

# Welcome on Board? Appointment Dynamics of Women as Directors

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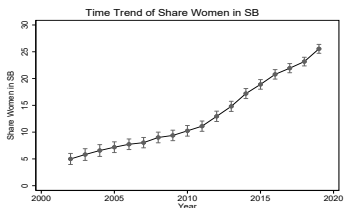
August 25th, 2022

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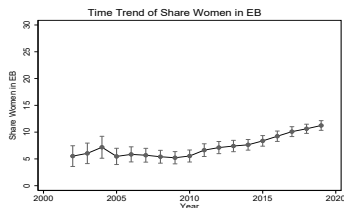
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## Leaky Pipeline for top positions around the world

- Women have been earning more college degrees than men for nearly 40 years in many OECD countries (OECD, 2020).
- In 2020, women held only 6.4% of Fortune 500 chairperson roles (Deloitte, 2021).



(a) Share Non-Executive Women



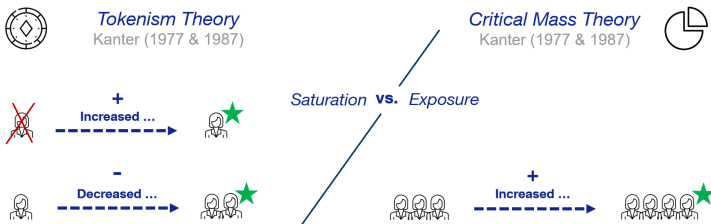
(b) Share Executive Women

Figure: Time Trend of Women Board Share in Western Europe

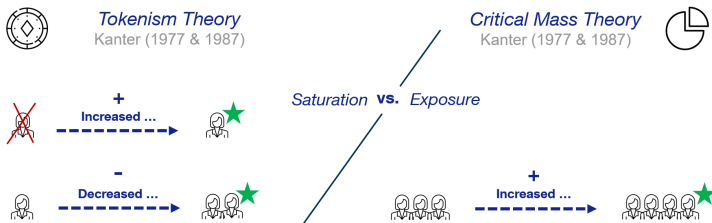
# Does board composition matter for director appointments?

- Majority of studies focus on the real effects, benefits, and costs of voluntary and mandatory board diversity.
- Limited empirical evidence on drivers and impediments of board diversity:
  - ① External environmental factors: *Institutional and resource dependence theories* (Brammer et al., 2009; Grosvold and Brammer, 2011; Arena et al., 2015; Tyrowicz et al., 2020).
  - ② Firm-specific factors (**board structure**, firm size, network linkages, and strategic orientation): *Resource dependence and work-group-level diversity theories* (Farrell and Hersch, 2005; Hillman et al., 2007; Smith and Parrotta, 2018; Markoczy et al., 2020).

# We oppose two group-level diversity theories



# We oppose two group-level diversity theories



... propensity to appoint female director.

*Hyp. 1:* Propensity increases with woman's departure.

*Hyp. 2A:* Propensity decreases with higher ex-ante share women.

*Hyp. 3A:* Executive appointments are less gender specific.

*Hyp. 2B:* Propensity increases with higher ex-ante share women.

*Hyp. 3B:* Spillovers on executive appointments.

## We find evidence of *tokenism* for non-executives

- *Hyp. 1*: Propensity to appoint a non-executive woman is **two times higher** when a woman, compared to when a man, leaves the non-executive board.
- *Hyp. 2A*: Propensity to appoint a non-executive woman **decreases by 1.1%** if the previous year's non-executive woman share increases by 1 pp.
- *Hyp. 3A*: Gender-specific appointment dynamics only for non-executives.
- *Hyp. 3B*: **No significant spillovers** to executives.
- Results are robust to controlling for endogeneity by instrumental variable approach and nearest-neighbor matching.

## We contribute to three streams of literature

- 1 **(Organizational) Behavior:** We test hypotheses that support existing group-decision taking and group-level diversity theories in an international corporate boardroom setting.
- 2 **Governance:** We examine micro-level data on the timing of director appointments and differentiate between non-executive and executive roles.
- 3 **Diversity & Quotas:** We test how existing (voluntary or mandatory) diversity influences future and executive diversity (time and functional spillovers).

## Cross-country sample for Europe ...

- Director Appointment and Resignation Data
  - Source: Orbis
  - Exclude directors with missing appointment or departure dates.  
Exclude firm-year observations with less than two directors.
- Financial & Ownership Firm Data
  - Source: Refinitiv's Worldscope & Orbis
  - Exclude utilities and financial firms with two-digit SIC codes 49 and 60-69.
- Main sample
  - 27,486 firm-year observations
  - 3,353 listed firms between 2002 and 2019
  - 19 Western European countries

Descriptives

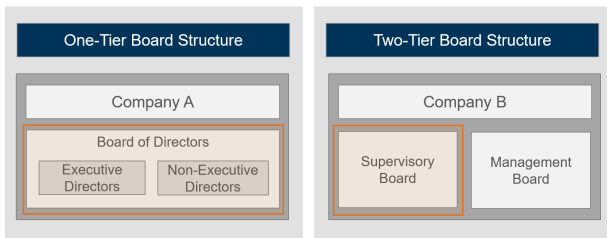
Time Trends for all countries



## ... with different institutional contexts



Quotas for the representation of the underrepresented gender



Independent of board structure, we differentiate between:

- 1 Executive role (further: *Executive Board*): Managing firm.
- 2 Non-executive role (further: *Supervisory Board*): Advising, monitoring, appointment, and remuneration of executive directors.

## Empirical model: Does gender predict appointment?

Propensities to appoint women to the supervisory and executive board are estimated using logit multivariate regressions for firm  $i = 1, \dots, N$  at time period  $t = 1, \dots, T$

$$P(y_{(supervisory)it}) = \alpha_{ist} + \beta_1 Predictors_{(supervisory)it} + \lambda_t + \gamma_s + \sigma_c + \mathbf{X}_{it}\delta + \varepsilon_{it}$$

$$P(y_{(executive)it}) = \alpha_{ist} + \beta_1 Predictors_{(executive)it} + \beta_2 Predictors_{(supervisory)it} + \lambda_t + \gamma_s + \sigma_c + \mathbf{X}_{it}\delta + \varepsilon_{it}$$

- *Predictors*: Director resignations and lagged women share.
- Year-, industry-, and country-fixed effects ( $\lambda_t$ ,  $\gamma_s$ , and  $\sigma_c$ ).
- Lagged board-, firm-, and country-specific controls ( $\mathbf{X}_{it}$ ).

# Tokenism in SB: We validate Hypotheses 1 and 2A

Table: Predicting Women's Supervisory Board Appointments

	(1) Main Predictors	(2) Dependence Indicator	(3) Board-Level Predictors
WomenShare in SB	0.989*** (0.002)	0.990*** (0.003)	0.981*** (0.004)
WomenShare in SB × WomenShare in SB	1.000 (0.000)	1.000 (0.000)	1.000 (0.000)
<b>WomenResignation from SB</b>	<b>4.083*** (0.338)</b>	<b>4.154*** (0.366)</b>	<b>6.304*** (0.801)</b>
<b>MenResignation from SB</b>	<b>2.387*** (0.137)</b>	<b>2.451*** (0.152)</b>	<b>3.058*** (0.292)</b>
Share Foreign Directors			0.993*** (0.002)
Board Size	0.984** (0.006)	0.984* (0.007)	0.970** (0.010)
Dependence Indicator		0.976*** (0.007)	
Constant	0.000** (0.000)	0.000 (0.002)	0.000* (0.000)
Controls	F C	F C	B F C
Fixed Effects	Y C I	Y C I	Y C I
N	27486	22244	10616

Exponentiated coefficients; Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

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## Graphical representation of the *saturation* effect (Hyp. 2A)

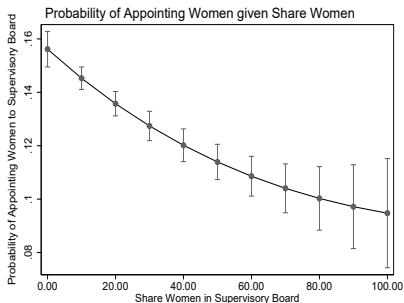


Figure: Marginal effects of share women on new supervisory appointments

# Tokenism stronger in quota countries? (Hyp. 1)

Table: Predicting Women's SB Appointments (Sub-Sample Analysis)

	(1) High sharw Industry	(2) Low sharw industry	(3) Quota Treated	(4) No Quotas
WomenShare in SB	0.988*** (0.003)	0.989** (0.004)	1.009 (0.005)	0.984*** (0.003)
WomenShare in SB × WomenShare in SB	1.000 (0.000)	1.000 (0.000)	1.000* (0.000)	1.000* (0.000)
WomenResignation from SB	3.975*** (0.409)	4.409*** (0.603)	12.837*** (3.308)	3.126*** (0.302)
MenResignation from SB	2.192*** (0.161)	2.781*** (0.259)	4.765*** (0.984)	2.047*** (0.124)
Board Size	0.991 (0.008)	0.971** (0.011)	0.968* (0.013)	0.991 (0.008)
Constant	0.000*** (0.000)	0.297 (1.844)	0.000** (0.000)	0.000** (0.000)
Controls	F C	F C	F C	F C
Fixed Effects	Y C I	Y C I	Y C I	Y C I
N	15335	12147	3629	23800

Exponentiated coefficients; Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

# Saturation effect persists for voluntary diversity (Hyp. 2A)

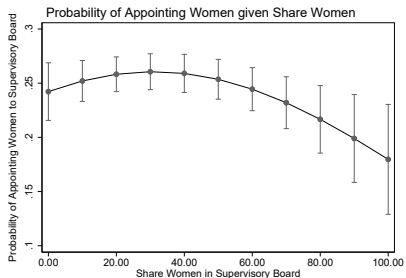


Figure: (a) Quota Observations

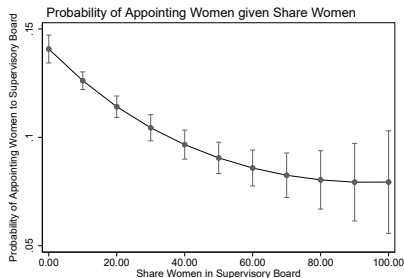


Figure: (b) No Quota Observations

# Are executive appointments different? (Hyp. 3A)

Table: Predicting Women's Executive Board Appointments

	(1)	(2)	(3)
	Main Predictors	Dependence Indicator	Board-Level Predictors
WomenShare in SB	1.009 (0.005)	1.010* (0.005)	1.001 (0.010)
WomenShare in EB	1.015** (0.005)	1.015** (0.005)	1.015 (0.009)
WomenShare in EB × WomenShare in EB	1.000* (0.000)	1.000* (0.000)	1.000 (0.000)
WomenShare in SB × WomenShare in SB	1.000 (0.000)	1.000 (0.000)	1.000 (0.000)
WomenResignation from EB	2.705*** (0.657)	2.774*** (0.728)	3.106* (1.474)
MenResignation from EB	2.578*** (0.290)	2.691*** (0.327)	2.794*** (0.615)
Director Tenure			0.907** (0.032)
Share Multidirectors			1.007* (0.004)
Board Size	1.032** (0.010)	1.030** (0.010)	1.025 (0.018)
Dependence Indicator		0.975 (0.014)	
Constant	0.000** (0.000)	0.000 (0.000)	0.000 (0.000)
Controls	F C	F C	B F C
Fixed Effects	Y C I	Y C I	Y C I
N	20378	17074	5495

Exponentiated coefficients; Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$



## What are our key results & implications?

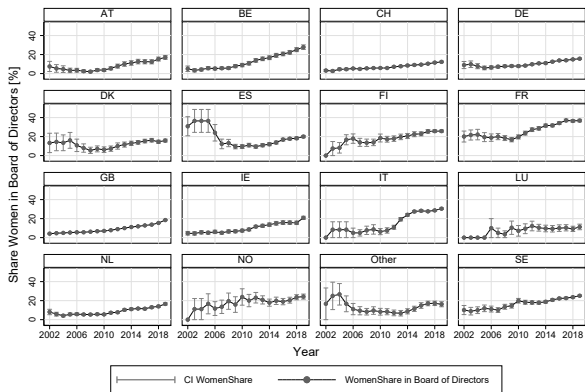
- Gender plays a role in non-executive board appointments.
- New non-executive women replace, rather than add to other non-executive women directors (*Tokenism*).
- Quotas intensify the attention on gender in appointments, but not beyond the mandatory threshold. Overall *saturation* effect for voluntary diversity.
- Little (to no) spillovers effects from supervisory to executive board.
- Executive board appointments are less (to not) gender specific.
- Policy needs to understand the demand and supply side and explicitly distinguish between director roles.

# Sample Descriptives [Back](#)

## Table: Descriptive Statistics

Variable name	Observations	Mean	S.D.	C.V.	Min.	Median	Max.
<b>Supervisory Board Variables</b>							
DummyWomenApp to SB	27486	0.14	-	-	0	0	1
AbsWomenApp to SB	27486	0.19	0.58	3.05	0	0	11
AbsWomenRes from SB	27486	0.05	0.27	5.63	0	0	8
AbsMenRes from SB	27486	0.39	0.88	2.27	0	0	16
WomenShare in SB	27486	14.42	20.48	1.42	0	0	100
<b>Executive Board Variables</b>							
DummyWomenApp to EB	20672	0.04	-	-	0	0	1
AbsWomenApp to EB	20672	0.04	0.23	5.17	0	0	3
AbsWomenRes from EB	20672	0.01	0.10	10.64	0	0	4
AbsMenRes from EB	20672	0.11	0.39	3.47	0	0	12
WomenShare in EB	20672	7.73	21.19	2.74	0	0	100
<b>Control Variables</b>							
Director Tenure	27486	4.59	3.25	0.71	0	4	38
Share Independent Directors	27486	80.81	26.98	0.33	0	100	100
Share Foreign Directors	27486	11.72	20.72	1.77	0	0	100
Share Multidirectors	27486	36.24	24.16	0.67	0	33.33	100
Chairwoman	10693	4.54	20.07	4.42	0	0	100
CEO is a Woman	12245	3.88	18.75	4.83	0	0	100
Director Age	27018	54.52	5.59	0.10	20	54.75	88
Board Size	27486	6.36	3.66	0.58	2	6	56
Independence Indicator	22493	3.61	3.10	0.86	1	3	10
Employees	25773	11867.68	41989.19	3.54	0	1050	664496
Tobin's Q	27486	2.63	47.06	17.88	-0.03	1.36	5416.50
ROA	27448	2.43	76.01	31.32	-11150	5.75	591.67
Firm Age	27486	16.83	12.93	0.77	0	14	54
log(Total Assets)	27486	5.46	2.36	0.43	-6.21	5.30	13.01
GDP per Capital	27486	42737.75	9495.99	0.22	22615.96	41269.35	116622.24
Employment Rate	27486	70.50	5.68	0.08	48.80	71.60	80.10
Women Labor Force Rate	27486	46.40	1.28	0.03	39.15	46.52	49.78

# Country-specific leaky pipelines [Back](#)



Graphs by Country Datastream

Figure: Time Trend of Women Share

Contextual Robustness Checks [Back](#)

Table: Robustness Checks Supervisory Board

	(1) Appointments Sample	(2) Resignation Sample	(3) NM: EarlyWomen/NoEarlyWomen	(4) NM: Res/no Res
WomenShare in SB	0.987*** (0.003)	0.977*** (0.007)	0.973*** (0.005)	0.945*** (0.010)
WomenShare in SB × WomenShare in SB	1.000 (0.000)	1.000 (0.000)	1.000 (0.000)	1.000 (0.000)
DummyWomenRes from SB	2.921*** (0.265)	3.146*** (0.310)	4.396*** (0.752)	3.405*** (0.674)
DummyWomenRes from SB=1 × WomenShare in SB				1.050** (0.016)
DummyWomenRes from SB=1 × (WomenShare in SB) <sup>2</sup>				1.000 (0.000)
DummyMenRes from SB	0.907 (0.056)		2.125*** (0.252)	2.832*** (0.403)
EarlyWomen=1			1.256* (0.119)	
EarlyWomen=1 × WomenShare in SB			0.995 (0.007)	
EarlyWomen=1 × (WomenShare in SB) <sup>2</sup>			1.000 (0.000)	
Board Size	0.987 (0.008)	0.970* (0.013)	0.988 (0.012)	0.961* (0.019)
Constant	0.000*** (0.000)	0.003 (0.029)	1981.275 (27814.837)	0.000 (0.000)
Controls	F C	F C	F C	F C
Fixed Effects	Y C S	Y C S	Y C S	Y C S
N	11164	6837	7216	1997

# Econometric Robustness Checks Back

Table: Alternative Specifications Supervisory Board

	(1)	(2)	(3)	(4)	(5)
	DummyWomenApp	DeltaWomenShare	FirmFixedEffects	Dynamic	IV: Heteroscedasticity-Based
WomenShare in SB	-0.100*** (0.025)	-0.118*** (0.010)	-0.909*** (0.043)	-0.035 (0.029)	-0.256*** (0.068)
WomenShare in SB × WomenShare in SB	0.045 (0.031)	-0.047* (0.019)	0.601*** (0.057)	-0.003 (0.035)	0.205** (0.070)
DummyWomenRes from SB	0.266*** (0.016)		0.274*** (0.016)	0.261*** (0.016)	0.302*** (0.017)
DummyMenRes from SB	0.083*** (0.006)		0.086*** (0.006)	0.088*** (0.006)	0.090*** (0.006)
Lagged.DummyWomenApp to SB				-0.036*** (0.008)	
Lagged.2.DummyWomenApp to SB				-0.031*** (0.008)	
Board Size	0.001 (0.001)	-0.001*** (0.000)	-0.006*** (0.001)	0.001 (0.001)	0.001 (0.001)
Constant	-0.517 (0.272)	-0.196* (0.088)	-0.876* (0.352)	-0.558 (0.314)	-2.689** (0.858)
Weak Instrument Test					56.90
Controls	F C	F C	F C	F C	F C
Fixed Effects	Y C S	Y C S	Y F	Y C S	Y C S
N	27486	27445	27486	25300	27486

# Graphic Representation of *Exposure* Effect

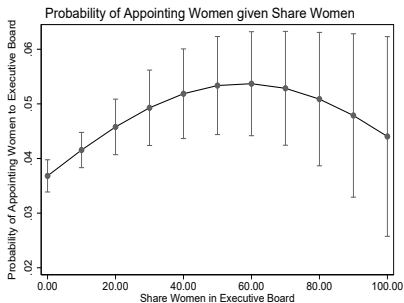
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Figure: Representation Effect on Female Executive Director Appointments

# Econometric Robustness Checks Back

## Table: Alternative Specifications Executive Board

	(1)	(2)	(3)	(4)	(5)
	DummyWomenApp	DeltaWomenShare	FirmFixedEffects	Dynamic	IV: Heteroscedasticity-Based
WomenShare in EB	0.123*** (0.029)	-0.060*** (0.017)	-0.629*** (0.053)	0.079* (0.034)	0.011 (0.009)
WomenShare in SB	0.024 (0.017)	0.021** (0.008)	0.032 (0.029)	0.024 (0.017)	0.033 (0.020)
WomenShare in EB × WomenShare in EB	-0.120*** (0.032)	-0.060** (0.023)	0.511*** (0.056)	-0.084* (0.036)	0.040 (0.035)
WomenShare in SB × WomenShare in SB	-0.006 (0.024)	-0.023* (0.011)	-0.009 (0.040)	-0.006 (0.025)	-0.020 (0.027)
DummyWomenRes from EB	0.091*** (0.027)		0.119*** (0.028)	0.099*** (0.029)	0.100*** (0.027)
DummyMenRes from EB	0.041*** (0.006)		0.040*** (0.007)	0.042*** (0.007)	0.042*** (0.006)
Lagged.DummyWomenApp to EB				0.024 (0.015)	
Lagged.2.DummyWomenApp to EB				0.035* (0.015)	
Board Size	0.004*** (0.001)	-0.000 (0.000)	0.006*** (0.001)	0.004*** (0.001)	0.005*** (0.001)
Constant	-0.258 (0.197)	-0.122 (0.087)	-0.155 (0.270)	-0.191 (0.213)	-0.734* (0.359)
Controls	F C	F C	F C	F C	F C
Fixed Effects	Y C S	Y C S	Y F	Y C S	Y C S
N	20672	20321	20672	19259	20672

# Control Variables

Table: Variable Definitions

Variable	Definition	Source
<b>Country-Level</b>		
GDP per Capita	Gross domestic product per capita	OECD
Women Labor Force Rate	Women's share of labor force	OECD
Employment Rate	Total share of labor force	OECD
<b>Firm-Level</b>		
Tobin's Q	Sum of total assets and market equity less common book equity divided by total assets	Worldscope
Total Assets	Total assets	Worldscope
Firm Age	Years since first accounts	Worldscope
Independence Indicator	Numeric A+ to D independence indicator	Orbis
<b>Board-Level</b>		
Board Size	Absolute number of directors in supervisory and executive board	Orbis
Share Foreign Directors	Share foreign directors in supervisory and executive board	Orbis
Director Age	Average director age in supervisory and executive board	Orbis
Share Multi-directors	Share multi-directors in supervisory and executive board	Orbis
Director Tenure	Average director tenure in supervisory and executive board	Orbis
Share Independent Directors	Share independent directors in supervisory and executive board	Orbis
Chairwoman	Share women in chair positions	Orbis
CEO is a Woman	Share women in CEO position	Orbis



# Quotas increase attention to gender in EB

Table: Cross-Sectional Executive Board Predictions

	(1)	(2)	(3)	(4)
	High sharw Industry	Low sharw industry	Quota Treated	No Quotas
WomenShare in SB	1.014* (0.006)	0.998 (0.008)	1.023 (0.012)	1.005 (0.005)
WomenShare in EB	1.011 (0.006)	1.023** (0.008)	1.005 (0.010)	1.013* (0.006)
WomenShare in EB × WomenShare in EB	1.000 (0.000)	1.000* (0.000)	1.000 (0.000)	1.000 (0.000)
WomenShare in SB × WomenShare in SB	1.000 (0.000)	1.000 (0.000)	1.000 (0.000)	1.000 (0.000)
WomenResignation from EB	2.689*** (0.806)	2.761* (1.138)	15.345*** (9.714)	1.998* (0.556)
MenResignation from EB	2.500*** (0.356)	2.768*** (0.508)	5.387*** (1.719)	2.326*** (0.283)
Board Size	1.034** (0.012)	1.030 (0.019)	0.980 (0.018)	1.052*** (0.014)
Constant	0.000* (0.000)	0.000* (0.000)	0.000 (0.000)	0.000** (0.000)
Controls	F C	F C	F C	F C
Fixed Effects	Y C I	Y C I	Y C I	Y C I
N	11276	8987	2631	17521

Exponentiated coefficients; Standard errors in parentheses

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

# No Quota Spillovers

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Figure: (a) Quota Observations

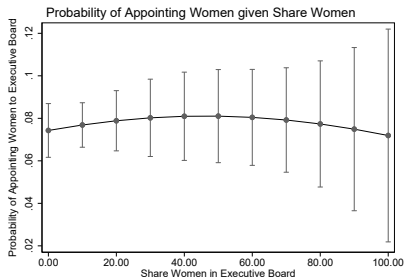
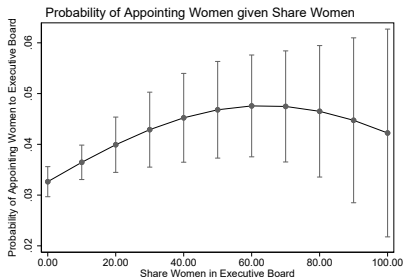


Figure: (b) No Quota Observations



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