# Research Brief: Four Important Things to Know About Banks in a Rising Rate Environment

**Author**
Richard Tortoriello
Quantamental Research
212-438-9506
richard.tortoriello@spglobal.com

**Acknowledgements**
Special thanks to Nathan Stovall and Chris Vanderpool of S&P Global Market Intelligence.

On June 14, the Federal Reserve raised short-term interest rates for the fourth time since 2015. With the Fed signaling further rate hikes ahead, bank investors may want to know which investment strategies have worked best in a rising rate environment historically. This paper leverages our empirical work on the SNL Bank fundamental data to aid investors in selecting bank stocks as rates rise.

- **In a rising rate environment, investors should focus on valuation.** When rates rise, banks are generally profitable and valuation strategies become key differentiators. Fundamental (income statement/balance sheet only) strategies are less effective during such periods.
- **Two less widely-used valuation metrics – core EPS to price and pre-provision net revenue to price – have been highly effective historically in valuing banks.** The latter is a banking version of the "price to sales" ratio and is the most effective investment strategy tested, with 9.2% annualized outperformance during periods of rising short-term rates from 1990 through 2017.[1]
- **A third key valuation metric in a rising-rate environment is tangible book value to price.**
- **Deposit structure is the fourth important area of focus as rates rise, specifically a bank's level of "interest free" deposits relative to total deposits.** Banks with a high concentration of non-interest bearing deposits have a cost of capital advantage when rates rise, as changes in rates have little effect on the costs of such deposits.
- **A four-factor model built from the valuation and deposit structure metrics identified above had long-only annualized excess returns of 11.1% during periods of rising short-term rates**, with a hit rate of 75%.[2] The model works equally well during periods in which rates remain flat.
- **Fifth Third, Regions Financial, JPMorgan Chase, and Citigroup top the list of best ranked Russell 3000 banks** (market cap greater than $1 billion) based on the most effective rising rate strategies historically.

[1] Annualized average excess return for the top 20% of stocks by strategy ranking. The strategy was statistically significant at the 1% level.

[2] The long-only hit rate is the percentage of monthly periods where the average return of the top 20% of stocks by model score outperforms the benchmark return (equal-weighted Russell 3000 banks).

# 1. The Current Banking Environment

## 1.1 Interest Rates and the Yield Curve

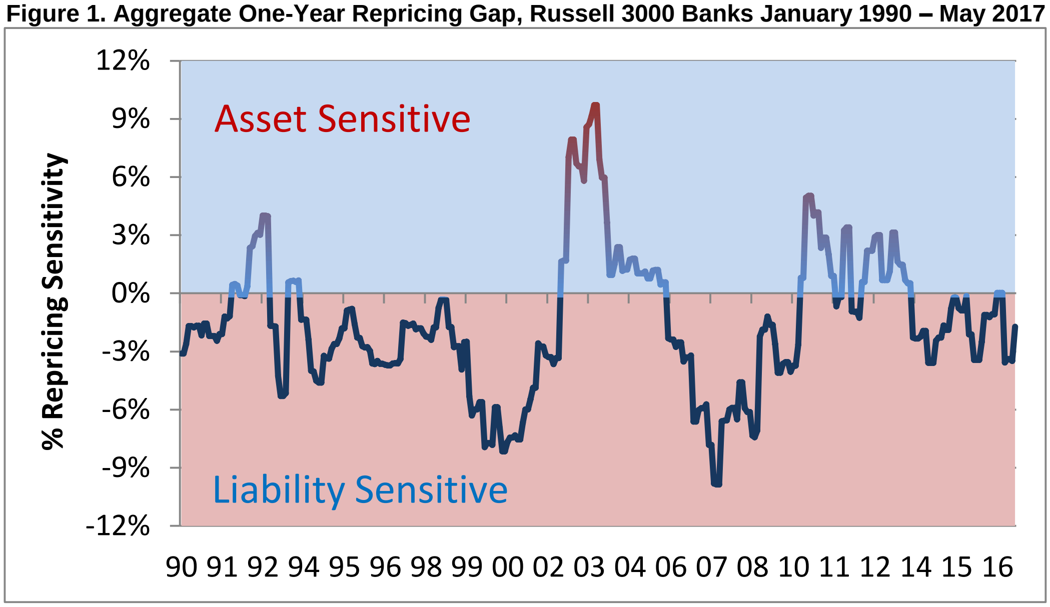
The length of the present banking cycle is unusual historically, characterized by prolonged credit quality improvement, record-low interest rates, slow economic growth, and onerous regulatory/capital requirements for many banks.

One trend that has occurred consistently across cycles is the Federal Reserve's move toward tighter monetary policy. With four benchmark rate increases over the past two years, the Fed is signaling a likely further increase in 2017. Longer term, **Chair Yellen[3] expects the Fed to raise rates "a few times a year" through 2019,** bringing the target fed funds rate "close to its longer-term neutral rate of 3%."

The Fed has also announced plans to reduce its $4.5 trillion Treasury and mortgage bond portfolio, which could put upward pressure on longer-term rates. So far, however, long-term rates have remained low, and the yield curve has flattened in recent months.

Whatever the shape of the yield curve, banks appear poised to adjust. Figure 1 shows the one-year repricing gap[4] for Russell 3000 banks. As of May 2017, banks are positioned near neutral, at -1.7%, and should be able to adapt quickly to changes in rates.

**Figure 1. Aggregate One-Year Repricing Gap, Russell 3000 Banks January 1990 – May 2017**




Source: S&P Global Market Intelligence Quantamental Research. Data as of May 31, 2017.

[3] Speech to The Commonwealth Club, San Francisco, January 2017.

[4] The one-year repricing gap consists of the sum of a bank's assets repricing within one year minus the sum of its liabilities repricing within one year, and serves as a measure of the bank's sensitivity to interest rate changes.

### 1.2 The Credit Cycle

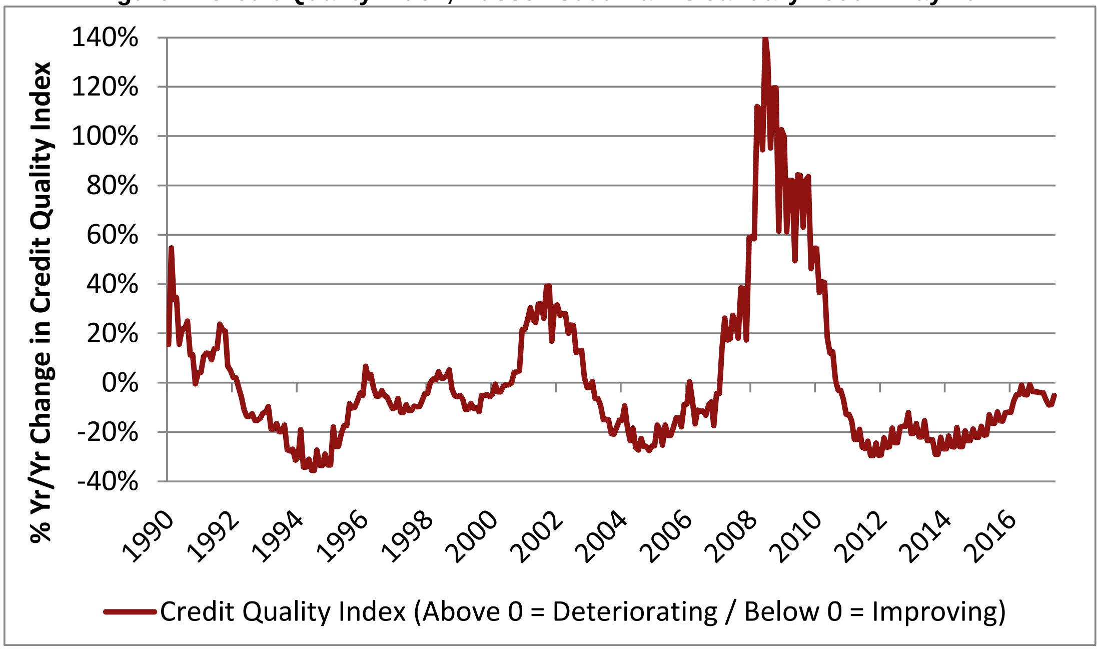
**Although credit quality improvement has slowed in recent months, the credit cycle remains benign.** Historically, rising short-term rates and benign credit quality regimes have overlapped, so investment strategies that work during these regimes are similar.

Figure 2 shows a credit quality index we constructed from the average 12-month change of four credit-quality indicators:

- non-accrual loans + loans 90 days or more past due + OREO[5] to assets
- non-accrual loans to total loans
- loan loss reserves to total loans
- charge-offs to average loans

As of May 2017, year-over-year credit quality improvement was in the mid-single digits, with continued declines in nonaccrual loans to total loans, despite an increase in charge offs. Aiding this trend, bank regulators have stepped up enforcement of commercial real estate loan quality rules. Weak spots in loan quality, including retail store and consumer (credit card and auto) loans, appear to be under control at present.

**Figure 2. Credit Quality Index, Russell 3000 Banks January 1990 – May 2017**




Source: S&P Global Market Intelligence Quantamental Research, SNL Bank fundamental data. Data as of May 31, 2017.

---

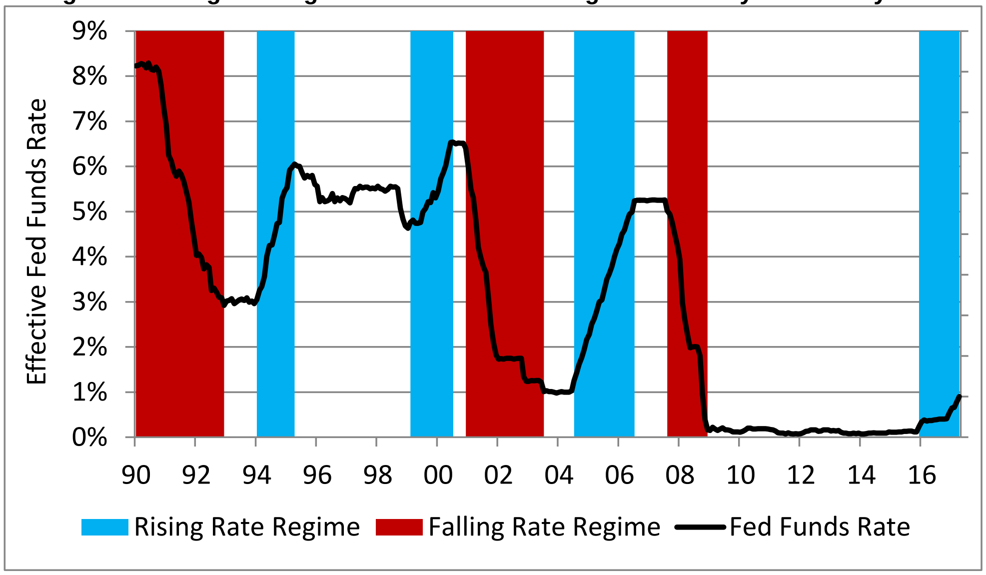
[5] OREO = other real estate owned.

## 2. Bank Strategies for a Rising Rate Environment

This section examines the most effective investment strategies historically within a rising short-term interest rate regime, using the banking metrics identified in the April 2017 research paper Banking on Alpha: Uncovering Investment Signals Using SNL Bank Data.

Figure 3 shows rising and falling interest rate regimes over the past 27 years, defined as periods of extended increases or decreases in the effective federal funds rate. Over the test period (January 1990 – May 2017) there were 77 months of increasing rates and 85 months of decreasing rates.

**Figure 3. Rising / Falling Federal Funds Rate Regimes January 1990 – May 2017**




Source: S&P Global Market Intelligence Quantamental Research, SNL Bank fundamental data. Data as of May 31, 2017.

**In a rising short-term rate regime, investors should focus on valuation strategies.** Figure 4 shows that three of the four top strategies (of 23 tested) during periods of rising rates were valuation strategies. During periods of rising rates, when banks are generally profitable, fundamental (income statement / balance sheet data) strategies do not perform well, leaving valuation metrics as key differentiators.

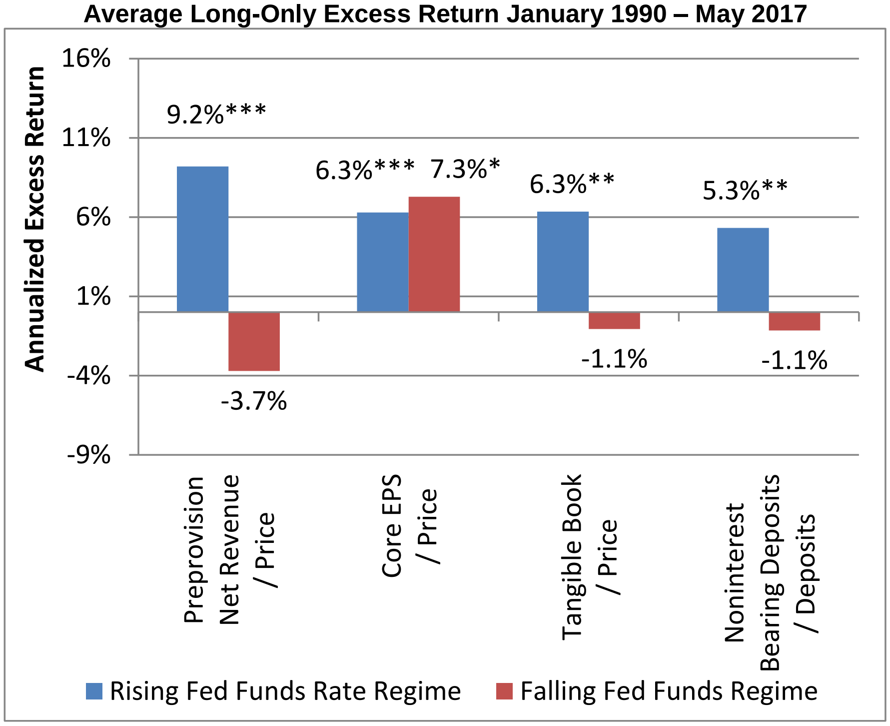
**Pre-provision net revenue[6] to price was the strongest valuation strategy tested in a rising rate environment.** This metric is the banking equivalent of the price-to-sales ratio, which is widely used to value non-financial companies. It has a low correlation (about 0.3) with core EPS[7] to price, and thus the two metrics complement each other.

[6] Pre-provision net revenue is defined as net interest income before provision for loan losses plus non-interest income, all on a per share basis.

[7] Core EPS is net income after taxes and before extraordinary items, less net income attributable to noncontrolling interest, gain on the sale of held to maturity and available for sale securities, amortization of intangibles, goodwill and nonrecurring items, all taken on a per share basis.

**Another important insight is that non-interest bearing deposits, such as traditional checking accounts, are important during a period of rising short-term rates**, as the costs of these deposits are not rate-dependent. Banks with high levels of noninterest bearing deposits outperform when rates rise, while banks with high levels of savings/money market deposit accounts outperform when rates fall. Both types of deposits are low cost; however, one is affected by interest rates and the other is not.

**Figure 4. Top Four Investment Strategies in a Rising Fed-Funds Rate Regime, Annualized Average Long-Only Excess Return January 1990 – May 2017**




*** significant at the 1% level; ** significant at the 5% level; * significant at the 10% level

Source: S&P Global Market Intelligence Quantamental Research. 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 of May 31, 2017.

## 3. Conclusion: Russell 3000 Bank Screen

The screen in Table 1 selects the top 20% of companies, based on the four strategies identified above, from the Russell 3000.[8] A backtest of this screen during periods of rising short-term interest rates from January 1993 to May 2017 (71 monthly observations) generated an 11.1% annualized long-only excess return with a hit rate of 74.6% and an information coefficient (IC) of 0.098[9], all significant at the 1% level.

Similarly, during periods of flat rates (167 monthly observations), the model generated long-only excess returns of 11.3%, with a hit rate of 79.0% and an IC of 0.080, also all significant

---

[8] The screen is intended to be used as a list of banks that may have good investment potential, to aid in the fundamental stock selection process, but not to substitute for such research.

[9] The information coefficient is the average correlation between model rankings for each stock at portfolio formation and subsequent one-month forward returns for those stocks.

at the 1% level. During periods of falling interest rates the model generated excess returns that were not significantly different from zero.

**Note that the fifth quintile of this model[10] also generated significant short-side excess returns during periods of both rising and flat short-term rates, so the model might also be used as a screen for short portfolios.**

In order to facilitate investability, only banks with a market capitalization greater than $1 billion were considered. In addition, companies must have at least three of the four metrics available to be ranked. Individual factor ranks are averaged to arrive at a final score. Rankings shown are percentiles with one being the highest ranking and 99 being the lowest.

Money center banks have been highlighted in grey.

**Table 1. Rising Federal Funds Rate Bank Screen – May 31, 2017**

| Ticker | Company Name | Market Cap ($Mln) | Total Assets ($Mln) | Core EPS to Price | Pre-provision Net Revenue to Price | Tangible Book Value to Price | Avg Non-Interest Bear Deposits to Deposits | Composite Score |
|---|---|---|---|---|---|---|---|---|
| FITB | FIFTH THIRD BANCORP | 19,049 | 140,200 | 12 | 9 | 18 | 24 | 1 |
| RF | REGIONS FINANCIAL CORP | 16,781 | 124,545 | 16 | 22 | 21 | 17 | 2 |
| JPM | JPMORGAN CHASE & CO | 309,479 | 2,546,290 | 8 | 10 | 23 | 44 | 2 |
| BPOP | POPULAR INC | 3,985 | 40,259 | 2 | 11 | 2 | 75 | 3 |
| C | CITIGROUP INC | 175,741 | 1,821,635 | 4 | 8 | 2 | 76 | 4 |
| FBC | FLAGSTAR BANCORP INC | 1,739 | 15,361 | 9 | 7 | 6 | 74 | 5 |
| FBP | FIRST BANCORP P R | 1,197 | 11,890 | 2 | 7 | 1 | 94 | 6 |
| WFC | WELLS FARGO & CO | 264,758 | 1,951,564 | 9 | 15 | 29 | 50 | 7 |
| BAC | BANK OF AMERICA CORP | 230,187 | 2,247,701 | 11 | 65 | 8 | 18 | 7 |
| BBT | BB&T CORP | 35,416 | 220,501 | 10 | 11 | 51 | 30 | 8 |
| HTH | HILLTOP HOLDINGS INC | 2,518 | 12,338 | 21 | 28 | 22 | 33 | 9 |
| UMPQ | UMPQUA HOLDINGS CORP | 3,978 | 24,861 | 20 | 21 | 31 | 35 | 10 |
| ZION | ZIONS BANCORPORATION | 8,577 | 65,463 | 32 | 57 | 15 | 4 | 11 |
| KEY | KEYCORP | 20,157 | 134,476 | 24 | 19 | 28 | 39 | 12 |
| COF | CAPITAL ONE FINANCIAL CORP | 39,063 | 348,549 | 1 | 5 | 8 | 98 | 12 |
| STI | SUNTRUST BANKS INC | 26,732 | 205,642 | 13 | 20 | 24 | 55 | 13 |
| TCF | TCF FINANCIAL CORP | 2,589 | 21,837 | 5 | 13 | 10 | 87 | 14 |
| IBOC | INTL BANCSHARES CORP | 2,276 | 11,966 | 46 | 37 | 19 | 15 | 15 |
| HOPE | HOPE BANCORP INC | 2,517 | 13,466 | 20 | 20 | 26 | 54 | 16 |
| HTLF | HEARTLAND FINANCIAL USA INC | 1,216 | 8,362 | 22 | 24 | 47 | 27 | 17 |
| HBAN | HUNTINGTON BANCSHARES | 14,198 | 100,046 | 15 | 17 | 47 | 47 | 17 |
| BOFI | BOFI HOLDING INC | 1,442 | 8,700 | 3 | 6 | 30 | 92 | 18 |
| CFG | CITIZENS FINANCIAL GROUP INC | 17,830 | 150,285 | 25 | 33 | 15 | 61 | 19 |
| WD | WALKER & DUNLOP INC | 1,492 | 2,482 | 6 | 3 | 93 | N/A | 20 |

Source: S&P Global Market Intelligence Quantamental Research, SNL Bank fundamental data. Data as of May 31, 2017.

10 I.e., the bottom 20% of stocks by model score, or those expected to underperform.

# Our Recent Research

**April 2017: Banking on Alpha: Uncovering Investing Signals Using SNL Bank Data**

This study leverages S&P Global Market Intelligence's SNL Financial data to answer three questions of importance to bank investors: 1. Which widely-used investment strategies have historically been profitable? 2. Which lesser-known strategies deserve wider attention? 3. How do these strategies perform across varying macro environments: rising vs. falling interest rates and above- vs. below-average financial stress?

**March 2017: Capital Market Implications of Spinoffs**

Spinoff activities have picked up in recent years. In 2015, more than $250 billion worth of spinoff transactions were closed globally - the highest level in the last 20 years. This report analyzes the short- and long-term performance of spun-off entities and their parent companies in the U.S. and international markets. We also examine a related but distinct corporate restructuring activity – equity carve-outs, which separate a subsidiary through a public offering.

**January 2017: U.S. Stock Selection Model Performance Review 2016**

2016 proved to be a challenging year for active investing. Against a backdrop of a sharp selloff in equities at the beginning of the year and political uncertainty over the course of the year, valuation was the only fundamental investing style that delivered positive excess returns. In this report, we review the performance of S&P Global Market Intelligence's four U.S. stock selection models in 2016.

**November 2016: Electrify Stock Returns in U.S. Utilities**

The U.S. utilities sector has performed especially well in the past several years as the Federal Reserve and central banks around the world enacted accommodative monetary policies to spur growth. As global active investors flock to the U.S. utilities sector in search of yields and high risk-adjusted returns, we explore a number of utility-specific metrics from a unique database that is dedicated to the utilities sector – S&P Global Market Intelligence's Energy (Source: SNL Energy) – to ascertain whether investors could have historically made stock selection decisions within the sector to achieve excess returns.

**October 2016: A League of their Own: Batting for Returns in the REIT Industry - Part 2**

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

**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**

**February 2016:** **U.S. Stock Selection Model Performance Review - The most effective investment strategies in 2015**

January 2016: **What Does Earnings Guidance Tell Us? – Listen When Management Announces Good News**

**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**