Informative Insider Trading

The Hidden Profits in Corporate Insider Filings

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"Insiders might sell their shares for any number of reasons, but they buy them for only one: they think the price will rise."

Peter Lynch
Former Manager of the Magellan Fund

Several studies have found that corporate insiders have an information advantage over the broad public and earn abnormal returns from trading stocks of their own companies[1]. For outside investors, the ability to profit from publicly disclosed information on insider trading has been a topic of debate. While some studies conclude that outsiders earn abnormal returns by mimicking insiders' trades, others suggest these profits disappear after transaction costs[2].

In this report, we investigate the impact of the public disclosure of insider trading on equity prices, using both an event study framework and a portfolio formation approach. Leveraging S&P Capital IQ's Ownership database, we explore several practical methods of identifying "informative" insider trades, and how to construct a portfolio of stocks using recent "informed" insider transactions. We document the following results:

- **Consistent with existing literature, insider trades are shown to be predictive of future stock returns**. Companies whose corporate insiders are net stock purchasers (sellers) generate positive (negative) excess returns of 0.68% (-0.19%) within one week following the announcements of insider transactions. However, a significant portion of this excess return was driven by performance in 2009.

- **Outside investors can earn economically significant excess returns by trading on "informative" insider trading signals**. Specifically, insider trades classified as "opportunistic", "intensive" and "directional change" predict excess returns of 0.48%, 2.47% and 0.55%, respectively, (all statistically significant at the 1% level) in the following week.

- **Mimicking the net purchase actions of CEOs yielded an excess return of 1.27% over the next one week**. However, this excess return was concentrated in 2008 and 2009.

- **A trading strategy based on the three characteristics: opportunistic, intensive and directional change, yielded 0.36% weekly excess returns after transaction costs**, statistically significant at the 1% level.

[1] For example, Jeng et al. (2003), Seyhun (1992) and Jaffe (1974).
[2] Bettis, Vickrey and Vickrey (1997), Rozeff and Zaman (1988)

1 Insider Trading and Stock Returns

The Securities and Exchange Commission (SEC) defines corporate insiders as a company's officers and directors, and any beneficial owners of more than 10% of a class of the company's equity securities[3]. Corporate insiders are a unique class of traders as they possess the most intimate information about a firm. In this report we examine the profitability for outside investors who observe what insiders are doing. Utilizing S&P Capital IQ's Ownership database which, among other data items, captures insiders' traded shares, holding position and filing dates, we explore alpha signals built from publicly available information regarding insider transactions in the U.S.

We start from a basic signal that identifies companies whose insiders are net purchasers or sellers of company stock. If on a given day, the total amount bought by all insiders is greater (smaller) than the amount sold, then the company has a net purchase (net sale) event. To the extent that insider trading reflects insiders' access to proprietary information, we expect the net purchase (net sale) events to be a positive (negative) signal for stock returns. The filing date is used as the event date. Table 1 shows abnormal returns (AR)[4] around net purchase and net sale events and their hit rates[5] for Russell 3000 companies over the last 5 years[6]. Event day performance is highlighted in purple.

Table 1 Abnormal Returns (AR) around Net Purchase (Net Sale) Events
Russell 3000; 9/1/2008 – 5/31/2013

	Pre-event						Event	Post-event					
Net Purchase	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day	day	1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
AR	-3.85%	-2.26%	-1.31%	-0.63%	-0.22%	0.00%	0.53%	0.27%	0.46%	0.56%	0.68%	1.05%	1.42%
AR t-stat	-36.20	-26.73	-19.69	-11.96	-5.09	-0.03	19.64	10.23	12.71	13.49	12.50	13.73	12.80
Hit Rate	37.5%	39.8%	42.5%	44.9%	47.1%	48.5%	54.8%	50.2%	50.5%	51.0%	50.3%	50.2%	49.5%
# Events	24770	24770	24770	24770	24770	24770	24770	24770	24770	24770	24770	24770	24770

	Pre-event						Event	Post-event					
Net Sale	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day	day	1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
AR	2.51%	1.33%	0.70%	0.31%	0.13%	0.03%	-0.07%	-0.05%	-0.08%	-0.12%	-0.19%	-0.30%	-0.50%
AR t-stat	40.95	32.49	21.23	13.39	7.02	2.34	-5.48	-4.19	-4.87	-6.25	-7.55	-9.35	-10.79
Hit Rate	58.3%	56.0%	53.7%	52.0%	50.1%	48.6%	46.7%	47.6%	47.0%	47.4%	47.0%	46.6%	46.4%
# Events	46144	46144	46144	46144	46144	46144	46144	46144	46144	46144	46144	46144	46144

Source: S&P Capital IQ Quantamental Research
Past performance is not a guarantee of future results

The market reacts with a statistically significant positive (negative) AR upon the announcement of net purchases (net sales). Following the net purchase events, companies see an AR of 1.42% (t-stat of 12.80) within one month. On the other hand, companies with net sale events experience a negative AR of -0.50% (t-stat of -10.79) over the same period. We further examine the performance by calendar year and the results are displayed in Table 2. Returns highlighted in bold are statistically significant at the 5% level.

[3] http://www.sec.gov/answers/form345.htm
[4] Throughout this report, abnormal returns are holding period stock returns adjusted for the Fama-French factors, unless otherwise specified. Please see Section 4 for more details.
[5] Hit Rate is defined as the percentage of times when abnormal returns are positive.
[6] In order to eliminate the impact of overlapping returns of multiple events, we also tested each signal with only the events that do not have any other event occurring within 2 weeks before or after, i.e. isolated events. The results are qualitatively the same. Please see the Appendix for tabulated returns of isolated events.

Table 2 indicates that performance over the testing period was largely driven by insider transactions in 2009. Net purchase (sale) one-month AR in 2009 was about nine (two) times larger in magnitude than the next largest calendar year return. This concentration of AR from the basic signal prompts us to search for more robust insider trading signals, described in the next section.

Table 2 Abnormal Returns around Net Purchase (Net Sale) Events by Calendar Year
Russell 3000

	Pre-event						Event	Post-event					
Net Purchase	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day	day	1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
2009	**-3.87%**	**-1.95%**	**-0.89%**	**-0.33%**	0.01%	0.14%	**0.60%**	**0.49%**	**0.72%**	**0.96%**	**1.33%**	**2.26%**	**3.83%**
2010	**-2.27%**	**-1.22%**	**-0.74%**	**-0.35%**	-0.11%	0.03%	**0.49%**	**0.07%**	**0.13%**	**0.18%**	**0.18%**	**0.22%**	0.28%
2011	**-3.67%**	**-2.45%**	**-1.50%**	**-0.77%**	**-0.33%**	**-0.13%**	**0.47%**	**0.15%**	**0.24%**	**0.29%**	**0.28%**	0.16%	-0.18%
2012	**-3.45%**	**-1.80%**	**-1.03%**	**-0.47%**	**-0.16%**	0.03%	**0.45%**	**0.14%**	**0.22%**	**0.28%**	**0.36%**	**0.44%**	**0.43%**

	Pre-event						Event	Post-event					
Net Sale	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day	day	1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
2009	**2.89%**	**1.47%**	**0.72%**	**0.35%**	**0.13%**	0.01%	**-0.13%**	**-0.16%**	**-0.27%**	**-0.37%**	**-0.57%**	**-0.83%**	**-1.34%**
2010	**2.21%**	**1.29%**	**0.69%**	**0.29%**	**0.08%**	0.02%	**-0.06%**	-0.01%	-0.05%	**-0.09%**	**-0.14%**	**-0.27%**	**-0.55%**
2011	**2.86%**	**1.67%**	**0.90%**	**0.42%**	**0.20%**	0.04%	**-0.08%**	-0.01%	-0.02%	-0.03%	**-0.09%**	**-0.21%**	**-0.34%**
2012	**2.19%**	**1.09%**	**0.57%**	**0.27%**	**0.13%**	**0.04%**	**-0.05%**	**-0.04%**	**-0.05%**	**-0.06%**	**-0.10%**	**-0.13%**	**-0.28%**

Source: S&P Capital IQ Quantamental Research
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2 Informative Insider Trading

As pointed out by both academia and practitioners, insiders make purchases and sales for various reasons, such as diversification or liquidity needs. In this section, we analyze our insider trading data to identify transactions that are more likely to reflect insiders' information advantage. These "informed" transactions should in theory be better predictors of a company's future stock return than signals that simply include all the transactions of insiders.

2.1 Opportunistic Trades

In a 2010 paper, Cohen et al. concluded that a subset of information-rich "opportunistic" trades contain all the predictive power within the insider trading universe. To identify opportunistic trades, Cohen et al. grouped all insiders who have traded in each of the past 2 years into two types – opportunistic and routine. Insiders who have traded in the same calendar month in the last 2 years are routine traders and all their trades in the following calendar year are tagged as "routine trades". Insiders not tagged as routine are classified as opportunistic and all their trades in the subsequent calendar year are termed as "opportunistic trades". The rationale for this classification is that insiders who use part of their compensation to buy the company stock at fixed intervals typically make such purchases in the same calendar month every year. These trades tend to contain no valuable information about the company's prospect.

We use the same approach to identify opportunistic trades. On any given day, if the number of shares bought by opportunistic traders is larger (smaller) than the amount sold by opportunistic traders, then the company has an opportunistic buy (sell) event. Table 3 shows AR around the event date for 2010 through 2013 as 2008 and 2009 data are used solely to classify insiders into

opportunistic or routine buckets. For comparison, the performance of the basic signal over the same period is displayed in the last row of the table and grayed out.

Table 3 Abnormal Returns (AR) around Opportunistic Buy (Sell) Events
Russell 3000; 1/1/2010 – 5/31/2013

Opportunistic	Pre-event						Event	Post-event					
Buy	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day	day	1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
AR	-2.26%	-1.82%	-1.21%	-0.66%	-0.31%	-0.06%	0.41%	0.08%	0.27%	0.34%	0.48%	0.55%	0.58%
AR t-stat	-7.95	-8.53	-7.00	-4.73	-2.94	-0.76	5.91	1.29	3.37	3.49	3.59	3.21	2.39
Hit Rate	40.3%	41.3%	43.9%	45.3%	47.7%	48.0%	56.6%	49.4%	52.9%	53.4%	53.1%	52.9%	50.3%
# Events	1701	1701	1701	1701	1701	1701	1701	1701	1701	1701	1701	1701	1701
Net Purchase AR	-3.11%	-1.82%	-1.07%	-0.51%	-0.19%	-0.03%	0.46%	0.11%	0.20%	0.23%	0.25%	0.25%	0.12%
Opportunistic	Pre-event						Event	Post-event					
Sell	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day	day	1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
AR	2.26%	1.44%	0.86%	0.40%	0.20%	0.05%	-0.09%	-0.05%	-0.07%	-0.11%	-0.17%	-0.24%	-0.22%
AR t-stat	15.97	14.18	12.21	8.09	5.07	1.78	-3.57	-2.26	-2.11	-2.79	-3.46	-3.18	-1.76
Hit Rate	59.2%	57.1%	57.1%	54.9%	52.8%	51.0%	46.6%	47.6%	47.1%	47.1%	47.0%	46.8%	48.3%
# Events	4059	4059	4059	4059	4059	4059	4059	4059	4059	4059	4059	4059	4059
Net Sale AR	2.30%	1.28%	0.66%	0.30%	0.12%	0.02%	-0.06%	-0.03%	-0.04%	-0.06%	-0.11%	-0.18%	-0.34%

Source: S&P Capital IQ Quantamental Research
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The results are consistent with the hypothesis - opportunistic trades contain useful information about the direction of equity prices, especially for "buy" events. For example, the one-week AR after opportunistic buys is 0.48%, statistically significant at the 1% level; the one-week AR for the basic net purchase signal is 0.25%, about 50% smaller than that of opportunistic buys. The one-week AR hit rate for opportunistic buy is 53.1%, as opposed to only 49.6% for the basic net purchase signal (not tabulated). A breakdown of the performance by calendar year (Table 4) shows the AR for opportunistic buys are largest in 2012 and weakest in 2011[7].

Table 4 Abnormal Returns around Opportunistic Buy Events by Calendar Year
Russell 3000

Opportunistic	Pre-event						Event	Post-event					
Buy	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day	day	1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
2010	**-1.59%**	**-1.11%**	-0.56%	-0.23%	-0.10%	-0.02%	**0.60%**	0.15%	**0.34%**	**0.37%**	0.55%	0.64%	0.81%
2011	**-3.30%**	**-2.55%**	**-1.81%**	**-0.86%**	**-0.41%**	-0.10%	**0.29%**	-0.02%	0.02%	0.16%	0.19%	0.06%	-0.11%
2012	**-1.29%**	**-1.51%**	**-1.07%**	**-0.90%**	**-0.49%**	-0.09%	**0.39%**	0.17%	**0.56%**	**0.70%**	**0.90%**	**1.24%**	**1.63%**

Source: S&P Capital IQ Quantamental Research
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On the sale side, the opportunistic/routine classification does not provide as much improvement. The one-week AR post opportunistic sell event is -0.17% (vs -0.11% for basic net sale signals over the same period).

2.2 Intensive Trades

Several academic papers suggest that "intensive" insider trading activities are associated with profits that outweigh transaction costs. We identify an intensive buy (sell) event if, on any given day, a company meets the following criteria:

[7] When we focus on isolated events, the returns are not concentrated in any calendar year. Please see Table A.4 for more details.

- At least two insiders are buying (selling);
- There is no insider sale (purchase);
- At least two insiders have increased (decreased) their holdings by more than 10%.

Table 5 shows the performance of intensive buy and intensive sell signals over the past 5 years. Abnormal returns improve significantly with the intensive buy signal: one-week AR post events is 2.47% with a t-stat of 6.01, as compared to the one-week AR of 0.68% for the basic net purchase signal (Table 1). The hit rate also rises to 54.6% (vs 50.3% for net purchase signal). Table 6 breaks down the performance of intensive buy signal by calendar year. The results demonstrate the robustness of this signal across different years. Intensive sell signals, on the other hand, do not generate significant returns[8].

Table 5 Abnormal Returns (AR) around Intensive Buy (Sell) Events
Russell 3000; 9/1/2008 – 5/31/2013

	Pre-event						Event	Post-event					
Intensive Buy	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day	day	1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
AR	-11.23%	-7.08%	-5.41%	-3.35%	-1.55%	-0.33%	1.41%	0.75%	1.44%	1.84%	2.47%	3.60%	5.76%
AR t-stat	-16.16	-11.09	-9.97	-8.18	-4.69	-1.48	6.49	4.15	4.70	5.86	6.01	6.34	5.83
Hit Rate	24.4%	29.1%	32.2%	37.6%	44.2%	47.9%	59.5%	52.9%	53.9%	55.0%	54.6%	56.5%	54.9%
# Events	966	966	966	966	966	966	966	966	966	966	966	966	966
	Pre-event						Event	Post-event					
Intensive Sell	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day	day	1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
AR	5.14%	2.85%	1.94%	0.68%	0.26%	0.16%	0.12%	0.00%	-0.08%	-0.18%	-0.05%	-0.20%	-0.37%
AR t-stat	13.64	11.75	6.18	4.97	2.05	2.07	0.74	0.01	-0.55	-1.49	-0.19	-0.98	-1.76
Hit Rate	66.9%	63.2%	60.4%	55.2%	52.7%	50.9%	48.0%	44.1%	44.4%	45.1%	46.1%	46.3%	47.3%
# Events	2011	2011	2011	2011	2011	2011	2011	2011	2011	2011	2011	2011	2011

Source: S&P Capital IQ Quantamental Research
Past performance is not a guarantee of future results

Table 6 Abnormal Returns around Intensive Buy Events by Calendar Year
Russell 3000

	Pre-event						Event	Post-event					
Intensive Buy	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day	day	1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
2009	**-10.48%**	**-5.19%**	**-3.83%**	-1.89%	-0.34%	0.77%	**0.96%**	**1.09%**	**2.57%**	**2.50%**	**3.71%**	**5.93%**	**13.84%**
2010	**-6.95%**	**-4.24%**	**-3.51%**	**-2.16%**	-0.87%	-0.47%	**1.75%**	0.53%	0.70%	**0.90%**	0.77%	**2.05%**	**3.21%**
2011	**-8.62%**	**-6.10%**	**-4.62%**	**-2.66%**	-0.74%	0.03%	**1.28%**	**0.44%**	**0.67%**	**0.96%**	**1.54%**	0.84%	-0.22%
2012	**-9.20%**	**-5.97%**	**-4.45%**	**-2.48%**	-1.24%	-0.24%	**1.04%**	0.19%	0.08%	**0.82%**	**1.25%**	**1.74%**	0.98%

Source: S&P Capital IQ Quantamental Research
Past performance is not a guarantee of future results

2.3 Change in Trading Direction

Lorie and Niederhoffer suggested, in their widely cited 1968 paper, that insider purchases (sales) are more likely to be followed by another purchase (sale). They concluded that "A change in direction of activity from purchase to sale, or vice versa, is of importance in deducing insider expectations concerning their stock." To capture the change in insiders' prospect about the firm, we define a "sell to buy" signal as an event when:

[8] Isolated intensive sell signal delivers similar results as isolated basic net sale signal. Please see Table A.5 for more details.

- A company experiences a net purchase over the last three months but a net sale over the previous three months;
- The purchased amount in the last 3 months is greater than in the previous 3 months;
- The amount sold in the last 3 months is smaller than in the previous 3 months.

A "buy to sell" signal is the mirror image of the "sell to buy" signal. Table 7 shows the performance of these change-in-direction events between 3/1/2009[9] and 5/31/2013. As a comparison, the performance of the basic signals over the same period is displayed in the last row of the table and grayed out.

Table 7 Abnormal Returns (AR) around Sell to Buy (Buy to Sell) Events
Russell 3000; 3/1/2009 – 5/31/2013

	Pre-event						Event	Post-event					
Sell to Buy	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day	day	1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
AR	-5.49%	-3.16%	-1.82%	-0.76%	-0.27%	-0.09%	0.60%	0.23%	0.45%	0.52%	0.55%	0.58%	0.67%
AR t-stat	-21.21	-15.30	-11.66	-6.33	-2.92	-1.47	10.45	4.17	6.19	5.89	5.00	3.51	2.66
Hit Rate	32.3%	35.3%	40.3%	44.8%	47.0%	48.4%	57.1%	50.4%	52.0%	52.8%	51.2%	49.5%	47.4%
# Events	2541	2541	2541	2541	2541	2541	2541	2541	2541	2541	2541	2541	2541
Net Purchase AR	-3.17%	-1.77%	-0.98%	-0.44%	-0.14%	0.00%	0.49%	0.19%	0.30%	0.37%	0.48%	0.67%	0.86%

	Pre-event						Event	Post-event					
Buy to Sell	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day	day	1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
AR	2.84%	1.29%	0.59%	0.14%	-0.02%	-0.07%	-0.10%	-0.05%	-0.12%	-0.17%	-0.24%	-0.34%	-0.99%
AR t-stat	8.79	7.78	4.76	1.53	-0.25	-1.54	-2.05	-1.12	-1.89	-2.29	-2.50	-2.49	-4.80
Hit Rate	57.1%	54.9%	52.1%	50.3%	47.4%	46.4%	46.0%	46.0%	45.3%	46.5%	46.0%	44.3%	41.5%
# Events	3064	3064	3064	3064	3064	3064	3064	3064	3064	3064	3064	3064	3064
Net Sale AR	2.41%	1.31%	0.67%	0.30%	0.12%	0.02%	-0.07%	-0.06%	-0.10%	-0.13%	-0.21%	-0.33%	-0.58%

Source: S&P Capital IQ Quantamental Research
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The results are consistent with our expectation. The one-week AR after a "sell to buy" signal is 0.55% (vs 0.48% for the basic net purchase signal), significant at the 1% level, and hit rate is 51.2% (vs 49.6% for net purchase signal, not tabulated). The "buy to sell" signal yields slightly more negative return than the basic net sale signal. A breakdown of the performance for the "sell to buy" signal by calendar year (Table 8) shows that one-week abnormal returns are statistically significant in all calendar years.

Table 8 Abnormal Returns around Sell to Buy Events by Calendar Year
Russell 3000

	Pre-event						Event	Post-event					
Sell to Buy	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day	day	1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
2010	**-4.38%**	**-2.65%**	**-1.54%**	**-0.82%**	-0.12%	-0.02%	**0.58%**	**0.18%**	**0.41%**	**0.58%**	**0.52%**	0.34%	0.10%
2011	**-5.71%**	**-3.74%**	**-2.45%**	**-1.16%**	**-0.48%**	**-0.30%**	**0.68%**	**0.23%**	**0.46%**	**0.43%**	**0.45%**	0.11%	-0.54%
2012	**-4.93%**	**-2.45%**	**-1.26%**	-0.19%	0.03%	**0.20%**	**0.44%**	0.23%	**0.54%**	**0.67%**	**0.84%**	**1.05%**	**1.67%**

Source: S&P Capital IQ Quantamental Research
Past performance is not a guarantee of future results

2.4 CEO Trades

Many studies have examined trading behavior of top executives who supposedly are the most knowledgeable insiders and found that they earn greater profits. Combining the Ownership

[9] Because this signal requires a 6-month window to detect the pattern, the results start from 3/1/2009 rather than 9/1/2008.

database with S&P Capital IQ's People Intelligence database, we identify trades made by CEOs and define a CEO net purchase (CEO net sale) event as the day when the CEO buys more (less) than he/she sells. Table 9 shows the returns around the event date for Russell 3000 companies over the past 5 years.

Over the entire testing period, CEO net purchase events are followed by positive and significant returns. The one-week AR post event is 1.27% with a t-stat of 2.93. However, a breakdown of the results by calendar year (Table 10) demonstrates that the positive returns are mostly concentrated in year 2008 (not shown because it only contains 4 months of data) and 2009. The pattern has reversed in the most recent year, and the positive one-week AR in earlier years are not significant at the 5% level.

The CEO net sale signal, like all other net sale strategies we considered earlier, is weak.

Table 9 Abnormal Returns (AR) around CEO Net Purchase (CEO Net Sale) Events
Russell 3000; 9/1/2008 – 5/31/2013

CEO Net	Pre-event						Event	Post-event					
Purchase	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day	day	1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
AR	-9.10%	-5.13%	-3.15%	-1.68%	-0.86%	-0.06%	1.04%	0.52%	1.07%	1.45%	1.27%	1.59%	3.07%
AR t-stat	-13.73	-8.71	-6.04	-3.79	-2.56	-0.24	4.75	2.69	4.02	4.34	2.93	2.93	3.23
Hit Rate	28.0%	31.6%	37.6%	40.8%	42.9%	49.1%	56.3%	51.9%	52.9%	53.1%	50.2%	50.6%	50.1%
# Events	801	801	801	801	801	801	801	801	801	801	801	801	801
CEO Net	Pre-event						Event	Post-event					
Sale	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day	day	1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
AR	2.11%	0.33%	-0.10%	-0.30%	-0.17%	0.28%	-0.18%	0.27%	0.29%	0.09%	0.45%	-0.41%	-1.28%
AR t-stat	3.31	0.93	-0.37	-1.50	-0.89	0.84	-1.71	0.81	0.90	0.33	0.73	-0.96	-3.35
Hit Rate	57.7%	52.2%	47.7%	49.7%	49.7%	46.8%	44.5%	46.0%	44.8%	45.0%	44.9%	42.1%	43.1%
# Events	954	954	954	954	954	954	954	954	954	954	954	954	954

Source: S&P Capital IQ Quantamental Research
Past performance is not a guarantee of future results

Table 10 Abnormal Returns around CEO Net Purchase Events by Calendar Year
Russell 3000

CEO Net	Pre-event						Event	Post-event					
Purchase	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day	day	1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
2009	**-7.61%**	**-3.90%**	**-2.69%**	-1.13%	-0.49%	0.48%	0.41%	0.50%	**1.01%**	**1.45%**	1.03%	**1.98%**	**6.30%**
2010	**-7.83%**	**-4.48%**	**-2.44%**	**-1.17%**	-0.41%	0.12%	**1.67%**	0.27%	0.06%	0.46%	0.55%	0.32%	0.70%
2011	**-8.26%**	**-5.78%**	**-3.78%**	-1.49%	-0.89%	-0.06%	**1.74%**	0.49%	**0.99%**	**1.02%**	0.76%	-0.14%	**-2.56%**
2012	**-5.48%**	-2.03%	-1.14%	-0.36%	-0.15%	-0.04%	**1.03%**	-0.38%	0.11%	-0.16%	-0.28%	-0.68%	-1.04%

Source: S&P Capital IQ Quantamental Research
Past performance is not a guarantee of future results

3 Portfolio strategy with insider trading signals

In this section, we construct a trading strategy that incorporates the three robust insider trading signals we have discussed earlier: opportunistic, intensive and directional change. We further illustrate how an outside investor can profit from using publicly announced insider trading activities.

Specifically, on every Friday, we form our portfolios among Russell 3000 companies using the following rules:

- If over the prior week, a company has had an opportunistic buy, an intensive buy or a sell to buy signal, then it is included in the long portfolio;
- If over the prior week, a company has had an opportunistic sell, an intensive sell or a buy to sell signal, then it is included in the short portfolio;
- If a company has both buy and sell signals in the prior week, then it is excluded from both portfolios.

The portfolios are rebalanced every week, and weekly excess returns[10] are calculated from 1/1/2010[11] to 5/31/2013 (Table 11). On average, companies with buy (sell) signals from insider trading activities yield 0.59% (-0.19%) excess return per week, statistically significant at the 1% level. Consistent with earlier findings, the long side is much stronger than the short side, with an information ratio (IR)[12] of 0.39 and hit rate of 68.7%.

Table 11 Weekly Portfolio Performance
Russell 3000; 1/1/2010 – 5/31/2013

	Long Portfolio Excess Return	Short Portfolio Excess Return	Long-Short Spread
Average	0.59%	-0.19%	0.78%
T-stat	5.19	-2.09	5.36
IR	0.39	-0.16	0.40
Hit Rate	68.7%	47.5%	69.3%
# Stocks	19	36	

Source: S&P Capital IQ Quantamental Research
Past performance is not a guarantee of future results

We then adjust the excess returns for several risk factors, displayed in Table 12 on the next page. The Fama-French adjusted return (first row) is the intercept from the regression of portfolio returns on weekly returns of the three Fama-French factors. The return for the long portfolio remains the same and significant at the 1% level, suggesting that the excess return is not simply a compensation for the Fama-French risk factors. On the other hand, the short portfolio return becomes significant only at the 10% level. The next three rows of Table 12 show the loadings on the three Fama-French factors respectively. Both long and short portfolios have significant loadings on the small-minus-big factor at the 1% level, indicating that this strategy is tilted toward small companies.

In previous sections, we noticed that abnormal returns before purchase (sale) signals are negative (positive), consistent with general consensus that insiders are contrarians. To ensure that the excess returns of our trading strategy is not merely a manifestation of stock price mean reversion, we regress portfolio returns on weekly decile spread of a 5-day reversal factor in addition to the Fama-French factors and report the reversal adjusted return in Table 13. The result is qualitatively the same as Fama-French adjustment and the loadings on the reversal factor (last row) are not

[10] Excess return = stock return – market equal-weighted return.
[11] We start from the earliest date when all the three signals can be constructed.
[12] IR = average excess return / standard deviation of excess return.

statistically significant, suggesting that mean reversion cannot explain the excess return of our trading strategy.

Table 12 Weekly Portfolio Performance – Fama-French Adjustment
Russell 3000; 1/1/2010 – 5/31/2013

	Long Portfolio	Short Portfolio
Intercept	0.59% ***	-0.16% *
β^{MKT}	0.95 ***	0.92 ***
β^{SMB}	1.14 ***	0.73 ***
β^{HML}	0.21 *	0.07

***significant at the 1% level; *significant at the 10% level
Source: S&P Capital IQ Quantamental Research
Past performance is not a guarantee of future results

Table 13 Weekly Portfolio Performance – Fama-French and Reversal Adjustment
Russell 3000; 1/1/2010 – 5/31/2013

	Long Portfolio	Short Portfolio
Intercept	0.58% ***	-0.17% *
β^{MKT}	0.94 ***	0.92 ***
β^{SMB}	1.14 ***	0.73 ***
β^{HML}	0.21 *	0.07
$\beta^{Reversal}$	0.03	0.01

***significant at the 1% level; *significant at the 10% level
Source: S&P Capital IQ Quantamental Research
Past performance is not a guarantee of future results

Finally, we consider the impact of transaction costs on the excess return. For the long portfolio, we assume a 10bps trading cost one-way and show the results in Table 14. The weekly excess return after trading costs falls from 0.59% to 0.36%, but it remains statistically significant at the 1% level.

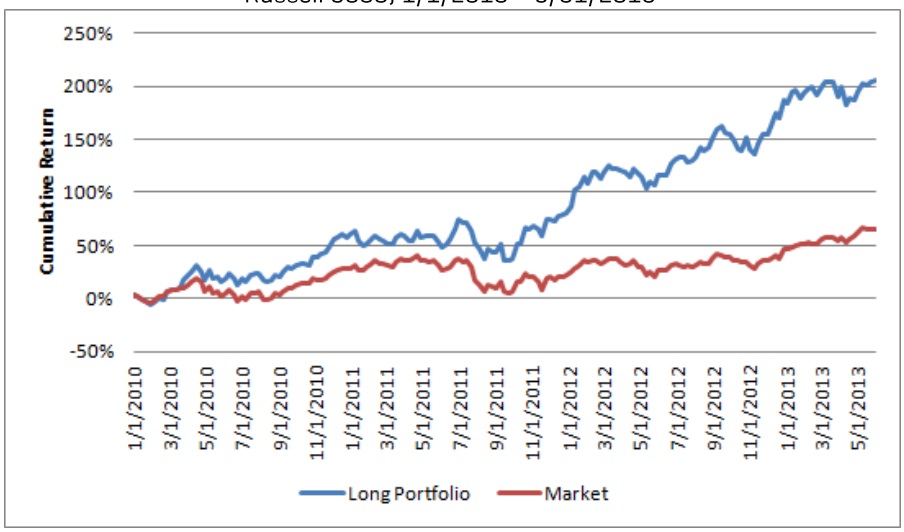
Table 14 Long Portfolio Performance Before and After Trading Costs
Russell 3000; 1/1/2010 – 5/31/2013

	Weekly Excess Return After Trading Costs	Weekly Excess Return Before Trading Costs
Average	0.36%	0.59%
T-stat	3.18	5.19
IR	0.24	0.39
Hit Rate	63.1%	68.7%

Source: S&P Capital IQ Quantamental Research
Past performance is not a guarantee of future results

The following figure shows the cumulative return of the long portfolio after trading costs. As a benchmark, the return to an equal weighted market portfolio is also displayed. The long portfolio has outperformed the market over the testing period, even after taking into consideration transaction costs, suggesting that outsiders can earn robust excess returns using insider trading data.

Figure 1 Cumulative Return of Long Portfolio vs Market
Russell 3000; 1/1/2010 – 5/31/2013



Source: S&P Capital IQ Quantamental Research
Past performance is not a guarantee of future results

4 Data and Methodology

We use S&P Capital IQ's Ownership database for insider trading activities, including the number of shares bought or sold by each insider, the holding position of the insider after each transaction, and corresponding filing date. To identify CEO's trades, we joined the S&P Capital IQ's People Intelligence database with the Ownership database. We focus on open market transactions for Russell 3000 companies, and our tests are carried out from September 1st, 2008 through May 31st, 2013.

In measuring abnormal returns (AR) around various signals, we first calculate a normal return for each stock using Fama-French model. Specifically, for stock i:

$$\text{Normal return}_i = \beta_i^{MKT} * MKT + \beta_i^{SMB} * SMB + \beta_i^{HML} * HML$$

Where MKT, SMB and HML are the returns to the three Fama-French factors[13], respectively, and the β's are estimated over a 252-day window one month before the event date for stock i. To limit the impact of unstable beta estimation, we constrain the normal return on any given day to be within 3 standard deviations of that stock's average normal return over the past 252 business days. Then AR is calculated as stock return minus normal return. For post-event AR, we use the close price of the day after the filing date for return calculation to account for the potential difficulty of getting in the position on the event date.

[13] Fama-French factor returns are obtained from http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

5 Conclusion

Corporate insiders are widely believed to have an information advantage over outsiders and have profited from trading stocks of their own company. In this report, we examine how outside investors can construct alpha signals based off insider trading activities. We find that opportunistic buy, intensive buy and directional change from sell to buy are strong indicators of future stock performance, generating one-week AR of 0.48%, 2.47% and 0.55%, respectively. Consistent with existing literature, insider net sale signals are relatively weak.

We demonstrate a practical implementation of a strategy that incorporates three insider trading signals. The long only portfolio of this strategy generates weekly excess returns of 0.36% after adjusting for trading costs.

Appendix Performance of Isolated Insider Trading Events

As many studies have pointed out, insider purchases and sales tend to cluster, which means the signals that we defined can take place multiple times within a short window. To get a clean picture of the predictive power of each signal, we calculated AR using only the events that do not have another event occurring within 2 weeks before or after for all signals except the directional change signals, for which we use only the first signal within every two-week period for AR calculation. The results are presented below and they do not qualitatively change the conclusion of our paper.

Table A.1 Abnormal Returns (AR) around Net Purchase (Net Sale) Events
Russell 3000; 9/1/2008 – 5/31/2013

Net Purchase	Pre-event						Event day	Post-event					
	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day		1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
AR	-2.94%	-2.13%	-1.51%	-0.84%	-0.38%	-0.03%	0.53%	0.19%	0.26%	0.25%	0.21%	0.14%	0.07%
AR t-stat	-19.14	-18.48	-16.81	-11.70	-6.55	-0.86	14.86	5.49	5.63	4.64	2.95	1.45	0.47
Hit Rate	39.0%	38.5%	40.3%	42.8%	45.4%	47.2%	56.1%	49.9%	50.1%	49.8%	48.6%	47.9%	47.1%
# Events	8728	8728	8728	8728	8728	8728	8728	8728	8728	8728	8728	8728	8728

Net Sale	Pre-event						Event day	Post-event					
	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day		1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
AR	2.05%	1.26%	0.75%	0.37%	0.16%	0.05%	-0.07%	-0.07%	-0.13%	-0.19%	-0.27%	-0.38%	-0.56%
AR t-stat	17.81	17.02	13.05	8.08	4.77	2.56	-3.64	-3.39	-4.90	-5.78	-6.80	-6.91	-6.77
Hit Rate	56.0%	55.9%	54.6%	52.8%	50.7%	49.4%	46.6%	47.2%	46.8%	47.0%	46.4%	46.1%	46.7%
# Events	15095	15095	15095	15095	15095	15095	15095	15095	15095	15095	15095	15095	15095

Source: S&P Capital IQ Quantamental Research
Past performance is not a guarantee of future results

Table A.2 Abnormal Returns around Net Purchase (Net Sale) Events by Calendar Year
Russell 3000

Net Purchase	Pre-event						Event day	Post-event					
	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day		1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
2009	**-3.69%**	**-2.61%**	**-1.72%**	**-0.78%**	-0.20%	0.06%	**0.60%**	**0.31%**	**0.36%**	**0.42%**	**0.43%**	0.58%	**1.36%**
2010	**-2.55%**	**-1.68%**	**-1.28%**	**-0.80%**	**-0.35%**	-0.09%	**0.44%**	0.04%	0.06%	0.05%	-0.07%	-0.20%	**-0.52%**
2011	**-3.00%**	**-2.24%**	**-1.61%**	**-1.00%**	**-0.58%**	**-0.24%**	**0.50%**	**0.19%**	**0.22%**	**0.22%**	0.20%	-0.16%	**-0.74%**
2012	**-2.60%**	**-1.89%**	**-1.21%**	**-0.69%**	**-0.32%**	-0.01%	**0.43%**	0.07%	0.11%	0.08%	0.08%	-0.05%	-0.31%

Net Sale	Pre-event						Event day	Post-event					
	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day		1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
2009	**3.15%**	**1.95%**	**1.11%**	**0.56%**	0.16%	0.06%	-0.10%	**-0.20%**	**-0.38%**	**-0.48%**	**-0.63%**	**-0.89%**	**-1.44%**
2010	**1.58%**	**1.08%**	**0.69%**	**0.37%**	**0.16%**	0.06%	**-0.09%**	0.01%	-0.06%	**-0.11%**	**-0.13%**	-0.12%	**-0.30%**
2011	**1.82%**	**1.11%**	**0.63%**	**0.29%**	0.09%	-0.02%	**-0.11%**	-0.02%	-0.03%	-0.09%	**-0.17%**	**-0.34%**	**-0.61%**
2012	**1.62%**	**1.04%**	**0.70%**	**0.34%**	**0.20%**	**0.08%**	**-0.09%**	**-0.06%**	**-0.08%**	**-0.10%**	**-0.21%**	**-0.27%**	**-0.49%**

Source: S&P Capital IQ Quantamental Research
Past performance is not a guarantee of future results

Table A.3 Abnormal Returns (AR) around Opportunistic Buy (Sell) Events
Russell 3000; 1/1/2010 – 5/31/2013

Opportunistic	Pre-event						Event	Post-event					
Buy	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day	day	1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
AR	-2.69%	-2.36%	-1.67%	-1.07%	-0.56%	-0.16%	0.39%	0.16%	0.40%	0.50%	0.53%	0.54%	0.29%
AR t-stat	-7.16	-8.42	-7.15	-5.51	-3.72	-1.56	4.40	2.17	3.89	4.02	3.43	2.66	1.02
Hit Rate	38.2%	37.4%	41.3%	42.5%	45.2%	45.1%	57.6%	52.1%	54.3%	54.8%	53.7%	52.8%	49.6%
# Events	898	898	898	898	898	898	898	898	898	898	898	898	898

Opportunistic	Pre-event						Event	Post-event					
Sell	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day	day	1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
AR	2.41%	1.58%	1.03%	0.52%	0.27%	0.07%	-0.09%	-0.06%	-0.10%	-0.14%	-0.20%	-0.36%	-0.28%
AR t-stat	13.49	11.94	10.93	7.94	5.30	2.21	-2.89	-1.90	-2.54	-2.67	-3.03	-3.83	-1.78
Hit Rate	60.7%	58.9%	59.6%	56.8%	53.7%	51.2%	47.2%	47.8%	47.2%	46.7%	47.0%	45.3%	48.6%
# Events	2302	2302	2302	2302	2302	2302	2302	2302	2302	2302	2302	2302	2302

Source: S&P Capital IQ Quantamental Research

Past performance is not a guarantee of future results

Table A.4 Abnormal Returns around Opportunistic Buy Events by Calendar Year
Russell 3000

Opportunistic	Pre-event						Event	Post-event					
Buy	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day	day	1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
2010	**-3.32%**	**-2.28%**	**-1.31%**	**-0.69%**	-0.33%	-0.27%	0.24%	**0.33%**	**0.45%**	**0.53%**	0.50%	**0.96%**	0.29%
2011	**-2.30%**	**-2.02%**	**-1.61%**	**-0.70%**	-0.30%	0.10%	**0.39%**	0.06%	0.27%	**0.44%**	0.50%	0.37%	0.54%
2012	**-2.63%**	**-2.74%**	**-2.04%**	**-1.99%**	**-1.17%**	**-0.49%**	**0.43%**	0.19%	**0.57%**	**0.64%**	0.61%	0.26%	-0.10%

Source: S&P Capital IQ Quantamental Research

Past performance is not a guarantee of future results

Table A.5 Abnormal Returns (AR) around Intensive Buy (Sell) Events
Russell 3000; 9/1/2008 – 5/31/2013

	Pre-event						Event	Post-event					
Intensive Buy	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day	day	1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
AR	-10.49%	-7.06%	-5.40%	-3.32%	-1.61%	-0.33%	1.20%	0.47%	1.15%	1.61%	1.99%	2.50%	3.65%
AR t-stat	-13.88	-10.61	-10.19	-7.87	-4.63	-1.39	5.44	2.79	3.56	4.84	4.62	4.77	4.15
Hit Rate	24.7%	27.5%	30.5%	36.4%	44.7%	47.0%	59.8%	51.3%	52.6%	54.2%	53.4%	55.2%	53.3%
# Events	781	781	781	781	781	781	781	781	781	781	781	781	781

	Pre-event						Event	Post-event					
Intensive Sell	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day	day	1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
AR	5.14%	3.07%	1.87%	0.74%	0.26%	0.13%	0.00%	-0.13%	-0.21%	-0.27%	-0.32%	-0.37%	-0.59%
AR t-stat	12.35	12.42	10.34	5.43	2.55	2.03	0.03	-2.29	-3.07	-3.42	-3.18	-2.39	-2.70
Hit Rate	67.1%	63.3%	60.5%	55.1%	52.3%	51.4%	48.9%	44.4%	43.8%	44.9%	45.8%	45.2%	46.5%
# Events	1576	1576	1576	1576	1576	1576	1576	1576	1576	1576	1576	1576	1576

Source: S&P Capital IQ Quantamental Research

Past performance is not a guarantee of future results

Table A.6 Abnormal Returns around Intensive Buy Events by Calendar Year
Russell 3000

	Pre-event						Event	Post-event					
Intensive Buy	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day	day	1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
2009	**-11.54%**	**-7.06%**	**-5.93%**	**-2.62%**	-1.07%	0.52%	0.67%	0.70%	**2.22%**	**2.36%**	**2.97%**	**4.31%**	**9.20%**
2010	**-6.01%**	**-4.02%**	**-3.46%**	**-2.18%**	-1.11%	-0.72%	**1.57%**	0.44%	**0.77%**	**1.10%**	0.77%	1.43%	2.22%
2011	**-8.85%**	**-6.29%**	**-4.87%**	**-3.03%**	**-0.97%**	0.15%	**1.19%**	0.32%	0.41%	**0.73%**	**1.25%**	0.86%	-0.06%
2012	**-8.81%**	**-5.64%**	**-3.97%**	**-2.10%**	-0.97%	-0.22%	**1.06%**	0.00%	-0.22%	0.39%	0.37%	0.61%	0.35%

Source: S&P Capital IQ Quantamental Research

Past performance is not a guarantee of future results

Table A.7 Abnormal Returns (AR) around Sell to Buy (Buy to Sell) Events
Russell 3000; 3/1/2009 – 5/31/2013

	Pre-event						Event	Post-event					
Sell to Buy	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day	day	1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
AR	-5.08%	-3.15%	-2.07%	-1.16%	-0.55%	-0.21%	0.54%	0.17%	0.43%	0.42%	0.42%	0.39%	0.23%
AR t-stat	-17.50	-13.53	-11.66	-8.29	-5.08	-3.13	8.61	2.87	5.40	4.29	3.39	2.25	0.89
Hit Rate	32.5%	34.3%	38.3%	42.1%	44.8%	47.0%	56.4%	49.6%	52.1%	52.2%	50.6%	49.2%	47.0%
# Events	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850

	Pre-event						Event	Post-event					
Buy to Sell	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day	day	1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
AR	2.75%	1.38%	0.71%	0.27%	0.06%	-0.02%	-0.10%	-0.06%	-0.18%	-0.24%	-0.30%	-0.40%	-0.84%
AR t-stat	7.14	6.99	4.69	2.35	0.62	-0.29	-2.01	-1.10	-2.81	-3.13	-3.06	-2.61	-3.62
Hit Rate	56.4%	55.3%	53.9%	51.0%	48.2%	46.6%	45.7%	45.4%	45.3%	46.2%	46.1%	44.8%	42.8%
# Events	2193	2193	2193	2193	2193	2193	2193	2193	2193	2193	2193	2193	2193

Source: S&P Capital IQ Quantamental Research

Past performance is not a guarantee of future results

Table A.8 Abnormal Returns around Sell to Buy Events by Calendar Year
Russell 3000

	Pre-event						Event	Post-event					
Sell to Buy	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day	day	1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
2010	**-3.97%**	**-2.52%**	**-1.78%**	**-1.21%**	**-0.43%**	-0.14%	**0.56%**	0.09%	**0.42%**	**0.59%**	0.42%	0.41%	0.00%
2011	**-5.34%**	**-3.75%**	**-2.69%**	**-1.71%**	**-0.84%**	**-0.47%**	**0.62%**	**0.23%**	**0.52%**	**0.36%**	**0.47%**	0.18%	-0.36%
2012	**-4.46%**	**-2.69%**	**-1.60%**	-0.45%	-0.12%	0.18%	**0.42%**	0.01%	**0.36%**	**0.50%**	**0.60%**	**0.73%**	1.06%

Source: S&P Capital IQ Quantamental Research

Past performance is not a guarantee of future results

Table A.9 Abnormal Returns (AR) around CEO Net Purchase (CEO Net Sale) Events
Russell 3000; 9/1/2008 – 5/31/2013

	Pre-event						Event	Post-event					
CEO Net Purchase	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day	day	1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
AR	-10.17%	-6.13%	-4.36%	-2.68%	-1.56%	-0.38%	1.32%	0.50%	1.01%	1.60%	1.44%	1.66%	2.96%
AR t-stat	-12.73	-8.18	-7.26	-5.36	-4.13	-1.30	4.87	2.13	3.05	3.71	2.52	2.38	2.17
Hit Rate	26.3%	29.0%	35.1%	37.6%	40.9%	46.8%	58.2%	52.2%	53.0%	54.9%	49.9%	49.7%	50.7%
# Events	479	479	479	479	479	479	479	479	479	479	479	479	479

	Pre-event						Event	Post-event					
CEO Net Sale	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day	day	1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
AR	2.20%	0.72%	0.31%	-0.12%	-0.04%	-0.20%	-0.09%	-0.13%	-0.22%	-0.21%	-0.06%	-0.59%	-0.80%
AR t-stat	2.36	1.70	0.99	-0.46	-0.17	-1.47	-0.88	-1.22	-1.32	-0.95	-0.16	-1.46	-1.60
Hit Rate	54.7%	51.6%	49.4%	50.6%	50.1%	47.3%	47.7%	43.8%	43.2%	43.8%	42.9%	41.2%	45.3%
# Events	539	539	539	539	539	539	539	539	539	539	539	539	539

Source: S&P Capital IQ Quantamental Research

Past performance is not a guarantee of future results

Table A.10 Abnormal Returns around CEO Net Purchase Events by Calendar Year
Russell 3000

	Pre-event						Event	Post-event					
CEO Net Purchase	1 Month	2 Weeks	1 Week	3 Days	2 Days	1 Day	day	1 Day	2 Days	3 Days	1 Week	2 Weeks	1 Month
2009	**-8.25%**	**-3.78%**	**-2.67%**	-1.22%	-0.85%	0.38%	**0.91%**	0.46%	**1.02%**	**1.72%**	0.88%	0.64%	5.06%
2010	**-7.96%**	**-4.78%**	**-2.88%**	**-1.62%**	**-0.84%**	-0.12%	**1.66%**	0.39%	0.18%	0.56%	0.57%	0.41%	0.32%
2011	**-9.90%**	**-6.83%**	**-5.66%**	**-2.90%**	**-1.62%**	-0.49%	**1.86%**	0.22%	0.83%	0.93%	1.15%	0.48%	-0.66%
2012	**-9.41%**	**-5.95%**	**-3.99%**	-2.29%	-1.46%	-1.23%	**1.88%**	-0.73%	-0.30%	-0.80%	-1.43%	**-2.07%**	-1.45%

Source: S&P Capital IQ Quantamental Research

Past performance is not a guarantee of future results

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Our Recent Research

September 2013: Beggar Thy Neighbor – Research Brief: Exploring Pension Plans

Pension underfunding is a worldwide problem. There has been an unending wave of news stories about cities and states across the United States suffering from defined benefit pension funding shortfalls, but these issues extend far beyond the public sector and beyond the United States as well.

In this brief we leverage S&P Capital IQ datasets to examine:

- Companies with the strongest and weakest pension funding status globally.
- Companies with the most optimistic return and discount rate assumptions globally.
- The relationship between projected and realized pension portfolio returns.
- The historical global trends in funding status, portfolio returns, and discount rates.

August 2013: Introducing S&P Capital IQ Global Stock Selection Models for Developed Markets: The Foundations of Outperformance

In this report, we explore the efficacy of different stock selection strategies globally and use this information to develop a suite of robust global stock selection models targeting Canada and the developed markets of Europe and Asia Pacific. Our global models were developed using S&P Capital IQ's industry leading Global Point-in-Time data, as well as the Alpha Factor Library, our web-based global factor research platform. We find that each of our Global Stock Selection Models for Developed Markets yield significant long-short spread returns and information coefficients at the 1% level. This performance is also robust providing similar statistical significance after controlling for Market Cap and Beta exposures.

July 2013: Inspirational Papers on Innovative Topics: Asset Allocation, Insider Trading & Event Studies

Inspiration drives innovation. The writings of Plutarch inspired Shakespeare, Galapagos finches inspired Darwin, and the German Autobahn inspired Eisenhower, but what inspires investment researchers to develop the next innovations for investors? When we get a new investment idea, we seek out literature on that topic to inspire us to bring the idea to fruition. This literature can help to further develop our own thoughts, polish up and expand on our priors, and avoid the pitfalls experienced by earlier researchers. Inspiration from academia enhances our ability to provide innovative solutions for our clients.

June 2013: Supply Chain Interactions Part 2: Companies – Connected Company Returns Examined as Event Signals

Leveraging Compustat customer segment data, we investigate the impact of news for customers and subsequent stock returns for their suppliers, over the time period May 2000 through April 2011 and find that:

- Shares of suppliers with major customer relationships reacted to positive and negative earnings surprise of their customers with a statistically significant 0.93% to 1.97% abnormal spread in the 5 to 60 trading days following the surprise.
- A monthly rebalanced backtest of long-short supplier portfolios based on customer momentum would have resulted in a statistically significant 0.81% average monthly return, or 0.70% after controlling for common risk factor exposures.
- The customer momentum signal historically performs best in cyclical sectors such as Materials and Consumer Discretionary.

June 2013: Behind the Asset Growth Anomaly – Over-promising but Under-delivering

In this paper, we revisit the asset growth anomaly. Our results indicate:

- Asset growth demonstrates return predictive power globally with and without controlling for size, value, 12-month price momentum, and 1-month price reversal factors.
- Information coefficient correlation analyses indicate that there are potential diversification benefits from adding asset growth to other alpha factors.
- The companies that demonstrated the highest asset growth show subsequent deterioration in their top-line and bottom-line growth rates while companies that had the lowest asset growth experience subsequent improvement in their top-line and bottom-line growth rates.

April 2013: Complicated Firms Made Easy – Using Industry Pure-Plays to Forecast Conglomerate Returns

This month we build upon the work done by Cohen and Lou in their 2010 paper, "Complicated Firms", to determine if we can exploit industry level information from pure-play firms to predict the future performance of multi-industry, complicated firms. Leveraging Compustat segment data and Standard Industrial Classification (SIC) 2 digit codes, we exploit the lag in incorporating industry level information between simple and complicated firms to forecast the future performance of complicated firms. This is done by constructing pseudo-conglomerate returns, revisions, and valuation signals that combine the relevant information of all the industries in which a complicated firm operates. These pseudo-conglomerate signals simply weight industry level information (ex: industry return) proportionately to the complicated firm's reported sales in each industry.

March 2013: Risk Models That Work When You Need Them – Short Term Risk Model Enhancements

Equity Risk models are subject to a common criticism. We examined three techniques to further enhance the S&P Capital IQ Fundamental Factor risk models: Utilized the cross sectional dispersion of stock and factor returns by adjusting model factors and stock specific volatilities, change the model production frequency from monthly to daily to capture recent data, and shorten data look back window (1 year as opposed to 2 years) resulting in a more reactive model. Dispersion based adjustments, and high frequency of model generation both improved model results, while a shortened calibration window showed no appreciable improvement.

March 2013: Follow the Smart Money – Riding the Coattails of Activist Investors

Can profits be made by following the actions of activists? One month after the commencement of activism, the strategy yielded a market-adjusted excess return of 3.4%. After controlling for market, size, value, and industry, the excess return was 2.7. Twelve months after the disclosure of activist involvement, the strategy produced an average excess return of 14.1% after controlling for market, size, value, and momentum. We did not find evidence of return reversal up to two years after activism or of diminished excess returns in 2008 -- 2012 vis-à-vis those in 2003 -- 2007.

February 2013: Stock Selection Model Performance Review: Assessing the Drivers of Performance in 2012

In this report, we review the performance of S&P Capital IQ's four U.S. stock selection models in 2012. These models were launched in January 2011, and this analysis will assess the underlying drivers of each model's performance over the 12 months ended December 31, 2012.

January 2013: Research Brief: Exploiting the January Effect Examining Variations in Trend Following Strategies
At the beginning of every year, one topic frequented by many institutional investors is the January Effect. Investors often point to January as the most pronounced example of seasonality, where longer term trend following strategies suddenly underperform and short-term reversal and mean-reversion dominate. But which strategies have performed well in January and is this performance sustainable? With several studies in the Literature documenting the January Effect on company capitalization, we decided to undertake our own review using our S&P Capital IQ Alpha Factor Library (AFL), to examine various strategies' effectiveness during the month.

December 2012: Do CEO and CFO Departures Matter? - The Signal Content of CEO and CFO Turnover
In October of this year, the US equity market was caught off guard with the seemingly sudden departure of Citibank CEO Vikram Pandit. While CEO departures are almost always headline news, CFO departures are not often accompanied with such recognition. We explore the impact of CEO and CFO departures and find consistent results in the US and the Developed World. CEO and CFO departures often signify a turning point in both the company's stock performance and the company's operating metrics.

November 2012: 11 Industries, 70 Alpha Signals -The Value of Industry-Specific Metrics
Investors routinely utilize industry intelligence in their investment process. But which information is relevant? Which is irrelevant? Our work yields some surprising results. This work complements our previous industry work on Retail [June 2011], Banking [Oct 2011], and Oil & Gas [May 2012]. Using S&P Capital IQ's Global Point-in-Time database and Compustat Industry-Specific data, we look at 70 factors in 11 industries: airlines, hospitals & facilities, managed healthcare, pharmaceuticals & biotechnology, homebuilding, insurance, telecommunications, utilities, gold miners, hotels & gaming, and restaurants

October 2012: Introducing S&P Capital IQ's Fundamental Canada Equity Risk Models
In July 2012 we released our regional risk models -- the Pan-Asia ex. Japan and the Pan-European Models, and updated versions of our US and Global Risk Models. Continuing in our efforts to provide a broad set of models to the asset management community, we are now releasing our second single country risk model -- Canada Fundamental Equity Risk Model.

September 2012: Factor Insight: Earnings Announcement Return – Is A Return Based Surprise Superior to an Earnings Based Surprise?

August 2012: Supply Chain Interactions Part 1: Industries Profiting from Lead-Lag Industry Relationships

July 2012: Releasing S&P Capital IQ's Regional and Updated Global & US Equity Risk Models

June 2012: Riding Industry Momentum – Enhancing the Residual Reversal Factor

May 2012: The Oil & Gas Industry - Drilling for Alpha Using Global Point-in-Time Industry Data

May 2012: Case Study: S&P Capital IQ – The Platform for Investment Decisions

March 2012: Exploring Alpha from the Securities Lending Market – New Alpha Stemming from Improved Data

January 2012: S&P Capital IQ Stock Selection Model Review – Understanding the Drivers of Performance in 2011

January 2012: Intelligent Estimates – A Superior Model of Earnings Surprise

December 2011: Factor Insight – Residual Reversal

November 2011: Research Brief: Return Correlation and Dispersion – All or Nothing

October 2011: The Banking Industry

September 2011: Methods in Dynamic Weighting

September 2011: Research Brief: Return Correlation and Dispersion

July 2011: Research Brief - A Topical Digest of Investment Strategy Insights

June 2011: A Retail Industry Strategy: Does Industry Specific Data tell a different story?

May 2011: Introducing S&P Capital IQ's Global Fundamental Equity Risk Models

May 2011: Topical Papers That Caught Our Interest

April 2011: Can Dividend Policy Changes Yield Alpha?

April 2011: CQA Spring 2011 Conference Notes

March 2011: How Much Alpha is in Preliminary Data?

February 2011: Industry Insights – Biotechnology: FDA Approval Catalyst Strategy

January 2011: US Stock Selection Models Introduction

January 2011: Variations on Minimum Variance

January 2011: Interesting and Influential Papers We Read in 2010

November 2010: Is your Bank Under Stress? Introducing our Dynamic Bank Model

October 2010: Getting the Most from Point-in-Time Data

October 2010: Another Brick in the Wall: The Historic Failure of Price Momentum

July 2010: Introducing S&P Capital IQ's Fundamental US Equity Risk Model

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