Robustness Checks for 'Appointments, Pay and Performance in UK boardrooms by Gender'

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Abstract

This note contains two tables of robustness checks for Table 7 'The impact of gender diversity in the boardroom on corporate performance'. Our original GMM equations found no evidence of a positive relationship between the gender diversity and firm performance. To test the robustness of this result, first we use matching techniques to estimate the impact of a female treatment to the firms in our sample. Second, we use two stage least squares by exploiting the level of female connectedness as an instrument for the percentage of females on the board. Neither of these methods find any evidence of a positive association between gender diversity and firm performance and so we consider original results robust. Some of the two-stage least squares specifications report a negative association between gender diversity and firm performance.

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Tables

Table 1: Pooled Matching estimates

Average Treatment Effect on the Treated (ATT)

	TSR	ROA	ROE	LnPTOB
Any Female	0.007	-0.001	0.010	0.032
	(0.34)	(-0.34)	(0.58)	(0.76)
Any Female Executive	-0.016	-0.003	-0.014	0.008
	(-0.33)	(-0.30)	(-0.37)	(0.10)
Female Additions	0.025	-0.007	-0.015	0.035
	(0.40)	(-0.47)	(-0.32)	(0.32)

Probit estimates from first stages

	Any Female	*Executive*	*Addition*
$LnSize_{t-1}$	0.084***	-0.039***	0.071***
	(11.7)	(-4.40)	(7.39)
$Board_{t-1}$	0.100***	0.068***	0.040***
	(19.2)	(10.78)	(5.97)
p_neds_{t-1}	0.500***	-1.674***	0.164*
	(7.37)	(-18.3)	(1.75)
p_ind_{t-1}	-0.602***	-0.083	-0.225**
	(-8.20)	(-0.80)	(-2.21)
$Volatility_{t-1}$	-0.070	0.042	0.211
	(-0.52)	(0.26)	(1.17)
Year dummies	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes
Observations	13,725	13,725	13,725

t-statistics in parentheses

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

1. The equations are estimated with nearest-neighbour matching with 4 nearest neighbours to calculate the Abadie and Imbens (2006) robust standard errors (psmatch2, n(4) ai(4)).
2. Further specifications are available to view in the STATA log file at *www.homepages.ed.ac.uk/mainbg*.

Table 2: 2-Stage Least Squares

p_female_{t-1}	-0.26	-0.30***	-0.38**	0.28
	(-1.34)	(-4.28)	(-2.21)	(0.58)
$LnSize_{t-1}$	0.021***	0.022***	0.045***	0.034***
	(8.13)	(14.8)	(14.2)	(4.27)
$Board_{t-1}$	-0.0047***	-0.0067***	-0.0080***	0.030***
	(-2.60)	(-9.03)	(-3.67)	(5.19)
p_neds_{t-1}	0.087***	0.031***	0.090***	-0.24***
	(3.62)	(3.46)	(3.50)	(-3.13)
p_ind_{t-1}	0.054**	-0.028***	-0.080***	-0.035
	(2.13)	(-2.97)	(-3.36)	(-0.54)
$Volatility_{t-1}$	-0.086	-0.099***	-0.28***	0.21*
	(-1.45)	(-4.88)	(-5.28)	(1.88)
Observations	13,729	13,729	13,729	13,729
R-squared	0.159	0.137	0.094	0.214

Robust z-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

1. The equations are estimated with 2-stage least squares (ivreg 2sls). The percentage of female directors on the board is instrumented with female connectedness on the board. We compute female connectedness by calculating for each director-year, the number of female directors serving at other companies where the director also served (typically as a non-executive director) in that year. We sum female connectedness for each firm-year and divide by the number of directors on the board (so to eliminate an association with board size). Our instrument is valid under the assumption that a working relationships with female directors at other companies *only* impacts performance through the association with the increased likelihood that females will be appointed to the company. This is a similar identification strategy to that in Adams & Ferreira (2009). In the first stage, a one standard deviation increase in the average number of female connections is associated with approximately a 2% point increase in females on the board (p<0.000). At the mean percentage of females of just under 5%, this represents a 40% increase in relative terms.
2. Further specifications are available to view in the STATA log file at *www.homepages.ed.ac.uk/mainbg*.