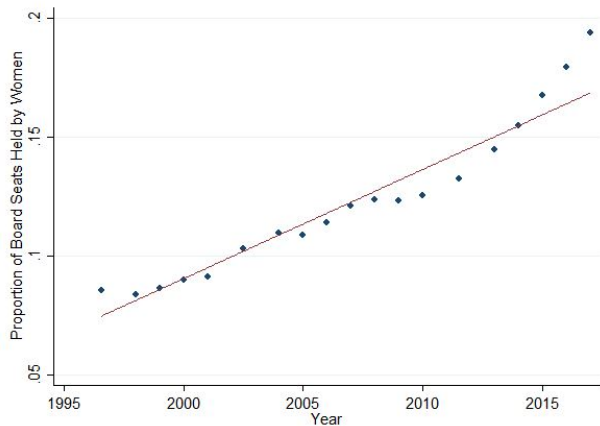# Women in the boardroom and their impact on governance and performance: An extended analysis and replication

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Female Representation on Corporate Boards Has Increased

Data Source: Institutional Shareholder Services (1996–2017)

Motivation

▶ Adams and Ferreira (2009) wrote an influential paper on the relationship between women on the board of directors and corporate governance

  1. Women tend to sit on the audit committee
  2. Boards with more women were more responsive to financial performance in the CEO turnover decision
  3. Firms with women tend to have worse financial and accounting performance using directors in the S&P 1500 from 1996–2003

Women on Boards in the Literature

- ▶ Farrell (2005) find that female representation gains in the 1990s were due to demand for one woman on the board
- ▶ Adams (2011) find positive abnormal stock returns to female board appointments in Australia
- ▶ Matsa and Miller (2013); Bertrand et al. (2014); Tyrefors and Jansson (2017) study gender quotas in Europe
- ▶ Adams (2016) finds that women on boards are dissimilar from men on boards and women in the general population

Research Question

Are the findings of Adams and Ferreira persistent over a longer sample period with greater gender representation on corporate boards?

Institutional Background

- California passed gender-representation quota for corporate boards with headquarters in CA (2018)
- Vanguard stated that gender diversity was an important element of their governance evaluation (2017)
- BlackRock stated that they would like two women on the boards of firms they own (2018)

Preview of Findings

Effect	1996–2003	2004–2017
Attendance Problem	↓	0
Audit Committee Service	↑	0
Compensation Committee Service	↓	0
Tobin's Q	↓	0
ROA	↓	0

The Data on Directors Come From ISS

Institutional Shareholder Services provides the data on directors from 1996–2017 and the data are merged with firm data

- ▶ Firm Financial Data from Compustat
- ▶ Executive Data from Execucomp
- ▶ Stock-Price Data from Center for Research in Security Prices

Tests for Differences in Characteristics

Characteristic	With Women 5,818 Observations	Without Women 4,278 Observations	P-Value
ln(Sales)	8.08	6.76	0.000
Tobin's Q	2.03	2.08	0.289
ROA	3.77	-1.97	0.000
Volatility	0.11	0.16	0.000
Performance	0.02	-0.003	0.069
Board Size	10.30	7.79	0.000

Characteristic	With Women 11,054 Observations	Without Women 4,306 Observations	P-Value
ln(Sales)	8.14	6.86	0.000
Tobin's Q	1.96	2.01	0.008
ROA	4.96	4.48	0.009
Volatility	0.10	0.13	0.000
Performance	0.03	0.04	0.230
Board Size	9.60	7.46	0.000

Linear Probability Model for Attendance Problems

$$AttendanceProblem_{it} = \beta_0 + \beta_1 Female_i + \gamma \mathbf{X} + \eta \mathbf{F} + YEAR + FIRM + \epsilon_{ft} \tag{1}$$
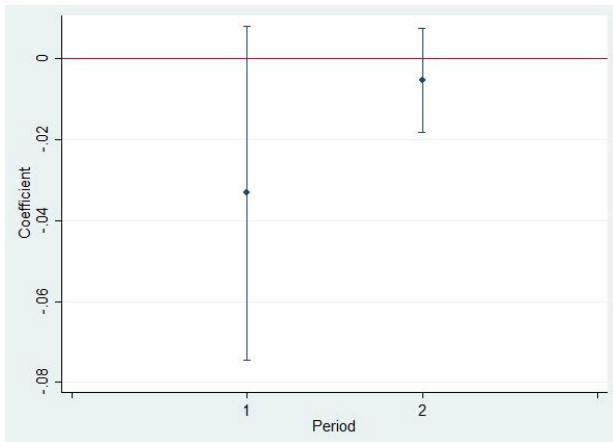
- ▶ $AttendanceProblem_{it}$ is an indicator equal to one if director i did not attend 75% of meetings in the prior year in year t
- ▶ $Female_i$ is an indicator equal to one if the director is a woman; or is the proportion of women on the board
- ▶ $\mathbf{X}$ contains director characteristics
- ▶ $\mathbf{F}$ contains firm characteristics

Women Are Not Less Likely to Have Attendance Problems in Later Periods
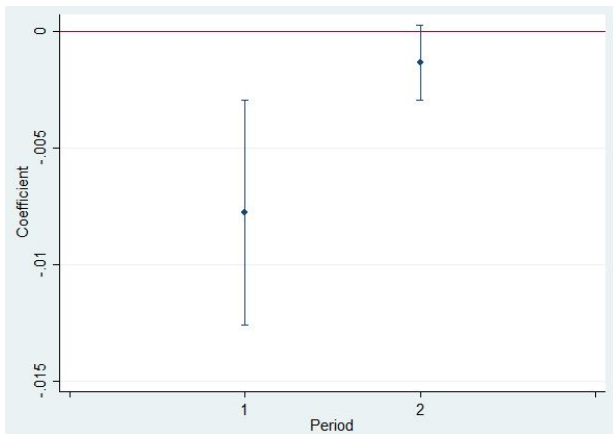
Notes: Adams and Ferreira (2009) find coefficients for *Female* of -0.007*** and *FractionWomen* of -0.035*.
Attendance Problem is an indicator equal to one if the director did not attend at least 75% of board meetings the previous year.

Men Serving with Women Are Not Less Likely to Have Attendance Problems in Later Periods
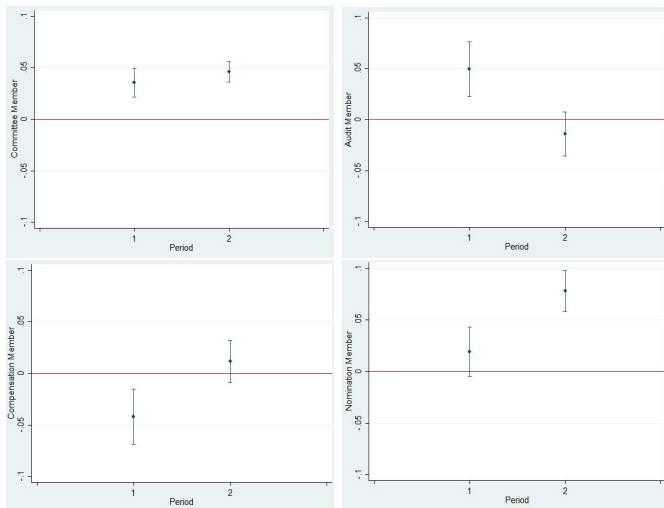

Notes: Adams and Ferreira (2009) find coefficients for *Female* of -0.007*** and *FractionWomen* of -0.035*.
Attendance Problem is an indicator equal to one if the director did not attend at least 75% of board meetings the previous year.

Linear Probability Model for Committee Service

$$Committee_{it} = \beta_0 + \beta_1 Female_i + \gamma \mathbf{X} + \eta \mathbf{F} + YEAR + FIRM + \epsilon_{ft} \tag{2}$$

- ▶ $Committee_{it}$ is an indicator equal to one if director i serves on the committee in year t
- ▶ $Female_i$ is an indicator equal to one if the director is a woman
- ▶ $\mathbf{X}$ contains director characteristics
- ▶ $\mathbf{F}$ contains firm characteristics

Women Have Changed Committees

Notes: Adams and Ferreira (2009) find coefficients of 0.035, 0.052, -0.033, and 0.020 for any committee (top left), audit committee (top right), compensation committee (bottom left), and nomination committee (bottom right). Dependent variables are indicators equal to one if the director served on any committee, the audit committee, the compensation committee, or the nomination committee.

Linear Probability Model for CEO Turnover

$$Turnover_{ft} = \beta_0 + \beta_1 Female_{ft} + \gamma \mathbf{X} + \eta \mathbf{F} + \delta \mathbf{C} + YEAR + FIRM + \epsilon_{ft} \tag{3}$$

- ▶ $Turnover_{ft}$ is an indicator equal to one if firm f experienced CEO turnover in year t
- ▶ $Female_i$ is the proportion of the board seats held by women
- ▶ $\mathbf{X}$ contains director characteristics
- ▶ $\mathbf{F}$ contains firm characteristics
- ▶ $\mathbf{C}$ contains CEO characteristics

CEO Turnover Has Decreased with More Women

VARIABLES	(1) 1996–2003	(2) 1996–2003	(3) 2004–2017	(4) 2004–2017
Fraction Female	0.00512	0.0112	-0.119**	-0.122**
	(0.0915)	(0.0916)	(0.0565)	(0.0565)
Fraction Female by Share-Return Performance		-0.0855		0.110
		(0.0661)		(0.0676)
Constant	-0.403**	-0.401**	-0.254**	-0.248**
	(0.169)	(0.169)	(0.120)	(0.120)
Year Fixed Effects?	Yes	Yes	Yes	Yes
Firm Fixed Effects?	Yes	Yes	Yes	Yes
Observations	7,752	7,752	12,807	12,807
Number of Firms	1,607	1,607	1,676	1,676
R-squared	0.126	0.126	0.104	0.104

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Notes: Adams and Ferreira (2009) find coefficients of -0.033 and -0.042 for fraction female and -0.263*** for fraction female by performance. I do not replicate these values directly but do find that in the longer sample period that firms with a higher proportion of women on the board tend to experience less CEO turnover.

Linear Model for CEO Compensation

$$Compensation_{cft} = \beta_0 + \beta_1 Female_{ft} + \gamma \mathbf{X} + \eta \mathbf{F} + \delta \mathbf{C} + YEAR + FIRM + \epsilon_{ft} \tag{4}$$

- $Compensation_{cft}$ is the log-transform of the proportion of CEO compensation tied to incentive pay; or it is the total amount of compensation for CEO c of firm f in year t
- $Female_{ft}$ is the proportion of the board seats held by women
- $\mathbf{X}$ contains director characteristics
- $\mathbf{F}$ contains firm characteristics
- $\mathbf{C}$ contains CEO characteristics

Women Have Not Become Involved With CEO Compensation
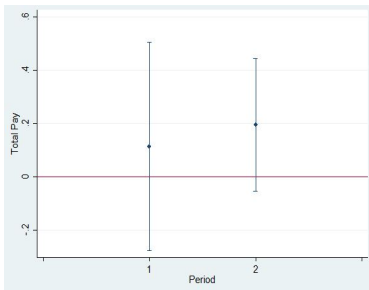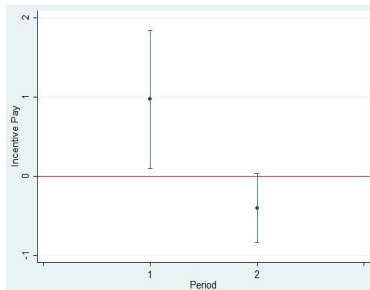
Notes: Adams and Ferreira (2009) find coefficients of 4.960*** and 0.372* for fraction female. For Incentive Pay, the log transform of the fraction incentive pay is used $ln \frac{IncentivePay}{1-IncentivePay} + \epsilon$, where ϵ is a "very small number". I define $\epsilon = 0.01$

2SLS Model for Firm Performance

$$Performance_{ft} = \beta_0 + \beta_1 \hat{Female}_{ft} + \gamma \mathbf{X} + \eta \mathbf{F} + \delta \mathbf{C} + YEAR + FIRM + \epsilon_{ft} \tag{5}$$

- $Performance_{ft}$ is the Tobin's Q or Return on Assets of the firm f in year t
- $\hat{Female}_{ft}$ is the predicted proportion of the board seats held by women based on the proportion of male directors at the firm who serve on other boards with women
- $\mathbf{X}$ contains director characteristics
- $\mathbf{F}$ contains firm characteristics

The Impact of Women on Tobin's Q Has Muted Over Time

VARIABLES	OLS 1996–2003	Firm FE 1996–2003	IV 1996–2003	OLS 2004–2017	Firm FE 2004–2017	IV 2004–2017
Fraction Female	0.342***	-0.052	-1.049***	0.087	0.026	-0.067
	(0.131)	(0.119)	(0.361)	(0.083)	(0.064)	(0.136)
Constant	0.637***	0.852***		0.965***	1.277***	
	(0.087)	(0.183)		(0.101)	(0.148)	
Year Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects?	No	Yes	Yes	No	Yes	Yes
Observations	10,095	10,095	9,869	15,360	15,360	15,268
Number of Firms	-	2,055	1,829	-	1,721	1,630
R-squared	0.071	0.090	0.069	0.108	0.149	0.149

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Notes: Adams and Ferreira (2009) find coefficients of 0.221*, -0.135*, and -5.924** for fraction female.

The Impact of Women on ROA Has Muted Over Time

VARIABLES	OLS 1996–2003	Firm FE 1996–2003	IV 1996–2003	OLS 2004–2017	Firm FE 2004–2017	IV 2004–2017
Fraction Female	12.012***	-2.675	-13.204	-1.328	-0.774	-2.280
	(3.473)	(3.759)	(15.728)	(1.353)	(1.525)	(4.843)
Constant	-14.448***	-31.730***		2.555	-25.548***	
	(2.645)	(11.152)		(1.560)	(4.434)	
Year Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects?	No	Yes	Yes	No	Yes	Yes
Observations	10,095	10,095	9,869	15,360	15,360	15,268
Number of Firms	-	2,055	1,829	-	1,721	1,630
R-squared	0.070	0.027	0.026	0.057	0.065	0.065

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Notes: Adams and Ferreira (2009) find coefficients of 6.190*, -6.170*, and -231.409**. I replicate the negative effects found in the IV but the value is muted.

Conclusion

- ▶ Women are not less likely to have attendance problems
- ▶ Women are not more likely to serve on audit committee
- ▶ Women are not less likely to serve on compensation committee
- ▶ No effect of women on accounting or financial performance