

# Gender quota and dynastic bias in women's representation

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# Motivation

## Large debate on the effect of mandatory gender quotas

- ▶ Low women representation in business leadership (10% of board members in 2012, Smith (2014)) → several European countries have taken action by imposing “hard” quotas: Norway, Iceland, Italy, France, Finland etc.
- ▶ Mitigated impact of gender quotas: effect on performance, companies’ avoidance, tokenism, no effect on women at other levels, effective power of new women in the boardroom, diversity of the new recruits etc.

## Recent evidence on dynastic bias in women’s representation in politics (Folke et al. 2020)

- ▶ As political leadership, business leadership is a sphere of power where women are underrepresented → dynastic bias is expected.
- ▶ How does gender dynastic bias interact with mandatory gender quotas?

# Research question

**Is there a dynastic bias in women's representation in the business elite? How do gender quotas affect the dynastic bias in women's recruitment?**

# Recruitment process of board members

- ▶ Shareholders and current board members propose a list of candidates to choose among.
- ▶ Legally, it is only mandatory to display the list of positions held by the candidate in other companies, if any.
- ▶ In practice, the qualifications (CV) of candidates are often made available to shareholders
- ▶ New board members are elected by shareholders at the general meeting (vote made by a simple relative majority).  
→ "In-house" nomination + lack of formal criteria makes it a rather informal process.

# Dynastic ties and the signaling of qualifications

## Screening discrimination across genders

- ▶ Accurate evaluation of candidates is difficult in the context of board members recruitment: “quality” is difficult to define and observe.
- ▶ Even more so for underrepresented groups:
  - ▶ Board members and shareholders are from the majority group.
  - ▶ Less information on quality for underrepresented groups.
  - ▶ Less available resources (network, informal relationships) to signal their quality.
- ▶ → Recruiters need to rely more heavily on underlying average qualification.
- ▶ → Above-average women are penalized.

# Dynastic ties and the signaling of qualifications

## Differential impact of dynastic ties across genders

- ▶ A dynastic tie can improve the accuracy in a candidate's evaluation:
  - ▶ Signal of quality inferred from the predecessor quality.
  - ▶ Increased resources available to the junior to signal quality.
- ▶ Since women are more likely to suffer from screening discrimination, they should benefit disproportionately from a dynastic tie compared to men.
  - Dynastic juniors should be more common among women than among men.

# Gender quota and the signaling role of dynastic ties

- ▶ Gender quotas are implemented in environment where women are underrepresented:
    - ▶ Screening discrimination are likely to take place.
    - ▶ Women are likely to benefit more largely from a dynastic tie.
  - ▶ On the short run:
    - ▶ Gender quotas increase the pressure for recruiting women without improving the accuracy of their qualifications' evaluation.
    - ▶ Gender quotas will exacerbate the reliance on dynastic ties, and the advantage of dynastic women over non-dynastic women.
- Dynastic women should account for a large part of the newly recruited women in response to gender quotas.
- The (conditional) share of dynastic women should increase after the introduction of gender quotas.

# Related literature

## Literature on the effect of board gender quotas

- ▶ Ahern and Dittmar (2012); Matsa and Miller (2013); Bertrand et al. (2018); Ferrarri et al. (WP 2019); Maida and Weber (WP 2019).

## Literature on dynastic transmission of power

- ▶ Dal Bó, Dal Bó and Snyder (2009); Besley and Reynal-Querol (2017); Folke, Rickne and Smith (2020); Querubín (2016); Querubín (WP 2020); Querubín, Labonne and Parsa (WP 2020).



# Preview of results

- ▶ Dynastic bias in the business elite across genders:
  - ▶ Women are 4.5% more likely to have a predecessor in the elite compared to men.
- ▶ Effect of the Danish gender quota on women share and on dynastic bias in women's representation:
  - ▶ The share of women on board has increased by 3% following the law (23% change with respect to the baseline 13.2% in 2011).
  - ▶ The conditional share of dynastic women has increased by 5% following the law (50% change with respect to the baseline 10% in 2011).

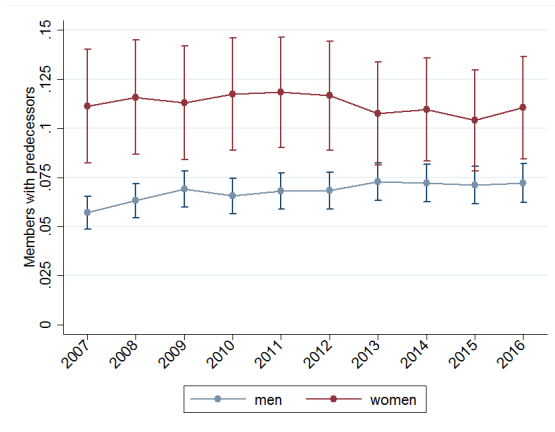
# Data and Sample

- ▶ Danish population registers: → unique family identifier allows to retrieve family ties and other individual-level information.
- ▶ Management registers from the Danish Business Authority from 2007 to 2017: matched firm-board members datasets.
- ▶ Accounting registers: firm-level information.

## Descriptive result: dynastic bias across genders in the business elite

- ▶ Business elite: CEOs and board members of large Danish firms (250 + employees)
  - Account for more than 40% of employees and of the national value added (source: DST).
- ▶ Relatives: nuclear family - parents, siblings, children, spouses
  - Lower bound of dynastic bias.
- ▶ A member of the business elite is coded as “connected” if she ever had a predecessor in the business elite after 1996.

## Descriptive result: dynastic bias across genders in the business elite



→ Women are 4.5% more likely than men to have a predecessor in the elite over the sample period.

→ Do gender quotas increase/ reduce this bias?

# Impact of the Danish gender quota

## Background

- ▶ Sparked by debate at the EU level & European Commission proposal for Gender Quotas in November 2012 (not adopted).
- ▶ Gender quotas on corporate boards introduced in the Danish political debate around 2011: “initiate a dialogue with the business sector in order to ensure more female members on boards of listed companies, including assessing proposals on quota on the basis of gender” (2011 Government Platform).

Source: report on gender equality in Denmark - Directorate-General for internal policies, European Parliament.

# Impact of the Danish gender quota

## The Danish quota: the law of target figures

- ▶ **Legal threshold:** firms must reach 40% representation for women on board of directors.
- ▶ **Flexible approach:** firms must set a target figure at least equal to this minimum legal thresholds and reach it within 4 years.
- ▶ **Transparency and Accountability:** every years, annual report must includes:
  - Gender composition (and progress compared to the previous year).
  - Target, time required for achievement, % achieved, reason for failure if not achieved.
  - Failing to report is punished by a fine.
- ▶ **Coverage:** largest firms in Denmark (appr. 700 firms):
  - firms needs to report under the law if it exceeds 2 of the 3 following criteria in 2 consecutive financial years:
    - balance sheet total of DKK 156 MM;
    - Net revenue of DKK 313 MM;
    - Average of 250 FTE employees.

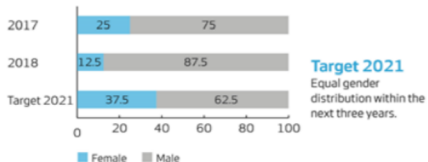
# Impact of the Danish gender quota

## Reporting sample

Based on the latest development in the composition of the Board it is an ambitious goal to reach equal gender distribution no later than 2021, but the Board has decided not to change the target.

### Development in gender distribution in the Board of Directors of Vestas Wind Systems A/S

Percent



# Impact of the Danish gender quota

## Research Design

- ▶ Difference-in-difference approach.
- ▶ Keep top 2% in terms of balance sheet total, net revenue and FTE from the universe of Danish firms between 2007 and 2017 (appr. 1,200 firms).
- ▶ Treated firms are firms that meet the requirement prior to the law (2012) (intent-to-treat approach).
- ▶ I compare the change in women representation within firms who need to report under the policy to the change in firms who do not need to report under the policy.
- ▶ I estimate the causal effect of being affected by the policy.

$$WS_{j,t} = \alpha_j + \lambda_t + \gamma X_{j,t} + \delta \mathbb{I}\{Post_t\} + \beta \mathbb{I}\{Treated_j \times Post_t\} + \epsilon_{j,t}$$

- ▶ Identifying assumption: the trends in women share representation would be the same in both groups in the absence of the policy.

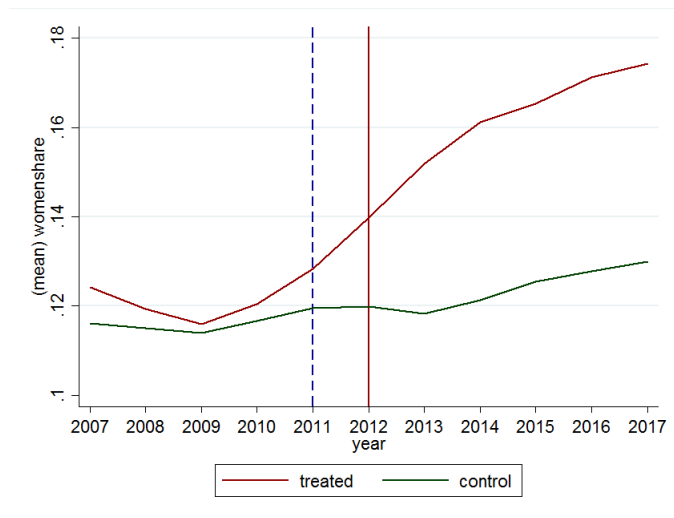


# Impact of the Danish gender quota

## Sample restriction

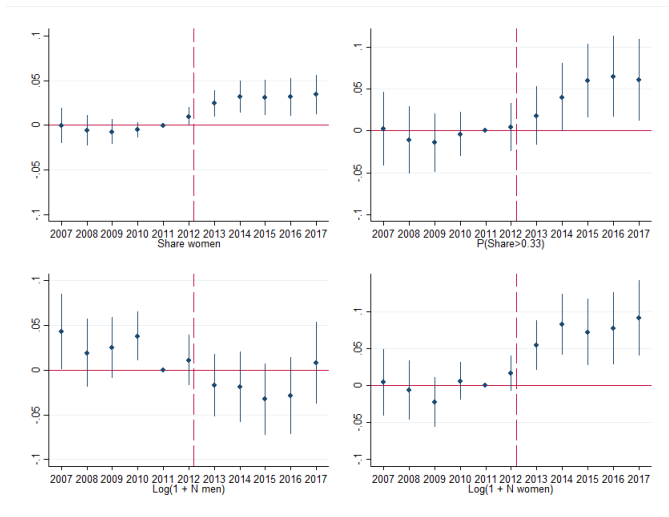
- ▶ Sample period: 2007-2017.
- ▶ I require firms to have accounting information every year for the 2007-2017 period (8% firm-year observations deleted.)
- ▶ → Analysis focuses on Danish shareholders-elected directors (employees-elected directors are not subject to the quota).

## Impact on women share: graphical evidence



Unconditional women share by group

# Impact on women share: parallel trend assumption check



Coefficients and confidence intervals obtained from a dynamic specification interacting each year dummy with the treated group indicator (baseline level: 2011). 95% confidence intervals based on robust standard errors clustered at the firm level.

## Impact on women share: estimates

	Share women	P(Share>0.33)	Log(1 + N men)	Log(1 + N women)
Post	0.014** (0.007)	0.016 (0.015)	-0.023 (0.015)	0.034** (0.016)
<b>Treated × Post</b>	<b>0.031***</b> (0.008)	<b>0.051***</b> (0.017)	<b>-0.033***</b> (0.017)	<b>0.076***</b> (0.020)
Firm F.E	Yes	Yes	Yes	Yes
Year F.E	Yes	Yes	Yes	Yes
Adjusted $R^2$	0.018	0.008	0.003	0.019
Observations	13,144	13,144	13,144	13,144
Firms	1,251	1,251	1,251	1,251

Standard errors are clustered at the firm level. \* ( $p < 0.10$ ), \*\* ( $p < 0.05$ ), \*\*\* ( $p < 0.01$ )

# Impact on women share: summary statistics

Variable	All			Treated (N=588)			Control (N=622)			t-test
	Obs	Mean	S.d	Mean	Med	S.d	Mean	Med	S.d	t-stat
N members	1251	4.85	2.29	5.18	5.04	2.52	4.57	4.38	2.03	-4.73
N men	1251	4.18	2.04	4.41	4.20	2.22	3.97	3.77	1.83	-3.81
N women	1251	0.68	0.85	0.77	0.53	0.86	0.59	0.28	0.84	-3.58
Percent women	1251	0.13	0.15	0.14	0.11	0.16	0.12	0.06	0.15	-2.70
Age	1251	52.64	5.38	52.50	52.17	5.12	52.76	52.53	5.60	0.83
University Degree	1246	0.44	0.27	0.43	0.42	0.27	0.44	0.43	0.27	0.74
Assets (M DKK)	1248	1198.03	8050.66	2271.78	522.94	11636.18	244.49	148.94	549.65	-4.47
Profits (M DKK)	1251	1064.89	4108.45	1965.96	772.53	5845.07	263.17	221.75	401.43	-7.48
Profits/assets	1248	0.07	0.27	0.08	0.06	0.38	0.06	0.05	0.11	-1.56
N employees	1251	339.35	947.15	585.01	286.85	1329.86	120.77	97.98	147.08	-8.92

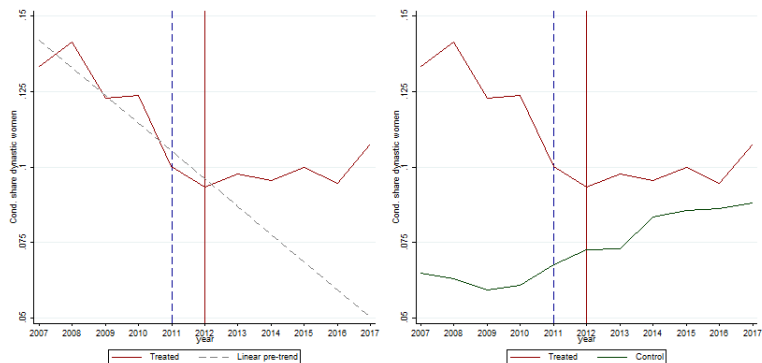
→ Even when restricting the sample to top 2% largest firms, significant differences between treated and control firms in terms of size and revenue.

Controls

Similar firms (1)

Similar firms (2)

## Impact on dynastic bias in women's representation: graphical evidence



Conditional share of women with predecessors (dynastic): linear trend and by group

- Clear trend break at the introduction of the gender quota.
- Treated and control groups trend differently before the quota.

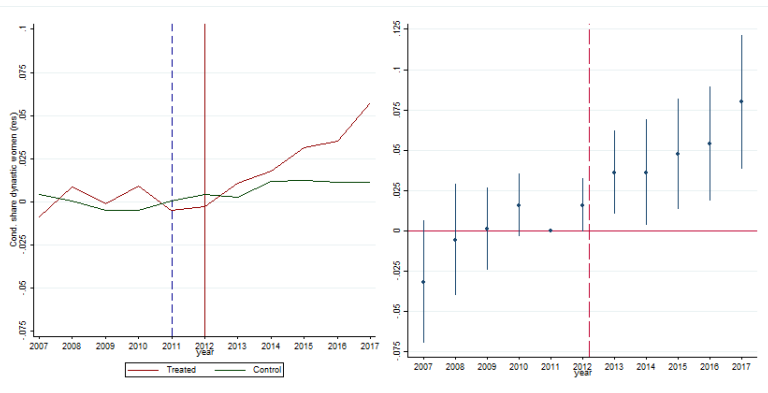
# Impact on dynastic bias in women's representation: research design

- ▶ Borrow to public finance and adjust for linear, group-specific pre-trends: Jakobsen, Jakobsen, Kleven, and Zucman (QJE 2019); Agersnap, Jensen, and Kleven (AERI 2020); Gruber, Jensen and Kleven (AEJ 2020).
- ▶ New estimation equation:

$$RES_{j,t} = \alpha_j + \lambda_t + \gamma X_{j,t} + \delta \mathbb{I}\{Post_t\} + \beta \mathbb{I}\{Treated_j \times Post_t\} + \epsilon_{j,t}$$

- ▶  $RES_{j,t}$  is the residual between the conditional share of dynastic women and linear group-specific trend estimated on pre-law data.
- ▶ Assumption: control and treated groups would have continued on the linear pre-trend in absence of the gender quota: Freyaldenhoven, Hansen and Shapiro (AER2019); Roth (2019).

# Impact on dynastic bias in women's representation: residualized outcomes



Left: residual conditional share of dynastic women by group.

Right: coefficients and confidence intervals obtained from a dynamic specification using residualized outcomes and interacting each year dummy with the treated group indicator (baseline level: 2011). 95% confidence intervals based on robust standard errors clustered at the firm level.



## Impact on dynastic bias in women's representation: estimates

	Cond. share dynastic women	Cond. share dynastic women
Post	0.015 (0.014)	-0.004 (0.012)
<b>Treated × Post</b>	<b>0.050***</b> (0.016)	<b>0.042***</b> (0.015)
Controls	No	Yes
Firm F.E	Yes	Yes
Year F.E	Yes	Yes
Adjusted $R^2$	0.021	0.011
Observations	5,376	4,296
Firms	700	741

Standard errors are clustered at the firm level. \* ( $p < 0.10$ ), \*\* ( $p < 0.05$ ), \*\*\* ( $p < 0.01$ )

## Concluding remarks

- ▶ Dynastic bias in the business elite across genders:
  - ▶ Women are 4.5% more likely to have a predecessor in the elite compared to men.
- ▶ Effect of the Danish gender quota on women share and on dynastic bias in women's representation:
  - ▶ The share of women on board has increased by 3% following the law (23% change with respect to the baseline 13.2% in 2011).
  - ▶ The conditional share of dynastic women has increased by 5% following the law (50% change with respect to the baseline 10% in 2011).
- ▶ Taken together, these results suggest that women disproportionately benefit from dynastic ties and that firms preferentially rely on dynastic ties when they are forced to bring in new women in the boardroom.
- ▶ Warning: results on dynastic bias in women's representation are preliminary.
- ▶ Alternative identification strategy comparing the share of dynastic directors between men and women in treated firms: Gender

Thank you!

## Impact on women share: estimates (controls included)

	Share women	P(Share>0.33)	Log(1 + N men)	Log(1 + N women)
Post	0.010 (0.007)	0.018 (0.015)	0.014 (0.014)	0.033** (0.016)
<b>Treated × Post</b>	<b>0.031***</b> (0.008)	<b>0.043***</b> (0.016)	<b>-0.046***</b> (0.016)	<b>0.072***</b> (0.018)
Firm F.E	Yes	Yes	Yes	Yes
Year F.E	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Adjusted $R^2$	0.015	0.006	0.009	0.016
Observations	10,740	10,740	10,740	10,740
Firms	1,248	1,248	1,248	1,248

Standard errors are clustered at the firm level. \* ( $p < 0.10$ ), \*\* ( $p < 0.05$ ), \*\*\* ( $p < 0.01$ ). Controls include logarithm of assets, logarithm of profits, and logarithm of number of employees. Sample size is reduced because accounting information not available for 2016 and 2017 yet.

◀ Return

## Impact on women share: similar firms

- ▶ Larger firms may have specific incentives influencing the change in women representation. E.g: EU directive for publicly traded firms.
- ▶ Redo the analysis comparing smallest firms in the treated group to largest firms in the control group (keep top and bottom 50% in terms of assets, sales, and FTE).

Variable	All			Treated (N=166)			Control (N=133)			t-test	
	Obs	Mean	S.d	Mean	Med	S.d	Mean	Med	S.d	t-stat	Control - Treated
N members	299	4.56	2.06	4.27	4.20	1.99	4.91	4.73	2.10		2.70
N men	299	3.95	1.93	3.68	3.55	1.82	4.29	4.09	2.02		2.70
N women	299	0.60	0.72	0.59	0.27	0.74	0.62	0.45	0.70		0.47
Percent women	299	0.14	0.17	0.14	0.08	0.19	0.13	0.07	0.15		-0.49
Age	299	52.88	8.53	53.13	52.17	8.94	52.56	51.90	8.02		-0.57
University Degree	289	0.27	0.36	0.25	0.00	0.36	0.31	0.15	0.36		1.54
Assets (M DKK)	297	356.82	577.97	279.17	271.52	85.69	452.56	228.72	850.46		2.60
Profits (M DKK)	299	440.27	537.64	474.09	456.54	121.53	398.05	286.72	794.28		-1.22
Profits/assets	297	0.07	0.09	-1.22	0.07	0.06	0.09	0.06	0.10		-1.00
N employees	299	177.84	194.20	158.36	157.57	70.69	202.15	164.53	278.97		1.95

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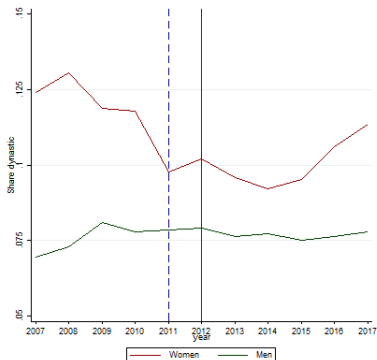
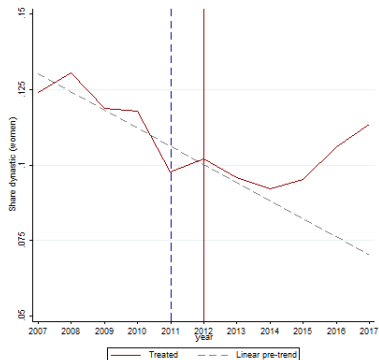
## Impact on women share: similar firms

	Share women	P(Share>0.33)	Log(1 + N men)	Log(1 + N women)
Post	0.006 (0.017)	-0.013 (0.035)	-0.024 (0.036)	0.020 (0.039)
<b>Treated × Post</b>	<b>0.046**</b> (0.018)	<b>0.092***</b> (0.033)	<b>-0.060*</b> (0.035)	<b>0.076**</b> (0.038)
Firm F.E	Yes	Yes	Yes	Yes
Year F.E	Yes	Yes	Yes	Yes
Adjusted $R^2$	0.028	0.018	0.010	0.017
Observations	3,146	3,146	3,146	3,146
Firms	299	299	299	299

Standard errors are clustered at the firm level. \* ( $p < 0.10$ ), \*\* ( $p < 0.05$ ), \*\*\* ( $p < 0.01$ )

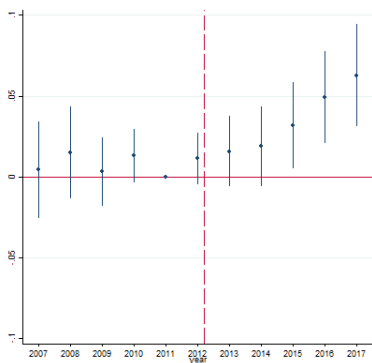
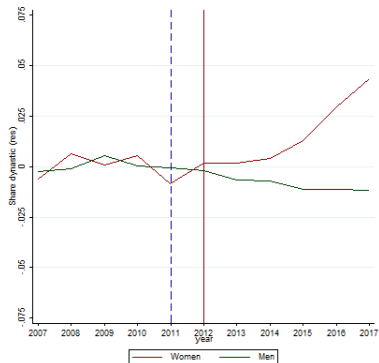
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## Impact on dynastic bias in women's representation: comparing men and women in treated group



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## Impact on dynastic bias in women's representation: comparing men and women in treated group





## Impact on dynastic bias in women's representation: comparing men and women in treated group

	Cond. share dynastic women	Cond. share dynastic women
Post	-0.004 (0.006)	-0.006 (0.007)
<b>Treated × Post</b>	<b>0.028**</b> (0.012)	<b>0.031**</b> (0.014)
Controls	No	Yes
Firm F.E	Yes	Yes
Year F.E	Yes	Yes
Adjusted $R^2$	0.000	0.024
Observations	27,026	23,270
Directors	5,526	4,713

Standard errors are clustered at the individual level. \* ( $p < 0.10$ ), \*\* ( $p < 0.05$ ), \*\*\* ( $p < 0.01$ )