The Sounds of Silence: No Response Speaks Volumes

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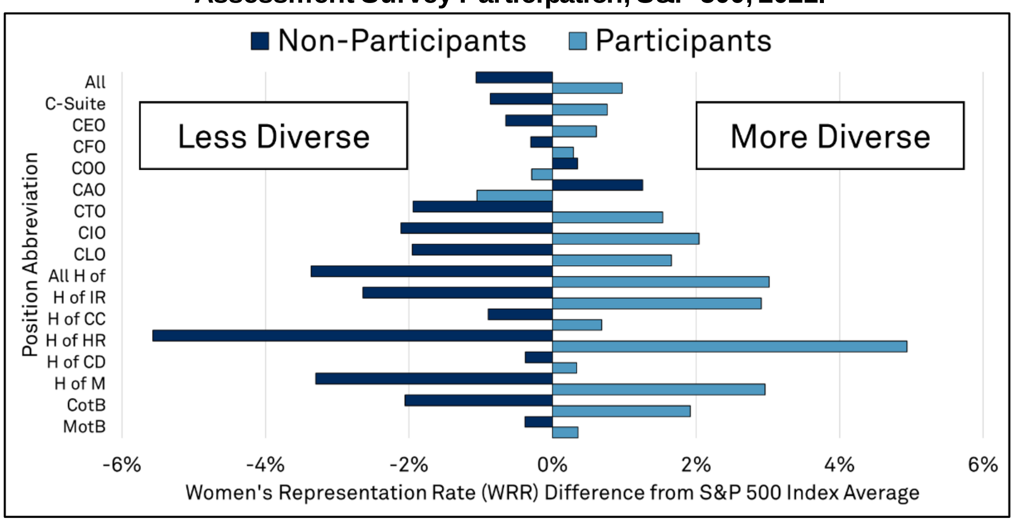
No simple remedy for gender discrimination exists. But the first step in solving any problem is collecting the data to understand it. Prior installments in this series have revealed both expected and unexpected insights into gender diversity. This research shows firms that share their data on diversity, 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. Specifically,

- Participant firms, compared to non-participant firms, in the S&P 500 had greater gender diversity in senior leadership. Large, publicly traded companies are subject to regulatory diversity requirements and to the public scrutiny of their diversity among executives. Consequently, these firms have a de facto diversity minimum. Participant firms go beyond the minimum requirement, particularly with 6% more women appointed in the less visible executive roles outside of the C-suite and board.
- Participant firms, compared to non-participant firms, are less likely to be defendants in a federal court decision. Despite a nearly even split between participant and non-participant firms, non-participant firms were defendants in 60% of all federal court case decisions and 64% of employer discrimination decisions from 2017-2021 where an S&P 500 index constituent was listed as a defendant.

Figure 1. Relative Women's Representation Rate (WRR) by Corporate Sustainability Assessment Survey Participation, S&P 500, 2021.



	Position	WRR Diff.		Position	WRR Diff.
All	All Exec. & Board	2.0%***	All H of	All Dept Heads	6.4%***
C-Suite	C-Suite	1.6%*	H of IR	Head of Investor Relations	5.6%
CEO	Chief Executive Officer	1.3%	H of CC	Head of Corporate Communications	1.6%
CFO	Chief Financial Officer	0.6%	H of HR	Head of Human Resources	10.5%***
COO	Chief Operating Officer	-0.6%	H of CD	Head of Corporate Development	0.7%
CAO	Chief Accounting Officer	-2.3%	H of M	Head of Marketing	6.3%*
CTO	Chief Technology Officer	3.5%	CotB	Chairman of the Board	4.0%**
CIO	Chief Information Officer	4.2%	MotB	Members of the Board	0.7%
CLO	Chief Legal Officer	3.6%			

*** = Significant at the 1% level; ** = Significant at the 5% level; * = Significant at the 10% Level

Source: S&P Global Market Intelligence Quantamental Research, S&P Global Corporate Sustainability Assessment. Data as of February 28, 2022.

1. A Step Towards Solving the Problem

A problem cannot be solved until it is understood. The prior installment to this research series on gender diversity aimed to understand gender discrimination in compensation. Surprisingly, that research found that the focus on equitable median compensation has been a net disadvantage for women. Less surprisingly, the same work also found that the last decade has seen an exponential increase in the representation of women in senior roles.[1]

These insights required data. However, data can be costly to collect. S&P Global's Corporate Sustainability Assessment (CSA) survey presents over 100 Environment, Social, and Governance (ESG)-focused multi-part questions. The survey is one of the most comprehensive, voluntary reporting mechanisms for firms to disclose data of this kind. Some smaller firms opt not to participate due to resource constraints, despite having pro-ESG policies. Larger firms are relatively resource rich and, therefore, the choice to complete the CSA survey is a suitable proxy for a large firm's dedication to ESG and DEI reporting.

This work posits that among S&P 500 firms, participants in the CSA survey are more likely to prioritize DEI initiatives and, consequently, have better gender diversity outcomes compared to non-participants.

2. Beyond Minimum Diversity

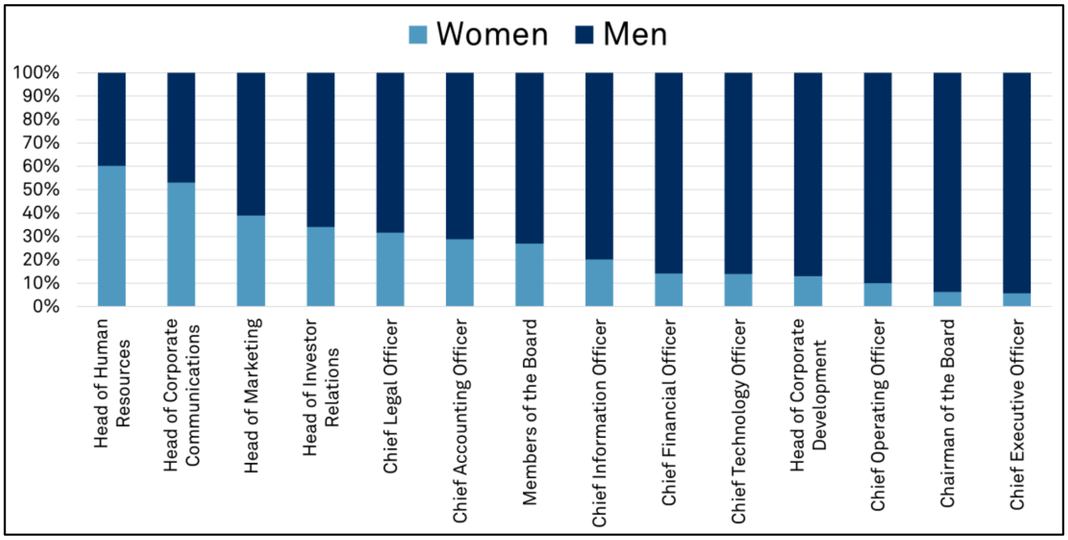
Despite recent improvements, women are underrepresented among senior leadership. (Figure 2) The problem has been discussed in previous work.[1,2] The solution is still being deciphered. Governing bodies including the SEC[3], the Nasdaq[4], and the California legislature[5] have chosen to legislate minimum diversity requirements. Others, like activist investor firm Arjuna Capital[6], have used shareholder resolutions to pressure firms to address DEI concerns. Regulatory and public pressure have created a de facto gender diversity minimum.

Firms have responded to the call for gender diversity. Previous work[1] documents an exponential increase in the women's representation rate[7] (WRR) over the last 10 years. However, the response has not been equal across all firms. Participant firms in the CSA survey had a higher WRR in nearly every position examined. (Figure 1) WRR differences between participant and non-participant firms were largest for positions outside of the C-suite and Board of Directors. These positions have less public visibility and, consequently, the

1 Sandberg, D.J., 2021. "Glass Floors and Ceilings: Why Closing the Median Wage Gap Isn't Fair." S&P Global Quantamental Research, https://www.spglobal.com/marketintelligence/en/news-insights/research/glass-floors-and-ceilings-why-closing-the-median-wage-gap-isnt-fair
2 Sandberg, D.J., 2019. "#ChangePays: There Were More Male CEOs Named John than Female CEOs." S&P Global Quantamental Research, https://www.spglobal.com/marketintelligence/en/news-insights/research/changepays-there-were-more-male-ceos-named-john-than-female-ceos
3 See Regulation S-K Item 407(c)(2)(vi). https://www.sec.gov/divisions/corpfin/guidance/regs-kinterp.htm
4 See Nasdaq Rule 5605(f), https://listingcenter.nasdaq.com/rulebook/nasdaq/rules/nasdaq-5600-series
5 See California Senate Bill 826, https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB826
6 Zarya, V., 2018. "Meet the Woman Who Convinced Apple, Starbucks, and Nike to Close Their Gender Pay Gaps." https://www.yahoo.com/entertainment/meet-woman-convinced-apple-starbucks-110054201.html
7 Defined as the percentage of women among all executives. See section 5 for details.

diversity of the position receives less public scrutiny. **One interpretation of this result is that the diversity differences of participants, compared to non-participants, reflect genuine cultural differences rather than an attempt to manage optics or acquiesce to the de facto minimum.**

Figure 2. Women's Representation Rate (WRR) by Position, S&P 500, 2021.



Source: S&P Global Market Intelligence Quantamental Research, S&P Global Corporate Sustainability Assessment. Data as of February 28, 2022.

3. Legal Woes

Diversity among senior leadership is a necessary, but not a sufficient, condition for a DEI-aware culture. Of similar importance are effective non-discrimination and anti-harassment policies. The repercussions of inefficient policies are lawsuits against the firm. Accordingly, the incidence of federal court opinions in which participant and non-participant firms were defendants serves as a proxy for comparing the effectiveness of DEI policies.

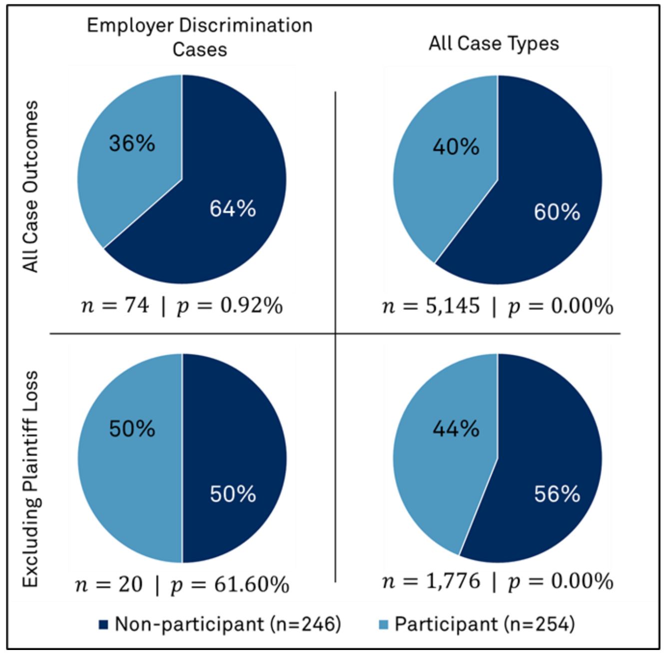
Like the results from the last section, participant firms demonstrate outcomes more consistent with a DEI-aware culture. At 49% of the S&P 500, non-participants were defendants in 64% of employer discrimination cases (Figure 3, top left) and 60% of all cases (Figure 3, top right) against an S&P 500 firm. These case distributions suggest a statistically higher likelihood that non-participants are defendants. **That is, a non-response to the survey speaks volumes.**

While the existence of a lawsuit does imply a dispute, it does not imply guilt. Furthermore, the publicly available data on federal court opinions is limited to cases that were not settled out of court. Firms that do not settle out of court often win.[8] Even among the subset of cases in which the defendant lost, non-participant firms were disproportionately defendants (Figure 3, bottom right). However, the subset of employer discrimination cases where defendants lost were

[8] Firms won more than 65% of cases in the data sample used in this analysis.

equally distributed between participant and non-participant firms (Figure 3, bottom left). As shown in section 5, the equal distribution of these 20 cases does not refute the other analyses but is offered as a caveat.

Figure 3. Incidence of Federal Lawsuits by Corporate Sustainability Assessment survey participation, S&P 500, 2017 - 2021.



Source: S&P Global Market Intelligence Quantamental Research, S&P Global Corporate Sustainability Assessment. Data as of February 28, 2022.

4. Data

The **S&P Global Corporate Sustainability Assessment** (CSA) data[9] is sourced from both publicly available information and company surveys that include over 1,000 datapoints and approximately 100 questions. Companies are scored on their responses and the scores are used as the basis for inclusion in the Dow Jones Sustainability Indices[10].

The **S&P Global Professionals** dataset was the source for executive data. The dataset includes board and company affiliations, executive biographies, standardized job functions, titles, education, and compensation for more than 4.5 million professionals going back to 1992.

Yewno Judicial Analytics dataset was the source for federal court case data. The dataset provides document level information from millions of court opinions with meta-tagging for legal themes, linking to global public entities, and the complete textual component of legal opinions.

[9] https://portal.csa.spglobal.com/survey/documents/CSA_CorporateSustainabilityAssessment_factsheet.pdf
[10] https://www.spglobal.com/spdji/en/indices/esg/dow-jones-sustainability-north-america-composite-index/#overview

5. Methodology Appendix

CSA participation status in this work was binary: participant or non-participant. Non-participants of the survey were those firms invited to participate who did not reply to the survey. Firms that responded to the survey, in whole or in part, were included in the participant group.

Approximately 1,800 companies participated in the 2021 CSA survey across multiple countries. The research herein exclusively examined S&P 500 firms, of which 254 participated in the 2021 CSA survey and 246 did not participate.

The women's representation rate was computed using equation 1,

$$WRR = \frac{number\ of\ women\ executives}{total\ number\ of\ executives} \quad \text{Eq. 1}$$

where the count of women and total executives was performed over the relevant group and position. For example, the WRR for the position of CEO among participant was firms was calculated as, $WRR = \frac{16}{254} = 6.3\%$ given 16 of the 254 participant firms had women CEOs.

The statistical significance of the differences in WRR between participant and non-participant firms was calculated by mapping the Z-statistic to a normal cumulative distribution function,

$$Z_{\Delta WRR} = \frac{WRR_{Participants} - WRR_{Non-Participants}}{\sqrt{WRR_{SP500}(1 - WRR_{SP500})\left(\frac{1}{254} + \frac{1}{246}\right)}} \quad \text{Eq. 2}$$

where $\Delta WRR = WRR_{Participants} - WRR_{Non-Participants}$ is the difference in women's representation between participant and non-participant groups; and WRR_{SP500} is women's representation across the entire S&P 500 universe.

For the incidence of court cases, the number of court decisions in the Yewno Judicial Analytics data for each company from 2017-2021 was determined. Employer discrimination cases were codified by Judicial Theme ID 16. The statistical likelihood of a distribution, given a proportional incidence of a court decision, was determined by binomial expansion,

$$p = \sum_{x=0}^{k} \binom{n}{x} \hat{p}^{x} (1 - \hat{p})^{n-x}$$

Where $\binom{n}{x}$ is the number of combinations in which x items can be selected from a set of size n, p is the probability of the participant group having k-many cases or fewer given the proportional probability $\hat{p} = \frac{254}{500}$.

Figure 3 in section 3 reports the probability (p) of observing the data given a proportional likelihood ($\hat{p}$) of court case decisions regardless of CSA participation. Of the 4 analyses, 3 have probabilities less than 1%, indicating the true likelihood of court case decisions varies with CSA participation. The analysis that fails to reject a proportional likelihood has a 50%/50% distribution of $n = 20$ cases. While this observation alone suggests the likelihood may be proportional, the observation does not reject a null hypothesis that non-participants have a higher likelihood of cases (for example, $p = 24\%$ for $\hat{p} = 40\%$, indicating a 24% probability that participant firms are defendants in only 40% of cases or less).

Our Recent Research

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 well-connected) 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**

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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**

February 2020: **Ship to Shore: Mapping the Global Supply Chain with Panjiva Shipping Data in Xpressfeed™**

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

December 2019: **The "Trucost" of Climate Investing: Managing Climate Risks in Equity Portfolios**

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

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February 2019: U.S Stock Selection Model Performance Review
February 2019: International Small Cap Investing: Unlocking Alpha Opportunities in an Underutilized Asset Class
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