amount by which Triad believes the stock price will move from its IPO price on its first day of trading.

In our universe of stocks, there was the following distribution of Consensus values:

IPO Consensus Values	
Consensus Value	% of Values
-0	2.22%
-0/0	14.70%
-0/0+	0.51%
0/0+	0.43%
0	11.71%
.25/.50	1.03%
.25/.75	7.69%
.50/.75	3.68%
.50/1.00	8.80%
.75/1.00	1.03%
0/.25	2.48%
0/.50	22.31%
1.00/1.50	4.36%
1.00/2.00	7.78%
1.00/3.00	2.74%
1.50/2.00	0.09%
1.50/2.50	0.09%
2.00/2.50	0.26%
2.00/3.00	2.39%
2.00/4.00	1.79%
2.50/3.00	0.09%
3.00/5.00	2.56%
3.00+	0.34%
5.00/10.00	0.09%
5.00+	0.85%

For Secondaries, Consensus

Ranking is as follows:

Secondaries Consensus Ranking Definitions	
Consensus Value	Meaning
0+++	Very Good
0++	Good
0+	Shot
-0/0+	Risky/Shot
-0	Risky/Avoid

For the stocks used in these studies, the following range of Consensus values was observed:

Secondaries Consensus Values	
Consensus Value	% of Values
No call	54.6%
-0/0+	22.57%
0/0+	21.61
0+	0.55%
-0/0	0.24%
New	0.17%
-0	0.17%
0	0.07%
0+/0++	0.02%

A Trading Strategy Using IPO Consensus

From the table above, we observe that Consensus features a range of values, e.g. “1.00/1.50” for IPOs. We use this data as *priceMin* and *priceMax* to set the boundaries of each Consensus range. In cases where there is only one value range, we set *priceMin* equal to *priceMax*.

Next, we have to find criteria for Consensus usage. Our purpose is to find a criterion which will provide sufficient predictive power for stock price changes and which will identify which stocks are most likely to generate excess returns.

1. We suggest meeting or exceeding Consensus expectations for a stock is a positive signal for future price appreciation. Thus, if the market open price on the first day of the IPO meets or exceeds Consensus, we generate a Long trade (i.e. Buy) signal.
2. On the other hand, the IPO price might be subsequently proven to be too high, perhaps as an effect of market overreaction emanating from marketing efforts surrounding the new issue. If a stock is overpriced, we can expect a negative return. These cases are candidates for Short trades, assuming the stock can be borrowed.

We consider a Consensus value greater than 20% of IPO price as an indicator of an overpriced stock.

Hypothesis

To summarize, our hypothesis is as follows:

1. If a stock meets Consensus and is not overpriced, open a Long position.
2. Otherwise open a Short position.

Shorting on the first day of an IPO trading can be difficult due to the lack of availability of stock to borrow to cover short trades. Therefore, in the trading strategy, we actually execute the signals generated on the date of the IPO **one week after the IPO event**.

Trading Algorithm

Based on our hypothesis, we implemented the following trading algorithm.

1. Open position at the market close price one week after IPO;

   if ((InitialPrice- IPOPrice >= PriceMin) and (PriceMin/IPOPrice<0.2))

   goLong;

   otherwise

   goShort;

   where *InitialPrice* is the day open price on first day of trading,

   PriceMin is the lower boundary of Consensus.

2. Close position at the market close price after a holding period of 10 days.

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This algorithm was tested for over 1,100 equities for the period from Jan 1, 2008 to December 31, 2015 for BetSize = $50,000. The results are shown in the performance reports and charts below:

Back-testing Performance: IPO Consensus Strategy			
Parameter	All Trades	Long Trades	Short Trades
Net Profit/Loss	786,747.17	695,726.73	91,020.44
Total Profit	2,112,654.92	1,691,455.58	421,199.35
Total Loss	-1,325,907.76	-995,728.84	-330,178.91
Cumulated Profit %	1573.49 %	1391.45 %	182.04 %
Max Drawdown	-89,687.99	-108,646.14	-76,385.78
Max Drawdown %	-14.87 %	-19.86 %	-42.61 %
Max Drawdown Date	4/10/2014	4/11/2014	2/28/2014
Return/Drawdown Ratio	8.77	6.40	1.19
Drawdown Days Percent	81.25 %	76.09 %	91.02 %
Max Drawdown Duration	477	459	1105
CAGR	43.82 %	41.70 %	14.31 %
Sharpe Ratio	2.11	1.49	0.65
Annualized Volatility	20.81	27.97	21.87
Sortino Ratio	3.63	2.48	1.01
UPI	0.34	0.22	0.05
Information Ratio	1.72	1.50	0.44
Optimal f	10.12	5.33	2.99
Historical VaR 95% 1D	-4935.66	-4687.91	-2168.86
Historical CVaR 95% 1D	-8334.01	-8379.00	-4099.86
Theoretical VaR 95% 1D	-5718.67	-5870.99	-2717.54
Theoretical CVaR 95% 1D	-15604.43	-15926.71	-7179.50
All Trades #	1157	901	256
Profitable Trades Ratio	0.54	0.54	0.53
Winning Trades #	624	489	135
Losing Trades #	533	412	121

Back-testing Performance: IPO Consensus Strategy			
Parameter	All Trades	Long Trades	Short Trades
Average Trade	679.99	772.17	355.55
Average Winning Trade	3385.66	3459.01	3120.00
Average Losing Trade	-2487.63	-2416.82	-2728.75
Avg. Win/ Avg. Loss Ratio	1.36	1.43	1.14
Average Profit per Share	0.20	0.23	0.09
Max Conseq. Winners	9	13	11
Max Conseq. Losers	7	13	7
Average Trade Holding Time	11.04:25:40	11.04:17:38	11.04:53:54

P&L Curve: IPO Consensus Strategy

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A Trading Strategy Using Secondaries Consensus

Our second strategy relies exclusively on Triad's Consensus for Secondaries data. Here we hypothesize that positive Consensus indicates stock price appreciation after the Secondaries pricing event, and we use this as the signal to open a long position.

Trading Algorithm

This is simply implemented as the following algorithm:

1. For all issues with consensus containing "0+" open long position at the market close price after the event "Deals Priced Today".
2. Position is hedged with SPY (i.e. we generate a short position)
3. Close position at the market close price after a holding period of 3 days.

This approach was tested for over 1400 equities over the period from Jan 1, 2008 to December 31, 2015 for BetSize = $50,000. The results are presented below:

Back-testing Performance: Secondaries Consensus Strategy			
Parameter	**All Trades**	**Long Trades**	**Short Trades**
Net Profit/Loss	155,239.96	172,639.93	-17,399.97
Total Profit	443,772.33	367,244.26	76,528.08
Total Loss	-288,532.37	-194,604.32	-93,928.05
Cumulated Profit %	310.48 %	345.28 %	-34.80 %
Max Drawdown	-5,782.35	-7,298.04	-31,637.80
Max Drawdown %	-2.79 %	-3.21 %	-54.28 %
Max Drawdown Date	11/5/2015	11/12/2015	5/8/2015
Return/Drawdown Ratio	26.85	23.66	-0.55
Drawdown Days Percent	64.73 %	66.17 %	95.09 %
Max Drawdown Duration	100	148	1818

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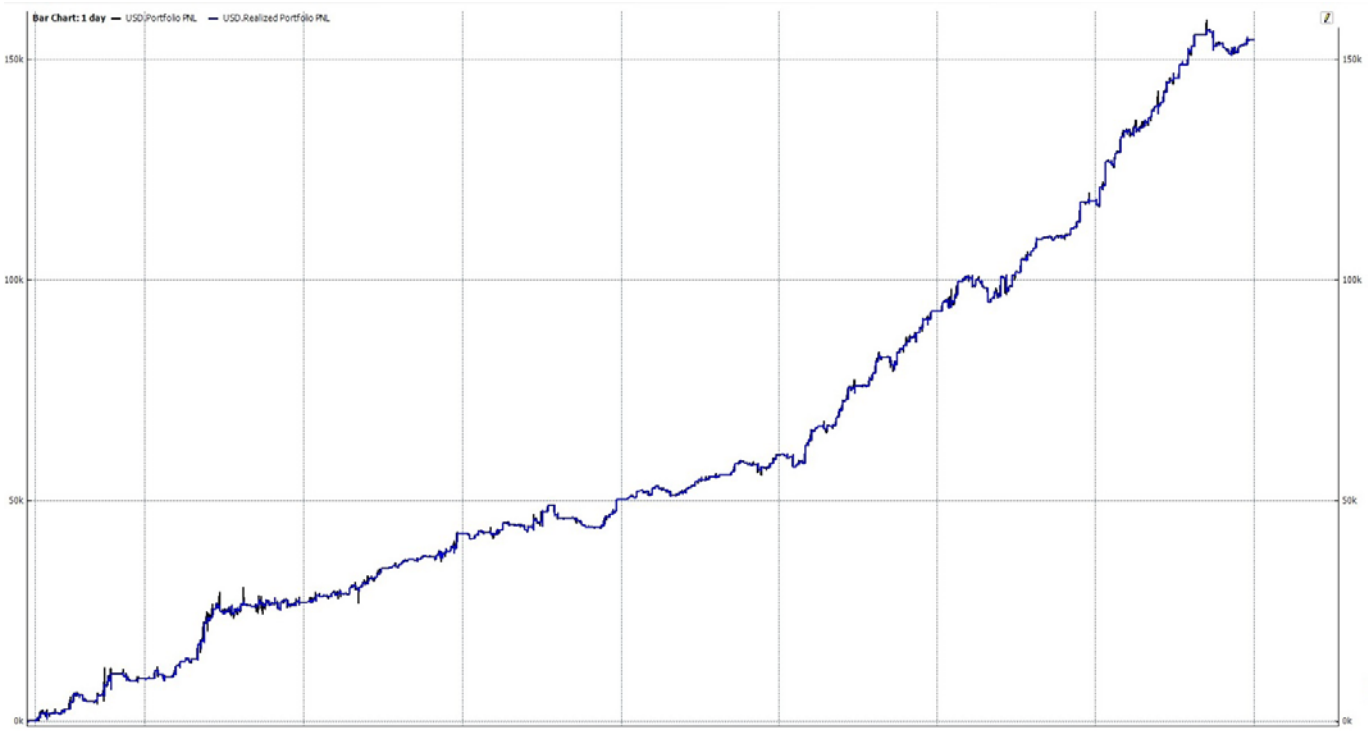
Back-testing Performance: Secondaries Consensus Strategy			
Parameter	**All Trades**	**Long Trades**	**Short Trades**
CAGR	19.98 %	21.24 %	-5.37 %
Sharpe Ratio	2.73	1.98	-0.40
Annualized Volatility	7.32	10.72	13.26
Sortino Ratio	4.99	3.23	-0.59
UPI	0.89	0.54	-0.01
Information Ratio	2.73	2.33	-0.39
Optimal f	37.26	18.47	-3.05
Historical VaR 95% 1D	-463.72	-582.90	-417.05
Historical CVaR 95% 1D	-931.05	-1257.28	-846.70
Theoretical VaR 95% 1D	-682.60	-903.78	-602.95
Theoretical CVaR 95% 1D	-1913.52	-2506.17	-1561.63
All Trades #	3704	1852	1852
Profitable Trades Ratio	0.50	0.61	0.38
Winning Trades #	1836	1132	704
Losing Trades #	1868	720	1148
Average Trade	41.91	93.22	-9.40
Average Winning Trade	241.71	324.42	108.70
Average Losing Trade	-154.46	-270.28	-81.82
Avg. Win/ Avg. Loss Ratio	1.56	1.20	1.33
Average Profit per Share	0.09	0.11	-0.12
Max Conseq. Winners	17	14	37
Max Conseq. Losers	11	7	60
Average Trade Holding Time	04.14:45:35	03.21:22:19	05.08:08:52

P&L Curve: Secondaries Consensus Strategy



Conclusion

We presented approaches in which Triad IPO and Secondaries Consensus data showed strong predictive power of stock price movement. We developed trading strategies that implemented algorithms based on these approaches. The first strategy, based on Triad Consensus data on IPOs, entered long or short positions one week after IPO. The second strategy, based on Triad Consensus data on Secondaries, entered long positions only but was hedged with the SPY ETF.

The two strategies were back-tested on in-sample data for the years 2008-2014 and out-of-sample data for 2015 on more than 1000 stocks. Back-testing showed the two strategies (the first for IPOs, the second for Secondaries) had Sharpe Ratios of 2.11 and 2.73 with average profits per share of $0.20 and $0.09 respectively for the eight years of 2008 to 2015.

Based on these results, it could be worthwhile to invest in further research. For example, you might want to experiment with different time periods after IPO, various holding periods, different hedging strategies, and/or alternative execution approaches. QuantOffice makes it easy to implement and back-test these variations. Utilizing QuantServer in addition allows users to deploy the strategies for live simulation and production trading.

About Deltix

Deltix is a leading provider of software and services for quantitative research, algorithmic and automated systematic trading. Deltix software enables a complete straight through processing environment for the development and deployment of closely-integrated alpha generation and/or execution strategies. Deltix has won ten industry awards since 2012 and was most recently recognized as having the "Best Trading Product" in February 2016 by Hedge Fund Magazine. Deltix is headquartered in Natick, Massachusetts, and has offices in New York, Minsk and St. Petersburg, Russia. For more information, please visit http://www.deltixlab.com.

About Triad

Triad Securities Corp. has been an introducing broker offering prime brokerage services for over 20 years and is currently celebrating its 40th year in business as a brokerage firm. Triad provides comprehensive prime broker services to accounts across all asset sizes and specializes in the smaller hedge funds and trading groups which may be overlooked by larger prime brokers. Triad is also a leader in IPO information and has dedicated specialists, software tools, and reports covering new and secondary stock issues in domestic and international financial markets.

Available to clients are Triad's full service execution desk and electronic execution platforms, offering clients direct access to algorithms, brokers, and exchanges.

Triad can also arrange office space for select trading groups and hedge funds.

To learn more about their state-of-the art technology and competitive transaction charges, visit http://www.triadsecurities.com or contact Scott Daspin at 212-349-1004 or sdaspin@triadsecurities.com.

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Annex - The Triad Data Set

symbol	Char(255)	This is the company's ticker symbol.
publication_dt	Datetime	The date the report was published
report_label	String	Name of the report
deal_id	Interger	Unique identifier for a deal
Manager	String	Deal manager
Amount	Float	$ amount of deal
Quantity	Float	Shares filed
deal_type	string	IPO=Initial Public Offering; 2nd=Secondary
Range	string	IPO price range/secondary price when deal is filed
Exchange	string	Exchange in which the deal was offered
Industry	string	Type of industry company is in
edit_dt	datetime	Tthe date the record was changed (ex: details added, consensus changed, etc)
Ss	Float	% of deal by selling shareholders
due_dt	datetime	The date corresponding to the beginning of the week (ie Monday) that the deal is priced
consensus	string	Triad's consensus (call)
consensus_dt	datetime	The date Triad's consensus (call) was made
priced_at	Float	Deal Price
lockup_dt	datetime	Expiration date of lock-up period
trade_dt	datetime	The date that the IPO/Secondary first trades
settlement_dt	datetime	The date that the IPO/Secondary first settles
selling_concession	Float	Amount paid to underwriters
modification	String	Type of change made/revised/additions
update_dt	Datetime	The date the record was last updated (same as edit date)