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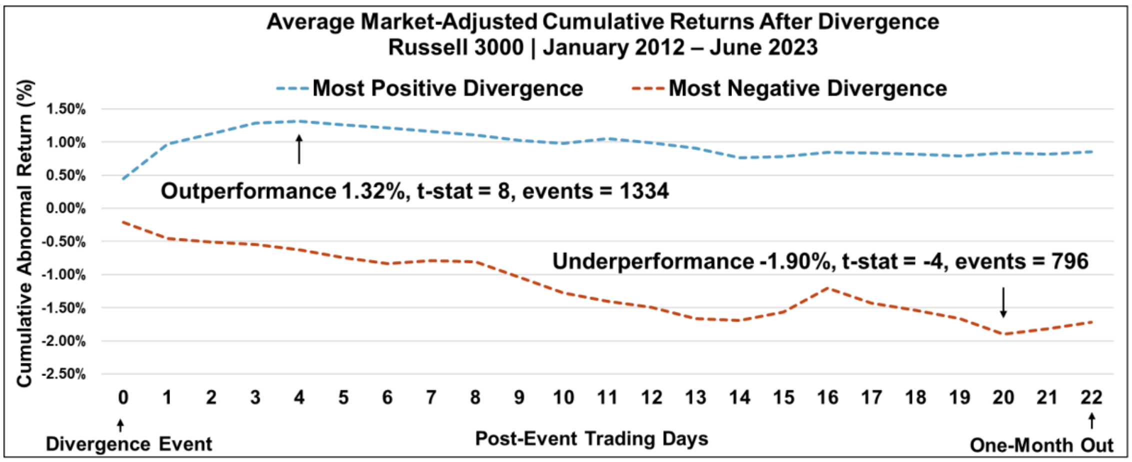
Data Arbitrage with Proprietary Dividend Forecasts

Historically Precise Updates Led to U.S. Outperformance

Sell-side forecasts tend to focus on the top- and bottom-line and are often slow to reflect new dividend policies. Our empirical results have shown that S&P Global Market Intelligence's Dividend Forecasting dataset has historically captured these dividend revisions in both a precise and timely manner, providing investors with an informational edge. This publication details how practitioners can leverage the dataset for equity investing in the U.S. market when the in-house FQ1 forecasts diverge from their sell-side counterparts.



Source: S&P Global Market Intelligence Quantamental Research. Data as of September 28, 2023.

Key findings in the U.S. equity market[1] between January 2012 and June 2023 are:

- **Historically Precise & Timely Updates:** In-house FQ1 dividend forecasts were closer to the eventual dividend actuals than the sell-side consensuses in 88% of the 6,300+ divergence events.
- **Short-Term Outperformance:** Firms that had the most positive divergence outperformed the market by 126 basis points after one-week with a win hit ratio of 59%. Firms that had the most negative divergence underperformed the market by 172 basis points after onemonth with a win hit ratio of 57%.

[1] Russell 3000 index is used as a proxy for the U.S. equity market.

- **Long-Term Outperformance:** A long-short monthly rebalancing strategy using the divergence signal yielded 3.81% annually with an information ratio of 0.69, after accounting for commonly used stock selection strategies.

- **Low Correlations:** The divergence signal was weakly correlated with commonly used strategies including those based on dividend actuals. The correlations ranged from -0.15 to 0.23.

1. Signal Construction: Divergence Score

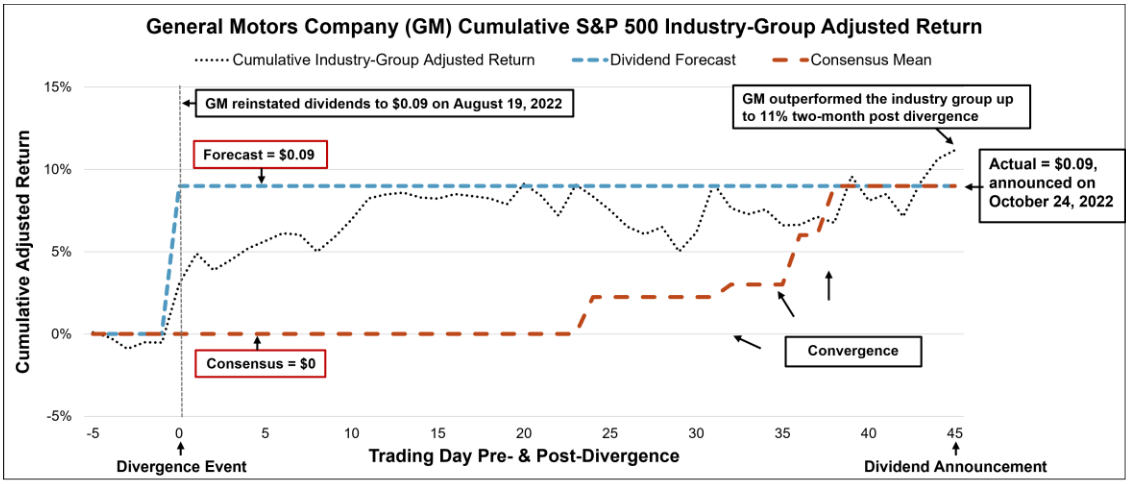
This paper explores the implication of divergence between the in-house FQ1 dividend forecasts and their corresponding sell-side consensuses. When the forecast is greater (less) than the consensus, this results in a positive (negative) divergence event. The magnitude signifies the extremeness of the disagreement. A more extreme score has a greater economic implication.[2]

$$Divergence_t = DividendForecas \underline{\qquad\qquad\qquad\qquad} ClosePrict_t - ConsensusMeaetnt_t ,$$

Eq. 1

Exhibit 1 has an example of a (positive) divergence event and its impact on performance during the subsequent convergence. On August 19, 2022, General Motors Company (NYSE: GM) announced that it would reinstate its quarterly dividend payments at $0.09 per share after suspending its dividend in April 2020. The in-house dividend forecast for FQ1 (Q4'22) captured the new policy within 2+ hours[3], while the corresponding consensus estimate started to reflect the new information four weeks after, on September 23, and did not fully reflect the $0.09 until eight weeks later, on October 13.

Exhibit 1: Example of A Positive Divergence Event: General Motors Company



Source: S&P Global Market Intelligence Quantamental Research. Data as of September 28, 2023.

2. Event Study: Fundamental Investing Use Case

An event study measures how the prices of securities respond to an event during a window of time.[4,5] The paper focuses on the one-week and one-month post-event windows where a divergence occurred for the first-time on record as the event. Since 2012 [6], there were approximately 6,300+ events that were sorted into six buckets based on the magnitude of the divergence.[7]

Firms with the most positive divergence outperformed the Russell 3000 index by 126 basis points one-week out with a win hit ratio of 59%. Firms with the most negative divergence underperformed the market by 172 basis points one-month out with a win hit ratio of 57% (Exhibit 2).[8,9]

Exhibit 2: Event Study Results: One-Week and One-Month Post the Divergence Russell 3000 Universe | January 2012 – June 2023

[4] The framework was first introduced by Fama et al. (1969).
[5] The windows of time include i) pre-event ii) on the day of iii) post-event.
[6] The data goes back prior to 2012 but 2012 was the first year in the U.S. where the data coverage is deemed sufficient for more rigorous empirical studies.
[7] Results in Exhibit 2 are based on the top-third (bottom-third) of the most positive (negative) divergence events. The results are robust to different cutoffs.
[8] Exhibit 2 has results that start from the event and from two trading days post the event. The results starting on the event date are harder to implement in practice. The results starting two trading days post the event date are more conservative.
[9] The median liquidity profile of firms with the most positive (negative) divergent scores using market capitalization as a proxy is at the 62nd (55th) percentile in the Russell 3000 universe where the 99th percentile signifies the largest firms by market capitalization.

	Number of Events	Event Window [Trading Days]	Mkt-Adjusted Average Returns	Mkt-Adjusted Median Returns	Stock-Level Hit Ratio
Most Positive Divergent Scores	1334	[t+0, t+5]	1.26%**	0.79%***	59.2%***
		[t+2, t+5]	0.28%**	0.29%***	54.1%***
		[t+0, t+22]	0.85%***	0.69%***	53.2%***
		[t+2, t+22]	-0.09%	-0.24%	48.1%

Asterisks ***, **, * signify 99%, 95% and 90% confidence level, respectively. Source: S&P Global Market Intelligence Quantamental Research. Data as of September 28, 2023.

	Number of Events	Event Window [Trading Days]	Mkt-Adjusted Average Returns	Mkt-Adjusted Median Returns	Stock-Level Hit Ratio
Most Negative Divergent Scores	796	[t+0, t+5]	-0.75%**	-0.17%	51.4%
		[t+2, t+5]	-0.22%	-0.20%*	52.5%*
		[t+0, t+22]	-1.72%***	-1.09%***	57.0%***
		[t+2, t+22]	-1.25%***	-1.00%***	55.5%***

Asterisks ***, **, * signify 99%, 95% and 90% confidence level, respectively. Source: S&P Global Market Intelligence Quantamental Research. Data as of September 28, 2023.

3. Portfolio Strategy: Systematic Investing Use Case

In Section 2, an event study framework provides practitioners with investing opportunities as a new event presents itself. Since divergence events generally occur on different dates, practitioners cannot anticipate when the next event would occur to construct their portfolio.

Calendar time framework in this section employs a lookback window so systematic investors can construct their portfolios during rebalancing periods. Our empirical results in this section use a 3-month lookback window.

Since 2012, a long-short strategy of buying firms with positive divergence and selling firms with negative divergence yielded 3.81% annually with a confidence level of 95% after accounting for commonly used strategies (Exhibit 3).[10] The additive performance in the Russell 3000 is predominately driven by firms in the Russell 2000 universe, a proxy for U.S.

[10] The results in Exhibit 3 use all divergence events to have an adequate number of firms in the long-short portfolios.
[11] The long- and short-side performance breakdowns are in the Appendix A.2.

small caps, with an annualized return of 5.39% with a confidence level near the 95% threshold.[11]

Exhibit 3: Long-Short Sector-Neutral Portfolio Results with A 3-Month Lookback Window | Russell 3000 | Jan. 2012 – Jun. 2023

	Avg Number of Firms in the LS Portfolios	Annualized Excess Return	Market Risk Premium	Size	Value	PriceMom	Asset Growth	Gross Profit to Assets
R3K coef	136	**3.81%****	0.033	0.077	0.041	0.137**	-0.092	0.027
R1K coef	77	0.74%	0.099**	0.066	-0.150	0.015	0.032	0.068
R2K coef	57	**5.39%***	-0.017	0.110	0.220	0.226**	-0.109	0.060

Asterisks ***, **, * signify 99%, 95% and 90% confidence level, respectively. Source: S&P Global Market Intelligence Quantamental Research. Data as of September 28, 2023.

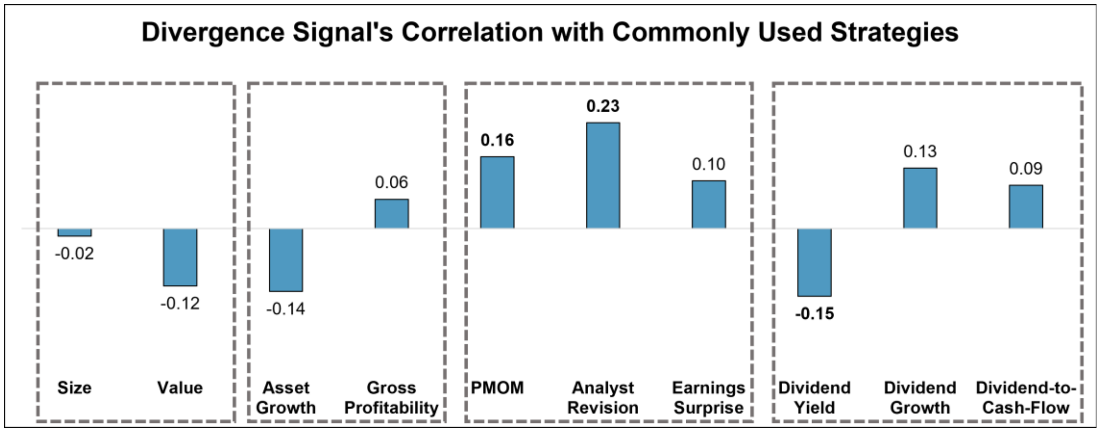
The bottom 1000 stocks in the Russell 2000 benchmark are more illiquid and harder to borrow for shorting. Our liquidity check suggests that the median market cap of both the long- and the short-side is at the 42nd percentile, which implies that the firms on the short-side are among the top 1000 stocks in the Russell 3000 universe by market cap.

4. Diversification Benefits from Low Correlations

Exhibit 4 shows the historical correlations of long-short returns between the divergence signal and ten commonly used strategies that are widely studied in the finance literature. The correlations range from -0.15 to 0.23.

The first takeaway is that the dividend divergence strategy is weakly correlated with commonly used strategies. When it is brought into the fold, both the return and risk of a composite strategy should improve from diversification. The second takeaway is that the divergence strategy tends to do well in stable and risk-on environments where price and earnings momentum are performing and flight-to-safety strategies such as dividend yield are not (Exhibit 4).

Exhibit 4: Return Correlations between the Divergence Strategy and Commonly Used Strategies | Sector-Neutral | Russell 3000 | January 2012 – June 2023



Source: S&P Global Market Intelligence Quantamental Research. Data as of September 28, 2023.

5. Why Does This Mispricing Exist – A Qualitative Look

Although an empirical analysis of why this mispricing occurs is outside the scope of this introductory piece, we posit the mispricing is attributed to 'data arbitrage' and sell-side inattention.

Out of 6,300+ FQ1 divergence events in the U.S. market since 2012, 88% showed that the inhouse FQ1 forecasts were closer to the eventual actuals relative to their corresponding consensuses. Unlike the sell-side, which focuses more on top- and bottom-line forecasts, the in-house 40-member team solely focuses on dividends, distributed globally with knowledge of local markets. The in-house team monitors their coverages daily leveraging fundamental and automated processes to parse new press releases, filings, and news.

Once a new in-house revision is authenticated, it is reflected in the database within 24 hours whereas the corresponding consensus may not reflect the new information for days or weeks. The delay may be attributed to inattention from the sell-side analyst community where their focus may not be on dividends. Secondly, the delay may be attributed to the fact that sell-side analysts do not submit their new dividend estimates in a timely manner.

6. Data

S&P Global Market Intelligence's Dividend Forecasting dataset contains independent dividend amount and date estimates for 28,000+ global stocks, ETFs, and ADRs for up to five years in the future. A global team of 40 dividend analysts deliver forecasts of the size and timing of payments based on bottom-up fundamental research, the latest company news and insights from a proprietary advanced analytics model. Investment banks, hedge funds, quants and asset managers utilize these forecasts to price derivatives and better understand dividend risks.

The S&P Capital IQ Estimates dataset consists of comprehensive global estimates based on projections, models, analysis, and research. This dataset can be used to evaluate earnings estimates to select stocks and manage investment performance and to track the direction and magnitude of upgrades and downgrades and more.

This research focuses on the U.S. market in which most regular stock dividends are announced and paid in cash on quarterly basis, therefore all the analysis and results are based on forecasts and estimates for regular quarterly cash dividend.

Appendix A.1 Descriptive Statistics of the Divergence Events Russell 3000 Universe | January 2012 – June 2023

Number of FQ1 Divergence Events	• Historical total: 6387 • Annual average: 556 • Annual median: 555 • Annual minimum: 452 • Annual maximum: 707
Percent of FQ1 Divergence Events Closer to the Eventual Dividend Actuals	• 88% among the 6387 events
Number of FQ1 Divergence Events within One Calendar Week of Earnings Release	• 1704 among the 6387 events (27%)

Source: S&P Global Market Intelligence Quantamental Research. Data as of September 28, 2023.

A.2 Performance of the Long- and the Short-Side of the Portfolios January 2012 – June 2023

			Avg Number of Firms in the Portfolios	Annualized Excess Return	Market Risk Premium	Size	Value	PriceMom	Asset Growth	Gross Profit to Assets
R3K	**Long - Rf**	**coef**	86	-1.51%	1.015***	0.194***	0.461***	0.161	0.105	0.231***
	Rf - Short		50	**5.32%****	-0.982***	-0.117	-0.420***	-0.253***	-0.078	-0.095
R1K	**Long - Rf**	**coef**	48	-0.19%	0.97***	0.33***	0.16	0.24***	0.01	0.13**
	Rf - Short		29	0.93%	-0.87***	-0.27***	-0.31**	-0.20*	0.05	-0.12
R2K	**Long - Rf**	**coef**	37	-2.70%	0.97***	0.01	0.55***	0.16*	0.24**	0.24***
	Rf - Short		20	**8.08%*****	-0.99***	0.10	-0.33***	-0.26**	-0.18	-0.01

Note: Rf is risk-free using one-month treasury bill as a proxy. Source: S&P Global Market Intelligence Quantamental Research. Data as of September 28, 2023.

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Our Recent Research

March 2024: Executives Exuberant Amid "Rightsizing" Workforce - An NLP Analysis of the Q4'23 Earnings Season

AI, geopolitics, labor ‘rightsizing’ (and other layoff euphemisms), and a sanguine tone characterized the Q4’23 earnings season. Nvidia is riding the AI wave and pulling its connected network along with it. An NLP analysis of earnings call transcripts was used to quantify the discussion.

March 2024: Elusive Parity: Key Gender Parity Metric Falls for First Time in 2 Decades
The growth in women’s representation among senior corporate positions, once a bright spot for gender parity, potentially faces an alarming turning point. Exponential growth over a decade is showing signs of losing momentum. Growth no longer appears exponential. A waning focus on diversity initiatives suggests a potential inflection point and calls our previous gender parity estimates into question.

February 2024: Deal Sourcing: A Data Science Approach - Impact of Financial Characteristics on Acquisition Likelihood
Deal sourcing is hard. Finding a target for acquisition has been likened to finding ‘a needle in a haystack’. Firm financials are a valuable starting point for systematic identification of acquisition targets. This publication provides actionable insights and a detailed blueprint on how practitioners can leverage computational finance for deal sourcing. Specifically, five firmlevel financial dimensions are identified that differentiate targets from their comparable nontargets based on global data from the most recent 10 years.

February 2024: The Ripple Effect – Finding Company Estimates from Detailed Estimates
Intel’s (NASDAQ: INTC) share price jumped 9.3% on Friday, Oct. 27, 2023, after the company reported strong earnings. Cadence Design Systems (NASDAQ: CDNS), which announced earlier in the week, was flat. Over the next 2 weeks (Oct 30 – Nov 14), CDNS would outperform INTC by 544 bps, as investors connected the dots between the two. INTC and CNDS do not share a GICS industry, however the two firms share something potentially more meaningful: sell-side analysts.

November 2023: Reading Between the Lines in Earnings Calls: 6 Things to Watch as the Q3’23 Earnings Season Unfolds

Watch for Q3’23 sentiment near 5-year highs, despite a quarter-on-quarter decline.
Sentiment for Q3’23 is estimated to decline by 5% compared to last quarter; but remains on track to be the 7th most positive of the last 60 quarters. What a difference three quarters can make! As ranked by the sentiment of language on earnings calls, Q3’22 was one of the worst quarters of the last 5 years. Just 3 quarters later, Q2’23 sentiment improved 24% to make the season the 4th most positive over the period. Major drivers of positivity including abating supply chain disruption, declining inflation, and hope for a more dovish U.S. Federal Reserve roadmap.

August 2023: Breaking Boundaries: Women Poised for Milestone Achievement in Parity Amidst Otherwise Bleak Outlook

Diversity in leadership has received increasing attention. However, most data show slow, incremental improvements at best. Yet in an otherwise bleak landscape, a bright spot has emerged: an analysis of 86,000 executives from 7,300 U.S. firms over 12 years found that women could reach parity in senior leadership positions between 2030 and 2037, among companies in the Russell 3000.

June 2023: Mixed Financials Diverge from Bullish Sentiment: A Textual Review of the Q1'23 U.S. Earnings Call Season

A bullish sentiment during the Q1'23 season has taken hold. The excitement surrounding the '*iPhone Moment'* of AI, the resiliency in the labor market, the receding likelihood of a banking crisis and the end of the current rate hike cycle have all uplifted the prospects of the U.S. economy. However, the exuded level of sentiment may not be supported by the financials. The breadth of firms citing growth deteriorated on a quarterly and yearly basis. Forecasts for the next season have come down materially from their bullish Q1'23 levels. Ominous clouds are on the horizon as banks' commercial loan portfolios come under scrutiny. Vacancy rates for office buildings have hit all-time highs. For the first time in the past five seasons, banks are prominently discussing their exposures to the commercial real estate market.

April 2023: Sentiment Rebounds While Regional Banks Tip Their Hand: A Textual Review of the Q4'22 U.S. Earnings Call Season

The sentiment from S&P 500 firms' latest earnings calls rebounded for the first time in 2022. Earnings continued its recovery after hitting a trough two quarters ago. The headwind surrounding the strong dollar started to recede. Defensive sectors led the way while the cyclicals continued their struggle. The recent implosions of SVB Financial Group and Signature Bank have intensified this divergence. Other regional banks appear susceptible as the sentiment from their latest calls has turned negative, a rare historical occurrence that preceded the demise of the two, now FDIC seized, banks.

March 2023: Singing the (Banking) Blues: Navigating the Current Volatility in the Banking Industry

The collapse of Silicon Valley Bank (SIVB) led to a reassessment of liquidity and contagion risks across the banking industry. Regional banks have borne the brunt of the subsequent market sell-off. Month-to-date, regional bank stocks are down by 28%, versus 0% for the S&P 500. This report introduces a screen to help both equity and fixed income investors navigate the current volatility in the banking industry. The screen identifies regional banks with unfavorable exposures to liquidity, investor sentiment and management sentiment indicators.

February 2023: Watch Your Language: Executives' Remarks on Earnings Calls Impact CDS Spreads

While company earnings calls are targeted at equity analysts, information relevant to credit investors are discussed on these calls. This report documents that executive remarks have an impact on credit default swap spreads. The percentage change in CDS spreads of companies with the worst executive sentiment reading is larger than that of companies with the best sentiment reading post earnings call. Credit investors should consider using executive sentiment as an additional tool to gauge the direction of future CDS spread movements.

January 2023: Machines Signal Q4'22 Guidance Not Falling Off a Cliff: An In-Depth Textual Review of Q3'22 Earnings Call Transcripts

In Q3'22, the sentiment of S&P 500 firms has deteriorated to a level not seen since the IMF Greek Debt Default. Firms' focus has shifted away from pandemic-related concerns to interest rate-related ones. Financial growth is uneven. The breadth of firms citing profitability growth remains a bright spot yet the number of firms citing bottom-line growth has been mired in an "earnings recession" throughout 2022. Guidance for Q4'22 is far from falling off a cliff. This series demonstrates the richness and the intuitiveness of insights that could be surfaced algorithmically from textual data.

October 2022: Hanging on Every Negative Word: Natural Language Processing Analysis of Credit Rating Action Reports

Credit ratings are opinions about credit risk. When a credit rating changes, the analyst explains why, in a report. The 'why' is important. For an equity investor, a downgrade due to a rapid decline in a company's sales has a negative implication; whereas, a downgrade due to an increase in leverage arising from a share buyback program may be viewed as positive. This study finds that the relative size of the price impact following a downgrade is dependent on the magnitude of the tone and the topics of focus in the report (Figure 1). Downgrades with strong negative sentiment underperform downgrades with positive sentiment by 2.7% over the following month.

March 2022: The Sounds of Silence: No Response Speaks Volumes

No simple remedy for gender discrimination exists. But the first step in solving any problem is collecting the data to understand it. This research shows firms that share their data on diversity, equity, and inclusion (DEI) have taken further steps to address gender equity concerns. The S&P Global Corporate Sustainability Assessment (CSA) is a premier benchmarking survey and litmus test for inclusion in the S&P Dow Jones Sustainability Index. Firms that participated in the CSA survey in 2021 had better DEI outcomes.

October 2021: Glass Floors and Ceilings: Why Closing the Median Wage Gap Isn't Fair

The gender wage gap describes the disparity in compensation between women and men doing the same work. Progress on this issue is commonly measured by comparing the median compensation for women to men. This research demonstrates that firms are catering to the focus on median compensation and are paying women in a tighter range around the median, compared to men in equivalent positions. Effectively, women have been given a glass floor as redress for the still-present glass ceiling. This 'Gender-Based Compensation Management' not only undermines the goal of equitable pay; but because the high end of the compensation range can be much farther from the median than the low end, this paradigm is a net disadvantage for women.

September 2021: The Board Matrix: The (ESG) Value of Well-Connected Directors
Corporate boards are responsible for shaping and overseeing environmental, social and governance (ESG) policies for their organizations. This report examines the relationship between companies connected through shared board members and ESG performance. It finds that companies with strong board networks (companies with directors who serve on more than one corporate board or are wellconnected) have better certain ESG outcomes than firms with weak board networks. Well-connected directors can utilize their network for information on emerging ESG trends/best practices and share this knowledge with their companies. Given their roles on multiple boards, well-connected directors are also better informed about the needs of different stakeholders (governments, communities, ESG activists) than directors with little or no network. This awareness of stakeholder management translates to better ESG performance for companies with well-connected directors.

August 2021: Technology Momentum: Peer Networks from Patents
Companies with similar patent portfolios exhibit peer group momentum. A strategy that buys (sells) stocks of focal companies in the Russell 3000 with outperforming (underperforming) technology peers produces an annualized risk-adjusted return of 5.23% in a historical backtest. The strategy returns are more pronounced for smaller companies. In the Russell 2000, the strategy demonstrates more efficacy with annualized long-short return of 7.32%. The strategy is distinct from sector momentum strategies. After controlling for sector momentum, 3.60% excess return in the Russell 3000 can be attributed to technology peer group momentum.

July 2021: Branching Out: Graph Theory Fundamentals
Investment analysis has evolved beyond financial data to non-financial, or alternative data. Typically, the focus has been on using alternative datasets that are purely time-series and tabular. Graph networks meanwhile offer investors the ability to gain deeper insights into the connections between economies, industries, and individual corporations.

May 2021: U.S Filings: No News is Good News
Company annual filings are a vital but often under-analyzed source of information for investors. Market moving content is buried within an ever-growing body of text that on average is equivalent to a 240-page novel. The filings contain subtle revisions making a computational linguistic approach imperative. Faced with this voluminous amount of text and the minute

number of changes, investors have historically overlooked the newly embedded information and the implications of those additions.

March 2021: Hiding in Plain Sight – Risks That Are Overlooked
This report uses three metrics (Minimum Edit Distance, Jaccard Similarity, and Cosine Similarity) to identify companies that made significant changes to the "Risk Factors" section of their filings. These metrics can serve as alpha signals or be used to quickly identify a pool of companies that require further investigation.

January 2021: Leadership Change That Matters: A Value and Momentum Story

December 2020: Warranted Optimism: Sentiment vs. Supply Chain

December 2020: A Dark Winter for REITS: Trouble Brewing

October 2020: Sweet Spots in the C-Suite: Executive Best Practices for Shareholder Friendly Firms

October 2020: Just the (Build)Fax: Property Intelligence from Building Permit Data

August 2020: The Analyst Matrix: Profiting from Sell-Side Analysts' Coverage Networks

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May 2020: Never Waste a Crisis: Following the Smart Money Through Beneficial Ownership Filings

May 2020: Risky Business: Foot Traffic, Vacancy Rates and Credit Risks

May 2020: Finding the Healthy Stocks in Health Care During Lockdown

May 2020: No More Walks in the (Office) Park: Tying Foot Traffic Data to REITs

May 2020: Do Markets Yearn for the Dog Days of Summer: COVID, Climate and Consternation

April 2020: Cold Turkey - Navigating Guidance Withdrawal Using Supply Chain Data

April 2020: Data North Star - Navigating Through Information Darkness

March 2020: Long Road to Recovery: Coronavirus Lessons from Supply Chain and Financial Data

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January 2020: Natural Language Processing – Part III: Feature Engineering Applying NLP Using Domain Knowledge to Capture Alpha from Transcripts

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October 2019: #ChangePays: There Were More Male CEOs Named John than Female CEOs

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February 2019: International Small Cap Investing: Unlocking Alpha Opportunities in an Underutilized Asset Class

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

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September 2016: A League of their Own: Batting for Returns in the REIT Industry - Part 1

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July 2016: Preparing for a Slide in Oil Prices -- History May Be Your Guide

June 2016: Social Media and Stock Returns: Is There Value in Cyberspace?

April 2016: An IQ Test for the "Smart Money" – Is the Reputation of Institutional Investors Warranted?

March 2016: Stock-Level Liquidity – Alpha or Risk? - Stocks with Rising Liquidity Outperform Globally

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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

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