Breaking Boundaries:
Women Poised for Milestone Achievement in Parity Amid Otherwise Bleak Outlook

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Key Findings

While diversity in leadership has received increasing attention, 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 US firms over 12 years found that women could reach parity[1] in senior leadership positions between 2030 and 2037, among companies in the Russell 3000.

– Women held 21.9% of all board and C-suite positions in companies in the Russell 3000 Index at year-end 2021, up from 9.5% in 2010.

– Extrapolating at current trends, companies in the Russell 3000 would reach gender parity in senior leadership roles between 2030 and 2037.

– Most of the progress toward gender parity comes from the increasing number of women taking seats on company boards, while C-suite parity remains elusive.

– Modeled values are within 0.4% of observed values one year after estimation, on average. This close agreement engenders confidence in the model forecasts.

Figure 1. Women's Representation Rate in Senior Leadership Positions, Russell 3000, 2010–2021 (Actual); 2022–2035 (Extrapolated)
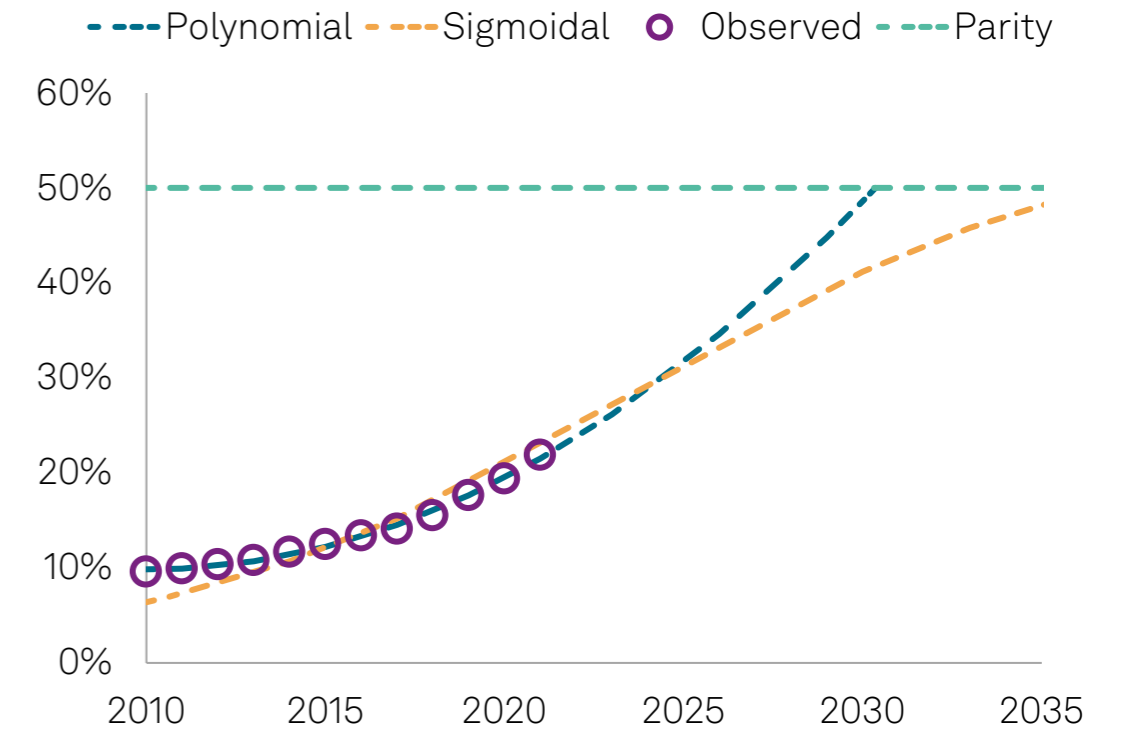
Data as of March 3, 2023.
Source: S&P Global Market Intelligence Quantamental Research.

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[1] Throughout this work, the term "parity" refers to "representation equity" and is defined as an equal number of women and men filling the available positions. To assess parity defined otherwise would require further data and analysis.

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1. What the Data Show

Equality advocates have pushed for diversity on company boards and management teams, and in some parts of the world, policy and regulatory change have taken hold. Yet despite such drivers, recent research paints a picture of slow, incremental improvements. The World Economic Forum's (WEF) latest Global Gender Gap Report[2] estimates that gender parity will take more than 100 years at the current rate of progress. A recent analysis[3] by S&P Global Sustainable1 showed that only 4.4% of 5,400 companies assessed in the S&P Global Corporate Sustainability Assessment[4] (CSA) had a woman in the role of CEO.

The report herein offers an encouraging finding in an otherwise bleak landscape. In this comprehensive study of executives and board members for companies in the Russell 3000 index[5] since 2010, there is evidence of exponential growth in the women's representation rate (WRR, defined as the percentage of women relative to the total). If the exponential growth observed over the last 11 years were to continue, women would hold half of senior leadership positions in these US companies by 2030, implying an accelerated timeline compared to WEF's global projections.

To achieve this estimate, the existing data on women's representation rate in the study universe[6] was fit to an exponential growth curve. The model can be extrapolated until the women's representation rate reaches 50% (that is, parity with men). A more conservative model, whereby the rate of growth slows as representation approaches 50%, forecasts parity by 2037. This more conservtive assumption estimates that exponential growth will continue in the near term but abate as women's representation rates reach an inflection point. In simple terms, companies that have been concentrating on achieving gender equality may deemphasize parity objectives as they realize progress.

Exhibit 1. Observed and Model Estimates of Women's Representation Rate, Russell 3000, 2019–2022[7]

Year	Observed Actual	Model Midpoint Estimates	Actual vs. Estimates
2019	17.6%	16.9%	0.7%
2020	19.4%	20.2%	-0.8%
2021	21.9%	21.8%	0.1%
2022	24.3%	24.3%	0.0%

[2] World Economic Forum, 2023. "Global Gender Gap Report 2023." https://www.weforum.org/reports/global-gender-gap-report-2023/
[3] S&P Global Sustainable1, 2023. "The Path to Gender Parity." https://www.spglobal.com/esg/insights/featured/special-editorial/the-path-to-gender-parity
[4] See the S&P Global Sustainable1 ESG Raw Data dataset for additional detail, https://www.spglobal.com/esg/solutions/esg-score-raw-data
[5] The Russell 3000 is a stock index comprised of the largest 3,000 US companies and represents approximately 98% of the US equity market by market capitalization.
[6] The study universe was senior leadership positions in Russell 3000 firms from 2010 to 2022. See appendix for additional detail.
[7] Data for 2022 is obtained from regulatory filings made available in 2023; of which only 10% of expected data was available as of the analysis.

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Figure 2. Second-Order Polynomial (Top) and Sigmoidal (Bottom) Models of Women's Representation Rate in Senior Leadership Positions, Russell 3000[8]
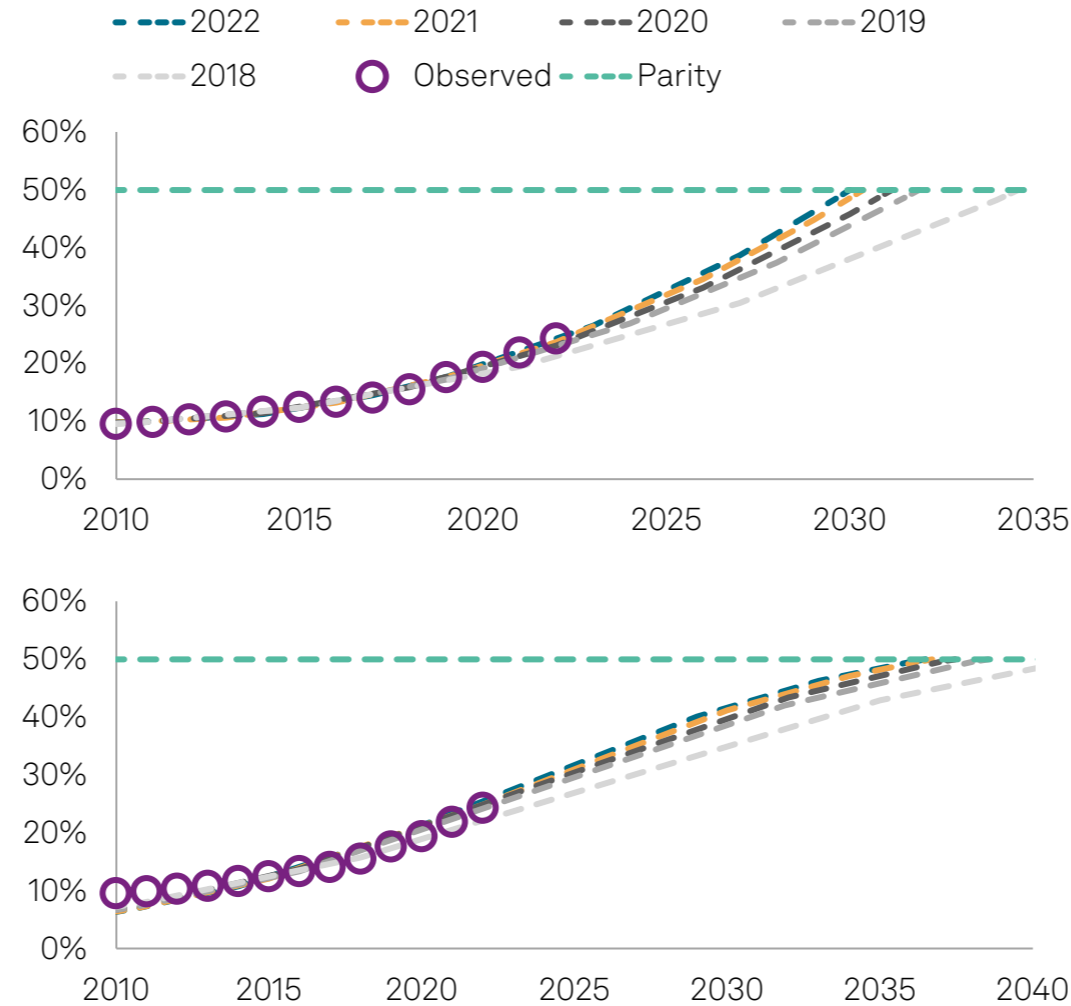
Data as of March 3, 2023.
Source: S&P Global Market Intelligence Quantamental Research.

Reality has closely followed model estimates, except during the COVID-19 lockdown in 2020. The error in the model forecasts is 0.4% on average over the last four years (2019–2022). The strong agreement of model projections with reality engenders confidence in the model. A notable exception was during the COVID-19 pandemic, when the actual representation of women in leadership positions grew by only 1.7%, versus the model expected growth of 2.5%. This data point is confirmatory of other observations that women's careers were generally hit harder[9,10] by COVID-19 compared to their male counterparts.

[8] Data for 2022 is obtained from regulatory filings made available in 2023; of which only 10% of expected data is available as of the analysis.
[9] Pan American Health Organization, 2022. "COVID-19 Pandemic Disproportionately Affected Women in the Americas."
    https://www.paho.org/en/news/8-3-2022-covid-19-pandemic-disproportionately-affected-women-americas
[10] McKinsey & Company, 2020. "Covid-19 and gender equality: Countering the regressive effects."
    https://www.mckinsey.com/featured-insights/future-of-work/covid-19-and-gender-equality-countering-the-regressive-effects

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2. Further Signs the US is Making Progress on the Gender Gap

According to the World Economic Forum's (WEF) 2023 Global Gender Gap Report[11], North America is the second most advanced region in terms of closing the gender gap, just behind Europe. The region also leads on closing the gender gap in the report's economic participation index, where both the US and Canada improved their scores. Parity in wage equality (for similar work) and estimated earned income had also increased in both countries, WEF found.

Policy actions and regulation may also accelerate the representation of women in overall leadership positions at US companies. The Biden-Harris administration announced a national strategy on gender equity and equality in 2021.[12] The strategy aims to achieve gender equality across society by, for example, promoting women's economic opportunities and access to well-paying jobs and leadership roles.[13] The administration has said it is also

taking steps to address equal pay in all states and further support access to childcare for specific industries. Further, in 2020, the US Securities and Exchange Commission (SEC) mandated[14,15] that publicly traded companies disclose certain details about their human capital resources that are material to their business, such as gender diversity. The SEC is scheduled to enhance human capital disclosure requirements in 2023[16], which could put pressure on companies to increase focus on diversity and provide additional transparency. The regulator has also made corporate board diversity[17] an agenda item for 2023, with a potential rule that would enhance disclosures about the diversity of board members and nominees.

[11] World Economic Forum, 2023. "Global Gender Gap Report 2023." https://www3.weforum.org/docs/WEF

[12] The White House, 2021. "The White House: Fact Sheet: National Strategy on Gender Equity and Equality."
https://www.whitehouse.gov/briefing-room/statements-releases/2021/10/22/fact-sheet-national-strategy-on-gender-equity-and-equality/

[13] The White House, 2021. "The White House: National Strategy on Gender Equity and Equality."
https://www.whitehouse.gov/wp-content/uploads/2021/10/National-Strategy-on-Gender-Equity-and-Equality.pdf

[14] https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=202304&RIN=3235-AL91

[15] For expanded discussion, see Whieldon, E., 2021. "Top US financial regulator faces big questions in move to mandate ESG disclosures."
S&P Global, https://www.spglobal.com/esg/insights/top-us-financial-regulator-faces-big-questions-in-move-to-mandate-esg-disclosures

[16] Office of Information and Regulatory Affairs, 2023. "Human Capital Management Disclosure."
https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=202304&RIN=3235-AM88

[17] Office of Information and Regulatory Affairs, 2023. "Corporate Board Diversity."
https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=202304&RIN=3235-AL91

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3. C-suite Diversity Lagging Board Diversity

Despite notable progress for women in US leadership, the data also show that gender parity in the C-suite remains elusive. The same extrapolation methodology used in section 2 suggests collective C-suite parity may not occur until mid-21st century, while parity at the highest levels in CEO and CFO positions could take even longer. The fact that parity in the C-suite may not be achieved before mid-century begs the question of whether companies, exchanges, regulators and governments should be taking further action.

According to the S&P Global Corporate Sustainability Assessment[18] (CSA), Europe is the region with the highest percentage of women in CEO roles, at 7.9%, reflecting legislative measures to ensure women's participation in company decision-making. For example, France passed a law[19] in 2011 mandating a 40% representation of women on corporate boards. The percentage of women on the boards of France's biggest publicly traded companies soared to 46% by 2021, up from 15% when the law was

passed ten years prior.[20] Norway was the first country in the world to introduce binding gender quotas for corporate boards,[21] while the UK's voluntary approach to gender balance has produced encouraging results.[22] Those measures have yet to filter through to the number of women in executive positions, suggesting that more is needed to reach parity in the C-suite. In North America, the representation of women CEOs is slightly less than that of Europe at 7%, according to S&P Global's CSA data. While ahead of Asia-Pacific, Africa and Latin America, companies in the US and Europe still have far to go before women have parity.[23]

18 See the CSA factsheet for additional detail, https://portal.csa.spglobal.com/survey/documents/CSA_CorporateSustainabilityAssessment_factsheet.pdf
19 Légifrance, 2011. "Relative à la représentation équilibrée des femmes et des hommes au sein des conseils d'administration et de surveillance
    et à l'égalité professionnelle." https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000023487662
20 French Senat, 2021. "Parité en entreprise : pour de nouvelles avancées, dix ans après la loi Copé-Zimmermann." https://www.senat.fr/rap/r20-757/r20-7572.html
21 European Foundation for the Improvement of Living and Working Conditions, 2023. "Government proposes gender quotas on company boards."
    https://www.eurofound.europa.eu/publications/article/2003/government-proposes-gender-quotas-on-company-boards.
22 FTSE Women Leaders Review, 2023. "Achieving Gender Balance."
    https://ftsewomenleaders.com/wp-content/uploads/2023/03/ftse-women-leaders-review-report-2022-v2.pdf
23 S&P Global Sustainable1, 2023. "The Path to Gender Parity." https://www.spglobal.com/esg/insights/featured/special-editorial/the-path-to-gender-parity

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Figure 3. Second-Order Polynomial and Sigmoidal Models of Women's Representation Rate in C-Suite Positions, Russell 3000[24]
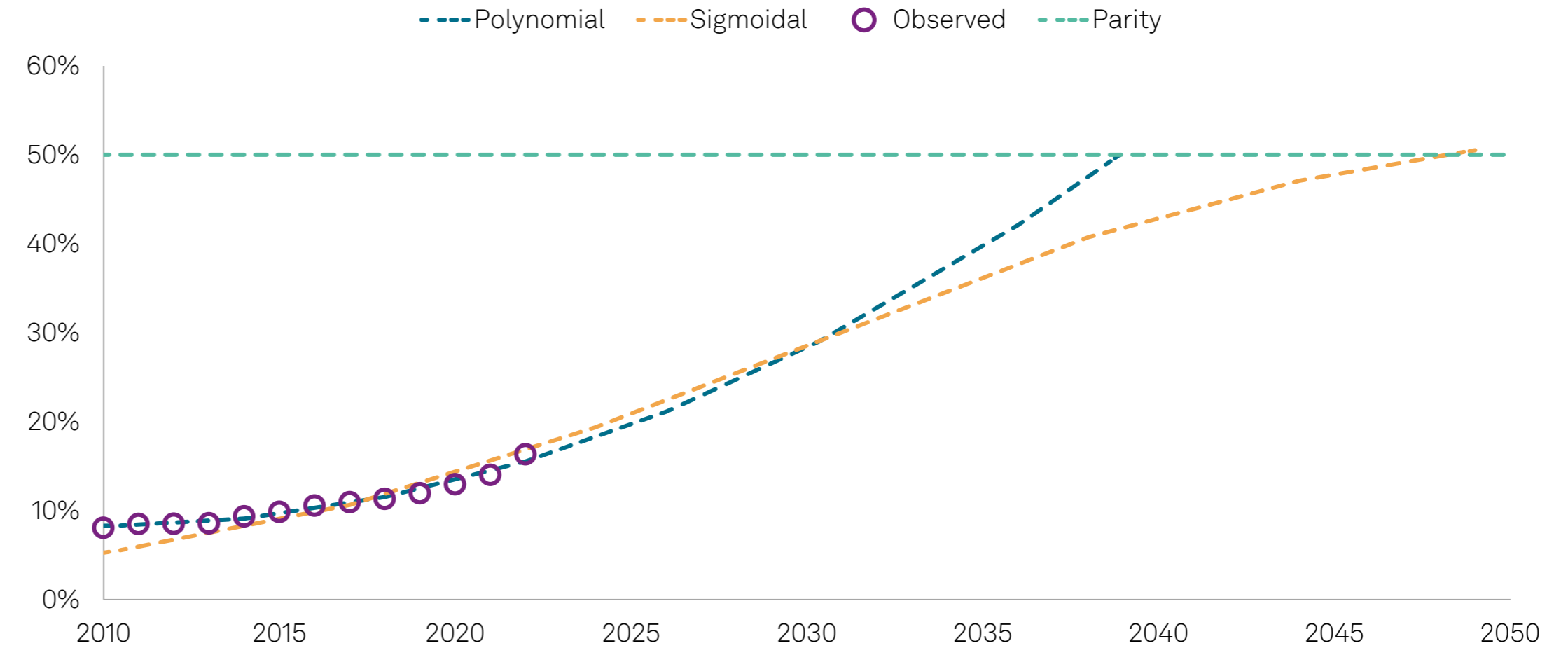
Data as of March 3, 2023.
Source: S&P Global Market Intelligence Quantamental Research.

[24] Data for 2022 is obtained from regulatory filings made available in 2023; of which only 10% of expected data is available as of the analysis.

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4. Final Thoughts

Research has shown that a more diverse workforce can make a company more profitable. Diversity could also have an impact on the long-term value of the firm. A study[25] by S&P Global published in 2019 showed that firms with a woman in the position of CFO were more profitable and generated excess profits of $1.8 trillion. Companies with a woman in the position of CEO or CFO produced superior stock price performance compared to the market average, while firms with more women on their boards were more profitable than firms with low gender diversity.

Women could achieve representation parity with men across senior leadership roles in the US in less than a decade. While that possibility is encouraging, recognizing that parity in the C-suite may not occur until mid-century provides an opportunity for firms to give further support for women's participation in the workplace. Companies can develop talent earlier in women's careers and can implement strategies to ensure a steady flow of women in the talent pipeline. Data show such strategies make good business sense and have long-term benefits.

[25] 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

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5. Appendix

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. Data are primarily sourced from Proxy Filings DEF-14A and amendments to 10-K filings, as well as other regulatory filings and press releases.

The S&P Global Corporate Sustainability Assessment (CSA) data 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.

This study includes more than 86,000 executives from 7,300 firms over 12 years. At each year, all Russell 3000 Index constituent firms as of December 31 with relevant executive information were included. Exhibit 2 contains the count of distinct individuals for each role over the entire analysis period. Except where otherwise noted, analyses were run on the executives holding the positions listed.

Exhibit 2. Count of Distinct Executives in Senior Positions, Russell 3000, 2010−2022

Executive Title	Executive Count
Chief Executive Officer	12,078
Chief Financial Officer	12,585
Chief Operating Officer	8,810
Chief Accounting Officer	6,370
Chief Technology Officer	1,819
Chief Administrative Officer	1,887
Chief Legal Officer	5,365
Unit CEO	3,089
Unit President	9,064
Member of the Board of Directors	59,034
Chairman of the Board	10,314
Treasurer	4,376
Secretary	7,669

Data as of March 3, 2023.
Source: S&P Global Market Intelligence Quantamental Research.

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Gender[26] determinations were made by three separate methods.

1. Included within the Professionals database is a field labeled 'prefix'. When the prefix field was equal to 'Mr.', 'Sir', 'Count', 'Father', 'Sheikh', 'Bishop', 'Lord', 'Hafiz', 'Baron', or 'Janab' then the executive was assumed to be a man. When the prefix field was equal to 'Mrs.', 'Miss', 'Ms.', 'Sister', 'Lady', 'Madam', 'Countess', 'Baroness', or 'First Lady' then the executive was assumed to be a woman. For all other prefixes (such as 'Dr.', 'Professor', 'Lieutenant', etc.) the gender was assigned 'ambiguous' for this method.

2. The biographies of each executive were parsed for the presence of gender related pronouns ("he", "him", "his", "she", "her", "hers"). If a minimum of 90% of the pronouns in the biography were specific to one gender, that gender was assumed for the executive; otherwise, the gender was assigned 'ambiguous' for this method.

3. Data from the US Social Security Administration were used to calculate the gender certainty associated with a first name and year of birth. For example, in 1975, 99.3% of babies named 'John' were male. If the gender certainty of an executive's first name in the year the executive was born was greater than 90%, then the executive's gender was assigned as such; otherwise the gender was assigned 'ambiguous' for this method.

After the 3 steps were completed for each executive in the study, the gender attribute classifications were programmatically compared for agreement, ignoring ambiguous results. Ambiguous records were resolved by a web search and manual determination.

5.1. Functional Form and Model Training[27]

This work presents models of WRR extracted to parity. Models can be grouped into two classes by functional form: second-order polynomial and sigmoidal. Both models are non-linear. Non-linear models were selected because the growth rate of WRR increases over the study period, indicating a positive second derivative for WRR in the present period.

The second-order polynomial captures the increasing growth rate of WRR over the training period, but assumes the growth rate continues to increase in the extrapolation period. Under this assumption, the largest growth in WRR occurs just before parity. Extrapolation beyond parity indicates all executive positions will be held by women as early as 2040. While this is mathematically possible, it is practically implausible.

[26] For discussion on the use of 'gender' rather than 'sex' within this work, see 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
[27] Parts of section 5.1. 'Functional Form and Model Training', were copied verbatim or paraphrased from earlier research.
See 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

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Exhibit 3. Model Coefficients, Russell 3000[28]

	Year	Second-Order Polynomial $$WRR = \frac{t^2}{A} + \frac{t}{B} + C$$			Sigmoidal $$WRR = \frac{1}{X + X exp\left\{\frac{-t}{Y} + Z\right\}}$$		
		A	B	C	X	Y	Z
All positions	2018	1,818	340	0.10	1.73	8.30	16.1
	2019	1,287	693	0.10	1.75	7.19	14.5
	2020	1,160	1,229	0.10	1.74	7.00	14.1
	2021	1,027	-9,444	0.10	1.76	6.60	13.7
	2022	965	-1,504	0.10	1.78	6.40	13.2
C-Suite	2018	3591	487	0.08	1.77	11.01	23.3
	2019	4,380	419	0.08	1.77	11.95	24.7
	2020	3,688	483	0.08	1.78	11.14	23.4
	2021	3,089	611	0.08	1.79	10.30	22.0
	2022	2,011	13,072	0.08	1.80	8.59	19.4

Data as of March 3, 2023.
Source: S&P Global Market Intelligence Quantamental Research.

The sigmoidal model assumes the second derivative moves in a pendulum fashion. Specifically, the second derivative will reach a maximum, retracing a path to 0, and turn negative at the so-called inflection point. When constructing a sigmoidal time-series model without observing the inflection point, an inflection point must be assumed. In this work, the inflection point was assumed at the time when the polynomial model is halfway to parity. For example, if WRR starts at 10% then a WRR of 30% is halfway to parity. Generally,

$$WRR_{Inflection} = \frac{50\% + WRR_{t=0}}{2}$$

Each model was trained on the observed WRR starting in 2010. For the model labeled 20x, data up to year-end 20x was included; where $x \in \{18,19,20,21,22\}$.

[28] In these model specifications, t is the time in years relative to 2010 (2010 has t=0, 2011 has t=1, etc.). The label "All positions" refers to the positions listed in exhibit 2, whereas "C-Suite" refers to the subset of exhibit 2 positions containing the word "Chief" in the title. Data for 2022 is obtained from regulatory filings made available in 2023; of which only 10% of expected data is available as of the analysis.

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