

Industry Specific Alpha Series
A League of Their Own
Batting for Returns in the REIT Industry – Part 2

Authors

Temí Oyeniýi, CFA
312-233-7151
toyeniýi@spglobal.com

David Pope, CFA
Managing Director of Quantamental
Research
617-530-8112
dpope@spglobal.com

Paul Fruin, CFA
617-530-8208
paul.fruin@spglobal.com

Vivian Ning, CFA
312-233-7148
vning@spglobal.com

Richard Tortoriello
212-438-9506
richard.tortoriello@spglobal.com

Acknowledgements

The authors would like to thank Keven Lindemann and Paul Reeder (Global Real Estate Group at S&P Global Market Intelligence) for their input.

SNL Financial's ("SNL")¹ global real estate database contains property level and geographical market-based demographic information that can be difficult for investors to obtain. These unique data points are valuable to investors seeking an understanding of the relationship between property level information and future stock price movement. In this report, we demonstrate how investors can use these data points as alpha strategies. Our back-tests suggest that metrics constructed from property level information may provide insights about future price direction not captured by fundamental or estimates data. Investors may want to consider incorporating information on a REIT's property portfolio when building a robust REIT strategy.

This paper is an extension of our first work ([REIT Paper - Part 1](#)) published last month on the efficacy of fundamental stock selection signals within the REITs (Real Estate Investment Trusts) industry. Our findings in this report (part 2 of the series) include:

- **Net Operating Income per Property, a measure of property productivity, shows the strongest backtest results when performance is based on annualized long-only active returns²** (3.13%, statistically significant at the 5% level, see Table 1).
- **Investors should consider the ability of a REIT to cover both interest and preferred dividend payments, especially if investors forecast a tightening in monetary policy.** In a rising interest rate environment, Fixed Charge Coverage Ratio (which captures the ability to cover interest and preferred dividends) had an average 1-month long-short return and information coefficient (IC)³ of 5.16% and 0.054 respectively, both statistically significant at the 5% level (Table 3).
- **Metrics constructed using property level and demographic information data have a low correlation with metrics constructed using fundamental and estimates data (Table 5).** A multi-strategy model using all the aforementioned data sets achieved an annualized long-only information ratio (IR)⁴ that was 15% higher than that of the strategy based only on metrics from part 1 (1.34 vs 1.16, see Table 6).
- **We introduce a new class of signals ("Demographic Fundamentals") constructed by overlaying demographic information on REIT property level data (Table 4).** While we could not demonstrate statistical significance from signals constructed using this approach due to limited data history, we intend to revisit this class of signals as the demographic data history grows longer.

¹ SNL Financial is now part of S&P Global Market Intelligence.

² Long-only active equal-weighted return is the equal-weighted return of the top 33% of stocks (based on a metric) minus the equal-weighted return to the Russell 3000 Equity REIT universe as described in Section 5.

³ **Long-short return** is the equal-weighted return of the top 33% of stocks (based on a metric) minus the equal-weighted return of the bottom 33% of stocks, based on the same metric; **IC** is the rank correlation of the metric to forward stock return.

⁴ Information ratio is a risk adjusted return metric and it is calculated as the annualized long-only active return divided by annualized standard deviation of those returns.

1. Factor Formulation and Description

A description of the metrics we tested is provided in Figure 1. The last column denotes the order in which the metric or factor was ranked – “A” for ascending and “D” for descending. Conceptually, we grouped the factors we tested into three groups:

- **Liquidity, Leverage & Credit Quality (“LLCQ”)**: Assesses a REIT’s liquidity level and ability to cover both short and long term financial obligations.
- **Property Fundamentals**: Examines property utilization, and revenue/market concentration.
- **Demographic Fundamentals**: Measures the attractiveness of a REIT’s property portfolio using demographic information.

Figure 1: Definition of Equity Real Estate Investment Trust Metrics

	Metric	Description	Order
Liquidity, Leverage & Credit Quality	Fixed Charge Coverage Ratio ("FCCR")	Earnings Before Interest, Taxation & Amortization ("EBITDA") divided by the sum of interest expense and preferred dividends.	D
	Variable Debt Level ("VDL")	The proportion of variable debt to total debt. A smaller ratio suggests that a REIT has a more stable and predictable source of financing.	A
	Short-Term Debt Level ("STDL")	Ratio of short-term debt to total debt. A large ratio indicates that a REIT will require more liquidity in the short term to meet its obligations.	A
	Short-Term Liquidity	The debt due this fiscal year plus debt due next fiscal year divided by cash. A high ratio indicates a REIT has sufficient cash to meet its maturing obligations.	A
	Credit Availability	Revolving credit lines drawn as a percent of revolving credit lines available. This indicates the level of unused liquidity available to a REIT.	A
	S&P Long-Term Issuer Credit Rating ("S&P LTICR")	A measure of credit quality and default risk.	A
	Tenant S&P Long-Term Issuer Credit Rating ("TenantCRD")	The average of S&P's Long-Term Issuer Credit Rating for all publicly listed tenants of a REIT.	A
	Net Debt / EBITDA ("NDE")	Ratio that indicates a REIT's debt burden.	A
Property Fundamentals	Occupancy Rate	A measure of utilization across a portfolio of properties.	D
	Property Age ("PropAge")	The average age across all the properties in a REIT's portfolio. Newer properties are preferred.	A
	Tenant Revenue Concentration ("TenantREVConc")	Herfindahl index using a REIT's top five tenants (by revenue). A measure of revenue concentration.	A
	Top Market Concentration ("TopMktConc")	Herfindahl index using a REIT's top five markets (by revenue). Since local market knowledge is very important, a higher value is preferred.	D
	Change in 1-Year Occupancy Rate ("ChgOccupancy")	A higher value indicates that the REIT's occupancy rate has improved over the last one year.	D
	Net Operating Income per Property ("NOI per Property")	A measure of property productivity.	D
Demographic Fundamentals	PerCapita Income CAGR	This is the mean per capita income growth rate over the next 5 years across a REIT's geographical location.	D
	Population Growth Rate ("PopGrowth")	This is the mean compounded annual growth rate over the next 5 years across a REIT's geographic location.	D
	Vacant Units Growth Rate	The mean compounded vacancy growth rate over the next 5 years across a REIT's geographic locations.	A

1.1. Back-Test Results

Back-test results for the metrics in the Liquidity, Leverage & Credit Quality (LLCQ) and Property Fundamentals groups are displayed in Table 1⁵ (results for demographic fundamentals are in Section 3). Factors with statistically significant results are greyed out.

All returns were equal-weighted and determined using tertiles. Table 1 includes:

- Start date (the date back-tests commenced for a given metric).
- Average count of stocks with data over the back-test horizon.
- Annualized long-only equal-weighted active return, information ratios and hit rate⁶.
- Annualized equal-weighted long-short return and information coefficient (IC).

**Table 1: Equity REIT Metrics 1-month Performance Summary
Russell 3000 (Equity REITs): Start Date – October 2015**

Metric	Start Date	Average Count	Annualized Long-Only Active Return	Annualized Information Ratio (Long Only Active Return)	Hit Rate (Long-Only Active Return)	Annualized Long-Short Return	1-month Information Coefficient (IC)
Liquidity, Leverage & Credit Quality							
Fixed Charge Coverage Ratio	Mar 1999	71	1.78%	0.36	55%	3.59%*	0.015
Variable Debt Level	Dec 1994	110	1.51%*	0.43	54%	1.82%*	0.011*
Short-Term Debt Level	Dec 1994	105	1.11%*	0.42	56%*	1.70%*	0.012*
Short-Term Liquidity	Dec 1994	103	1.04%	0.35	51%	1.76%	0.011
Credit Availability	Dec 1994	107	1.01%	0.31	60%***	0.42%	0.008
S&P LTICR	May 1997	58	0.25%	0.05	52%	-0.93%	0.010
Net Debt to EBITDA	Apr 1999	70	-0.52%	-0.11	51%	0.58%	0.000
TenantCRD	Jun 2005	56	-1.06%	-0.19	48%	-0.28%	0.003
Property Fundamentals							
NOI Per Property	Mar 1999	81	3.13%**	0.63	59%**	2.72%*	0.023**
Occupancy Rate	Mar 1999	82	0.42%	0.09	55%	1.52%	0.023**
Property Age	Dec 1994	103	0.35%	0.13	53%	0.51%	0.007
Chg1YOccupancy	Mar 2000	75	-0.29%	-0.08	51%	0.12%	0.018*
TenantRevCon	Mar 2002	54	-0.40%	-0.06	50%	0.27%	0.007
Top Markets Concentration	Mar 2010	45	-1.40%	-0.36	52%	-0.67%	-0.015

*** statistically significant at 1% level; ** statistically significant at 5% level; * statistically significant at 10% level.

Source: S&P Global Market Intelligence Quantamental Research. For all exhibits, all returns and indices are unmanaged, statistical composites and their returns do not include payment of any sales charges or fees an investor would pay to purchase the securities they represent. Such costs would lower performance. It is not possible to invest directly in an index. Past performance is not a guarantee of future results. Data as at 07/31/2016.

The first three metrics in the LLCQ category produced long-only active returns, long-short returns or ICs that were significant at the 10% level. Net Debt to EBITDA, which captures the debt burden of a REIT relative to its EBITDA showed no ability to predict future stock return. While we ordered this metric in ascending order (implying that we prefer REITs with lower debt burden), a higher debt burden may only become a problem when it is considered unsustainable, for example in periods of rising interest rates or increased bankruptcy risk.

The intent of both credit metrics (S&P LTICR and TenantCRD) is to separate REITs with high credit quality (both corporate and tenant credit quality) from those with low credit quality based on long term issuer credit ratings provided by S&P Global Ratings⁷. The performance

⁵ See Appendix A for 3-month performance results.

⁶ Hit Rate is the count of monthly positive long-only active returns divided by the count of the entire monthly history.

⁷ S&P Global Market Intelligence is an affiliate of S&P Global Ratings which is analytically and editorially independent from any other group at S&P Global.

of both indicators tested univariately are however quite weak. It is important to note that TenantCRD may not paint a complete picture of the credit quality of a REIT's tenants, as we only have ratings for tenants that are publicly traded. If the majority of a REIT's tenants are private entities, TenantCRD will not be an accurate reflection of the overall credit quality of all tenants.

The factor demonstrating the strongest back test results in the Property Fundamentals category is NOI per Property, with all performance metrics (annualized long-only return, long-short return, IC and hit rate) statistically significant. Occupancy Rate and Chg1YOccupancy also show some degree of efficacy when performance is measured by 1-month IC.

In [REIT Paper - Part 1](#) (see Figure 3), we showed the impact of extreme stock returns on long-only and long-short portfolio returns around the global financial crisis (October 2008 – August 2009). In the next section, we will use a similar approach to review the impact of extreme stock returns during this period on tertile portfolio returns.

1.2. Impact of the Global Financial Crisis on Portfolio Returns

Table 2 shows the performance of all factors when we exclude periods associated with the global financial crisis (October 2008-August 2009). Five of the eight factors in the LLCQ bucket now have annualized long-only excess returns that are statistically significant, the exceptions being the two credit quality metrics and Net Debt to EBITDA.

Four factors also have statistically significant long-short returns, compared to one metric in Table 1.

**Table 2: Equity REITs Metrics: 1-month Performance Summary
Russell 3000 (Equity REITs): Start Date – Oct 2015 (Excluding Oct 2008 – Aug 2009)**

Metric	Start Date	Average Count	Annualized Long-Only Active Return	Annualized Information Ratio (Long Only Active Return)	Hit Rate (Long-Only Active Return)	Annualized Long-Short Return	1-month information Coefficient (IC)
Leverage, Liquidity & Credit Quality							
Fixed Charge Coverage Ratio	Mar 1999	72	1.85%**	0.55	57%*	2.60%*	0.016
Variable Debt Level	Dec 1994	110	1.57%**	0.57	55%	2.36%**	0.011*
Credit Availability	Dec 1994	107	1.28%**	0.53	61%***	1.05%	0.009
Short-Term Liquidity	Dec 1994	103	1.27%**	0.53	52%	1.96%**	0.011
S&P LTICR	May 1997	58	1.14%	0.22	53%	0.46%	0.011
Short-Term Debt Level	Dec 1994	105	1.03%*	0.42	56%*	1.85%**	0.013**
Net Debt to EBITDA	Apr 1999	70	0.40%	0.11	52%	0.45%	0.001
TenantCRD	Apr 1999	56	-1.76%	-0.48	45%	-0.32%	-0.006
Property Fundamentals							
NOI Per Property	Mar 1999	81	3.11%***	0.83	60%***	3.26%**	0.027**
Occupancy Rate	Mar 1999	82	1.05%	0.36	55%	2.82%**	0.024***
Chg1YOccupancy	Mar 2000	75	0.46%	0.14	53%	1.76%	0.021**
TenantRevCon	Mar 2002	54	0.16%	0.03	50%	1.10%	0.009
Property Age	Dec 1994	104	0.15%	0.06	52%	1.11%	0.009
Top Markets Concentration	Mar 2010	45	-1.40%	-0.36	52%	-0.67%	-0.015

*** statistically significant at 1% level; ** statistically significant at 5% level; * statistically significant at 10% level.

Source: S&P Global Market Intelligence Quantamental Research. For all exhibits, all returns and indices are unmanaged, statistical composites and their returns do not include payment of any sales charges or fees an investor would pay to purchase the securities they represent. Such costs would lower performance. It is not possible to invest directly in an index. Past performance is not a guarantee of future results. Data as at 07/31/2016.

2. Regime Study: Impact of Rising Interest Rates on Factor Performance

We were interested to see how metrics that assess a REIT's liquidity level and ability to meet its financial obligations performed in a rising interest rate environment. In this analysis, we looked at the performance of all metrics during the last series of rate hikes by the Federal Reserve ("Fed"), which spanned June 2004 – August 2006. Note that the short window makes it challenging to achieve statistical significance. The results for some of the metrics in the LLCQ category are displayed in Table 3 (see Appendix B for results on all metrics).

**Table 3: Factor Performance in Rising Interest Rate Regime:
Russell 3000 (Equity REITS): June 2004 – August 2006**

Metric	Average Count	Annualized Long-Only Active Return	Annualized Information Ratio (Long Only Active Return)	Hit Rate (Long-Only Active Return)	Annualized Long-Short Return	1-month information Coefficient (IC)
Fixed Charge Coverage Ratio	63	2.89%	0.98	56%	5.16%**	0.054**
Net Debt to EBITDA	61	2.40%	0.90	52%	2.77%	0.039*
Short-Term Debt Level	106	0.16%	0.10	42%	2.20%	0.039**

*** statistically significant at 1% level; ** statistically significant at 5% level; * statistically significant at 10% level.

Source: S&P Global Market Intelligence Quantamental Research. For all exhibits, all returns and indices are unmanaged, statistical composites and their returns do not include payment of any sales charges or fees an investor would pay to purchase the securities they represent. Such costs would lower performance. It is not possible to invest directly in an index. Past performance is not a guarantee of future results. Data as at 07/31/2016.

Investors should pay attention to the ability of a REIT to cover interest and preferred dividend payments if they anticipate the Fed will raise interest rates. Fixed Charge Coverage Ratio was the strongest metric in the LLCQ category, with an annualized long short return of 5.16% and 1-month IC of 0.054. The average 1-month IC of Net Debt to EBITDA provides another indication of the importance of debt levels in a tightening monetary policy regime. The IC of this metric was 0.00 over the full period, implying no predictive power (Table 1). However, when we restricted our analysis to only periods of rising interest rates, the IC improved to 0.039 (significant at the 10% level).

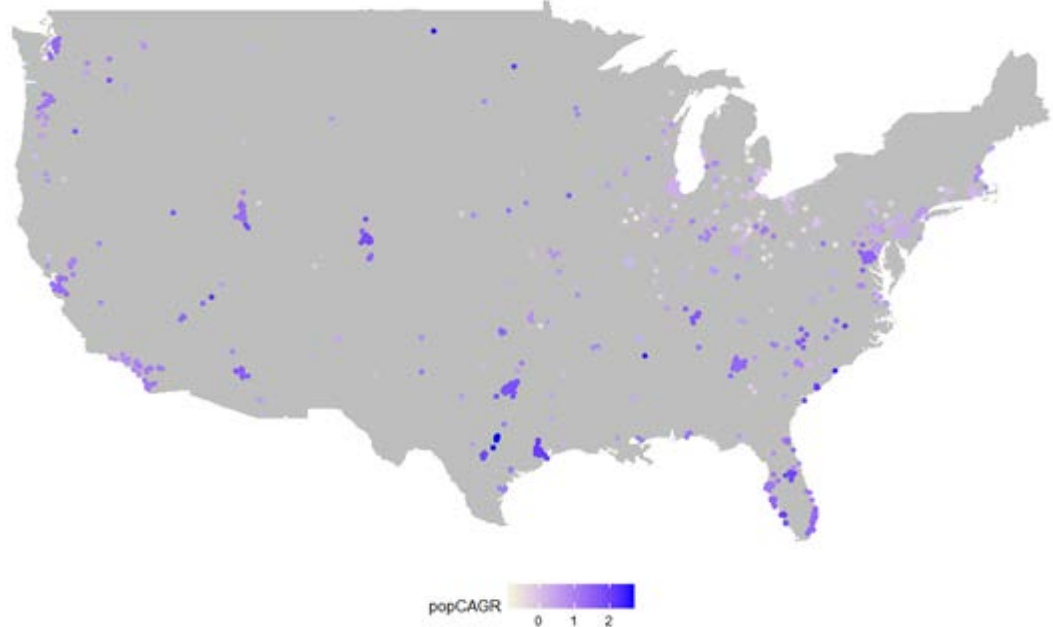
3. Demographic Fundamentals

One of the unique data items available in the SNL Global Real Estate database is the geographical location (based on a longitude and latitude coordinate system) of each property in a REIT's portfolio. How can this information be used by an investor? One approach would be to map the geographical location of each property and then overlay this with demographic information specific to that location.

For example, consider two REITs (REIT A and REIT B) focused on managing residential apartments. After overlaying the demographic information on the geographical location of the properties of both REITs, and aggregating the demographic information across all properties for each REIT, an investor may then draw observations, such as which REIT has more properties in areas with high vacancy or unemployment rates?

Figure 2 is a graphical representation of the process described above for HCP, Inc., a healthcare focused REIT. Each point represents a property (1,091 in total) and its color reflects the 5-year compounded annual population growth rate ("CAGR"), which ranged from -0.86% to 2.63%.

Figure 2: HCP, Inc: Geographical Property Location for U.S Real Estate Portfolio overlaid with 5-Year Population CAGR (November 2015)



Source: S&P Global Market Intelligence Quantamental Research. Data as at 07/31/2016

Ideally, an investor should prefer REITs with good or improving demographic fundamentals over those with poor or deteriorating fundamentals.

**Table 4: Demographic Fundamentals Performance Summary
Russell 3000 (Equity REITs): Start Date – October 2015**

Metric	Start Date	Average Count	Annualized Long-Only Active Return	Annualized Information Ratio (Long Only Active Return)	Hit Rate (Long-Only Active Return)	Annualized Long-Short Return	1-month Information Coefficient (IC)
Population Growth CAGR	June 2013	133	1.84%	0.89	57%	1.09%	0.012
Vacant Units CAGR	June 2013	133	0.71%	0.40	56%	0.32%	0.006
PerCapita Income CAGR	June 2013	133	0.05%	0.02	54%	-1.60%	-0.016

Source: S&P Global Market Intelligence Quantamental Research. For all exhibits, all returns and indices are unmanaged, statistical composites and their returns do not include payment of any sales charges or fees an investor would pay to purchase the securities they represent. Such costs would lower performance. It is not possible to invest directly in an index. Past performance is not a guarantee of future results. Data as at 07/31/2016.

An obvious issue is the short back-test history, as this makes it difficult to draw statistically significant conclusions (Table 4). Our intent is to show a practical way to use this data. As the history of the demographic data increases, we will revisit the efficacy of these indicators.

4. Combining the Metrics in a Multi-Factor Framework

We extend the multi-factor framework approach we introduced in our earlier work on REITs to include the additional metrics we have discussed in this paper (excluding the metrics in the demographic fundamentals group due to their short data history). The goal is to determine if there is value in combining all the various metrics we have identified so far in both research papers.

We selected one metric each from six categories (four categories from REIT paper - part 1⁸, and two categories from this paper). The rank correlation between the six metrics is displayed in Table 5. Five of the six correlation coefficients are not statistically significant, except for the coefficient between FFO Pay-Out Ratio and SFFO1YG, which is significant at the 10% level. The two metrics selected from this paper (last 2 rows of Table 5) have low correlation with the four metrics selected from the first paper (first four rows).

Table 5: Factor Rank Correlation Matrix (Aug 2004 – Oct 2015)

	Net Asset Value to Price ("NAVP")	3-month Change in FFO to Price ("Chg3MFY1FFO")	1-year Change in FFO per Share ("SFFO1YG")	FFO Pay-Out Ratio	NOI per Property	Fixed Charge Coverage Ratio
Net Asset Value to Price ("NAVP")	1					
3-month Change in FFO to Price ("Chg3MFY1FFO")	-0.09	1				
1-year Change in FFO per Share ("SFFO1YG")	0.00	0.08	1			
FFO Pay-Out Ratio	-0.04	0.04	0.16*	1		
NOI per Property	-0.03	-0.02	0.06	0.09	1	
Fixed Charge Coverage Ratio	-0.08	-0.01	0.07	0.02	0.04	1

*** statistically significant at 1% level; ** statistically significant at 5% level; * statistically significant at 10% level.

Source: S&P Global Market Intelligence Quantamental Research. For all exhibits, all returns and indices are unmanaged, statistical composites and their returns do not include payment of any sales charges or fees an investor would pay to purchase the securities they represent. Such costs would lower performance. It is not possible to invest directly in an index. Past performance is not a guarantee of future results. Data as at 07/31/2016.

4.1. Strategy Performance

We show the performance of a 4-factor strategy ("REITs Strategy I") and a 6-factor strategy ("REITs Strategy II") in the first two rows of Table 6⁹. REITs Strategy I (REITs Strategy II) is an equal-weighted composite of the first four (all six) metrics in Table 5.

Table 6: Performance Summary - Russell 3000 (Equity REITs): August 2004 – October 2015

Metric	Average Count	Annualized Long-Only Active Return	Annualized Information Ratio (Long Only Active Return)	Hit Rate (Long-Only Active Return)	Annualized Long-Short Return	Annualized Information Ratio (Long Short Active Return)	1-month information Coefficient (IC)
REITs Strategy II - 6 Factors	108	4.81%***	1.34	66%***	8.37%***	1.27	0.062***
REITs Strategy I - 4 Factors	105	5.02%***	1.16	64%***	8.05%***	1.09	0.062***
NAVP	113	3.82%**	0.50	60%**	7.81%*	0.53	0.047***
FFO PayOut Ratio	106	2.77%**	0.62	53%	4.75%**	0.64	0.025**
NOI per Property	97	2.30%	0.46	59%**	2.46%	0.35	0.027**
SFFO1YG	89	1.28%	0.40	50%	2.08%	0.36	0.017
Fixed Charge Coverage Ratio	80	0.27%	0.05	49%	1.61%	0.19	0.007
Chg3MFY1FFO	112	-0.31%**	-0.07	61%**	-0.48%	-0.05	0.027***

*** statistically significant at 1% level; ** statistically significant at 5% level; * statistically significant at 10% level.

Source: S&P Global Market Intelligence Quantamental Research. For all exhibits, all returns and indices are unmanaged, statistical composites and their returns do not include payment of any sales charges or fees an investor would pay to purchase the securities they represent. Such costs would lower performance. It is not possible to invest directly in an index. Past performance is not a guarantee of future results. Data as at 07/31/2016.

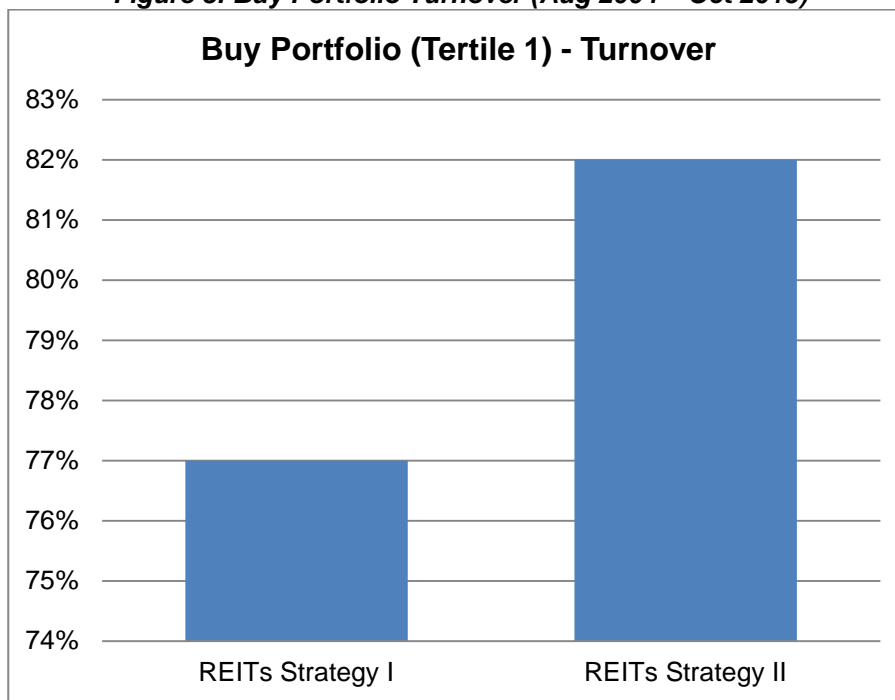
⁸ See Figure 2 ([REIT Paper - Part 1](#)) for the definition of the four metrics selected from the first part of our REIT research.

⁹ A stock must have factor values for at least 2 metrics before it is ranked in the 4-factor strategy, while a stock must have factor values for at least 3 metrics before it is ranked in the 6-factor strategy.

While REITs Strategy I has a higher annualized long-only active return, REITs Strategy II has a higher long-only IR (1.34 vs 1.16) and annualized long-short IR (1.27 vs 1.09), indicating that blending factors in this paper with those highlighted in the first paper helped to dampen return volatility and improve risk-adjusted performance. Both multi-factor strategies have better performance metrics than any of the underlying factors indicating that the multi-strategy framework is superior to any single factor strategy.

An important characteristic to consider is the turnover or portfolio churn associated with a strategy, as transaction costs constitute a drag on portfolio performance. A simple way to measure portfolio turnover is by examining the number of stocks that remain in the “buy” portfolio on a month-to-month basis¹⁰. Strategies with a higher proportion of stocks that stay in the buy portfolio month-to-month will induce a lower turnover than strategies with a lower proportion.

Figure 3: Buy Portfolio Turnover (Aug 2004 – Oct 2015)



Source: S&P Global Market Intelligence Quantamental Research. Data as at 07/31/2016.

The buy portfolio turnover for REITs Strategy I is 77% compared to 82% for REITs Strategy II (Figure 3), indicating a lower churn for the latter strategy.

5. Universe

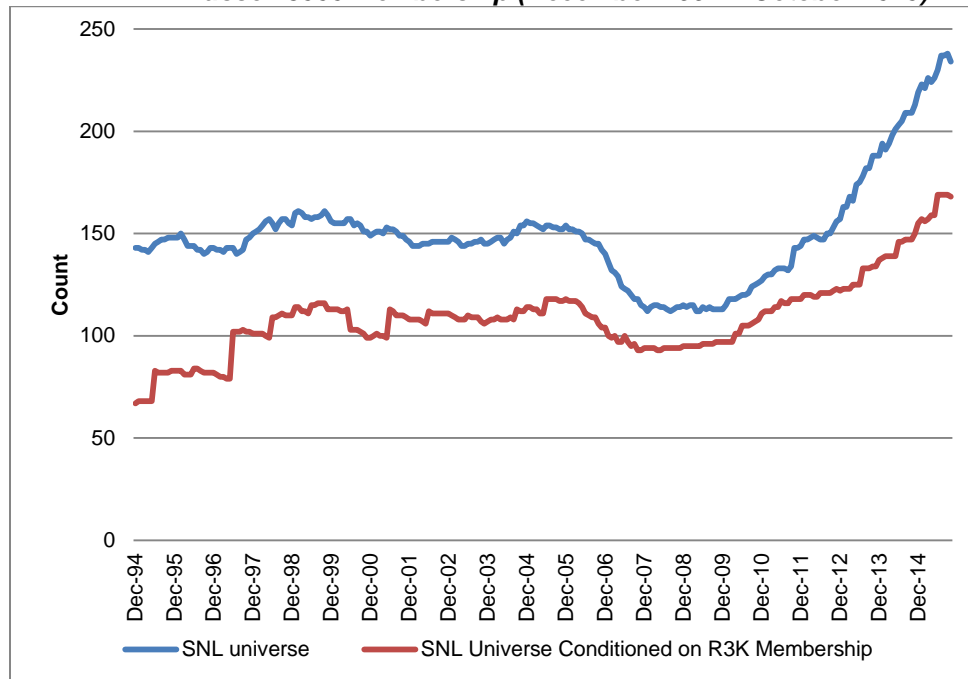
In this study, we started with all the securities in the SNL Corporate North America Master File. We then required that the property “Investment Focus” and “Elected REIT Status” fields be set to “equity” and “1” respectively to ensure that we were capturing equity

¹⁰ Another way to measure portfolio churn of a strategy is by looking at its 1-month rank auto-correlation coefficient. A higher measurement indicates lower churn. The 1-month auto correlation coefficient of REITs Strategy I is 0.84 while it is 0.88 for REITs Strategy II.

securities that had elected “REIT status”. We used the “Month REIT Status Established” and “Year REIT Status Established” fields to determine the month and year REIT election occurred (we assumed election occurred prior to January 1995 where both fields were missing). Finally, we required membership in the Russell 3000 (to address issues with size and liquidity) before we included a security in our final universe.

The time series count for the SNL Universe and the SNL Universe conditioned on Russell 3000 membership (which was used for all our tests) is shown in Figure 4. The universe conditioned on Russell 3000 membership averaged 109 securities and was 168 as at the end of October 2015.

Figure 4: Time Series Count of SNL Universe and SNL Universe Conditioned on Russell 3000 Membership (December 1994 – October 2015)



Source: S&P Global Market Intelligence Quantamental Research. Data as at 07/31/2016

6. Factor Construction Methodology

One consistent theme we heard during our discussions with analysts was that REITs were not “homogenous”; fundamentals can differ significantly across property focus types or sub-industries. This difference in fundamentals across sub-industries is visible in Table 7 where we show the aggregate¹¹ Funds from Operations (“FFO”) / Total Revenue ratio (%) for five sub-industries over the last five years, including the average over the same period. The 5-year average for the self-storage sub-industry is three times that of the Hotel sub-industry.

¹¹ Sub-industry aggregates are market-cap weighted

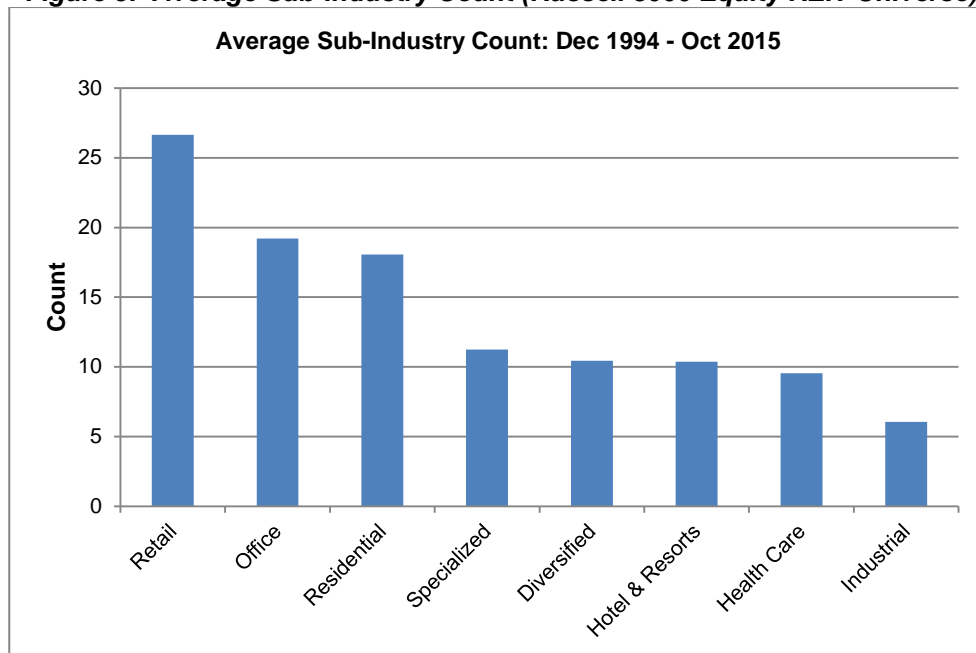
Table 7: FFO / Total Revenue (%)

Property Focus / Sub-Industry	12/31/2011	12/31/2012	12/31/2013	12/31/2014	12/31/2015	Average
SNL U.S. REIT Healthcare	44	47	46	46	35	44
SNL U.S. REIT Hotel	13	14	18	21	21	18
SNL U.S. REIT Industrial	31	29	50	49	54	42
SNL U.S. REIT Manufactured Homes	25	28	26	29	30	28
SNL U.S. REIT Self-storage	57	50	55	55	54	54

Source: S&P Global Market Intelligence Quantamental Research. Data as at 07/31/2016

Each analyst we spoke with had a different way of dividing a REITs universe into different cohorts. Our goal was to have a reasonable number of securities with similar property focus in each cohort. We settled on the 8 GICS Real Estate sub-industries as the basis for our universe as it served our purpose. The average count of the number of REITs for each of the 8 sub-industries is shown in Figure 5.

Figure 5: Average Sub-Industry Count (Russell 3000 Equity REIT Universe)



Source: S&P Global Market Intelligence Quantamental Research. Data as at 07/31/2016

Each metric (financial or demographic ratio) we tested was constructed by first calculating Z-Scores at the sub-industry level, then re-ranking across the REIT universe using the sub-industry Z-Scores. We applied the following assumptions to our back-tests:

- Fundamental metrics were lagged 90 days from the period end date.
- Own (tenant) long-term issue credit ratings were expired 12 months after issue date.
- Demographic data was lagged by 6-months.

7. Data

The data for this research was from SNL Financial's Global Real Estate database. SNL Financial ("SNL") is now part of S&P Global Market Intelligence and contains industry-specific content. As of September 2015, SNL's Real Estate database covered over 1,000 companies in 46 countries. In addition to fundamental and estimate data, SNL collects information on over 80,000+ individual properties. Some of the data items in the detail property level data set include tenant information (top tenant contribution to revenue, publicly-traded tenant issuer credit rating from the rating agencies), top markets contribution to revenue, and occupancy rate. Another interesting data set within the Real Estate database is demographic and unemployment information, which can be mapped to the location of each REITs property.

8. Conclusion

REITs are one of the most challenging asset classes to model as their underlying operations are different from companies in other (non-real estate) sectors. In the first part of our REIT research, we identified several fundamental and estimate-based metrics that could help investors pursuing an active strategy select stocks within the REITs industry.

In this second part, we have identified additional factors based on both fundamental and property-level information that investors may want to consider for a stock selection strategy. We also demonstrated that a multi-factor approach, such as the six-factor strategy discussed in this paper, provided stronger results than any single metric we explored.

Readers interested in replicating or extending the work we have done based on SNL's fundamental data, now have the opportunity to do so. SNL's Global Fundamental Real Estate data is now available via S&P Global Market Intelligence's Xpressfeed platform and on ClariFI¹², the research engine we used for this study.

¹² ClariFI is an advanced research and portfolio management platform built to provide asset managers with complete solutions for their research and production workflows.

Appendix A**Equity REIT Metrics: 3-month Return Horizon (Non-Overlapping Returns)
Performance Summary - Russell 3000 (Equity REITs): Start Date – October 2015**

Metric	Start Date	Average Count	Annualized Long-Only Active Return	Annualized Information Ratio (Long Only Active Return)	Hit Rate (Long-Only Active Return)	Annualized Long-Short Return	3-month information Coefficient (IC)
Leverage, Liquidity & Credit Quality							
Fixed Charge Coverage Ratio	March 1999	73	1.37%	0.40	64%**	2.02%	0.027
Variable Debt Level	Dec 1994	111	1.15%	0.33	52%	1.39%	0.021*
Short-Term Liquidity	Dec 1994	105	1.20%**	0.45	63%**	1.53%	0.020*
Credit Availability	Dec 1994	108	0.99%	0.37	60%	0.33%	0.020*
Short-Term Debt Level	Dec 1994	107	0.82%	0.31	54%	1.02%	0.019*
S&P LTICR	June 1997	59	0.28%	0.04	58%	-1.85%	0.009
Net Debt to EBITDA	March 1999	72	-1.30%	-0.23	43%	-1.09%	0.000
TenantCRD	June 2005	59	-1.13%	-0.22	45%	-1.35%	0.004
Property Fundamentals							
NOI Per Property	March 1999	82	3.38%***	0.61	61%*	2.77%	0.044**
TenantRevCon	March 2002	54	1.50%	0.22	51%	1.56%	0.003
Occupancy Rate	March 1999	82	0.41%	0.10	58%	0.41%	0.041***
Property Age	Dec 1994	95	0.15%	0.06	49%	-1.19%	-0.010
ChgNumProp	March 1998	101	-0.03%	0.00	51%	-1.31%	-0.004
Top Markets Concentration	March 2010	50	-0.07%	-0.03	52%	0.23%	0.000
Chg1YOccupancy	March 2000	77	-0.29%	-0.08	52%	0.17%	0.037**
Growth in SqFT	June 2007	73	-3.32%	-0.42	32%*	-5.55%	-0.031

*** Statistically significant at 1% level; ** statistically significant at 5% level; * statistically significant at 10% level.

Source: S&P Global Market Intelligence Quantamental Research. For all exhibits, all returns and indices are unmanaged, statistical composites and their returns do not include payment of any sales charges or fees an investor would pay to purchase the securities they represent. Such costs would lower performance. It is not possible to invest directly in an index. Past performance is not a guarantee of future results. Data as at 07/31/2016.

Appendix B**Equity REIT Metrics: Performance Summary - Russell 3000 (Equity REIT):
Start Date – October 2015 (Excluding Oct 2008 – Aug 2009)**

Metric	Start Date	Average Count	Annualized Long-Only Active Return	Annualized Information Ratio (Long Only Active Return)	Hit Rate (Long-Only Active Return)	Annualized Long-Short Return	3-month Information Coefficient (IC)
Leverage, Liquidity & Credit Quality							
Fixed Charge Coverage Ratio	March 1999	73	1.37%	0.40	64%**	2.02%	0.027
Variable Debt Level	Dec 1994	111	1.15%	0.33	52%	1.39%	0.021*
Short-Term Liquidity	Dec 1994	105	1.20%**	0.45	63%**	1.53%	0.020*
Credit Availability	Dec 1994	108	0.99%	0.37	60%	0.33%	0.020*
Short-Term Debt Level	Dec 1994	107	0.82%	0.31	54%	1.02%	0.019*
S&P LTICR	June 1997	59	0.28%	0.04	58%	-1.85%	0.009
Net Debt to EBITDA	March 1999	72	-1.30%	-0.23	43%	-1.09%	0.000
TenantCRD	June 2005	59	-1.13%	-0.22	45%	-1.35%	0.004
Property Fundamentals							
NOI Per Property	March 1999	82	3.38%***	0.61	61%*	2.77%	0.044**
TenantRevCon	March 2002	54	1.50%	0.22	51%	1.56%	0.003
Occupancy Rate	March 1999	82	0.41%	0.10	58%	0.41%	0.041***
Property Age	Dec 1994	95	0.15%	0.06	49%	-1.19%	-0.010
Top Markets Concentration	March 2010	50	-0.07%	-0.03	52%	0.23%	0.000
Chg1YOccupancy	March 2000	77	-0.29%	-0.08	52%	0.17%	0.037**

*** Statistically significant at 1% level; ** statistically significant at 5% level; * statistically significant at 10% level.

Source: S&P Global Market Intelligence Quantamental Research. For all exhibits, all returns and indices are unmanaged, statistical composites and their returns do not include payment of any sales charges or fees an investor would pay to purchase the securities they represent. Such costs would lower performance. It is not possible to invest directly in an index. Past performance is not a guarantee of future results. Data as at 07/31/2016.

Our Recent Research

September 2016: [A League of their Own: Batting for Returns in the REIT Industry - Part 1](#)

This month REITs (Real Estate Investment Trusts) have been separated from the GICS (Global Industry Classification Standard) Financial sector into a sector of their own. Even prior to the sector reclassification, investors have been attracted to REITs' strong performance and attractive yield. REITs differ from traditional companies in several important ways. Metrics that investors typically use to value or evaluate the attractiveness of stocks such as earnings yield or book-to-price are less meaningful for REITs. For active investors interested in understanding their REITs portfolio, an understanding of the relationship between REIT financial ratios and price appreciation is instructive. Is dividend yield relevant? What about funds from operations ("FFO"), one of the most widely used metrics?

August 2016: [Mergers & Acquisitions: The Good, the Bad and the Ugly \(and how to tell them apart\)](#)

In this study we show that, among Russell 3000 firms with acquisitions greater than 5% of acquirer enterprise value, post-M&A acquirer returns have underperformed peers in general. Specifically, we find that:

- Acquirers lag industry peers on a variety of fundamental metrics for an extended period following an acquisition.
- Stock deals significantly underperform cash deals. Acquirers using the highest percentage of stock underperform industry peers by 3.3% one year post-close and by 8.1% after three years.
- Acquirers that grow quickly pre-acquisition often underperform post-acquisition.
- Excess cash on the balance sheet is detrimental for M&A, possibly due to a lack of discipline in deploying that cash.

July 2016: [Preparing for a Slide in Oil Prices -- History May Be Your Guide](#)

With the price of West Texas Intermediate (WTI) in the mid-forties, oversupply concerns and the continued threat of a global slowdown have led many to fear a resumed oil price decline. The year-to-date performance of Oil & Gas (O&G) companies, particularly Integrated O&G entities has been strong, further contributing to concerns that oil may be poised to retrench.

June 2016: [Social Media and Stock Returns: Is There Value in Cyberspace?](#)

This review of social media literature represents a selection of articles we found particularly pragmatic and/or interesting. Although we have not done research in the area of social media, we are always on the hunt for interesting insights, and offer these papers for your thoughtful consideration.

April 2016: [An IQ Test for the "Smart Money" – Is the Reputation of Institutional Investors Warranted?](#)

This report explores four classes of stock selection signals associated with institutional ownership ('IO'): Ownership Level, Ownership Breadth, Change in Ownership Level and Ownership Dynamics. It then segments these signals by classes of institutions: Hedge Funds, Mutual Funds, Pension Funds, Banks and Insurance Companies. The study confirms

many of the findings from earlier work – not only in the U.S., but also in a much broader geographic scope – that Institutional Ownership may have an impact on stock prices. The analysis then builds upon existing literature by further exploring the benefit of blending 'IO' signals with traditional fundamental based stock selection signals.

March 2016: [Stock-Level Liquidity – Alpha or Risk? - Stocks with Rising Liquidity Outperform Globally](#)

Most investors do not associate stock-level liquidity as a stock selection signal, but as a measure of how easily a trade can be executed without incurring a large transaction cost or adverse price impact. Inspired by recent literature, such as Bali, Peng, Shen and Tang (2012), we show globally that a strategy of buying stocks with the highest one-year change in stock-level turnover has historically outperformed the market and has outperformed strategies of buying stocks with strong price momentum, attractive valuation, or high quality. One-year change in stock-level turnover has a low correlation (i.e., <0.15) with commonly used stock selection signals. When it is combined with these signals, the composites have yielded higher excess returns and information ratios (IR) than the standalone raw signals.

February 2016: [U.S. Stock Selection Model Performance Review - The most effective investment strategies in 2015](#)

Since the launch of the four S&P Capital IQ[®] U.S. stock selection models in January 2011, **the performance of all four models (Growth Benchmark Model, Value Benchmark Model, Quality Model, and Price Momentum Model) has been positive each year.** The models' key differentiators – a distinct formulation for large cap versus small cap stocks, incorporation of industry specific information for the financial sector, sector neutrality to target stock specific alpha, and factor diversity – enabled the models to outperform across disparate market environments. In this report, we assess the underlying drivers of each model's performance in 2015 and since inception (2011), and provide full model performance history from January 1987.

January 2016: [What Does Earnings Guidance Tell Us? – Listen When Management Announces Good News](#)

This study examines stock price movements surrounding earnings per share (EPS) guidance announcements for U.S. companies between January 2003 and February 2015 using S&P Capital IQ's Estimates database. Companies that experienced positive guidance news, i.e. those that announced optimistic guidance (guidance that is higher than consensus estimates) or revised their guidance upward, yielded positive excess returns. We focus on guidance that is not issued concurrent with earnings releases in order to have a clear understanding of the market impact of guidance disclosures. We also explore practical ways in which investors may benefit from annual and quarterly guidance information.

December 2015: [Equity Market Pulse – Quarterly Equity Market Insights Issue 6](#)

November 2015: [Late to File - The Costs of Delayed 10-Q and 10-K Company Filings](#)

October 2015: [Global Country Allocation Strategies](#)

September 2015: [Equity Market Pulse – Quarterly Equity Market Insights Issue 5](#)

September 2015: [Research Brief: Building Smart Beta Portfolios](#)

September 2015: [Research Brief – Airline Industry Factors](#)

August 2015: [Point-In-Time vs. Lagged Fundamentals – This time i\(t\)'s different?](#)

August 2015: [Introducing S&P Capital IQ Stock Selection Model for the Japanese Market](#)

July 2015: [Research Brief – Liquidity Fragility](#)

June 2015: [Equity Market Pulse – Quarterly Equity Market Insights Issue 4](#)

May 2015: [Investing in a World with Increasing Investor Activism](#)

April 2015: [Drilling for Alpha in the Oil and Gas Industry – Insights from Industry Specific Data & Company Financials](#)

March 2015: [Equity Market Pulse – Quarterly Equity Market Insights Issue 3](#)

February 2015: [U.S. Stock Selection Model Performance Review - The most effective investment strategies in 2014](#)

January 2015: [Research Brief: Global Pension Plans - Are Fully Funded Plans a Relic of the Past?](#)

January 2015: [Profitability: Growth-Like Strategy, Value-Like Returns - Profiting from Companies with Large Economic Moats](#)

November 2014: [Equity Market Pulse – Quarterly Equity Market Insights Issue 2](#)

October 2014: [Lenders Lead, Owners Follow - The Relationship between Credit Indicators and Equity Returns](#)

August 2014: [Equity Market Pulse – Quarterly Equity Market Insights Issue 1](#)

July 2014: [Factor Insight: Reducing the Downside of a Trend Following Strategy](#)

May 2014: [Introducing S&P Capital IQ's Fundamental China A-Share Equity Risk Model](#)

April 2014: [Riding the Coattails of Activist Investors Yields Short and Long Term Outperformance](#)

March 2014: [Insights from Academic Literature: Corporate Character, Trading Insights, & New Data Sources](#)

February 2014: [Obtaining an Edge in Emerging Markets](#)

February 2014: [U.S Stock Selection Model Performance Review](#)

January 2014: [Buying Outperformance: Do share repurchase announcements lead to higher returns?](#)

October 2013: [Informative Insider Trading - The Hidden Profits in Corporate Insider Filings](#)

September 2013: [Beggar Thy Neighbor – Research Brief: Exploring Pension Plans](#)

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

July 2013: [Inspirational Papers on Innovative Topics: Asset Allocation, Insider Trading & Event Studies](#)

June 2013: [Supply Chain Interactions Part 2: Companies – Connected Company Returns Examined as Event Signals](#)

June 2013: [Behind the Asset Growth Anomaly – Over-promising but Under-delivering](#)

April 2013: [Complicated Firms Made Easy - Using Industry Pure-Plays to Forecast Conglomerate Returns.](#)

March 2013: [Risk Models That Work When You Need Them - Short Term Risk Model Enhancements](#)

March 2013: [Follow the Smart Money - Riding the Coattails of Activist Investors](#)

February 2013: [Stock Selection Model Performance Review: Assessing the Drivers of Performance in 2012](#)

January 2013: [Research Brief: Exploiting the January Effect Examining Variations in Trend Following Strategies](#)

December 2012: [Do CEO and CFO Departures Matter? - The Signal Content of CEO and CFO Turnover](#)

November 2012: [11 Industries, 70 Alpha Signals -The Value of Industry-Specific Metrics](#)

October 2012: [Introducing S&P Capital IQ's Fundamental Canada Equity Risk Models](#)

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](#)

Copyright © 2016 by S&P Global Market Intelligence. All rights reserved.

No content (including ratings, credit-related analyses and data, valuations, model, software or other application or output therefrom) or any part thereof (Content) may be modified, reverse engineered, reproduced or distributed in any form by any means, or stored in a database or retrieval system, without the prior written permission of S&P Global Market Intelligence or its affiliates (collectively, S&P). The Content shall not be used for any unlawful or unauthorized purposes. S&P and any third-party providers, as well as their directors, officers, shareholders, employees or agents (collectively S&P Parties) do not guarantee the accuracy, completeness, timeliness or availability of the Content. S&P Parties are not responsible for any errors or omissions (negligent or otherwise), regardless of the cause, for the results obtained from the use of the Content, or for the security or maintenance of any data input by the user. The Content is provided on an “as is” basis. S&P PARTIES DISCLAIM ANY AND ALL EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, FREEDOM FROM BUGS, SOFTWARE ERRORS OR DEFECTS, THAT THE CONTENT’S FUNCTIONING WILL BE UNINTERRUPTED OR THAT THE CONTENT WILL OPERATE WITH ANY SOFTWARE OR HARDWARE CONFIGURATION. In no event shall S&P Parties be liable to any party for any direct, indirect, incidental, exemplary, compensatory, punitive, special or consequential damages, costs, expenses, legal fees, or losses (including, without limitation, lost income or lost profits and opportunity costs or losses caused by negligence) in connection with any use of the Content even if advised of the possibility of such damages.

Credit-related and other analyses, including ratings, and statements in the Content are statements of opinion as of the date they are expressed and not statements of fact. S&P Global Market Intelligence’s opinions, analyses and rating acknowledgment decisions (described below) are not recommendations to purchase, hold, or sell any securities or to make any investment decisions, and do not address the suitability of any security. S&P Global Market Intelligence assumes no obligation to update the Content following publication in any form or format. The Content should not be relied on and is not a substitute for the skill, judgment and experience of the user, its management, employees, advisors and/or clients when making investment and other business decisions. S&P Global Market Intelligence does not act as a fiduciary or an investment advisor except where registered as such. While S&P Global Market Intelligence has obtained information from sources it believes to be reliable, S&P Global Market Intelligence does not perform an audit and undertakes no duty of due diligence or independent verification of any information it receives.

S&P keeps certain activities of its business units separate from each other in order to preserve the independence and objectivity of their respective activities. As a result, certain business units of S&P may have information that is not available to other S&P business units. S&P has established policies and procedures to maintain the confidentiality of certain non-public information received in connection with each analytical process.

S&P may receive compensation for its ratings and certain analyses, normally from issuers or underwriters of securities or from obligors. S&P reserves the right to disseminate its opinions and analyses. S&P’s public ratings and analyses are made available on its Web sites, www.standardandpoors.com (free of charge), and www.ratingsdirect.com and www.globalcreditportal.com (subscription), and may be distributed through other means, including via S&P publications and third-party redistributors. Additional information about our ratings fees is available at www.standardandpoors.com/usratingsfees.