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QUANTAMENTAL RESEARCH

February 2024

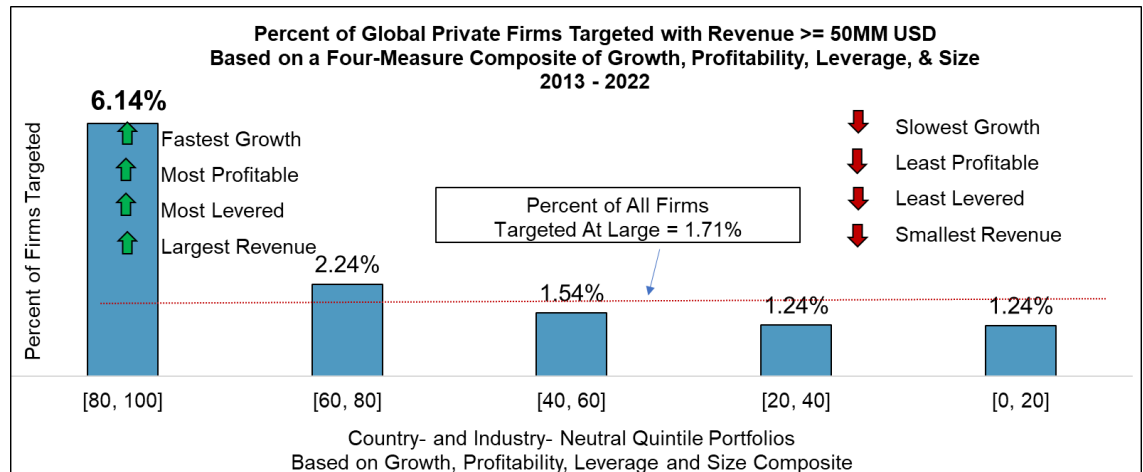
# Deal Sourcing: A Data Science Approach

## 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 firm-level financial dimensions are identified that differentiate targets from their comparable nontargets based on global data from the most recent 10 years.

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Source: S&P Market Intelligence Quantamental Research. Data as of Jan. 14, 2024

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### Key takeaways are:

- Acquisition targets exhibited faster growth, higher leverage, lower liquidity, greater profitability, and larger revenue size, relative to comparable non-targets.<sup>1</sup>
- Firms in the top quintile based on a composite of four financial measures that equally weights growth, leverage, profitability, and revenue size were 5x more likely to be targets for acquisition than firms in the bottom quintile.
- Growth and profitability were universally important. Regionally, European targets were further differentiated on leverage whereas APAC targets were additionally differentiated on revenue size.

- A portfolio of European firms (APAC firms) that scored in the top quintile on a regionspecific

composite of growth, leverage, and profitability (growth, profitability and revenue size) had a 4.1% (4.6%) probability of being targeted, 2.4x (2.7x) more likely than all European (APAC) private firms at large.

## 1. Introduction

Historically, deal sourcing, the process of identifying target firms for acquisition, has relied heavily on a manual process. Systematic investing, which leverages machine-readable data and applied statistics, has been far more focused on liquid secondary markets, such as public equity. As technology and data improve, systematic deal sourcing for private acquisitions has grown in interest. An emergence of relevant data sets in recent years, driven by filing requirements in European and Asian jurisdictions, provides opportunity. Early adopters who harness the informational content in these data sets will have a competitive advantage.

This publication i) explores the impact of firm-level financials on the likelihood of acquisition (Section 2) and ii) provides a detailed guide on how to utilize financial data to extract actionable and meaningful insights for potential deal sourcing.

## 2. Financial Makeup & Likelihood of Acquisition

Acquisition likelihood was evaluated along five firm-level dimensions: *i) growth ii) profitability iii) liquidity iv) leverage and v) size*.

**Exhibit 1: Definitions of the Five Financial Measures**

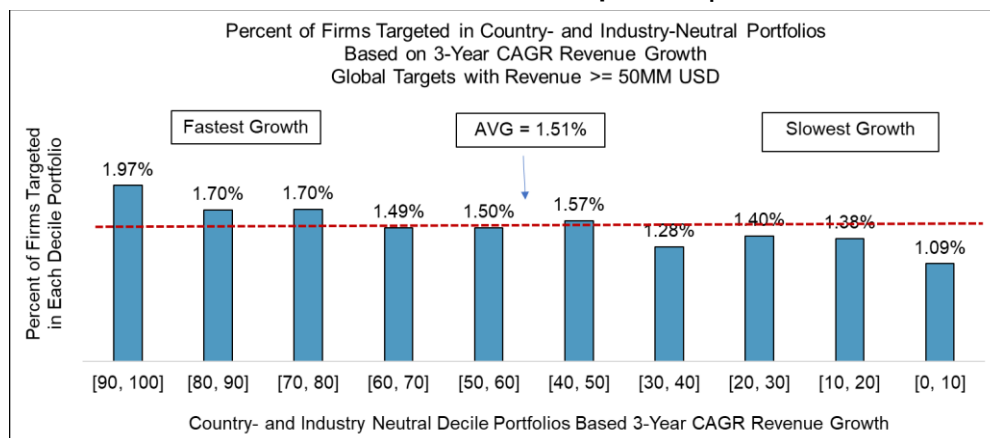
Financial Measures	Definitions
Growth	3-Year CAGR in Revenue Growth
Profitability	EBITDA / Revenue
Liquidity	Current Ratio = Current Assets / Current Liabilities
Financial Leverage	Total Debt / EBITDA
Size	Revenue Size in Millions USD

Source: S&P Market Intelligence Quantamental Research. Data as of Jan. 14, 2024

**Faster Growth, Greater Profitability, and Larger Revenue Base**

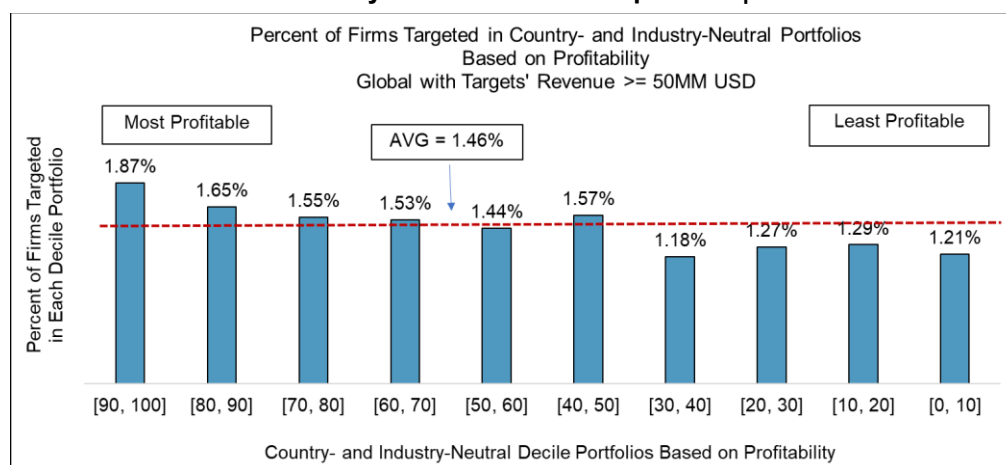
Over the study period, investors have targeted private firms that exhibited faster growth, greater profitability, and a larger revenue base relative to their comparable peers.<sup>2</sup> The three firm-level financial characteristics have similar importance with private firms in the top deciles having as much as double (+104% for revenue size) the likelihood of historically being targeted than the those in the bottom deciles (See Exhibit 2-4).<sup>3</sup>

**Exhibit 2: Growth & Likelihood of Acquisition | 2013 – 2022**



Source: S&P Market Intelligence Quantamental Research. Data as of Jan. 14, 2024

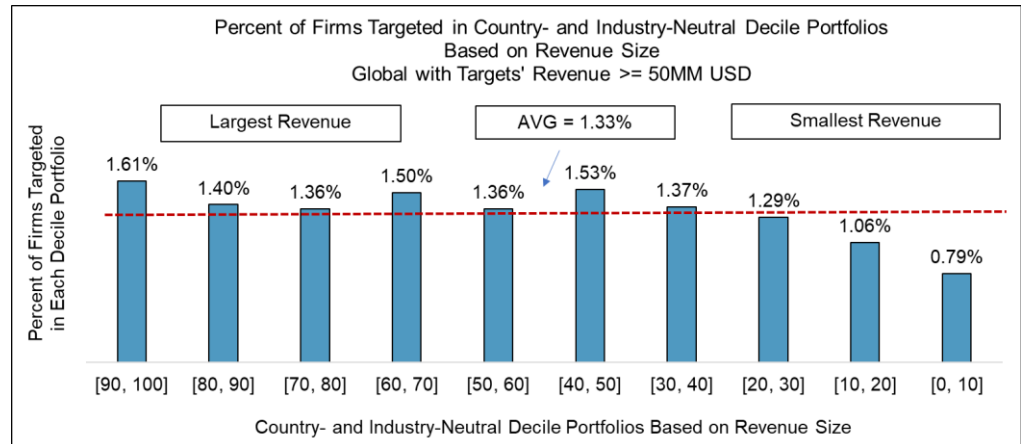
**Exhibit 3: Profitability & Likelihood of Acquisition | 2013 – 2022**



Source: S&P Market Intelligence Quantamental Research. Data as of Jan. 14, 2024

<sup>2</sup> See Section 5 for the definition of comparable peers.

<sup>3</sup> The 104% is derived from using the historical percent of firms targeted in the top and bottom decile portfolios (i.e., 1.61% / 0.79% = 1.04). See Exhibit 4.

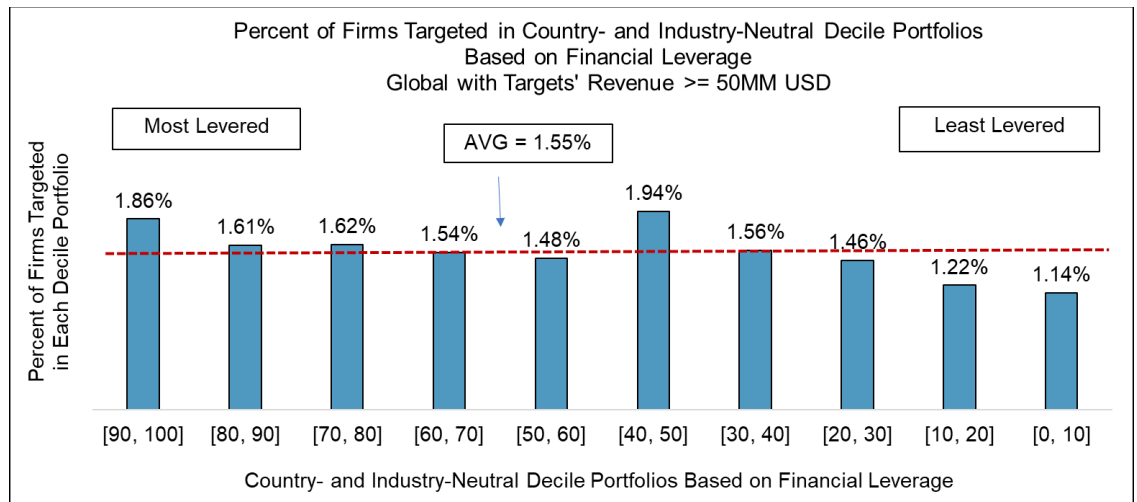
**Exhibit 4: Revenue Size & Likelihood of Acquisition | 2013 – 2022**

Source: S&amp;P Market Intelligence Quantamental Research. Data as of Jan. 14, 2024

**Highly Levered**

Historical probabilities of acquisition along the leverage dimension are less intuitive. Unlike the previous measures, investors have historically targeted firms in two distinct groups: those with the highest leverage and those with a more moderate amount of leverage (Exhibit 5).

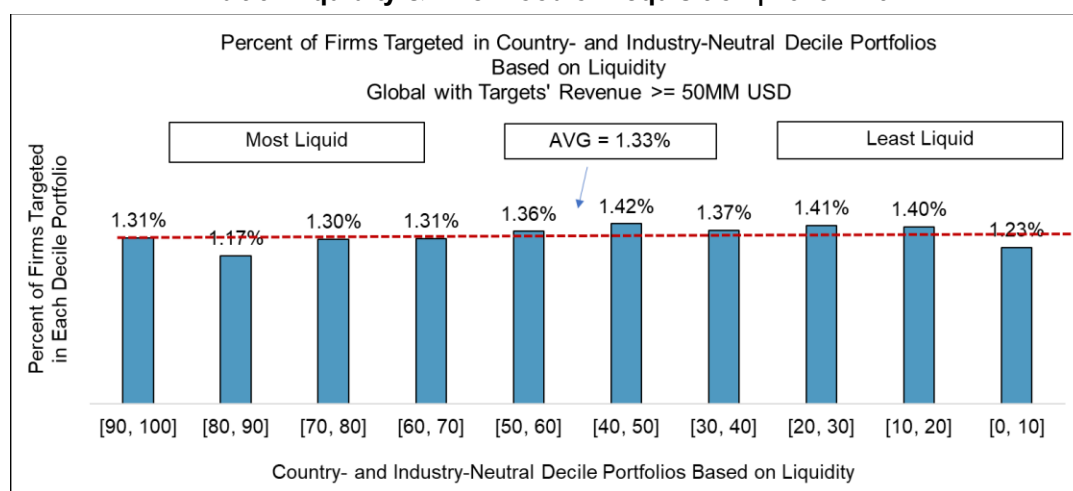
A highly levered firm with an expensive cost of capital may be distressed by debt servicing, despite having otherwise attractive potential. An investor with a lower cost of capital may be able to obtain a highly levered firm at a discount. Leverage enhances returns through financial engineering and tax benefits. While these benefits do lead to a higher likelihood of acquisition for the most levered firms, leverage cuts both ways (i.e., riskier). Debt servicing may consume capital and management focus; and if market conditions become unfavorable, an elevated debt level may hinder a profitable exit.

**Exhibit 5: Leverage & Likelihood of Acquisition | 2013 – 2022**

Source: S&amp;P Market Intelligence Quantamental Research. Data as of Jan. 14, 2024

### Moderate Liquidity

Unlike the previous four financial measures, acquisition probability did not vary much with firm-level liquidity (Exhibit 6). A high current ratio, which indicates strong short-term liquidity, is generally considered favorable. Excessively high current ratios may deter investors' interest due to the perceived limited growth opportunities to deploy the extra free cash. Firms with high liquidity may also be more able to defer raising capital or may demand more favorable terms. Excessively low current ratios may deter investors' interest due to perceived cash flow troubles and insolvency.

**Exhibit 6: Liquidity & Likelihood of Acquisition | 2013 – 2022**

Source: S&amp;P Market Intelligence Quantamental Research. Data as of Jan. 14, 2024

### 3. Correlations

Growth and profitability were universally important, as based on the correlation analysis below. There was geographical variation in acquirers' preferences around the other financial attributes. Investors placed additional importance on leverage for European targets and additional importance on revenue size for APAC targets. The nuances of these variations are a subject reserved for future study.

**Exhibit 7: Correlations Between the Level of Financial Characteristics & the Historical Acquisition Percentage, Select Universe, 2013-2022**

	Growth	Leverage	Liquidity	Profitability	Size
Full Universe	0.91 (0.00)	0.75 (0.01)	-0.41 (0.24)	0.84 (0.00)	0.76 (0.01)
Europe	0.93 (0.00)	0.76 (0.02)	-0.37 (0.30)	0.88 (0.00)	0.39 (0.26)
APAC	0.61 (0.07)	-0.10 (0.79)	0.22 (0.54)	0.56 (0.10)	0.96 (0.00)

Note: The top number in each cell is the correlation. The corresponding p-value of the correlation is in parentheses. Full Universe includes Europe, APAC and North America. North America is not broken out as the number of private firms that file financials is minute especially among U.S. domiciled firms. Specifically, most U.S. private firms do not need to disclose their financials under SEC Form 10. Source: S&P Market Intelligence Quantamental Research. Data as of Jan. 14, 2024

#### 4. Composite Financial Makeups & Likelihood of Acquisition

Different financial characteristics of firms can be synergistic. Section 2 shows investors historically targeted private firms along multiple financial dimensions. When an equally weighted composite of the financials is formed, investors preferences can be further differentiated relative to a standalone dimension. Private firms that scored in the top quintile based on an equally weighted blend of growth, profitability, leverage, and revenue size (i.e., a four-measure composite score) were 5x more likely to be targeted for acquisition than the firms in the bottom quintile.

Regionally, a portfolio of European private firms that scored in the top quintile from an equalweighted composite of growth, leverage, and profitability had a probability of 4.1% of being targeted, 2.4x more likely than all European private firms at large, and 2.8x more likely than those in the bottom quintile. A portfolio of APAC firms that scored in the top quintile from an equal-weighted composite of growth, profitability, and revenue size in the region had a probability of 4.6% of being targeted, 2.7x more likely than all APAC firms at large, and 9.1x more likely than those in the bottom quintile of the composite score (appendix A.4).

## 5. Data & Methodology

Targets in this publication are defined as private firms where strategic or financial investors made an investment. The universe of targets is limited to acquisitions and does not include those that went public or had private placements.

There are 8,200+ **targets** in our input data set that span across Europe, APAC, and North America regions.<sup>4</sup> Most of the targets and their peers are domiciled in Developed Europe as private firms in the region are mandated to file select financials (Exhibit 8). The targets (and their peers) need to have a minimum of \$50 million USD in revenue to ensure they are of sufficient economic size to warrant potential interest from investors.<sup>5</sup> Multiple targeting of the same firm is included when two consecutive deals are at least three years apart.<sup>6</sup> Annual firmlevel financials are used for the analysis.

**Peers (non-targets)** in the publication are defined for each target along the dimensions of country, industry, currency, and calendar year. For instance, a batch of peers is in the same country and industry as the target and has their financials available along with the target's two years prior<sup>7</sup> to the announcement date of the acquisition. Collectively, all targets and their

corresponding peers make up an **opportunity set** which ranges from 250,000+ to 450,000+ private firms depending on the financial measure.<sup>8</sup>

### Exhibit 8: Descriptive Statistics of Targets Input Data Set<sup>9</sup> | 2013 – 2022

<b>Number of Targets</b>	<ul style="list-style-type: none"> <li>• There are a total of 8298 global targets in our sample time range.</li> <li>• 820 deals per year with a yearly oscillation of 112 deals 2020 had the least number of deals at 686 and 2021 had the largest number of deals at 966</li> </ul>
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<sup>4</sup> In a future publication, we will include targets from the other continents including the Middle East. The number of new targets is minute and should not change the economic inferences.

<sup>5</sup> Economic inferences do not change when we use a lower threshold e.g., \$25 million USD in our sample universe and period.

<sup>6</sup> To mitigate instances where investors take a series of small piecemeal stakes within a short window

<sup>7</sup> Private Company Financials data set has fiscal year end dates but filing dates are sparsely populated. Results in the publication are based on lagging firm-level financials for two years as a proxy for when the data becomes available in the public domain (i.e., available in the SQL database).

<sup>8</sup> There are more data points for balance sheet items due to filing requirements.

<sup>9</sup> The targets input data set is Europe-centric because financials are available in the region due to regulations. <sup>10</sup> U.S. private firms are required to file financials with the SEC if they meet i) >10MM USD assets whose stock is held by more than 500 owners ii) have made a public debt offering. See SEC Form 10.

<b>Number of Targets by Region</b>	<ul style="list-style-type: none"> <li>• Europe: 81.5% (6762 deals)</li> <li>• APAC (Japan and Korea): 16.1% (1338 deals)</li> <li>• North America (US and Canada): 2.4% (198 deals)<sup>10</sup></li> </ul>
<b>Percent Acquired of Targets</b>	<ul style="list-style-type: none"> <li>• 62% of the deals the acquirer(s) took a controlling stake (i.e., &gt; 50%)</li> <li>• 72% of the deals the acquirer(s) took a significant stake &gt; 25%</li> </ul>

Source: S&P Market Intelligence Quantamental Research. Data as of Jan. 14, 2024

### Private Company Financials

The Private Company Financials dataset provides 200+ standardized financial statement items for over 12 million private companies globally. This dataset includes i) fully standardized data integrated within the S&P Capital IQ Fundamentals offering ii) global coverage with history dating back to 2004 for North America and Europe and iii) APAC coverage dating back to 2012.

### Transactions

The Transactions dataset provides the entire lifecycle of primary and secondary market business transactions, across public offerings, private placements, mergers & acquisitions, buybacks/repurchases, corporate restructuring, bankruptcies, spin-offs, and split-offs. The transactions database covers more than two million transactions across the globe.

### Primary Industry Classification (PIC)

It is a global industry classification system for private firms.

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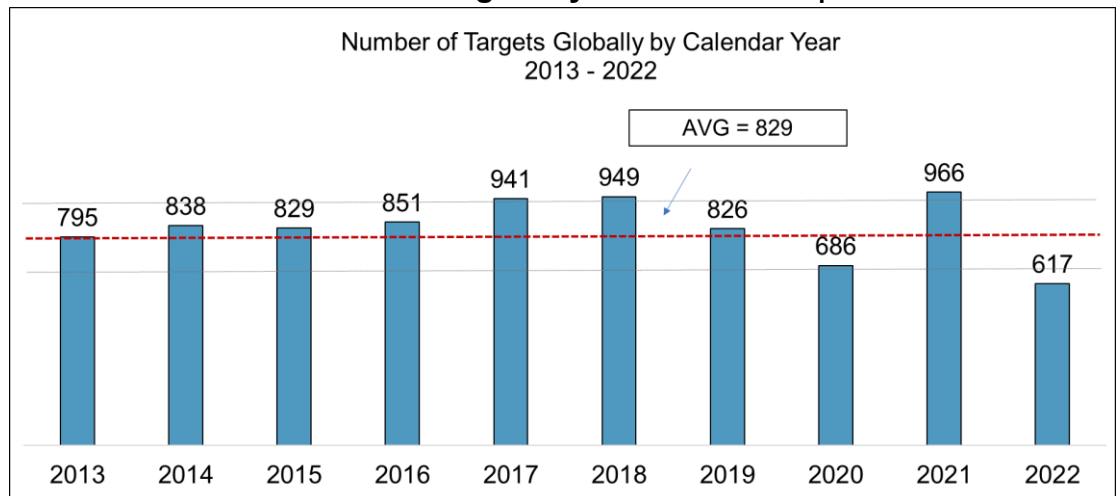
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## Appendix

### A.1: Number of Global Targets by Calendar Year | 2013 – 2022



Note: The two gray colored lines are one standard deviation above and below the average number of deals.

Source: S&P Market Intelligence Quantamental Research. Data as of Jan. 14, 2024

### Exhibit A.2: Financial Characteristics of Targets vs. Their Peers 2013 – 2022

		[1]	[2]	[3]	[4]	[5]
		Growth	Leverage	Liquidity	Profitability	Size
[1]	Targets (Median)	5.51%	1.77x	1.27x	6.62%	118.1MM USD
[2]	Peers (Median)	4.86%	1.61x	1.33x	6.12%	106.4MM USD
[3]	<b>Targets Less Peers (Median Difference)</b>	0.65%	0.16x	-0.06x	0.50%	11.7MM USD
[4]	<b>P-Value (Median Difference)</b>	0.00	0.00	0.00	0.00	0.00
[5]	Number of Deals	3882	3664	5713	4819	5751

Note: The deal numbers are smaller than the totals in Exhibit 8 and A.1 because the deals are further filtered on the availability of financials. Source: S&P Market Intelligence Quantamental Research. Data as of Jan. 14, 2024

### Exhibit A.3: Top Five Countries by Number of Deals | 2013 – 2022

#### Europe

Country	Number of Deals
United Kingdom	1673
Germany	879
Italy	849
France	744
Spain	541

Source: S&P Market Intelligence Quantamental Research. Data as of Jan. 14, 2024

#### APAC

Country	Number of Deals
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South Korea	653
Japan	511
Singapore	73
Malaysia	46
Taiwan	46

Source: S&P Market Intelligence Quantamental Research. Data as of Jan. 14, 2024

### Exhibit A.4: Probability of Acquisition | 2013 – 2022

Global   Composite Score of Growth, Leverage, Profitability, and Revenue Size		
Percentiles	% of Firms Targeted	Firms in the Portfolio
Top Quintile [80, 100]	6.14%	1482
[60, 80]	2.24%	39704
[40, 60]	1.54%	86187
[20, 40]	1.24%	27000
Bottom Quintile [0, 20]	1.24%	1374

Note: Each quintile portfolio has the targets and their peers that scored in that percentile range of the equalweighted composite score. Source: S&P Market Intelligence Quantamental Research. Data as of Jan. 14, 2024

### Europe | Composite Score of Growth, Leverage, and Profitability

Percentiles	% of Firms Targeted	Firms in the Portfolio
Top Quintile [80, 100]	4.08%	3065
[60, 80]	2.10%	39244
[40, 60]	1.52%	67389
[20, 40]	1.30%	24001
Bottom Quintile [0, 20]	1.47%	2659

Note: Each quintile portfolio has the targets and their peers that scored in that percentile range of the equalweighted composite score. Source: S&P Market Intelligence Quantamental Research. Data as of Jan. 14, 2024

### APAC | Composite Score of Growth, Profitability, and Revenue Size

Percentiles	% of Firms Targeted	Firms in the Portfolio
Top Quintile [80, 100]	4.60%	1109
[60, 80]	2.29%	6549
[40, 60]	1.51%	9850
[20, 40]	1.06%	5822
Bottom Quintile [0, 20]	0.50%	1192

Note: Each quintile portfolio has the targets and their peers that scored in that percentile range of the equalweighted composite score. Source: S&P Market Intelligence Quantamental Research. Data as of Jan. 14, 2024

## Our Recent Research

### February 2024: The Ripple Effect – Finding Company Estimates from Detailed Estimates

Intel's (NASDAQ:INTC) share price jumped 9.3% on Friday, Oct 27th 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 CDNS 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 7<sup>th</sup> 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 4<sup>th</sup> 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**

**June 2020: The Information Supply Chain Begins Recovering From COVID**

**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**

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