Anticipation Effects of a Board Room Gender Quota Law: Evidence from a Credible Threat in Sweden

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Introduction

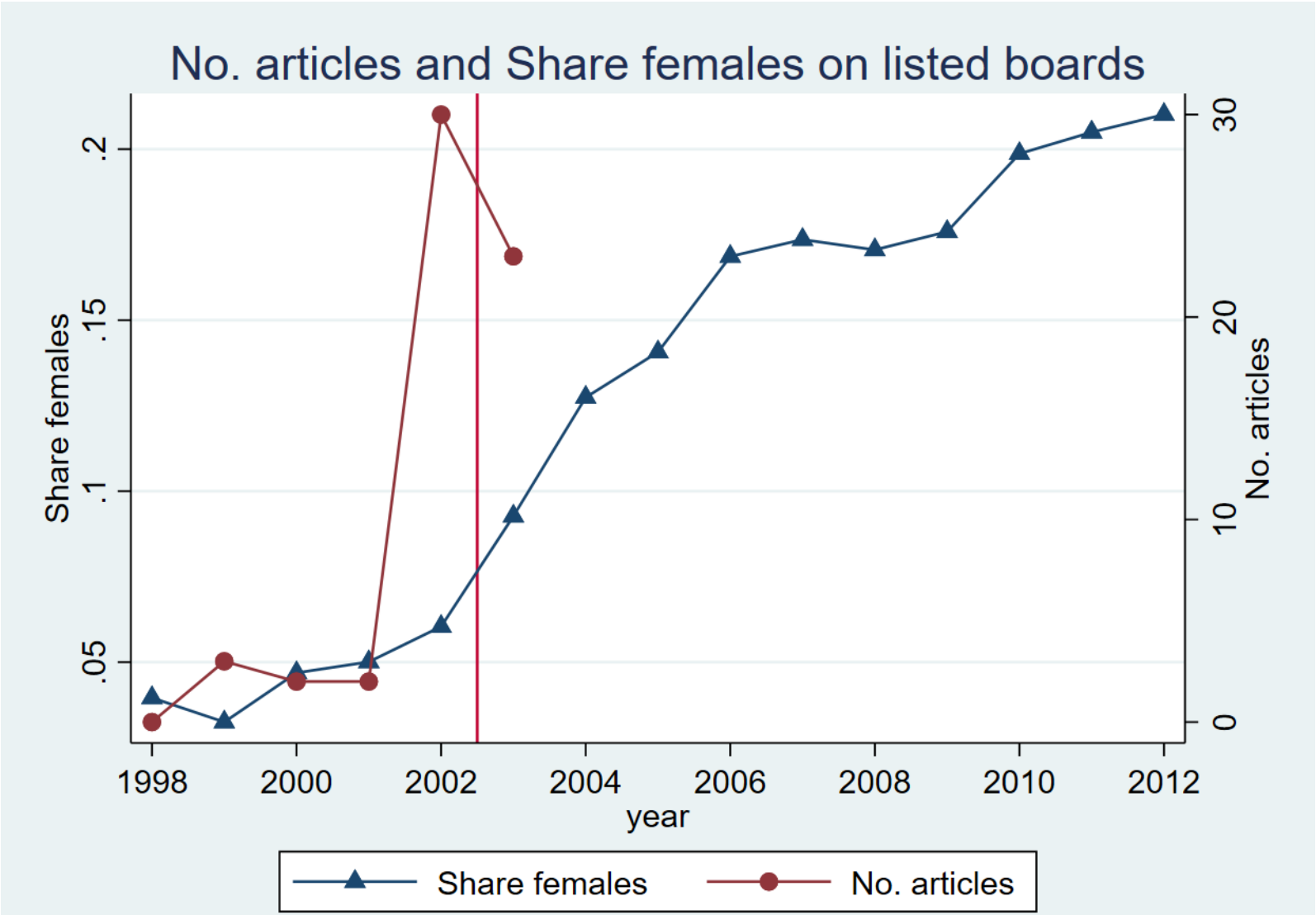
Background:

- Norway implemented law on board quotas ”between 2001-2008”
  - Rapid increase in the share of women
- Many countries implemented similar policies, for instance:
  - Spain, Belgium, France, Germany, Iceland, Italy and the Netherlands
- Discussion of implementation in the EU
- No discussion in the US and many other countries

Introduction

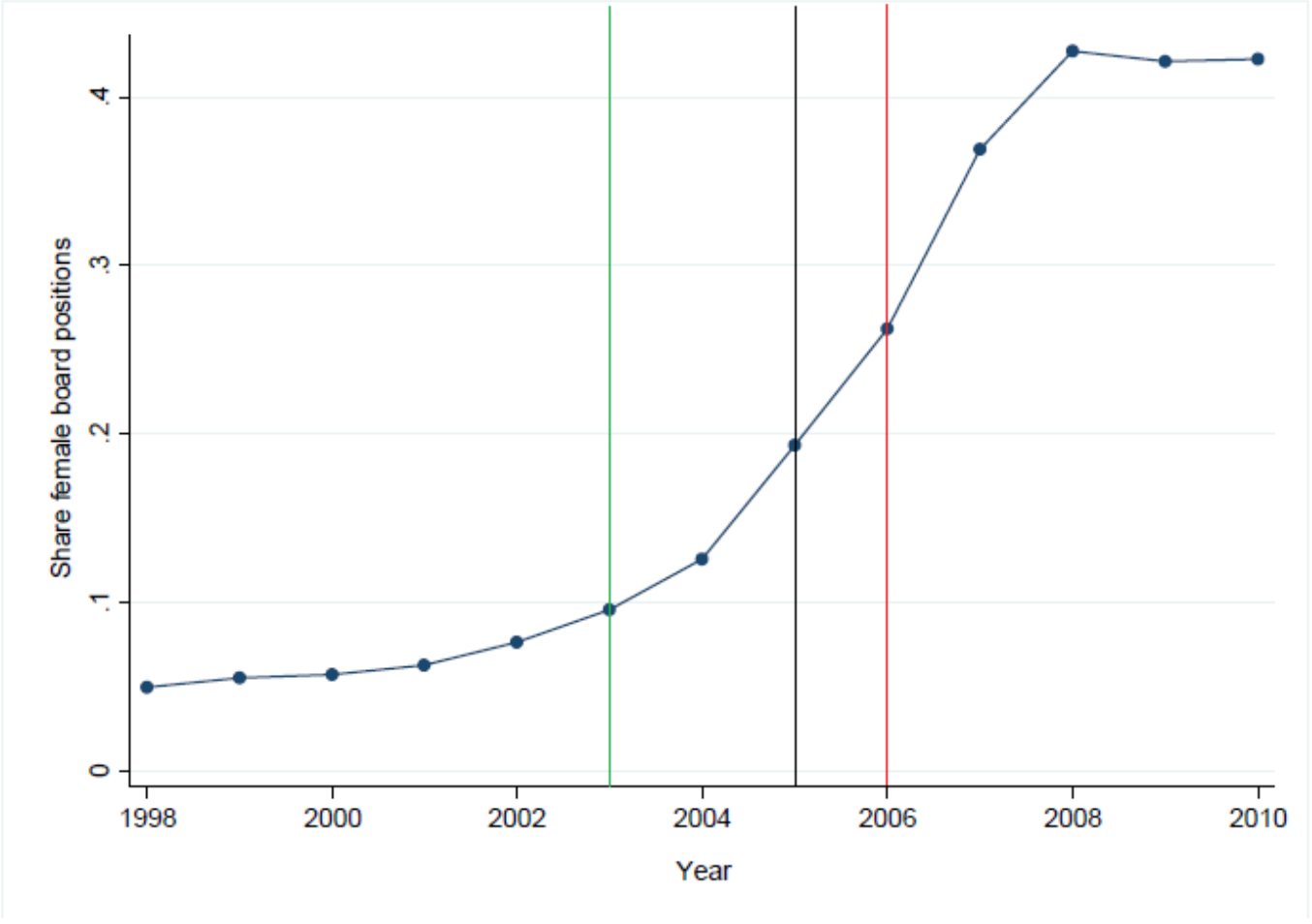
- We study law threat in Sweden
- Margareta Winberg (DP), 2002
- Key difference to Norway:
  - the center right coalition did not support the reform
  - The center right won the election in 2006 in Sweden (2005 in Norway)
- Both countries had change in power, only one implemented the policy

Number of articles mentioning “Margareta Winberg” and “bord quotas”



From Bertrand, Black, Jensen and Lleras-Muney (2014):

Figure 1: Percentage Female Directors in ASA Firms, 1998 to 2010



Introduction

- Effect on other (marginalized) groups?
- Return of the Social democrats in power in 2014
  - "2nd experiment"
- (Company performance)
- In future, additional board measurements (who are they?)

Introduction – literature

- Firm performance:

  Negative effects on firm performance:

  - Ahern and Dittmar (2012) (use pre-reform share of women on board)
  - Matsa and Miller (2013) similar design to ours, a sample non-listed, control group but matched.

  Neutral or slight positive effects

  - Eckbo, Nygaard and Thorburn (2022), Ferrari et al. (2021), Baltrunaite et al. (2021), Comi et al. (2020), Fedorets et al. (2019), Annadanam et al. (2022), Gertsberg et al. (2021)
- Board characteristics (Bertrand et al., 2019; Ferreira et al. 2017)
- Quotas in politics (Besley et al., 2017)
- Board networks (von Essen and Smith, 2022)

Design and data

- DD design
  - Threatened companies (listed in 2002) are the treatment group
  - The non-listed limited liability companies (2002) not threatened and serves as control
  - “Synthetic control” – match on pre-event levels
  - Foreign companies listed on SSE – additional control group
  - Treatment of standard errors

Design and data

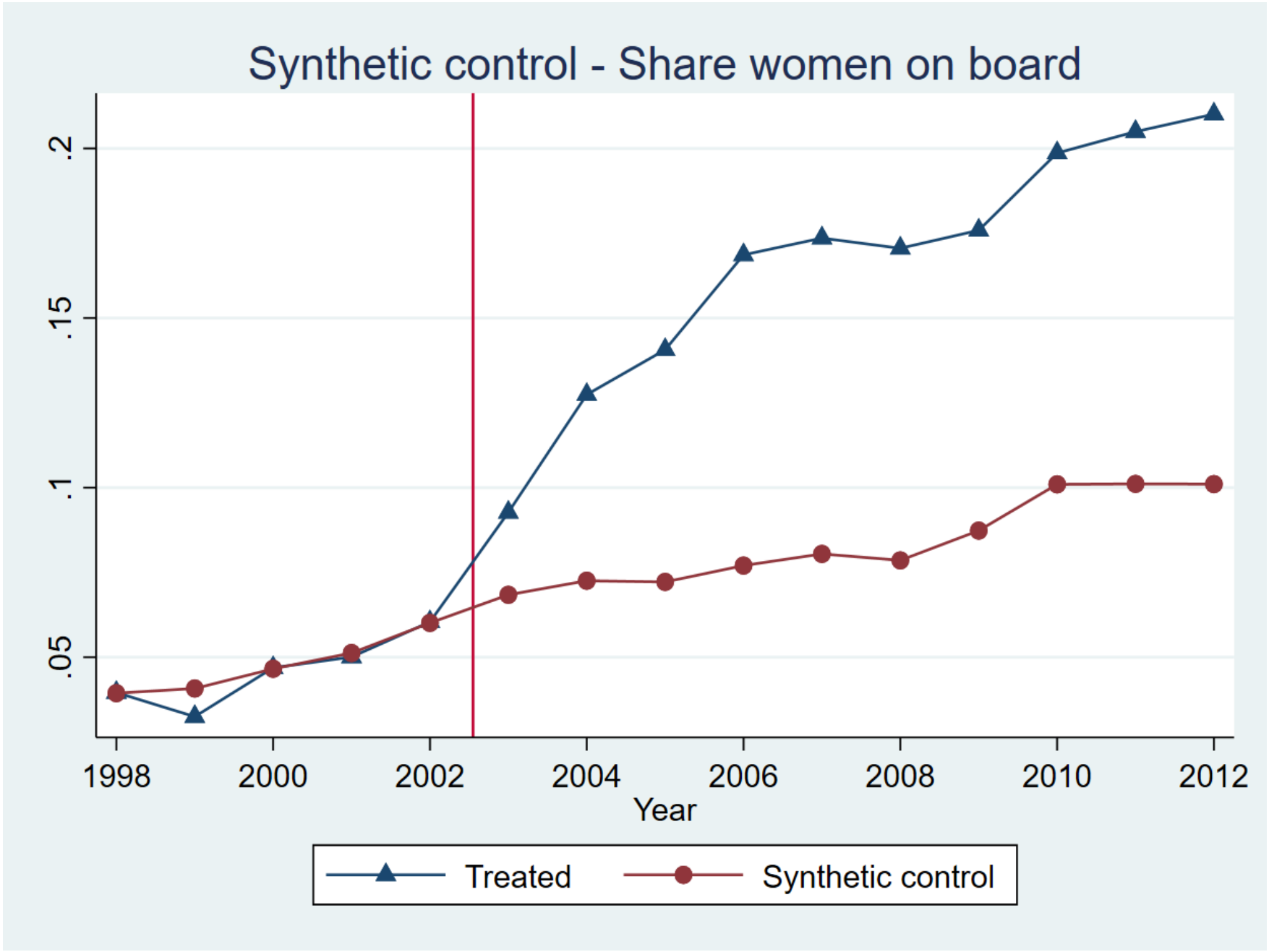
- Data from Swedish registers (1998-2012(2020)):
  - Board members and start/end date
  - Addi. Characteristics
  - (Firm performance etc…)

Design and data

- Theory

- Why does the increase start before law?
- Shortage of talent among women – competition for the best?
- Implementation smoothing – it is the share in the second period that matters
  - Not the share new hires


Share women on board
.05
.1
.15
.2
1998
2000
2002
2004
2006
2008
2010
2012
year
Not listed
Listed


Synthetic control - Share women on board
.05
.1
.15
.2
1998
2000
2002
2004
2006
2008
2010
2012
Year
Treated
Synthetic control

Regression results

Table 2—Intentional Effect of the Threat of a Quota Law on Board Composition

	(1)	(2)	(3)	(4)	(5)
Outcome	Basic	Company and time fixed effects	Compositional bias test	Linear trends	Collapsed
Share Female	0.0865***	0.0851***	0.0836***	0.0420***	0.0872***
	(0.00501)	(0.00528)	(0.00474)	(0.00608)	(0.0102)
Industry trends	No	No	Yes	No	No
Standard errors	Clustered at industry	Clustered at industry	Clustered at industry	Clustered at industry	Newey-West

The table presents difference-in-difference estimates where firms listed on the Stockholm Stock Exchange are treated and the non-listed companies are used as controls. The outcome variable is the share of female board members on the corporate board. The standard errors are clustered at the industry level (57 clusters), errors in Columns 1-4. Column 5 presents Newey-West standard errors. Column 4 include a separate linear time trend for listed and non-listed firms. *p<0.10, **p<0.05, ***p<0.01. The number of observations is 163,953 in Columns 1-4. In Column 5, the number of observations is 15.

Table 3—Unintentional Effects of the Threat of a Quota Law on Firm Governance

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Born Stockholm	Non-EU immigrant	EU immigrant	Average board age	CEO background (1998-2000)	Log(No. boards sitting on)	Director turnover	CEO turnover
				Panel A: Effect on all board members				
Estimate	-0.0232**	0.0196**	0.0177	-0.915**	-0.0185	0.0582**	-0.0402***	-0.0215**
	(0.00991)	(0.00746)	(0.0139)	(0.373)	(0.0141)	(0.0283)	(0.00566)	(0.00934)

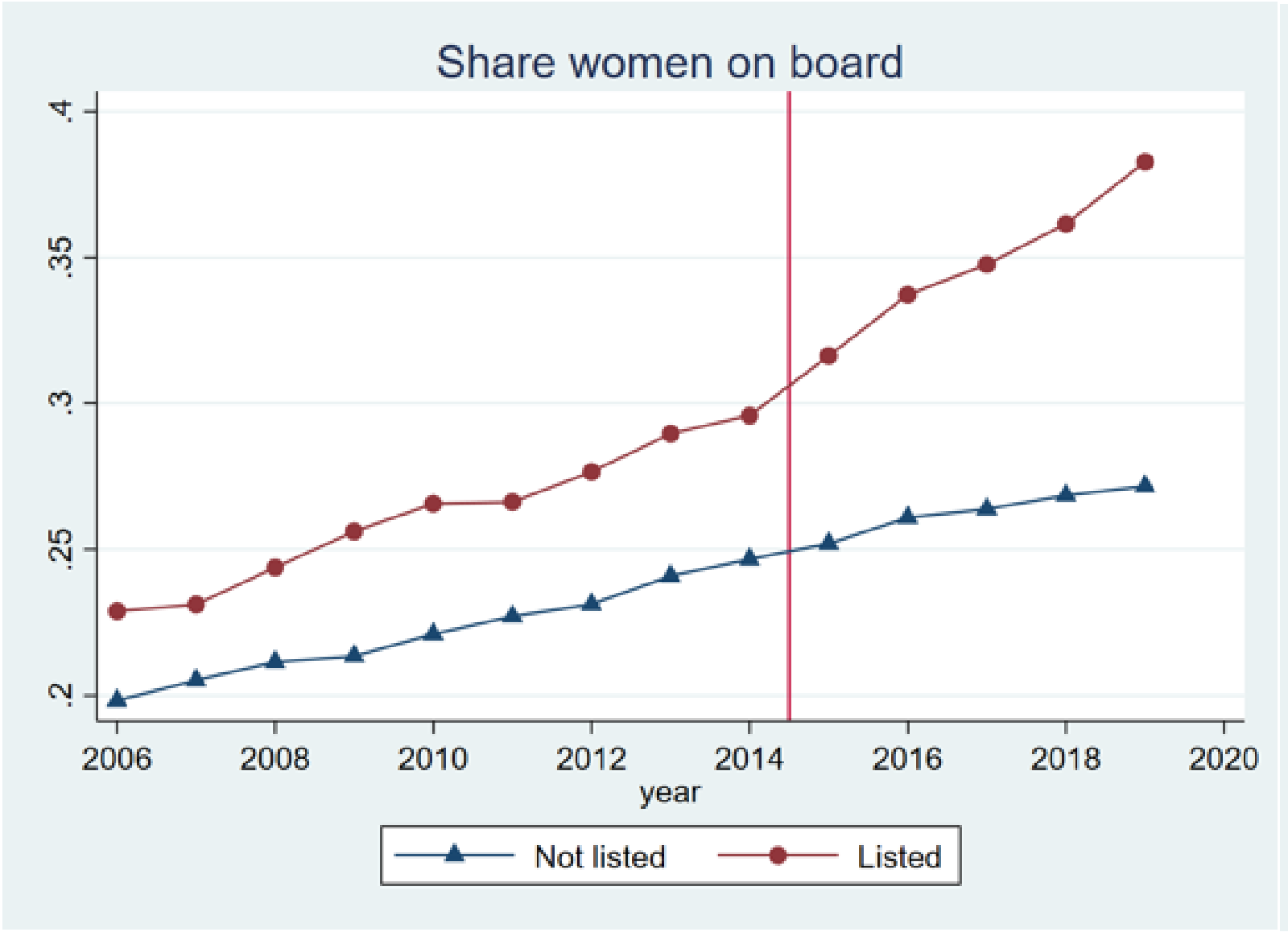
Table 3—Unintentional Effects of the Threat of a Quota Law on Firm Governance

	(1) Born Stockholm	(2) Non-EU immigrant	(3) EU immigrant	(4) Average board age	(5) CEO background (1998-2000)	(6) Log(No. boards sitting on)	(7) Director turnover	(8) CEO turnover
				Panel A: Effect on all board members				
Estimate	-0.0232**	0.0196**	0.0177	-0.915**	-0.0185	0.0582**	-0.0402***	-0.0215**
	(0.00991)	(0.00746)	(0.0139)	(0.373)	(0.0141)	(0.0283)	(0.00566)	(0.00934)
				Panel B: Effect on female board members				
Estimate	-0.0596*	-0.00697	0.0252	-1.433***	-0.0185	-0.00890	-0.0458***	-0.0287
	(0.0355)	(0.00890)	(0.0156)	(0.511)	(0.0386)	(0.0442)	(0.0170)	(0.114)
				Panel C: Effect on male board members				
Estimate	-0.0204	0.0172**	0.0146	-0.147	-0.00512	0.0953***	-0.0347***	-0.0161*
	(0.0144)	(0.00752)	(0.0108)	(0.402)	(0.0140)	(0.0306)	(0.00589)	(0.00931)
Period	1998-2012	1998-2012	1998-2012	1998-2012	2001-2012	1998-2012	1998-2012	1998-2012
Sample	Firms	Firms	Firms	Firms	Firms	Firms	Directors	Directors

The table presents difference-in-difference estimates where firms listed on the Stockholm Stock Exchange are treated and the non-listed companies are used as controls. Standard errors clustered at the industry level (57 clusters). All specifications include a full set of industry*year fixed effects. *p<0.10, **p<0.05, ***p<0.01. The number of observations in Panel A is 164,432 in columns 1-4, 128,281 in column 5, 159,215 in column 6, 1,086,707 in column 7 and 105,797 in column 8. The number of observations in Panel B is 72,539 in columns 1-4, 42,685 in column 5, 69,554 in column 6, 154,012 in column 7 and 8,027 in column 8. The number of observations in Panel C is 162,136 in columns 1-4, 125,030 in column 5, 157,091 in column 6, 885,114 in column 7 and 94,836 in column 8.

Return of the Social Democrats

- 2014 – Social democrats return to power
  - Threaten to introduce quota law again
  - “2dn experiment”


Share women on board
.2
.25
.3
.35
.4
2006
2008
2010
2012
2014
2016
2018
2020
year
Not listed
Listed

Conclusion

- The causal effect of a law = anticipatory + law effects.
  - We measure only anticipatory effect
  - Share women now at same level as in Norway
- Theory and empirics demonstrate why expected
- Effect on other groups
- Return of the Social democrats
- Future work -> more on who they are

Appendix

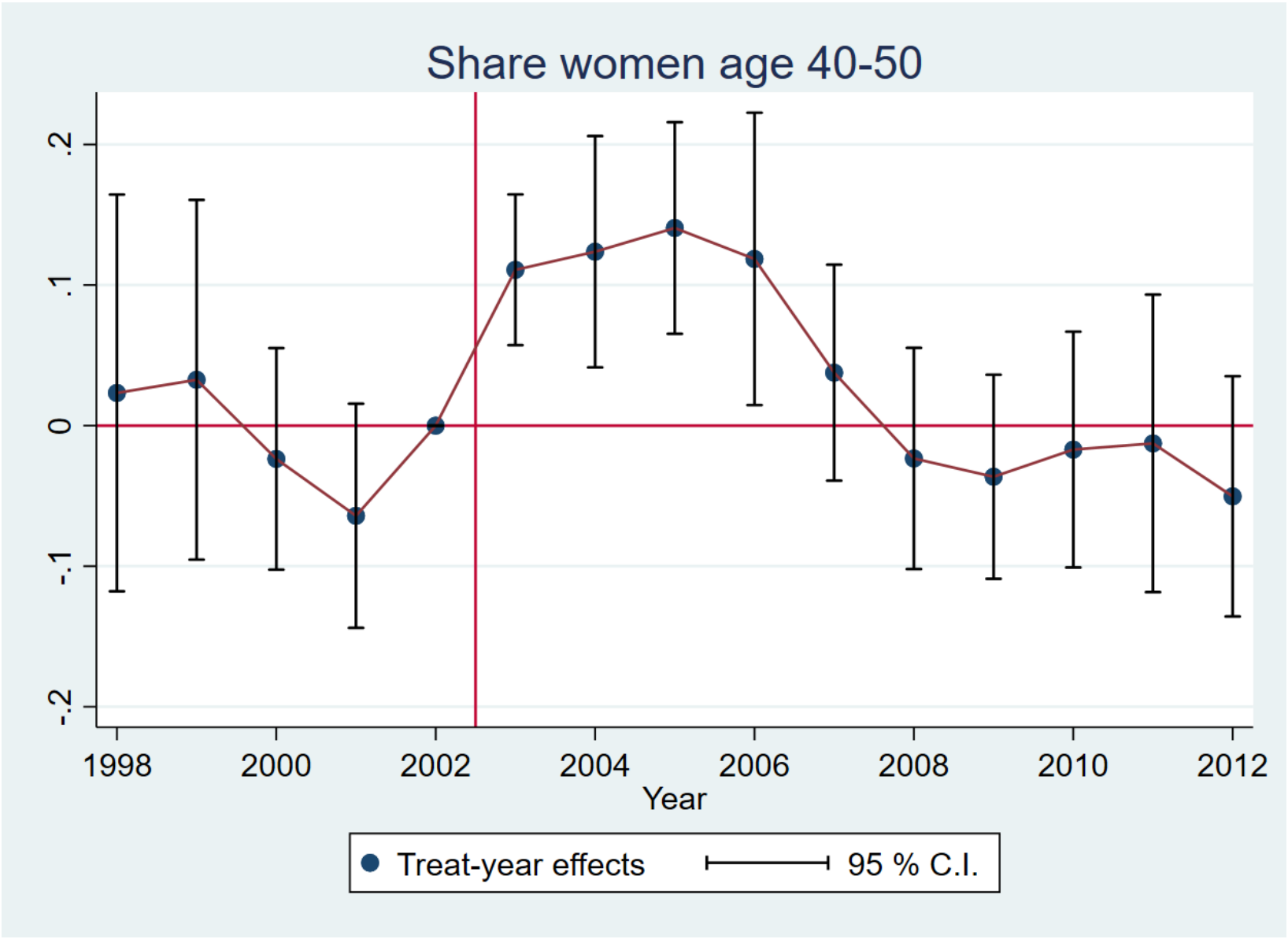
Theory

- Two period model with input m and M, maximize V(M,m) in each (M*, m*)
- Exogenous regulation with prop. p in t=2 to increase m/M
- If regulation -> new hires in t=2 =50/50, only decision in t=2 matters
- If regulation -> share m/M in t=2 =50/50, decision in t=1 also matters -> incentive to start hiring
- Sort of hiring smoothing

Table 4—Board Turnover Heterogeneity

	(1)	(2)	(3)	(4)	(5)	(6)
	Turnover	Turnover	Turnover	Turnover	Turnover	Turnover
			Panel A: Effect on board members			
Estimate	-0.0350***	-0.0458***	-0.0827***	-0.0264	-0.0262*	-0.0431***
	(0.0123)	(0.00555)	(0.0249)	(0.0196)	(0.0133)	(0.00553)
			Panel B: Effect on CEOs			
Estimate	-0.00447	-0.0315***	0.0210	0.0276	0.00634	-0.0304***
	(0.0162)	(0.0102)	(0.107)	(0.240)	(0.0188)	(0.0106)
Period	1998-2012	1998-2012	1998-2012	1998-2012	1998-2012	1998-2012
Av. ROA 1998-2002	Negative	Positive	Negative	Positive	Negative	Positive
Board members	All	All	Only female	Only female	Only male	Only male


Share women on board
.1
.05
0
-.05
1998
2000
2002
2004
2006
2008
2010
2012
Year
Treat-year effects
95 % C.I.


Share women age 40-50
.2
.1
0
-.1
-.2
1998
2000
2002
2004
2006
2008
2010
2012
Year
Treat-year effects
95 % C.I.


Share men age 40-50
.2
.1
0
-.1
-.2
1998
2000
2002
2004
2006
2008
2010
2012
Year
Treat-year effects
95 % C.I.

Table A1—Synthetic Control Difference Estimates

	(1) Difference female	(2) Difference profits/assets
Post 2002	0.0818	0.0313
Constant	-0.000857	-0.00473
Synthetic control difference	Yes	Yes
N	15	15

Table A7—Foreign Companies as Controls

	(1) Female board share	(2) Profits/assets	(3) Log(stock price)
Estimate	0.0526**	0.0876***	0.0194
	(0.0241)	(0.0283)	(0.0801)
Period	1998-2012	1998-2012	2002
Company FEs	Yes	Yes	Yes
Time FEs	Yes	Yes	Yes
N	4359	4408	79287

Table A9— Heterogeneity in Effect on Share of Women on the Board

	(1) Female board share	(2) Female board share	(3) Female board share	(4) Female board share	(5) Female board share	(6) Female board share	(7) Female board share	(8) Female board share
Estimate	0.0832***	0.0837***	0.0768***	0.0390	0.0764***	0.0862***	0.0780***	0.0891***
	(0.00810)	(0.00739)	(0.00550)	(0.0383)	(0.0124)	(0.00374)	(0.00909)	(0.00439)
Period	1998-2012	1998-2012	1998-2012	1998-2012	1998-2012	1998-2012	1998-2012	1998-2012
Restriction	Only negative pre ROA	Only positive pre ROA	Higher turnover than median	Lower turnover than median	B2C companies	B2B companies	Women on board in 2002	No women on board in 2002
N	54309	109644	82099	81854	70764	83009	74090	89863

The table presents difference-in-difference estimates where firms listed on the Stockholm Stock Exchange are treated and the non-listed companies are used as controls. Standard errors are clustered at the industry level (57 clusters). All specifications include a full set of industry*year fixed effects. * p <0.10, ** p <0.05, *** p <0.01

Table A2—Remove Restrictions

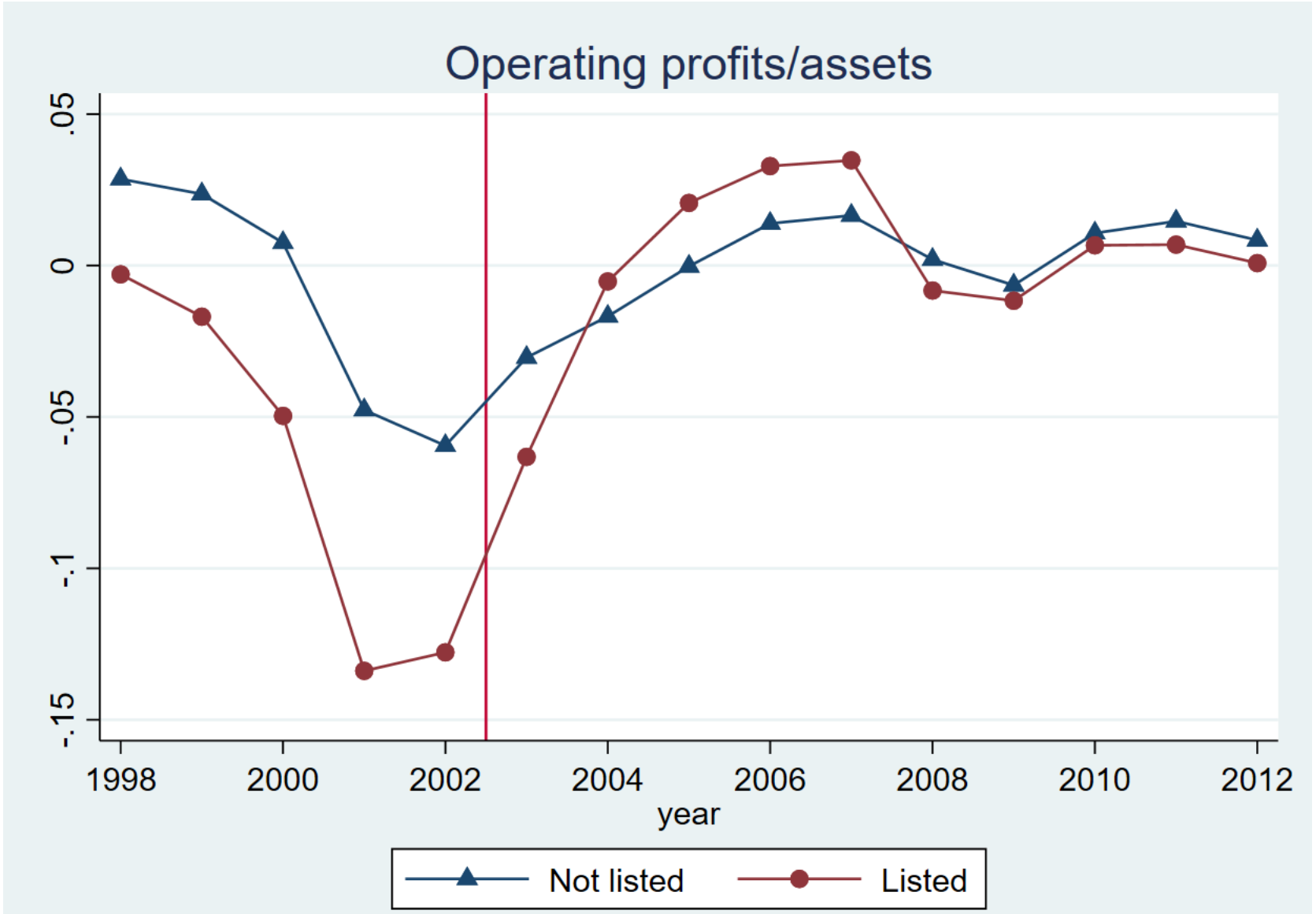
	(1) Non-active used	(2) Board>2	(3) All board sizes	(4) 2001 as base	(5) 2 lags in NW
			Panel A: Share of females		
Estimate	0.0816***	0.0951***	0.105***	0.0795***	0.0872***
	(0.00477)	(0.00521)	(0.00536)	(0.00462)	(0.0113)
			Panel B: Operating profits/assets		
Estimate	0.0523***	0.0685***	0.0907***	0.0311**	0.0569***
	(0.0164)	(0.0174)	(0.0207)	(0.0141)	(0.0115)
Standard errors	Clustered at industry	Clustered at industry	Clustered at industry	Clustered at industry	Newey-West

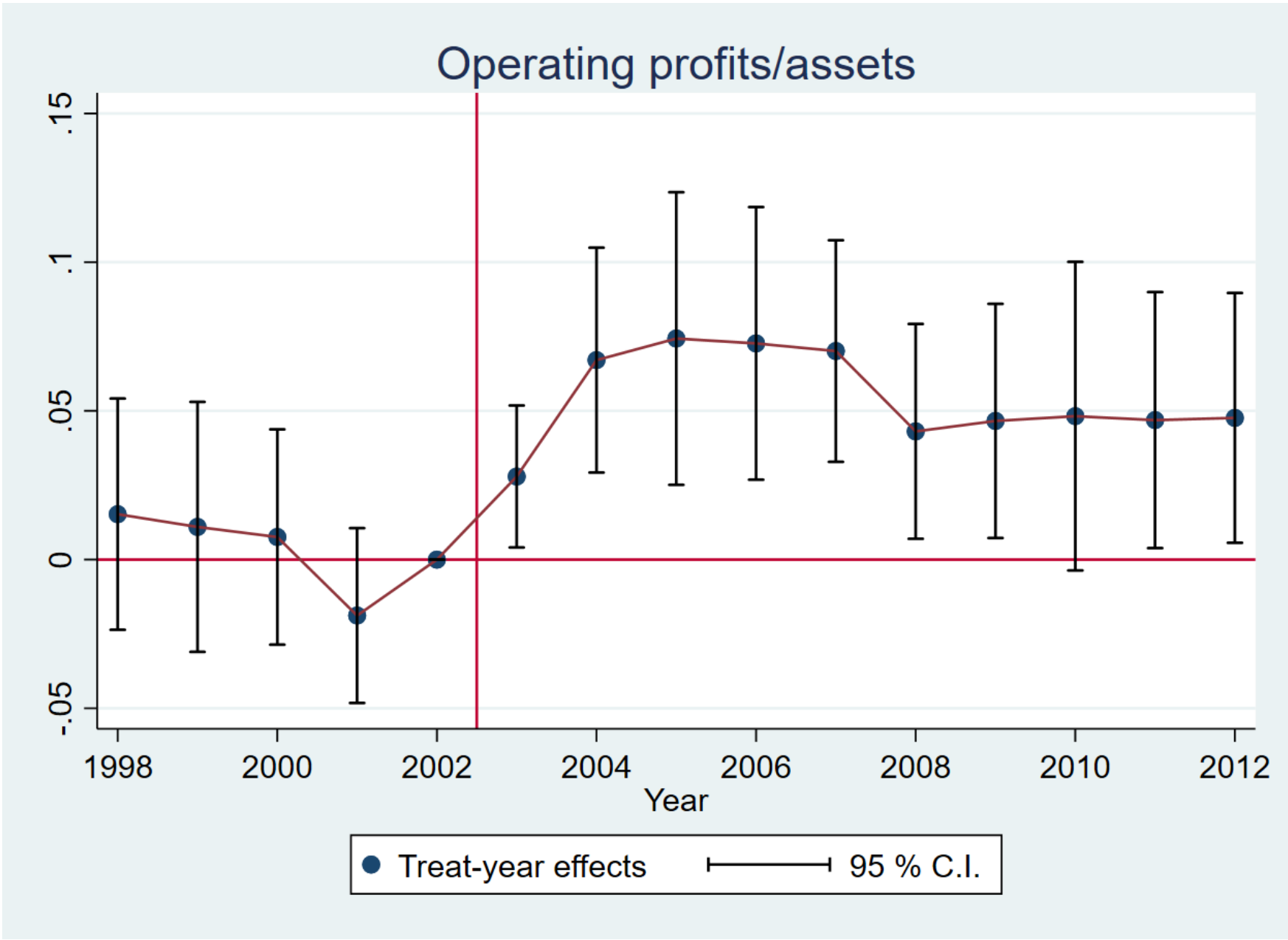
The table presents difference-in-difference estimates where firms listed on the Stockholm Stock Exchange are treated and the non-listed companies are used as controls. Standard errors are clustered at the industry level (57 clusters). All specifications except Column 5 include a full set of industry*year fixed effects. $^{*}p<0.10$, $^{**}p<0.05$, $^{***}p<0.01$. The number of observations in Panel A is 170,844 in column 1, 500,155 in column 2, 2,479,415 in column 3, 159,826 in column 4 and 15 in column 5. The number of observations in Panel B is 169,509 in column 1, 498,310 in column 2, 2,482,713 in column 3, 159,576 in column 4 and 15 in column 5.

Table A3—Add Restrictions

	(1) At least 5 employees	(2) At least 10 employees	(3) At least 20 employees	(4) At least 500k SEK in share capital	(5) At least 1000k SEK in share capital
			Panel A: Share of females		
Estimate	0.0791***	0.0764***	0.0723***	0.0749***	0.0709***
	(0.00602)	(0.00649)	(0.00688)	(0.00498)	(0.00503)
			Panel B: Operating profits/assets		
Estimate	0.0539***	0.0522***	0.0443***	0.0507***	0.0459**
	(0.0164)	(0.0169)	(0.0151)	(0.0161)	(0.0186)

The table presents difference-in-difference estimates where firms listed on the Stockholm Stock Exchange are treated and the non-listed companies are used as controls. Standard errors are clustered at the industry level (57 clusters). All specifications include a full set of industry*year fixed effects. $^{*}p<0.10$, $^{**}p<0.05$, $^{***}p<0.01$. The number of observations in Panel A is 94,130 in column 1, 72,334 in column 2, 52,295 in column 3, 70,834 in column 4 and 55,380 in column 5. The number of observations in Panel B is 93,957 in column 1, 72,217 in column 2, 52,214 in column 3, 70,722 in column 4 and 55,281 in column 5.


Operating profits/assets
.05
0
-.05
-.1
-.15
1998
2000
2002
2004
2006
2008
2010
2012
year
Not listed
Listed


Operating profits/assets
.15
.1
.05
0
-.05
1998
2000
2002
2004
2006
2008
2010
2012
Year
Treat-year effects
95 % C.I.

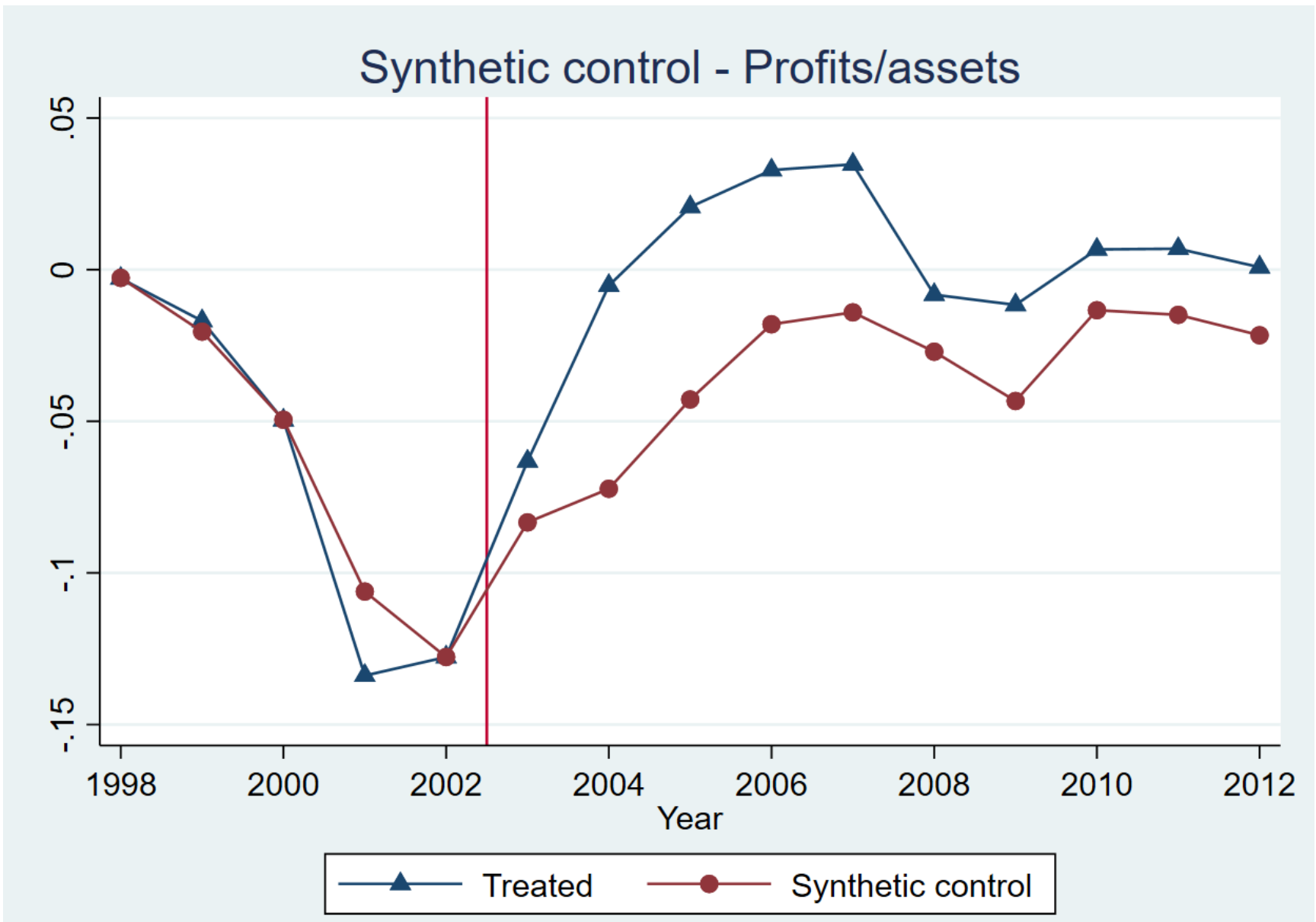

Synthetic control - Profits/assets
.05
0
-.05
-.1
-.15
1998
2000
2002
2004
2006
2008
2010
2012
Year
Treated
Synthetic control

Table 5—Effect of the Threat of a Quota Law on ROA

	(1)	(2)	(3)	(4)	(5)
Outcome	Basic	Company and time fixed effects	Compositional bias test	Linear trends	Collapsed
			Panel A: Effect on firm performance: All firms		
Profits/assets	0.0552***	0.0595***	0.0523***	0.0694***	0.0569***
	(0.0172)	(0.0169)	(0.0159)	(0.0213)	(0.0123)
			Panel B: Effect on firm performance: Groups only		
Profits/assets	0.0466***	0.0512***	0.0408***	0.0511***	0.0471***
	(0.0144)	(0.0146)	(0.0144)	(0.0180)	(0.0124)
Industry trends	No	No	Yes	No	No
Standard errors	Clustered at industry	Clustered at industry	Clustered at industry	Clustered at industry	Newey-West

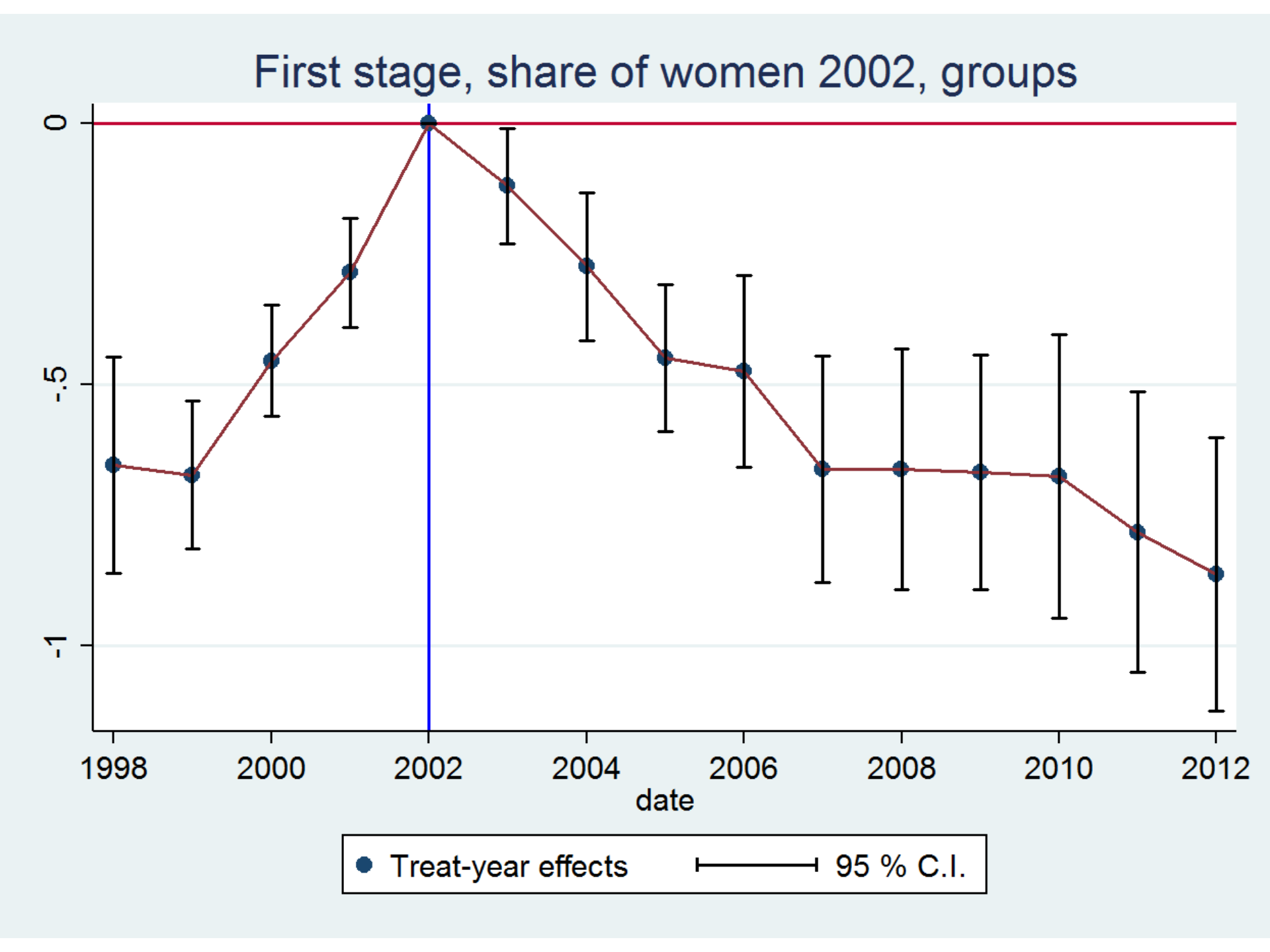
The table presents difference-in-difference estimates where firms listed on the Stockholm Stock Exchange are treated and the non-listed companies are used as controls. Standard errors clustered at the industry level (57 clusters) in Columns 1-4. Column 5 presents Newey-West standard errors. All specifications include a full set of industry*year fixed effects. *p<0.10, **p<0.05, ***p<0.01. The number of observations is 163,301 in panel A and 34,401in panel B. In Column 5, the number of observations is 15 in both panels.

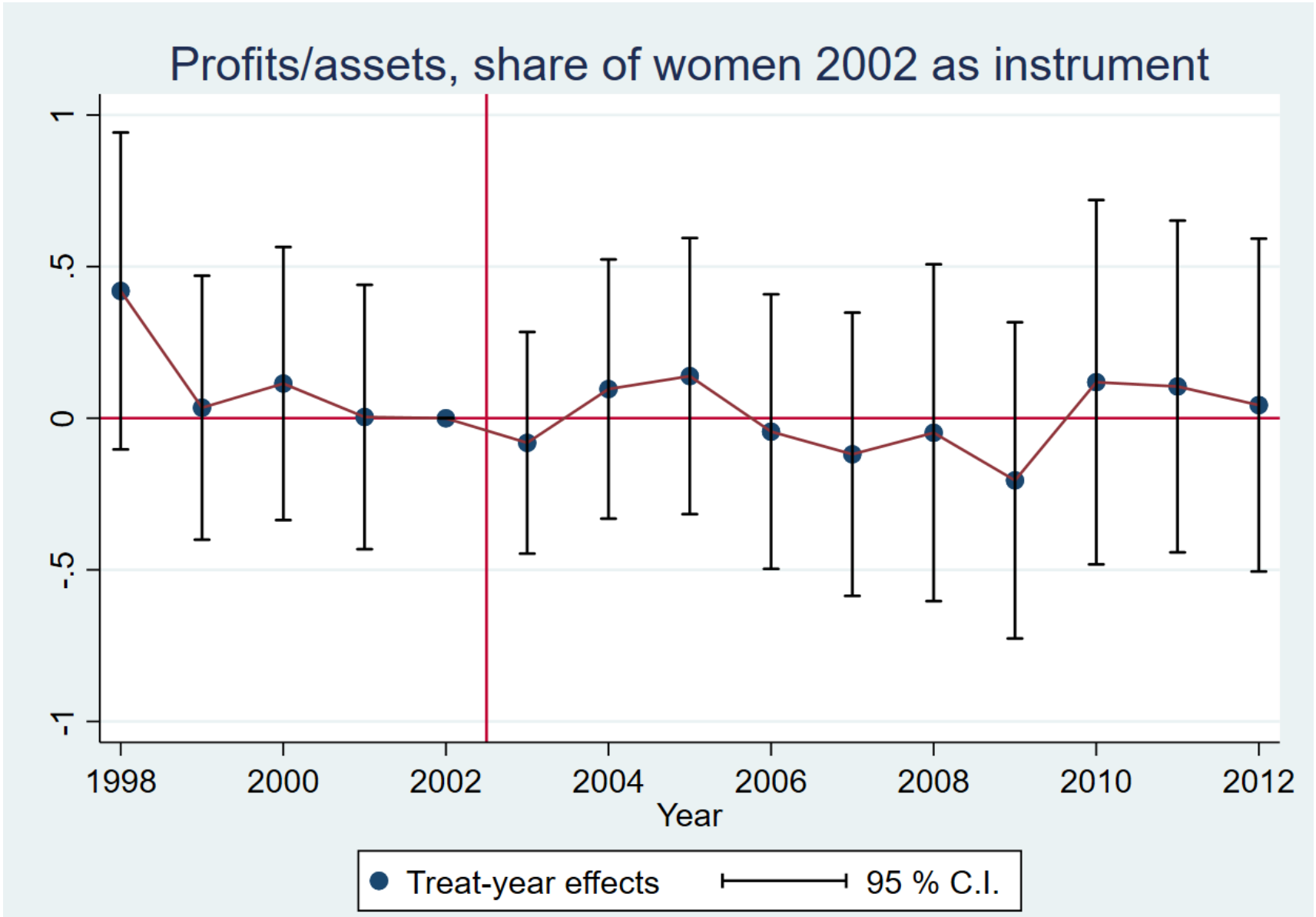
Table 6—Additional Outcomes

	(1) EBITDA/assets	(2) Total revenue/assets	(3) Labor cost/assets	(4) Operating profits/employee	(5) Value added/employee	(6) Log(No. employed)	(7) Log(No. on board)
Estimate	0.0379***	0.0184	-0.0369**	29.11	73.91	0.0434	0.219***
	(0.0142)	(0.0326)	(0.0172)	(120.0)	(101.9)	(0.0546)	(0.0183)

The table presents difference-in-difference estimates where firms listed on the Stockholm Stock Exchange are treated and the non-listed companies are used as controls. Standard errors clustered at the industry level (57 clusters). All specifications include a full set of industry*year fixed effects. *p<0.10, **p<0.05, ***p<0.01. The number of observations is 161,973 in column 1, 163,370 in column 2, 118,242 in column 3, 121,321 in column 4, 118,067 in column 5, 121,552 in column 6 and 164,432 in column 7.


Operating profits/assets
.06
.04
.02
0
-.02
2006
2008
2010
2012
2014
2016
2018
2020
year
Not listed
Listed


First stage, share of women 2002, groups
0
-.5
-1
1998
2000
2002
2004
2006
2008
2010
2012
date
Treat-year effects
95 % C.I.


Profits/assets, share of women 2002 as instrument
1
.5
0
-.5
-1
1998
2000
2002
2004
2006
2008
2010
2012
Year
Treat-year effects
95 % C.I.

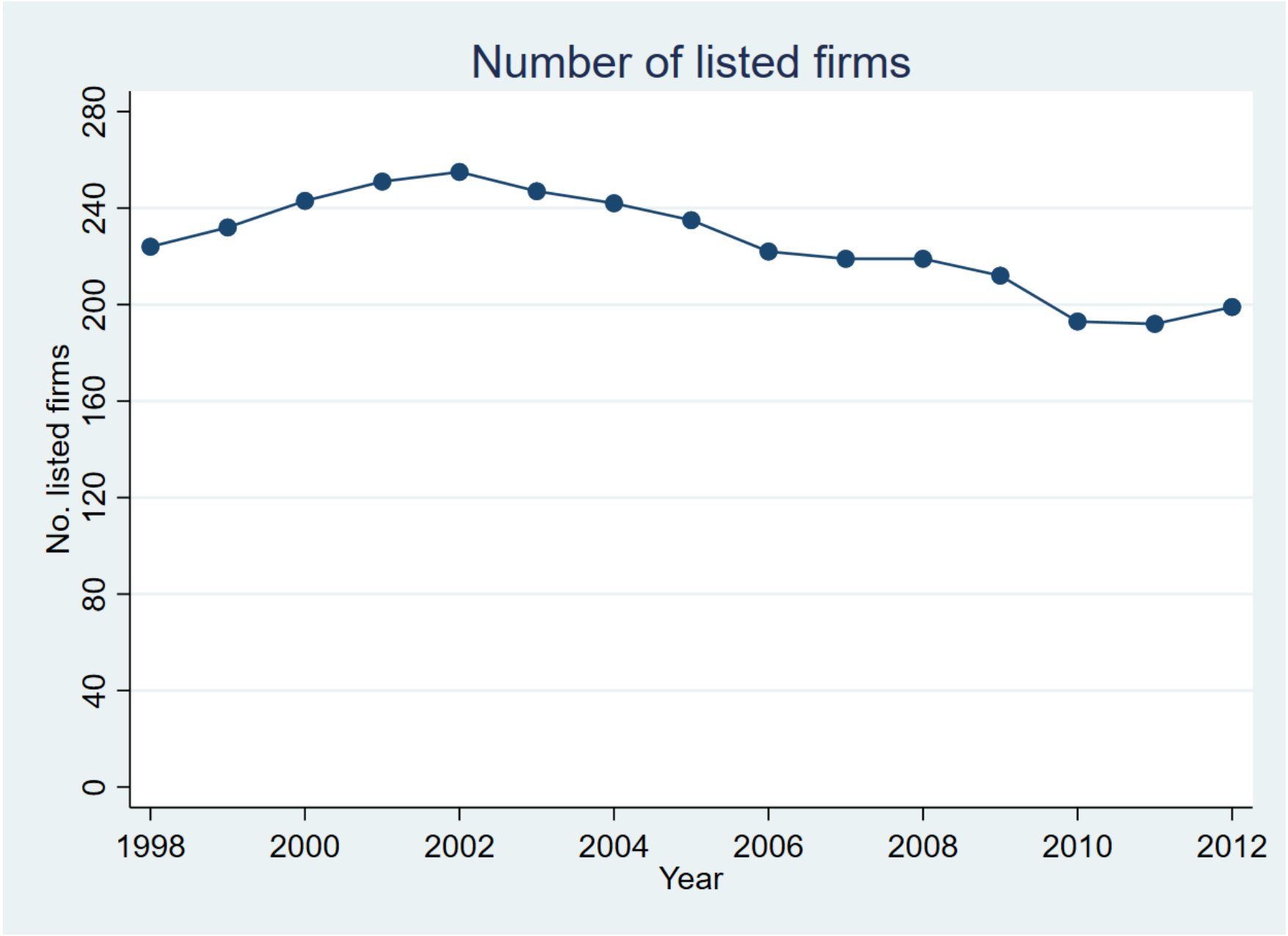

Number of listed firms
No. listed firms
0
40
80
120
160
200
240
280
1998
2000
2002
2004
2006
2008
2010
2012
Year

Table 1—Summary Statistics, 1998-2012

	Mean	Median	SD	Min	Max	Count
Panel A: All firms financial statements						
Female board share	.1404427	0	.2018218	0	1	163953
Operating profits	21.33559	.153	349.7982	-1331.731	16455	163576
Total assets	402.2665	9.991	4423.191	.065	204426	163603
Profits/assets	-.0061049	.0298155	.2938932	-1.812992	.6003702	163301
Total revenue	283.4309	9.972	3219.345	0	132879	163646
No. on board	5.627755	5	2.736571	1	63	164432
Labor cost/assets	.5963454	.3934298	.6430314	.0011105	3.367133	118242
Labor cost	82.5143	6.16	909.2228	.011	36253.39	118305
No. employed	188.9427	7	2874.25	0	279641	158337
EBITDA	33.80559	.406	466.0118	-526.594	21192	162240
Average board age	51.51972	51.875	7.16873	19	97	164432
Born Stockholm	.1776222	0	.257769	0	1	164432
Non-EU immigrant	.0215081	0	.0885894	0	1	164432
EU immigrant	.1055174	0	.2397314	0	1	164432
Observations	165306					
Panel B: Only groups' financial statements						
Female board share	.1269623	0	.177745	0	1	34381
Operating profits	100.1256	2.4895	769.9309	-1356	16556	34456
Total assets	1709.469	82.009	9829.374	.303	206656	34461
Profits/assets	.0172641	.0425472	.2148286	-1.336231	.5084573	34401
Total revenue	1174.042	85.571	7052.383	0	133150	34479
No. on board	6.139292	6	2.798906	1	48	34460
Labor cost/assets	.4533434	.3167387	.4750934	.0014631	2.56626	30432
Labor cost	277.5177	25.111	1803.191	.24	37064.9	30460
No. employed	729.8293	42	6134.185	0	279641	33874
EBITDA	155.7236	5.216	1031.768	-536.408	21425	34219
Average board age	52.41547	52.71429	6.162107	24	84	34460
Born Stockholm	.1901888	.0909091	.251273	0	1	34460
Non-EU immigrant	.0316427	0	.1034999	0	1	34460
EU immigrant	.1061684	0	.222512	0	1	34460
Observations	34681					

NOTE: ACCOUNTING VARIABLES EXPRESSED IN MILLIONS OF SWEDISH KRONA. WE ONLY INCLUDE FIRMS WITH AT LEAST 5 REGULAR MEMBERS ON THE BOARD IN 2002.