THE NEXT GENERATION ALPHA MODEL:
ILLUMINATING CEO AND CFO BEHAVIOR USING NLP

One concept that novice equity investors must learn early is that optimism is a key job requirement of a chief executive officer ("CEO"). As CEOs have the tendency to radiate sunshine, investors who fail to bring a healthy dose of skepticism will one day find themselves on the wrong side of an investment recommendation. After listening to just a few conference calls, it becomes obvious that a company's chief financial officer ("CFO") often represents the alter ego for the CEO, serving as the gatekeeper of the nitty-gritty performance metrics. If a corporation was a body, the CEO would be the right-brain—exuding a visionary focus, enthusiasm, and extroversion—while the CFO would be the left-brain, focused on technical acumen.

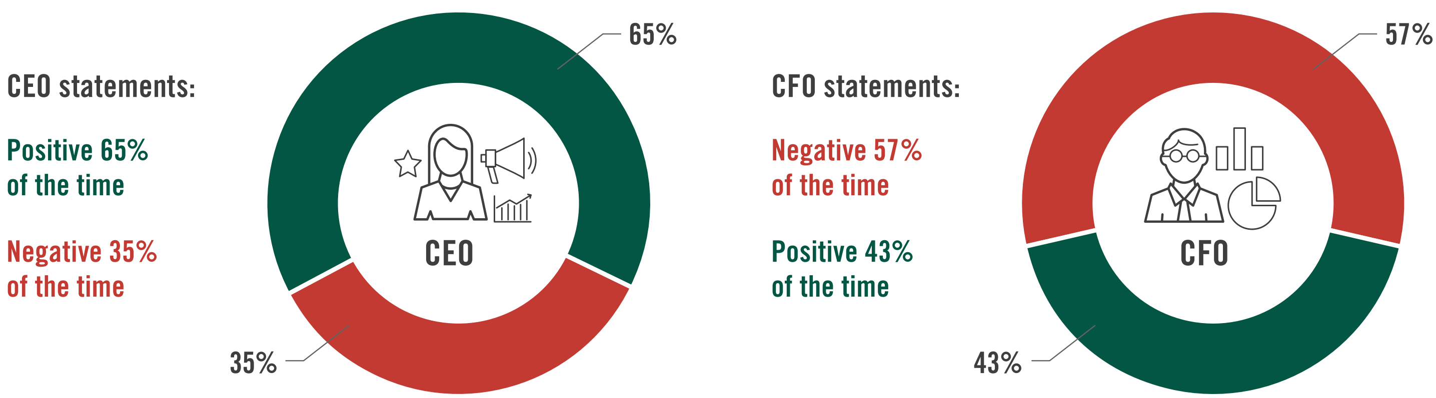
This Wall Street adage can be confirmed through our AI Sentiment series of natural language processing ("NLP") models. We trained these models to exhibit synthetic human judgment, specifically for equity security selection. Our AI Management Sentiment Model is designed to read thousands of earnings call transcripts in a matter of hours.

KEY TAKEAWAYS

- Our AI Management Sentiment Model is designed to read earnings call transcripts and measure sentiment.
- After analyzing 160,000 earnings call transcripts spanning the years 2012 to 2020, CEOs exhibited significantly more positive sentiment than their CFO counterparts.
- CEO and CFO behavioral differentials are important considerations. It will be the thoughtful marriage of big data and intuition that materializes an effective AI sentiment model for stock selection.

Overall, the AI Management Sentiment model confirms that CEOs carry a highly optimistic bias. In exhibit 1, we show the results of our proprietary AI Management Sentiment model's readings of CEO and CFO statements made across nearly 160,000 transcripts. This included not only prepared remarks, but also responses to analyst questions. Of all the statements made by CEOs, 65% had a positive sentiment. On the other hand, CFOs had a negative predisposition, with only 43% of their statements having a positive sentiment.

EXHIBIT 1: CEO VS CFO AGGREGATED SENTIMENT



Source: Virtus Systematic AI Management Sentiment Model's assessment of company earnings transcripts from 2012 to 2020. See additional information on the Model at the end of this document.

This dynamic is likely an outcome of the corporate cultural expectation of a CEO, who is expected to be a strategic visionary. Since a chief executive's job security is dependent on advancing that vision, they are heavily incentivized to portray company developments and plans in the most positive light. On the other hand, the CFO's role focuses on financing initiatives to fund operations and tracking financial performance. Oftentimes during earnings calls, CFOs are left to discuss the nitty gritty details. The example in exhibit 2 highlights this exact dynamic. Here, the CEO discusses the positive multi-year implication of a new strategic acquisition while the CFO is relegated to the gloomier topic of lowered guidance for the remaining fiscal year.

EXHIBIT 2: AI MANAGEMENT SENTIMENT OUTPUT FOR AN INDUSTRIAL COMPANY'S QUARTERLY EARNINGS CALL

	CEO	CFO
Commentary	The acquisition is consistent with the strategic themes you've heard from us over the last decade, leadership position in niche markets and acquisitions that materially strengthen an existing business, which, in this case, is our Payment Solutions business. Both businesses serve five major principal end markets. They are all global and they all have very attractive growth prospects. Importantly, the company has been a beautifully managed business and has in place low-cost manufacturing in both Mexico and China, with a strong history of growth and attractive financial results. Clearly, together this is—we'll be able to better satisfy our customer needs with a more complete product line.	Fourth quarter sales growth is expected to be in the 2% to 3% range, a bit softer than expected, but we continue to expect 2012 eps to be in the lower half of the previously communicated guidance range of $3.75 to $3.85, excluding special items. The guidance also excludes transaction expenses associated with the acquisition. I will reiterate that we are assuming a benefit from the R&D tax credit, which is also worth about $0.05 per share to us.
Sentiment score	Positive	Negative

It is common to observe a highly ambitious CEO paired with a grounded CFO, who can help right-size those ambitions. After all, a CFO has a clear vantage point on the financial status of the organization (and limitations of the balance sheet). This risk aversion sometimes plays out organically during earnings calls. In the example highlighted in exhibit 3, an analyst posed a question regarding the potential cost savings from a new overseas joint venture, which was formed by merging another company's local operations with their own. The CEO highlighted multiple avenues where cost saving could be realized. This response adequately answered the analyst's questions. However, the CFO jumped in to soften expectations on the timing for realizing these synergies.

EXHIBIT 3: AI MANAGEMENT SENTIMENT OUTPUT FOR A SEMICONDUCTOR DEVICES COMPANY

	CEO	CFO
Commentary	There's really a variety of initiatives. Certainly consolidating our purchases gives us leverage with the vendors. Looking at the materials that both parties use and searching for the lowest price point on materials is another. Looking at the same grade of reticle that they make versus we make. What materials we use versus what materials they use, since both are qualified, which suite of materials offers the lowest cost to produce, and then implementing that broadly. Looking at what service models they use, what their service pricing is, who has the best-in-class from both an uptime as well as a purchase price perspective. I could go on and on and on. But there are plenty of opportunities in front of us to wring the cost out that we're looking for.	We obviously have many moving parts as we work to integrate both the operations and back-room functions. And as mentioned, we have an aggressive synergy plan that we're working on, and we're extremely confident we'll be successful. That said, it's going to take some time, and we do expect, when we close Q3, we gave the guidance for Q3. When we close Q3, we'll get further granularity about the success points for where we are, and also establish new targets on incremental revenue. We've talked in the past about 50% drop through. Obviously, that's not feasible day one, but a couple of months or quarters of the JV. But we'll reestablish new targets as we move forward.
Sentiment score	Positive	Negative

continued

Even facing distressed circumstances, CEOs will put forward heroic effort to create a positive tone. In exhibit 4, we highlight the last earnings call for MF Global. CEO Jon Corzine takes time to discuss the firm's repo-to-maturity ("RTM") portfolio, a leveraged off-balance sheet investment in European sovereign bonds. Further escalation of the 2011 European debt crisis triggered ratings downgrades that pushed MF Global's solvency into a highly precarious position. Despite the ongoing risks, Corzine underscored the upside potential of these investments as European government support was expected to address investor concerns. This resulted in AI Management Sentiment categorizing this commentary with a positive sentiment. Comparing the CEO and CFO commentary on the same topic, both tried to ease investor fears on the RTM portfolio. However, the CFO was left discussing the worst-case potential impacts on the balance sheet. Since this type of commentary is associated with deteriorating conditions, the AI Management Sentiment identified a negative sentiment.

EXHIBIT 4: AI MANAGEMENT SENTIMENT OUTPUT FOR AN INVESTMENT BANK

	CEO	CFO
Commentary	Now let me turn to a subject, which is understandably clouded perceptions with respect to our progress, that is our repurchase to maturity sovereign positions, as noted on slide five. As we have pointed out over the past year in our disclosures and quarterly calls, we have taken advantage of the dislocations in the European sovereign debt market by buying short dated debt in European peripherals, and financing those securities to their exact maturity date, therefore, the term repo-to-maturity. The spread between interest earned and the financing costs of the underlying repurchase agreement has often been attractive, even as the structure of the transaction themselves essentially eliminates market and financing risk…And the later reinforced by the commitments of European and international institutions in supporting the solvency of the issue in the countries, again, in the timeframe of our exposures.	You'll also see at the bottom of this slide, how the tangible book per share, even after the write-downs in this quarter is still above $7 at $7.08. Based on our liquid short-term balance sheet, we feel good about the quality of this tangible book value. As an example, and I refer you back to the sovereign exposure that John discussed earlier, as well as what you saw in the slide presentation posted on our website yesterday. Even under what could be described as a worst-case scenario reflecting significant macro events, limited mitigating factors implemented by us and forced sale actions, a $100 million to $200 million credit default charge would reduce the tangible book value by only about $1. This means that even after this charge, net tangible book value would still remain above $6.
Sentiment score	Positive	Negative

As Jon Corzine offered closing statements for this earnings call, he put forward an optimistic outlook on the future of MF Global.

> *"Let me close by noting that while we recognize and respect the challenges of the environment, we also believe it is one with opportunity, filled with opportunity…With a modicum of market normalcy, I believe we will deliver for our shareholders in the quarters ahead."*
>
> *Jon Corzine, October 25, 2011*

It turns out that this declaration was dreadfully inaccurate. Within one week after this earnings call, MF Global declared bankruptcy.

Regardless of the market environment and even company specific conditions, there is always room for CEOs to project sunshine, even as a company faces imminent collapse. Clearly, there are behavioral and motivational biases underneath the remarks provided by management teams. When developing an NLP model to read these earnings transcripts, data science and computer programming expertise only represents the cost-of-entry. A key aspect of our endeavors relies on careful consideration of the psychology and motivation that drives management team remarks. The statistical significance in the differential of CEO and CFO sentiment will play a role. It will be the thoughtful marriage of big data and intuition that materializes the next generation alpha model.

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To generate the results for the exhibits, the AI Management Sentiment Indicator utilizes quarterly earnings call transcripts for publicly traded companies as inputs. The AI model provides a positive or negative output for every paragraph within the earnings call transcript. Each paragraph is also tagged by its speaker, which includes CEOs, CFOs, analysts, and other members of the management team. The final CEO and CFO positive (negative) sentiment percentage is calculated by dividing the number of positive (negative) sentiment paragraphs by the total number of paragraphs for the respective chief executive.

This report was originally published in April, 2021 while the Team was known as the Allianz Global Investors U.S. LLC ("AllianzGI") Systematic Investment Team. Effective July 25, 2022, AllianzGI's Systematic Investment Team joined Virtus Investment Partners, Inc. as the Virtus Systematic Team. The content has been edited from the original.

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