

Do board gender quotas affect firm value?

B. Espen Eckbo, Knut Nygaard, and Karin S. Thorburn

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Natural experiment: Exogenous shock to board composition

Board composition is endogenous

- ▶ Board characteristics and firm value may be determined simultaneously by latent factors
- ▶ Quota provides excellent setting to examine valuation effects of forced changes in board composition

Norway's board gender quota

- ▶ 40% of shareholder-elected directors from each gender
- ▶ Applies to ASA (public limited liability company)
- ▶ Law mandated in December 2005, with two years to comply

Several countries have followed suit

- ▶ Germany, France, Italy, Spain, Netherlands, Belgium, EU

Why would a board gender quota impact firm value?

Three hypotheses with different valuation effects

- ▶ Board entrenchment: firm value $\uparrow\uparrow$
 - ▶ Improved monitoring by breaking up entrenched boards
- ▶ Board efficiency: firm value $\downarrow\downarrow$
 - ▶ High-quality male directors replaced by lower-quality female directors
 - ▶ Board loses valuable experience
- ▶ Board codetermination: firm value $\downarrow\downarrow$
 - ▶ Stakeholder-oriented female directors form voting coalitions with labor representatives
 - ▶ Reduce firm risk in order to hedge fixed wage claims

Prior evidence on Norway's quota is inconclusive

Quota-induced changes in market values of OSE listed firms

- ▶ Nygaard (2011): positive effect, 12/9/05
- ▶ Ahern and Dittmar (2012): negative effect, 2/23/02 and Q

Conversions from ASA to (non-quota regulated) AS

- ▶ Nygaard (2011)
- ▶ Bohren and Staubo (2013)

Post-quota corporate actions

- ▶ Matsa and Miller (2013): Labor costs and operating profits
- ▶ Bertrand et al (2014): Female director qualifications

Our main contributions

New and robust tests of quota's effect on equity values

- ▶ Event study covering the complete legislative process
- ▶ Tobin's Q analysis over the implementation of the quota

New evidence on corporate actions

- ▶ The decision to convert from ASA to AS
- ▶ Director turnover and experience
- ▶ Concentration of board seats and director network power

Early legislative process of the Norwegian quota

Norway has long tradition of gender equality

- ▶ Since 1981, $\geq 40\%$ of public committees from each gender

A: Early discussions of amendment to gender equality law

(1) Aug 12, 1999: Cabinet press conference

(2) Oct 15, 1999: Public hearing

B: Early steps toward quota amendment to corporate law

(3) Mar 8, 2001: Cabinet announces no quota in gender equality law

(4) July 2, 2001: Public hearing for quota in corporate law

- ▶ Center-left government facing new elections in the fall
- ▶ At this point, no majority support in Parliament

In 2002, the political situation changes

Newly elected center-right government also supports quota

C: Events leading to approval of quota by Parliament

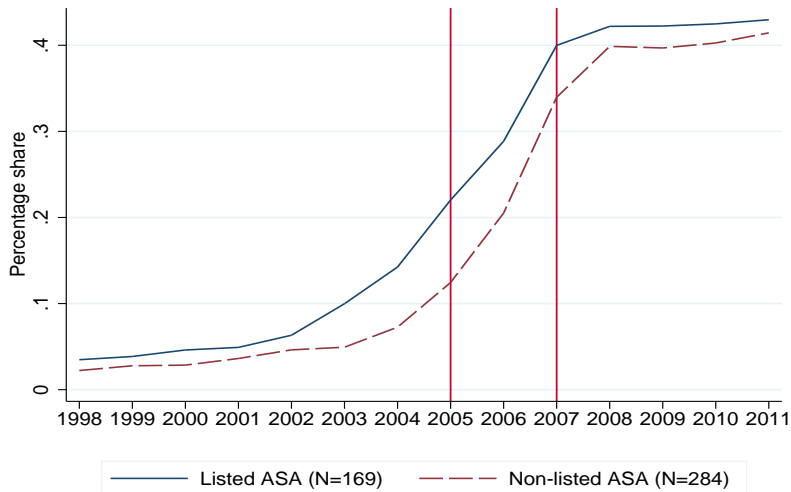
- (5) February 22, 2002: Minister of Trade supports a quota
- (6) Mar 8, 2002: New Cabinet proposes board gender quota
 - ▶ Government-controlled firms to comply by year-end 2002
- (7) June 13, 2003: Proposal submitted to Parliament
- (8) Nov 27, 2003: Parliament supports law absent voluntary compliance

D: Signing of the gender quota into law

- (9) Dec 1, 2005: Prime Minister says quota will be mandated
- (10) Dec 9, 2005: Quota mandated, sanction is forced liquidation

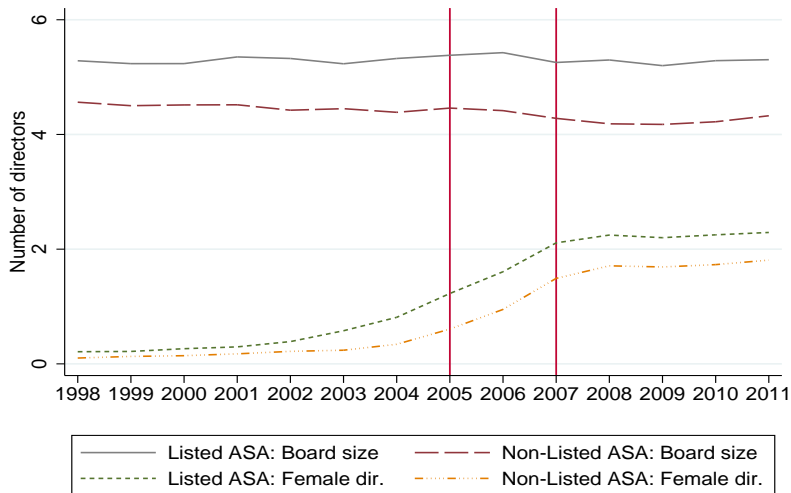
Average fraction of female directors, 1998-2011

Increase from 16% at legislation to 43% at compliance



Average number of directors and female directors, 1998-2011

On average, one woman replacing one male board member



Event study with OSE-listed foreign firms as control group

Table reports two-day CAR ($2 \times AR_k$) for individual event dates

Estimation:	$r_t^e = \alpha + AR_k d_{k,t} + \varepsilon_t$			$r_t^e = \alpha + AR_k d_{k,t} + \beta_1 W_t^e + \beta_2 W_{t-1}^e + \varepsilon_t$		
Portfolio:	Domestic OSE firms (1)	Foreign OSE firms (2)	Domestic - Foreign (3)	Domestic OSE firms (4)	Foreign OSE firms (5)	Domestic - Foreign (6)
<i>Event date:</i>						
(3) March 8, 2001	-0.001 (0.002)	-0.002 (0.003)	0.000 (0.005)	-0.003 (0.002)	-0.005 (0.003)	0.002 (0.005)
(4) July 2, 2001	0.011 (0.006)	0.014** (0.004)	-0.003 (0.009)	-0.003 (0.007)	-0.013*** (0.002)	0.009 (0.009)
(5) Feb 22, 2002	-0.008 (0.003)	-0.006 (0.002)	-0.003 (0.001)	-0.009** (0.002)	-0.007** (0.002)	-0.002 (0.001)
(6) March 8, 2002	0.031*** (0.002)	0.041*** (0.003)	-0.010 (0.006)	0.028*** (0.002)	0.035*** (0.005)	-0.007 (0.006)
(7) June 13, 2003	-0.007*** (0.001)	0.004 (0.004)	-0.011 (0.005)	-0.006 (0.003)	0.004 (0.007)	-0.010 (0.005)
(8) Nov 27, 2003	0.002 (0.003)	-0.012** (0.003)	0.013*** (0.001)	0.002 (0.002)	-0.012*** (0.002)	0.014*** (0.001)
(9) Dec 1, 2005	0.010*** (0.001)	-0.002 (0.003)	0.012** (0.003)	0.007*** (0.001)	-0.006 (0.002)	0.013** (0.003)
(10) Dec 9, 2005	0.005 (0.002)	0.013*** (0.001)	-0.008*** (0.001)	0.005 (0.003)	0.013*** (0.002)	-0.008*** (0.001)

⇒ No evidence of quota-induced abnormal returns

Testing for the different hypothesis in the cross-section

Cross-sectional regressions for subperiod CAR

Legislative period:	Dependent variable: AR over total event window in legislative subperiod							
	A		B		C		D	
	Early discussions (events 1+2)		Early steps (events 3+4)		Parliament approves (event 5+6+7+8)		Quota mandated (event 9+10)	
<i>Regressors:</i>								
Shortfall women	0.003 (0.065)	0.017 (0.068)	-0.060 (0.076)	-0.031 (0.077)	-0.102 (0.093)	-0.169 (0.113)	-0.004 (0.021)	-0.003 (0.026)
Codetermination	0.002 (0.019)	0.002 (0.019)	0.012 (0.020)	0.022 (0.020)	0.008 (0.032)	0.007 (0.034)	0.005 (0.008)	0.004 (0.008)
Risk	0.449 (0.311)	0.528 (0.384)	0.616 (0.770)	-0.971 (0.793)	-2.091** (0.871)	-1.325 (1.054)	-0.675 (0.531)	-0.828 (0.538)
Government control		0.030 (0.022)		-0.002 (0.037)		-0.141* (0.072)		-0.020 (0.016)
Ownership conc.		-0.001 (0.023)		0.034 (0.054)		-0.012 (0.063)		-0.009 (0.026)
Size		0.001 (0.005)		-0.017*** (0.006)		0.018 (0.013)		0.003 (0.003)
Sector dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.19	0.19	0.06	0.12	0.24	0.27	0.13	0.18
Obs. (firms)	110	110	120	119	99	97	131	125

⇒ No systematic variation in CAR across different firm characteristics

A perspective on Ahern-Dittmar (2012)'s event study

February 22, 2002, return adjusted with US industry return

Sample:	All firms	No female directors	Female directors > 0	Difference
A: Event window (-2,2), Wed-Tue (same as Ahern-Dittmar)				
Mean	-2.817*** (0.000)	-3.714*** (0.000)	-0.592 (0.585)	-3.122** (0.034)
Observations (firms)	94	67	27	
B: Event window (-1,1), Thu-Mon				
Mean	-2.445*** (0.003)	-3.087*** (0.004)	-0.775 (0.426)	-2.312 (0.103)
Observations (firms)	90	65	25	
C: Event window (-1,0), Thu-Fri				
Mean	-0.820 (0.201)	-1.132 (0.167)	-0.054 (0.955)	-1.078 (0.391)
Observations (firms)	83	59	24	

⇒ What is going on over the weekend?

2/22/2002: Minister of Trade & Industry supports quota

Verdens Gang: the largest Norwegian tabloid newspaper

Bestemor
blir reality-
stjerne på NRK

● SIDE 58 og 59

Næringsministeren lei av gubbeveldet:
VIL TVINGE
KVINNER
inn i styrerommene

Arnegar
Gabrielsen

FOTO: AFTENPOSTEN

● SIDE 4

VG

NORGES STØRSTE AVIS WWW.VG.NO

**ØKER
MEST
+11525**

Russerne raste i natt etter stafett-skandalen:
TRUER

Kjus og Aamodt blir
**EGET
LANDSLAG**

TOK BRONSE: Lasse Kjus.

Dagens Næringsliv: the largest Norwegian daily business newspaper

NYHETER

9

Dagens Næringsliv, 23/24. februar 2002

Gabrielsen ikke lenger for kvotering

ARNE GRANDE
og ÅSNE HAUGLI
Oslo

Det blir knallhard kamp i regjeringen om statsråd Laila Dåvøys (KrF) kvoteringsforslag. Høyre støtter ingen av dem.

Næringsminister Ansgar Gabrielsen (H) går tilbake på uttalelser i VG igår, der han gikk kraftfullt inn for kjønns-

kvotering i private aksjeselskap, og det raskt.

I VG var Gabrielsen møkk lei mannsdominansen «Gutteklubben Grei» skaper i aksjeselskapenes styrer, og sa folk ville bli overrasket over hvilke radikale virkemidler han er villig til å ta i bruk.

Høyres Leif Frode Onarheim trodde ikke riktig hva han så, men om det mot formodning

var riktig, ventet han opprør i Høyres gruppe.

– Jeg synes dette var litt pussig. Men i politikken er det jo så mye som skjer... ler Onarheim.

Det gjorde det altså ikke, denne gangen. For nå er Gabrielsen vesentlig spakere enn igår:

Gabrielsen vil gi «gutteklubben» to år på seg til å få frem flere kvinner frivillig, ellers

«utelukker» han ikke kvotering.

– Men per i dag vil jeg ikke gå inn for dette, sier Gabrielsen.

Både Gabrielsen og Onarheim er imidlertid for kvotering i statlig eide selskap, der næringsministeren er generalforsamling.

arne.grande@dn.no
asne.haugli@dn.no

Effect of gender quota on industry-adjusted Tobin's Q

Several sources of variation in female directors

- ▶ Normal director turnover (endogenous)
- ▶ Pace of compliance (endogenous)
- ▶ The gender quota (exogenous)

We instrument the effect of the gender quota

- ▶ Instrument: pre-quota (2001) shortfall of female directors
 - ▶ Quota fraction of women varies with board size: 33%-50%
 - ▶ In 2002, firms likely have responded to legislative process

What to expect over time?

- ▶ Market reaction to announcements through 2005
- ▶ Possible learning about actual director quality 2006-2008

Panel IV regression for industry-adjusted Tobin's Q

First stage regressions (year-end 2001 instrument):

Quota-induced shortfall of female directors in year t

= f(year dummies*shortfall women in 2001, year FE, firm FE)

Second stage: Dependent variable is industry-adjusted Q

Sample:	2002-2007	2002-2008	2002-2009
$\widehat{Shortfall\ women}$	0.582 (0.941)	0.676 (0.818)	0.530 (0.918)
Year fixed effects	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Observations (firm-years)	693	808	905

⇒ Industry-adjusted Tobin's Q does not vary with shortfall female directors

A perspective on Ahern-Dittmar's Tobin's Q analysis

Sample:	2003-2007	2003-2008	2003-2009
Panel A: 2002 instrument, all firms (same as Ahern-Dittmar)			
$\widehat{Shortfall\ women}$	1.186 (0.820)	1.514** (0.656)	1.518** (0.606)
Observations (firm-years)	579	705	808
Panel B: 2002 instrument, excl. 5 government-controlled firms			
$\widehat{Shortfall\ women}$	1.095 (1.208)	1.402 (0.928)	1.276 (0.827)
Observations (firm-years)	554	675	773
Panel C: 2001 instrument, all firms			
$\widehat{Shortfall\ women}$	1.079 (1.261)	1.017 (1.165)	0.786 (1.283)
Observations (firm-years)	576	691	788

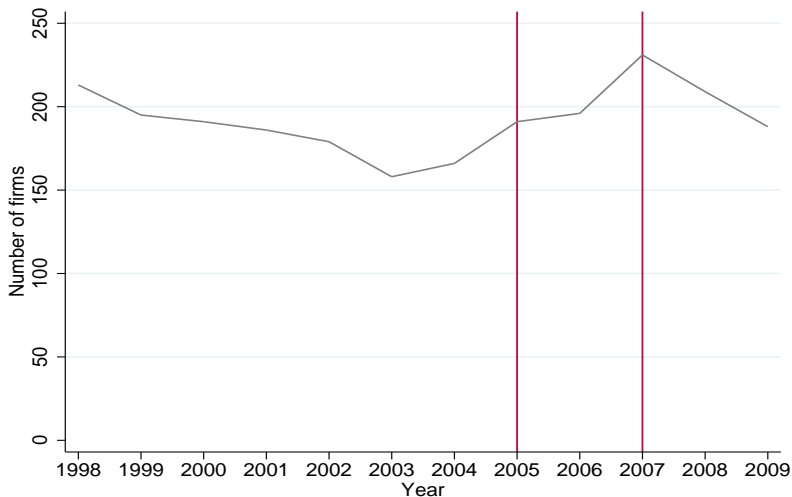
⇒ Year-end 2002 timing of instrument generates Ahern-Dittmar's result

Did firms convert from ASA to AS to avoid the quota?

- ▶ The board gender quota applies to ASA firms only
 - ▶ ASA firms can switch to AS through a change in bylaws
- ▶ Only ASA firms can issue public equity and list on the OSE
 - ▶ For listed ASA, a conversion would imply large costs
- ▶ Few, if any, benefits of being non-listed ASA (vs. AS) beyond option to go public
 - ▶ Identical protection of creditors: all firms can issue bonds
 - ▶ Both ASA and AS can issue equity in a private placement and trade on the Norwegian OTC market
- ▶ Some regulatory costs of being a non-listed ASA vs. AS
 - ▶ At most 50% non-voting shares
 - ▶ Securities trading records held by official registry (VPS)
 - ▶ Gender-balanced board

Number of domestic OSE listed firms, 1998-2011

Quota did not prompt OSE listed firms to convert



The decision to convert from ASA to AS

Dependent variable:	ASA firm converts to AS in the next year		ASA firm converts at some point
	Fixed effect panel	Logit	Bohren-Staubo (2013)
Shortfall female dir.	0.080 (0.075)	0.870 (0.594)	2.818*** (0.383)
Implementation years	-0.043* (0.026)	0.249 (0.262)	
Pre-quota years	-0.215*** (0.035)	-0.521* (0.275)	
Firm age		-0.009** (0.004)	-0.016*** (0.005)
Listed firm		-0.721*** (0.213)	-0.732*** (0.272)
Ownership conc.	0.379*** (0.086)	1.161*** (0.312)	0.465 (0.395)
Firm characteristics	yes	yes	yes
Market characteristics	yes	yes	no
Sector controls	no	yes	no
N (firm-years)	2057	2049	2057

Quota-induced changes of the board

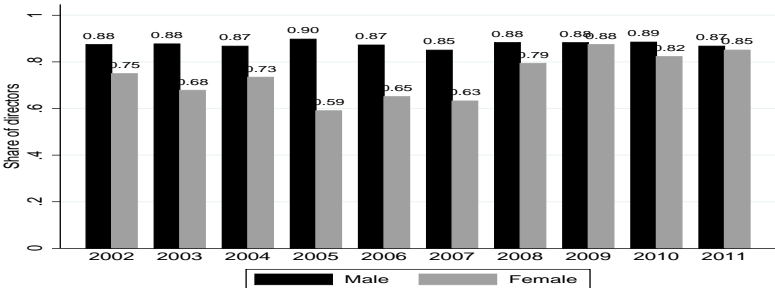
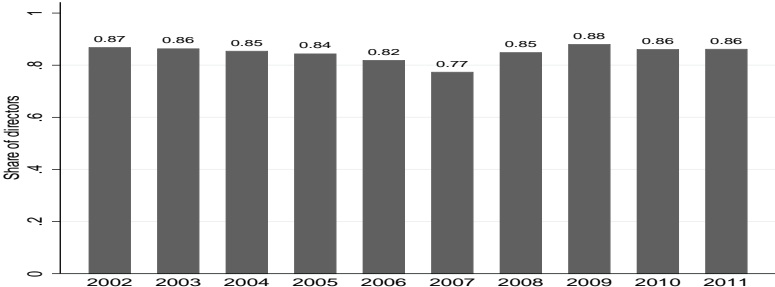
If high-quality female directors are in short supply:

- ▶ Decrease in the board's CEO and director experience
- ▶ High post-quota turnover of female directors
- ▶ Concentration of board seats to a few women

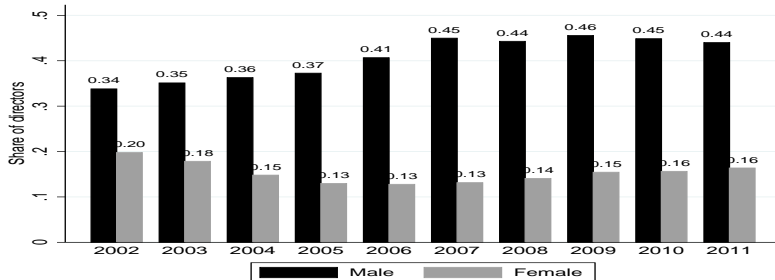
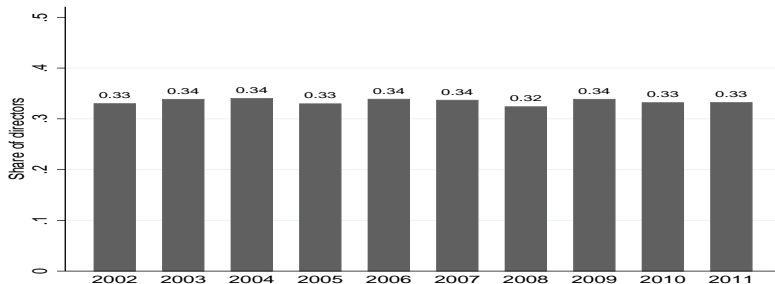
Data

- ▶ All ASA and Large AS firms (top 10% by sales)
- ▶ 530,000 directorship-years
 - ▶ 25,000 in ASA and 505,000 in Large AS
- ▶ 99,300 unique directors
 - ▶ 83,500 men and 15,800 women

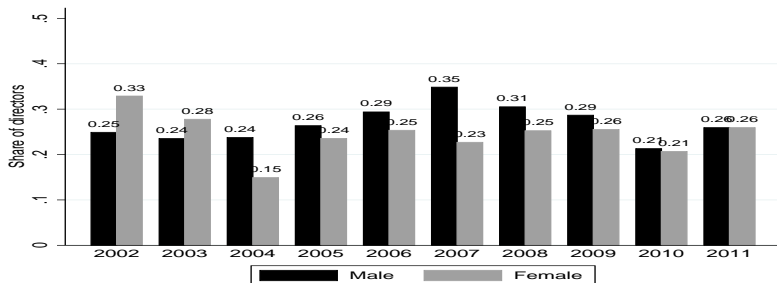
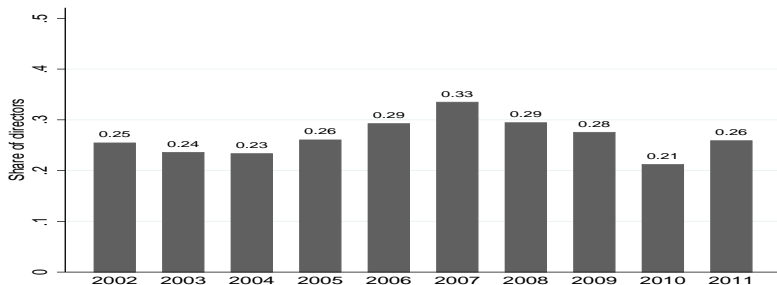
Fraction of ASA directors with prior board experience



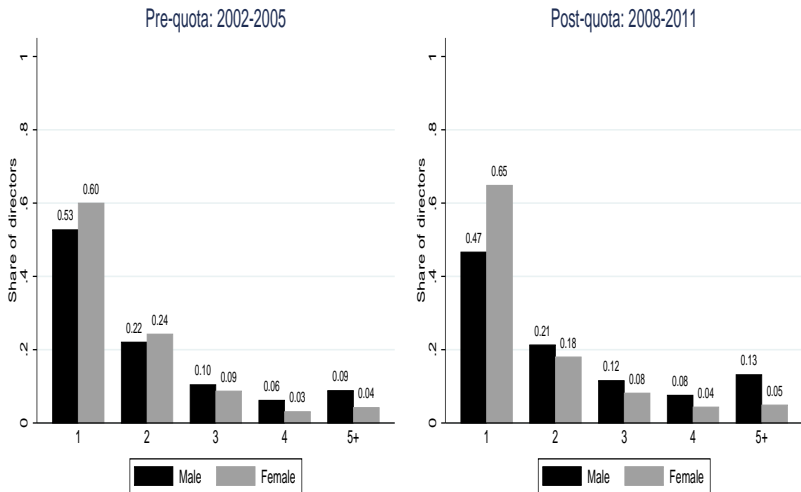
Fraction of ASA directors with CEO experience



Average annual turnover rate of ASA directors (by firm)



Number of board seats per ASA director, pre vs. post quota

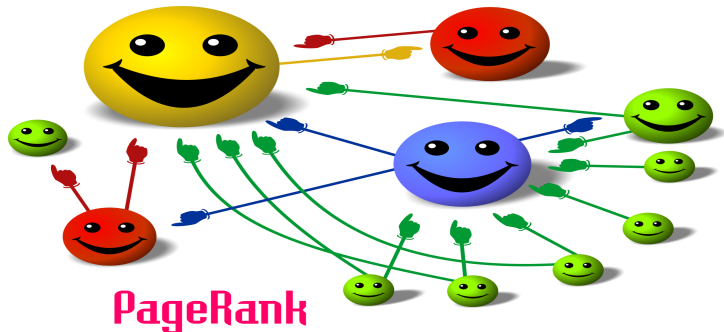


⇒ Decreased (increased) concentration for female (male) directors

Director power measured using PageRank (Google)

PageRank = a modified eigenvector centrality measure

- ▶ Counts the number of network connections for each director
- ▶ Considers the relative importance of interlocking directorships
- ▶ Allows for some degree of connectedness between otherwise disconnected networks



Female and male ASA director network power

Year	Mean PageRank			Median PageRank			N	
	Male	Female	Ratio	Male	Female	Ratio	Male	Female
2002	0.178	0.163	0.916	0.131	0.130	0.994	1544	96
2003	0.179	0.164	0.918	0.131	0.131	1.000	1418	112
2004	0.205	0.178	0.868	0.147	0.147	1.000	1369	162
2005	0.187	0.162	0.866	0.137	0.131	0.955	1175	254
2006	0.188	0.166	0.882	0.137	0.134	0.979	1067	344
2007	0.213	0.179	0.840	0.156	0.138	0.884	938	517
2008	0.193	0.157	0.813	0.148	0.126	0.851	806	525
2009	0.231	0.183	0.794	0.184	0.149	0.809	691	440
2010	0.194	0.153	0.786	0.153	0.119	0.780	662	441
2011	0.209	0.172	0.823	0.165	0.130	0.783	636	409

⇒ Increase in overall female director network power

⇒ Drop in ratio of average female to male director network power

Conclusions

New robust evidence on effects of Norwegian board gender quota

- ▶ No evidence of any valuation effect—positive or negative
- ▶ No evidence of increased conversion rate from ASA to AS

What can we make of this?

- ▶ Deep pool of women with director skills?
- ▶ Boards don't matter?
- ▶ One size doesn't fit all?
 - ▶ No net effect
- ▶ Board changes combine to render the quota value-neutral?