Do Institutional Investors Drive Female Critical Mass within a Firm's Lifecycle and its Impact on Performance

Farida Akhtar*[a]; Shumi Akhtar [b]; April Ye [c]

Assoc Prof Shumi Akhtar
Shumi.akhtar@sydney.edu.au
University of Sydney
Sydney, Australia

Dr Farida Akhtar
Farida.akhtar@mq.edu.au
Macquarie University
Sydney, Australia

Dr April Ye
PwC.

Brisbane, Australia

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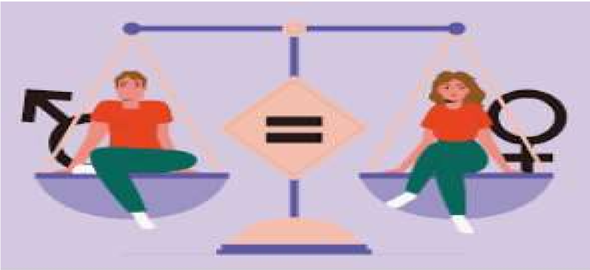


Abstract

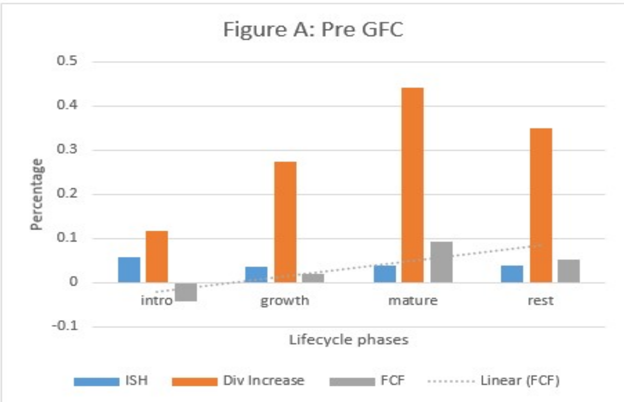
This paper examines the effect of having three or more female representatives on a board of directors ("critical mass") and its implications on firm performance. Drawing on insights from institutional theory and agency theory, we examine whether institutional shareholders promote or discourage female critical mass to improve gender diversity. We document that higher institutional ownership reduces the likelihood of hiring boards with female critical mass, and this manifests predominantly among firms that have greater level of agency problems (i.e. free cash flow). Additionally, we find that these effects are prevalent in boards during CEO turnover time. We also find that, female critical mass boards are significantly positively related to performance. We employ an instrumental variable approach using firms' addition to S&P500 index as an instrument to account for potential endogeneity in the examined relationship between female critical mass and institutional ownership. Based on our findings, we conclude that higher ownership by institutional investors negatively impacts on female critical mass, which in turn may worsen board effectiveness.

Hypothesis 1: More concentrated institutional ownership will negatively impact the likelihood of appointing critical mass board predominantly for mature firms.
Hypothesis 2: Conditional effect of critical mass impact on firm performance will be positive for mature firms.

- Main Findings: The result predominantly shows that institutional ownership systematically reduces the chance of appointing critical mass (i.e. three) female directors in corporate boardrooms especially for complex firms with higher agency concern (i.e. free cash flow).
- The negative association between female critical mass and investors is paramount in CEO turnover period.
- We also document that the conditional effect of critical mass on performance such as ROA and Tobin's Q is positive.
- Collectively we find that female critical mass-institutional ownership substitution relationship is causal and female critical mass reduces agency concern of mature firms by improving board efficacy.

Figure 1: Sample distribution of institutional investors, free cash flow and dividend increase across lifecycles phases

The tables shows the average of concentrated institutional shareholder (ISH), dividend increment (Div Increase) and free cash flow (FCF) for the four category of firm's lifecycles phases (introduction, growth, mature and rest or crises). Considering Global Financial crises impact on the market, Figure: A shows pre GFC and Figure: B presents post GFC average of each variables.



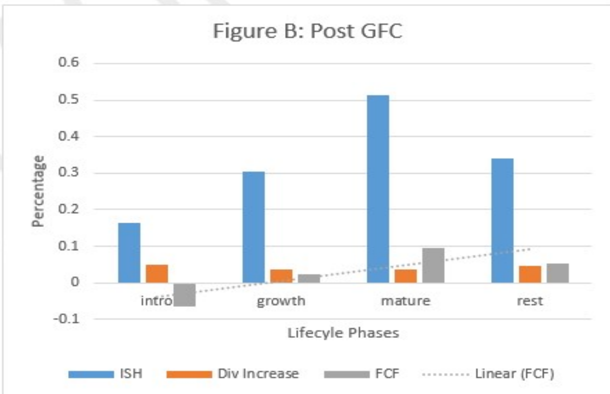


Figure 3: Top 50 companies with highest institutional ownership concentration ratio from 2004 to 2014.

This table shows the trend of top 50 companies with the highest ratio of concentrated institutional ownership. The y-axis shows the years and x-axis shows the company names.

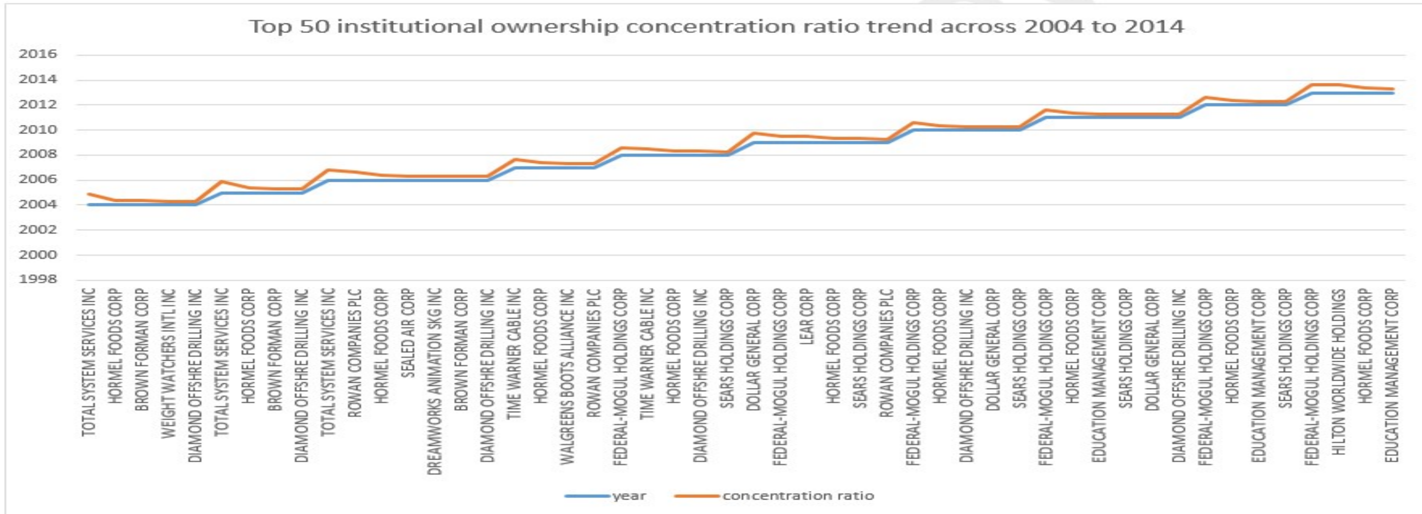


Table A2. Critical Mass composition across different industries during pre-post Global Financial Crises

This table shows different industry with critical mass representation or not during pre-post crises period. The variables definition are: CEO_F when CEO is a female, CEO_M when CEO is a male, CMB=1 denotes board that has at least three or more female executives on board, CMB=0 means board has less than 3 female executive on board and thus represents a token female presentation. Panel A displays list of firms within different industries where board composition does not change much between pre and post GFC in terms of reaching critical mass board implies female representation on board remain tokenism (one female) or minority (2 female). Panel B shows list of firms within industries that have reached 3 female directors or more on board in post crises period compared to pre crises period.

Panel A	Pre crises Period (2000-2008)				Post crises Period (2009-2015)			
Industry	**CEO_F**	**CEO_M**	**CMB = 1**	**CMB = 0**	**CEO_F**	**CEO_M**	**CMB = 1**	**CMB = 0**
Application Software	6	73	2	36	0	98	2	84
Computer & Electronics Retail	0	12	0	9	0	16	0	16
Computer Hardware - Discontinued	0	8	0	6	0	1	0	1
Diversified Metals & Mining	0	16	0	10	0	16	0	13
Diversified REITs	0	4	0	3	0	6	0	5
Diversified Real Estate Activities	0	0	0	0	0	4	0	3
Diversified Support Services	0	16	0	6	0	15	0	14
Environmental & Facilities Services	0	30	0	7	0	32	0	27
Health Care Services	0	40	2	24	0	44	0	39
Health Care Technology	1	15	0	6	0	20	0	13
Systems Software	0	50	0	24	0	57	0	50
Wireless Telecommunication	0	13	1	5	0	15	0	12

Panel B	Pre crises Period (2000-2008)				Post crises Period (2009-2015)			
Industry	**CEO_F**	**CEO_M**	**CMB = 1**	**CMB = 0**	**CEO_F**	**CEO_M**	**CMB = 1**	**CMB = 0**
Biotechnology	2	56	0	30	7	68	4	57
Data Processing & Outsourced	6	71	3	39	16	101	16	86
IT Consulting & Other Services	0	53	5	22	4	58	14	40
Integrated Telecommunication	0	24	5	13	0	24	11	10
Internet Retail	0	18	0	9	0	32	2	26
Internet Software & Services	8	34	0	30	7	57	9	46
Pharmaceuticals	1	41	14	16	0	48	20	22
Research & Consulting Services	0	18	0	10	4	27	5	22
Specialized Finance	6	12	0	3	0	29	8	18
Specialized REITs	0	30	2	9	0	51	6	36
Specialty Chemicals	0	101	1	52	0	96	11	67
Specialty Stores	0	48	7	19	3	64	15	47
Technology Distributors	0	27	0	8	0	32	1	29
Technology Hardware, Storage	0	67	0	36	0	71	1	62

*[a]Assistant Professor, Department of Actuarial Studies and Business Analytics, Macquarie University, Sydney, Australia. E: farida.akhtar@mq.edu.au; P: +612 98501869.
[b]Associate Professor, Finance Discipline, University of Sydney, Sydney, Australia. E: shumi.akhtar@sydney.edu.au; P: +612 90369309.
[c] Dr April Ye, PwC, Australia.