



Contents lists available at SciVerse ScienceDirect

Pacific-Basin Finance Journal

journal homepage: www.elsevier.com/locate/pacfin



CEO gender, executive compensation and firm performance in Chinese-listed enterprises[☆]

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ARTICLE INFO

Article history:

Received 16 December 2011

Accepted 29 August 2012

Available online 6 September 2012

Keywords:

Gender

CEO

State-owned enterprise

China

Executive compensation

JEL classification:

P20

G38

J16

J31

J33

L25

ABSTRACT

The present study extends the international body of evidence on executive compensation by offering a novel account of the interaction of CEO gender with executive remuneration and firm performance in the Chinese market place. Examination of more than 10,000 firm-year observations, spanning the period 2000–2008, points to women making up around 4.4% of all CEOs in China's listed issuers. More tellingly, female CEO participation is on the rise and is considerably more visible in firms with private control. This result is consistent with Becker's (1957) proposition that competitive forces lessen discriminatory pressures. We surmise that the Chinese authorities' attempts to promote gender-neutral hiring policies now appear subordinate to forces unleashed by China's burgeoning private sector. Female CEOs are also more likely to emerge in firms where at least one female director is present. However, the presence of international cross-listings does not materially raise CEO compensation or the likelihood of the CEO being female. In keeping with international norms, female CEOs receive less favourable compensation terms than their male counterparts. Finally, we find only limited evidence of a CEO gender–firm performance link.

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[☆] The authors would like to thank David Ahlstrom, Michael A. Firth, Richard D. F. Harris, Oliver M. Rui and Jay Ritter for their comments on earlier drafts of this paper. The authors also wish to acknowledge helpful comments made by Ngo Hang Yue, during the initial stages of this study project, as well as the valuable comments of an anonymous reviewer.

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1. Introduction

This paper is motivated by the recent surge in female participation at the chief executive officer (CEO) level in Chinese-listed companies.¹ While women still only fill around 4% of all CEO positions in the top 1,000 listed companies in the United States,² the present study points to a rate for China's population of listed issuers of around 5.5% for the most recent year of analysis (in our 2000–8 study frame). More significantly, we detect a female CEO participation rate in our most recent year of analysis (2008) of around 8.3% for private firms (i.e., those with direct state ownership of 5% or less). This compares to a rate of only 3.1% for firms with state ownership exceeding 50% of available voting rights (see Table 1D).³

A central research issue we investigate is the extent to which the growth in female CEO participation has been driven by the emergence of China's private sector. We usefully address this issue by considering more than 11,000 firm-year observations across a recent nine-year study frame, 2000–8. Prior to this period, China had relatively few private enterprises. By 2008, the picture had changed dramatically, with privately held firms competing almost side-by-side with longstanding state-controlled concerns across a range of industries. Through the prism of China's emerging market economy, and its unique institutional structure, we are able to critically assess the extent to which the balance of private- to state-based ownership drives CEO gender change. No other market in recent times has experienced such momentous structural change. It is therefore timely to investigate the effect of such ownership change on Chinese women's access to leadership positions in the business sphere.

Seminal accounts like Becker's (1957) suggest that discriminatory practices of various types should become more costly when markets are open and contestable. Given the dominance of state-related shareholders in firms in protected or 'strategic' industries in China, the proportion of a firm's outstanding shares in private hands serves as a useful proxy for the degree to which a firm's underlying product and labour markets are contestable. Consistent with Becker's (1957) notion that competitive forces inhibit discriminatory practices, we find that the recent growth in female CEO participation rates in China derives almost exclusively from privately controlled Chinese enterprises. Moreover, female participation at the CEO level is not only increasing over time but at a faster rate for firms with low levels of state ownership (i.e., levels of 5% or below).⁴

For state-controlled firms, we detect little change in the proportion of female CEOs. State-directed policies, which ostensibly aim at promoting gender equality, and some evidence of a modest improvement in women's overall involvement in the Chinese political process (see, for instance, Guo and Zheng, 2008), appear to have had little effect on female CEO participation rates in state-held firms.

As a related and further important finding, we also note that women CEOs are more likely to be present in entities where other women serve as directors. Additionally, we examine how foreign ownership impacts on CEO gender. This most obviously manifests itself when mainland Chinese-incorporated entities list in Hong Kong in H-form. The 'international' standards imposed by such a market suggest 'bonding' effects (see Coffee, 1999; Stulz, 1999). Such markets may also drive a "risk premium effect" (Oxelheim and Randoy, 2005) whereby CEOs, being subject to greater scrutiny, demand enhanced compensation. Such arguments, as well as Oxelheim and Randoy's (2005) "institutional spillover," "supply" and "demand"

¹ For Chinese listed companies, the leading executive typically carries the title 'General Manager', sometimes 'President' and very occasionally 'Acting General Manager'. The formal title 'CEO' rarely features. However, and as we explain in Section 4 of this paper, we use the term CEO as an all-encompassing term to capture the person serving as the leading executive officer within a Chinese listed entity.

² See Catalyst's June 2012 list (<http://www.catalyst.org/publication/271/women-ceos-of-the-fortune-1000>) of female CEOs in "Fortune 1000" companies. There is some evidence of slightly greater participation at the top level in the last year or so, given only a three per cent female CEO rate for "Fortune 500" companies as recently as 2010 (see Fortune 500, 2010). At the same time, we note that comparison of Chinese listed companies with either US Fortune 500 or 1000 companies is problematic given notable differences in corporation size and institutional arrangements.

³ In a related finding, Fan et al. (2007, p. 350–351), for mainland Chinese A-listed firms between 1993 and 2001, find that women make-up nearly six per cent of board members. See The Economist, 26 Nov, 2011: 11–14 for international comparison of more recent evidence on boardroom gender balance.

⁴ The mean level of direct state ownership, for the more than 11,600 firm-year observations in our sample, is around 31% of such firms' equity. We therefore focus on state ownership thresholds below this level, of 5, 10 and 25% (Table 1D). Ng et al. (2009, 419), in their 1996–2003 analysis of Chinese A-listed firms, report a compression in mean state-ownership levels from 40.3% for the first year (1996) to 34.5% for their most recent year of analysis (2003). We note a continuation in this trend, with a mean rate of 35.2% in 2000 (N = 1,003 firms) and one of 21.9% in the most recent year (2008; N = 1,573).

effects (page 473), would require a cross-listed entity's CEO to be adept at meeting domestic and global regulatory protocols. In such cases, discriminatory gender hiring practices (in the sense of Becker, 1957) should be even more costly to underlying firms. Prima facie, this might suggest greater female CEO participation. However, we find little evidence to support this conjecture.

This study offers a further important contribution by examining how CEO gender interacts with and shapes executive compensation and performance in Chinese-listed entities. While there is a rich literature on the determinants of executive compensation in China (see Firth et al., 2007; Chen et al., 2008; Ke et al., 2008; Kato and Long, 2011; Conyon and He, 2011; Chen et al., 2011), we extend the debate by considering the decisive component of CEO gender. Recent studies in the West (see, for instance, Munoz-Bullon, 2010; Kulich et al., 2011; Smith et al., 2010, for the United States, UK and Denmark respectively) point to the persistence of a resilient CEO gender pay gap.

In keeping with recent evidence for China on top-executive pay (Chen et al., 2011) we detect a gender pay disparity. Our major contribution in this area stems from consideration of the interaction between ownership form (i.e., private versus state) and gender on the magnitude of the pay gap. Even though state-controlled firms appear much more likely to hire men than women to the coveted CEO role, state-initiated policies could still function to constrain the gender pay gap. At the same time, market forces in the private domain could also act to rein-in gender salary differentials. We find a generally insignificant association between the CEO gender pay gap and the degree of state ownership. However, we note a significant negative association between state ownership and CEO compensation levels.

Additionally, and consistent with Oxelheim and Randoy's (2005) "risk Premium Effect" argument, we find some limited evidence of a positive association between CEO compensation (across both men and women) and the presence of offshore listing. In contrast to international findings, there is little to suggest that female CEOs in Chinese-listed enterprises have significantly stronger academic credentials than their male counterparts. However, we note that formal indicators of academic success offer only a partial insight into executive "expertise" (in the sense of Fan et al., 2007). In any event, incomplete data on such indicators limits findings in this area.

This study's final major contribution stems from consideration of the extent to which CEO gender correlates with firm performance. This last area extends the extant literature on the performance-executive compensation link in China (see Kato and Long, 2005, 2011; Firth et al., 2006a,b, 2007; Zhu, 2007; Ke et al., 2008; Chi and Zhang, 2010; and for a detailed review of executive compensation in China, Sun et al., 2010, pp. 793–795). Our evidence points to a mixed and inconsistent CEO gender–firm performance relation. We also consider the possibility that a CEO has greater potential impact on firm performance where he/she also serves as chairperson (see Peng et al., 2007; Cheng et al., 2010). However, we find no obvious multivariate evidence of enhanced firm performance in such cases.

The present paper has the following structure. Section 2 examines the extant literature relevant to female CEO participation rates and the related gender pay gap question. Based on this literature and the unique institutional and regulatory features of the Chinese market place, we then determine relevant hypotheses. Section 3 contains discussion of the literature and hypotheses relevant to the gender–firm performance question. Section 4 then outlines the unbalanced data panel and empirical approach we employ. Finally, Sections 5 and 6 contain empirical results and assessment of the present study's various contributions.

2. CEO gender participation rates and the widely documented gender pay gap

2.1. The international evidence

A woman's elevation to a top management position often hinges on the establishment of high-level professional and academic qualifications (Adams et al., 2007) as well as an extensive array of business networks (Bartlett and Miller, 1985). Women making it to the top also tend to be younger on average than men (Bertrand and Hallock, 2001; Burress and Zucca, 2004). Furthermore, the business sector of the employer (King and Cornwall, 2007), the surrounding institutional/legal environment (Guthrie and Roth, 1999) and general market opportunities (Lam and Dreher, 2004) play an important role in conditioning the promotion prospects of women. Such issues help account for the low female CEO participation rates routinely observed in the United States and elsewhere.

A slew of international studies points to a notable and protracted ‘gender earnings gap’ at senior management levels.⁵ Contemporary discussions of gender discrimination inevitably begin with Becker’s (1957) economic account of discrimination, where market frictions serve to exacerbate discriminatory practices of various kinds. In this light, market competition acts as a bulwark against institutionally based discrimination. It is also conceivable that social and family pressures may exert influence in limiting the mobility of women. In this sense, a CEO gender pay gap is not so much predicated on issues of labour market discrimination but rather women acceding to family pressures limiting their work choices (see Lam and Dreher, 2004: 792–793 for consideration of the relevant literature). In some cases, women might therefore only consider high-level positions that lie within a given geographical radius of their spouse’s employment location. This could result in a female executive consciously sacrificing personal salary enhancement in favour of family income maximization and convenience.⁶ Higher exit rates for female executives may also be a factor in explaining the widely documented executive gender pay gap (see Gayle et al., 2011).

2.2. Does China have a ‘gender earnings gap’?

Prior to 1979, when Deng Xiaoping first orchestrated China’s ‘open-door’ policy, China was very much a command economy with prices and wages determined along Marxist–Leninist lines. Walder (1990) reports that bonus payments became more commonplace in the early reform years, and that male workers had greater access to such payments. Bishop et al. (2005) identify 1992 as a watershed, and note that, “An egalitarian wage system ... across occupations and genders [was] replaced with a more market-oriented economic system.” (p. 258).

The majority of studies on China’s pay gap focus on the overall distribution of earnings. Across the 1987–2004 period, Chi and Li (2008) report an ever-widening earnings gap. Du and Dong (2009), in their study of 2001–3 household survey data, report that women experience longer periods of unemployment. Gustafsson and Li (2000), in their study of employees in 10 Chinese provinces, across the 1988–1995 period, report a widening ‘gender earnings gap’. Liu et al. (2000) also detect a widening gap and suggest that this has more to do with market forces than to discrimination per se. Nonetheless, early studies like Korabik’s (1993) highlight the overwhelming dominance of males at senior management levels in state-owned enterprises. Interview-based studies of female executives (see Leung, 2002) point to only modest advances during the 1990s. Recent evidence also points to a noticeable senior executive gender pay gap. Chen et al. (2011), for Chinese-listed companies’ top-three executives over the period 1999–2009 period, find, “... pay is significantly positively related to gender, with female executives receiving approximately 6.7% less pay ...” (Chen et al., 2011, page 15).

What is missing from the foregoing literature is an account of how the balance of ownership between state and private sectors conditions the CEO pay gap differential. Consistent with Becker (1957), market forces that surround private firms likely play an important role in blunting discriminatory recruitment and pay policies. A useful connection can also be forged with the general evidence on China’s overall gender pay gap. Demurger et al.’s (2006) account of the Chinese market reforms of the early 1990s is particularly instructive. They note that:

“...by bringing in more competition, liberalization favored a reduction in discriminative behaviors in both urban and foreign-invested enterprises ... by relaxing institutional rules, it led to a loosening of the government’s egalitarian wage-setting policies, leaving space for more discrimination in state-owned enterprises.” (Demurger et al., 2006, Abstract).

Our Hypothesis 1 derives in part from an extension of the above to the market for Chinese CEOs. Specifically, market reforms of the last 10 years or so, which have paved the way for the development of a vibrant private sector, may have helped ease discriminatory hiring practices in the upper echelons of business. At the same time, and in the spirit of Demurger et al.’s (2006) general arguments in relation to

⁵ Highlights in this literature include Mohan and Ruggiero (2003), Ostroff and Atwater (2003), Bell (2005), Jordan et al. (2007), Munoz-Bullon (2010), Kulich et al. (2011) and Smith et al. (2010).

⁶ We are grateful to earlier comments from Jay Ritter in relation to this area.

worker pay differentials, state injunction in promoting egalitarian hiring policies may have waned. Accordingly, we posit that,

H1a. As the proportion of state ownership falls, female CEO participation rates increase; and

H1b. As the proportion of state ownership falls, female CEO compensation levels increase.

At the same time, Hypothesis **H1a** can be countered by evidence of Chinese women's increased involvement in the country's political processes (see, for instance, [Guo and Zheng, 2008](#)). As the appointment of a CEO in a state-controlled enterprise is inevitably part of a wider political process, it is conceivable that female CEO participation may in fact have risen in state-led firms. Or, more precisely, rising female political power may have helped offset weakening state injunction in the promotion of women to top business positions. The precise balance of effects can only be resolved through careful empirical assessment.

Our initial exploration of this issue (see [Table 1](#), panel D) suggests significantly greater rates of female CEO participation in private firms. Moreover, the gap in participation rates between state- and non state-led firms appears to have widened. The descriptive statistics also point to no material change in *absolute* female CEO participation rates in state-led firms. However, resolution of Hypotheses 1a and b requires multivariate testing. This follows in later sections.

The Grant Thornton International Business Report ([GTIBR, 2011](#)) also helps inform H1. The [GTIBR \(2011\)](#), which deals with non-public (i.e., unlisted), non-government owned entities, indicates that women account for around 19% of all CEOs in private Chinese firms. This finding resonates with the international evidence, where female CEOs are more likely to emerge in small firms ([Roth, 2003](#)) and in niche or service-based industries ([Guthrie and Roth, 1999](#); [King and Cornwall, 2007](#)).

State-directed policies could figure in quelling discriminatory gender-related practices. Under such circumstances, state-directed equal opportunity policies would naturally fall more squarely on firms with higher levels of government ownership. A smaller gender pay gap in state-controlled entities would be consistent with a situation in which state-directed objectives were more important in shaping gender pay levels than market forces. Such an outcome would lead to rejection of **H1b**.

The present study also examines how foreign ownership shapes CEO hiring decisions. Foreign ownership most obviously occurs when mainland Chinese-incorporated entities list in Hong Kong in the form of H shares. The establishment of overseas listing may mean that constituent stakeholders are more likely to evaluate the incumbent CEO in relation to global standards. This resonates with the 'risk premium effect' offered in [Oxelheim and Randoy's \(2005\)](#) account of cross-listings in "Anglo-American" markets. They posit that CEOs exposed to such market systems should expect to receive additional pay to compensate for the adverse effect on their job security.

[Oxelheim and Randoy \(2005\)](#) also offer three other effects arising from exposure to "Anglo-American" markets, which could conceivably combine to enhance CEO compensation. These are the 'institutional spillover', 'supply' and 'demand' effects (page 473). The 'supply effect' is particularly apposite. Specifically, [Oxelheim and Randoy \(2005\)](#) argue that such an effect is "... connected with the smaller pool of CEOs in the non-Anglo-American countries who are able to handle the Anglo-American financial influence ..." (page 473). This seems pertinent to the cross-listing of mainland Chinese-incorporated entities, given the obvious "Anglo-American" antecedents of Hong Kong's regulatory and governance environment. In the context of the present study, this would mean that the CEO of an overseas Chinese state-owned entity would need to be adept at understanding the regulatory demands and protocols of both the domestic mainland Chinese and global market environments. In this light, the costs of discriminatory gender hiring practices (in the sense of [Becker, 1957](#)) would be even higher for a cross-listed issuer. All other things being equal, this factor should favour greater female CEO participation. Accordingly, Hypothesis 2 asserts that,

H2a. Firms with A- and H-share cross-listings have a greater proportion of female CEOs; and

H2b. Firms with A- and H-share cross-listings offer more favourable compensation terms for women.

However, the dominant residual equity stake typically held by the state in H-listed enterprises could act to weaken or even offset external foreign influence (see [O'Connor et al., 2006](#)). Rejection of H2 would be consistent with such a set of circumstances. Nonetheless, recent evidence in [Chen et al. \(2011\)](#) indicates that senior executives receive greater compensation in mainland Chinese-incorporated firms when foreign stakeholders are present.

For cross-listed firms, [Chi and Zhang \(2010\)](#) show that the greatest impact on executive compensation occurs in cases where state ownership levels remain high. [Ke et al. \(2008\)](#) also find a better alignment of executive pay and firm performance in cross-listed firms (see [Kato and Long, 2005](#); [Firth et al., 2006a,b, 2007](#); [Zhu, 2007](#) for earlier Chinese-based studies exploring this link). Given the abundance of such evidence, the present study does not explicitly examine the sensitivity of CEO compensation to firm performance. In relation to Chinese managerial turnover, [Firth et al. \(2006b\)](#) find that earnings-based returns provide the most reliable indicators. [Kato and Long \(2006\)](#) note greater CEO turnover in Chinese-listed entities with lower levels of state ownership.

The various agency themes addressed in the foregoing strike a chord with [Wright et al.'s \(2005\)](#) exhortation for a melding of agency and “institutional theory” in relation to emerging market research issues. Specifically, the institutional arrangements governing the Hong Kong listing of mainland Chinese-listed firms may act decisively in purging agency costs and realigning executive compensation and performance.

This study's third hypothesis stems from the notion that female CEOs are more likely to emerge in companies where other women are also present at senior levels ([Bell, 2005](#); [Matsa and Miller, 2011](#)). Recent U.S. evidence in [Matsa and Miller \(2011\)](#) shows that a female CEO is more likely to emerge where a company's board contains one or more female directors. The various female ‘support’ mechanisms that underlie this finding likely serve to offset or mitigate institutionally based gender discrimination practices. [Bell \(2005, page 2\)](#) accounts for such gender ‘support’ mechanisms in terms of “mentoring” effects, “networks” and working preferences. She also remarks that, “... as women advance through ranks, differences in the treatment of men and women that arise from imperfect information about women's abilities ... narrow as more and better information is obtained.” (Page 2, Bell).

In the face of distinct cultural and institutional differences, female support mechanisms in China likely hinge on some or all of the above factors, as well as others besides. Gender-based leadership characteristics or “prototypes,” in the sense of [Paris et al. \(2009\)](#), may also differ substantially in the Chinese context. Specifically, male executives in China often have stronger “political connections” than females ([Fan et al., 2007](#)). Accordingly, one can hypothesize that women compensate for such weaker “connections” through the “expertise” (in the sense of [Fan et al., 2007](#)) they bring to bear as well as the mutual support networks they offer one another. As informed by the literature ([Bell, 2005](#); [Matsa and Miller, 2011](#)), Hypothesis 3 takes the following form:

H3a. Where women are present as directors, female CEO participation rates are higher; and

H3b. Where women are present as directors, the gender pay-differential is smaller

The international evidence also suggests that for women to break through the proverbial ‘glass ceiling’ they must establish stronger academic bona fides than their male peers ([Adams et al., 2007](#); [Jalbert et al., 2011](#)). Given the role of state-owners, and the historical and ongoing influence of the Communist Party in regulating product, labour and stock markets in China, it is not clear whether such effects play-out in the Chinese market context. Utilizing education as a measure of [Finkelstein's \(1992, pp. 515–516\)](#) ‘prestige power’, [Chen et al. \(2011\)](#) show, within the Chinese market context, that senior executives’ education level correlates positively with compensation. In terms of performance, [Fleisher et al. \(2011\)](#) provide evidence of a positive link between a CEO's education level and ‘total factor productivity’ in Chinese firms. Hypothesis 4 in the present study derives from consideration of the relevant international literature ([Chen et al., 2011](#); [Fleisher et al., 2011](#); [Jalbert et al., 2011](#)) and the characteristics of the mainland Chinese market place.

H4a. In Chinese-listed firms, female CEO participation increases with the strength of the CEO's academic credentials; and

H4b. In Chinese-listed firms, executive compensation levels correlate positively with the strength of female CEOs’ academic bona fides.

3. The gender–firm performance relation

In the U.S. context, evidence of a positive relationship between CEO gender and firm performance is apparent in [Krishnan and Parsons \(2008\)](#) and [Erhardt et al. \(2003\)](#). [Dezso and Ross \(2008\)](#) also note that a positive firm value effect arises from gender diversity in cases where “innovation” is a central pillar of firm strategy. In contrast, [Shrader et al. \(1997\)](#) reveal no obvious link when scrutinizing the composition of top

Table 1
Descriptive statistics.

Panel A: Female CEO participation by year: 2000–8			
	Mean	Std. deviation	n
WCEO (year 2000)	0.0419	0.20040	42
CEO_All	1.0000	0.00000	1,003
WCEO (year 2001)	0.0398	0.19554	44
CEO_All	1.0000	0.00000	1,106
WCEO (year 2002)	0.0382	0.19168	45
CEO_All	1.0000	0.00000	1,179
WCEO (year 2003)	0.0372	0.18929	47
CEO_All	1.0000	0.00000	1,264
WCEO (year 2004)	0.0391	0.19383	52
CEO_All	1.0000	0.00000	1,331
WCEO (year 2005)	0.0426	0.20192	56
CEO_All	1.0000	0.00000	1,316
WCEO (year 2006)	0.0448	0.20696	63
CEO_All	1.0000	0.00000	1,406
WCEO (year 2007)	0.0490	0.21589	74
CEO_All	1.0000	0.00000	1,511
WCEO (year 2008)	0.0546	0.22734	86
CEO_All	1.0000	0.00000	1,574
WCEO (year 2000–2008)	0.0436	0.20408	509
CEO_All	1.0000	0.00000	11,690

Note. WCEO is a dummy variable coded one where a female CEO is present and zero where a male is present.

Panel B: Number of A-, B- and H-share listings by year: 2000–8

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	All years
A and B listings	79	81	84	85	81	83	83	85	84	745
A and H listings	18	21	24	28	27	30	37	51	56	292
A, B and H listings	0	0	0	0	0	0	0	1	1	2
Single A listing	882	980	1,048	1,127	1,200	1,180	1,264	1,353	1,411	10,445
Single B listing	24	24	23	24	23	23	22	22	22	208
Single H listing ^(a)	Excl	Excl	Excl	Excl	Excl	Excl	Excl	Excl	Excl	Excl
Missing data on share numbers ^(b)	0	0	0	0	0	0	19	21	0	40
Total	1,003	1,106	1,179	1,264	1,331	1,316	1,425	1,533	1,574	11,730

Notes: (a) Excl means excluded. The table does not report figures on those companies with only H-share listing (i.e., companies that do not have complementary or adjoining A and/or B listings). (b) For 19 and 21 companies in 2006 and 2007, respectively, the numbers of tradable A and B shares outstanding stood at zero. Given such incomplete share information, Table 1B treats the 40 cases as missing data items.

Panel C: Details of the duration of employment of a given individual as company CEO

	Number of companies with a given individual as CEO for 1, 2, 3, ..., up to 9 years (across the period 2000–8)*									
	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years	9 years	
CEO Men	1,405	948	551	368	278	192	113	88	84	4,027
CEO Women	73	48	27	17	14	7	3	3	4	196
Total	1,478	996	578	385	292	199	116	91	88	4,223

*Based on 11,690 observations.

Panel D: The association between female CEO participation rates and state ownership

	STATOWN 0–5%	STATOWN 5.01–100%	MW Z test diff. #	STATOWN 0–10%	STATOWN 10.01–100%	MW Z test diff. #	STATOWN 0–25%	STATOWN 25.01–100%	MW Z test diff. #	STATOWN 0–5%	STATOWN 50.01–100%	MW sum of ranks Z test diff. #
Year	CEO Female	CEO Female		CEO Female	CEO Female		CEO Female	CEO Female		CEO Female	CEO Female	
2000	3.83%	4.31%	−0.33	4.10%	4.23%	−0.09	4.03%	4.28%	−0.19	3.83%	3.98%	−0.09
<i>n</i>	261	742		293	710		372	631		261	377	
2001	4.43%	3.83%	−0.44	4.64%	3.73%	−0.69	4.43%	3.74%	−0.58	4.43%	3.11%	−0.91
<i>n</i>	271	835		302	804		384	722		271	418	
2002	5.08%	3.39%	−1.31	4.83%	3.42%	−1.14	4.80%	3.28%	−1.30	5.08%	3.03%	−1.44
<i>n</i>	295	884		331	848		417	762		295	462	
2003	6.38%	2.90%	−2.77 ***	6.03%	2.84%	−2.68**	5.17%	2.93%	−2.01 **	6.38%	2.63%	−2.60 ***
<i>n</i>	298	966		348	916		445	819		298	495	
2004	4.93%	3.55%	−1.14	5.08%	3.42%	−1.42	5.02%	3.24%	−1.62	4.93%	2.83%	−1.59
<i>n</i>	345	986		394	937		498	833		345	495	
2005	5.38%	3.84%	−1.23	5.69%	3.62	−1.72*	5.80%	3.25%	−2.24 **	5.38%	3.67%	−1.18
<i>n</i>	353	963		404	912		517	799		353	463	
2006	6.12%	3.77%	−1.95 *	5.97%	3.74%	−1.91*	6.01%	3.23%	−2.51 **	6.12%	2.64%	−2.29 **
<i>n</i>	425	981		469	937		632	774		425	341	
2007	7.39%	3.57%	−3.28 ***	7.23%	3.45%	−3.31***	6.36%	3.45%	−2.62 ***	7.39%	2.56%	−2.78 ***
<i>n</i>	528	981		581	928		755	754		528	273	
2008	8.28%	3.47%	−4.13 ***	7.65%	3.69%	−3.44***	7.29%	3.08%	−3.63 ***	8.28%	3.02%	−2.72 ***
<i>n</i>	652	921		706	867		892	681		652	232	
All years	6.16%	3.61%	−6.14 ***	6.01%	3.55%	−6.11***	5.72%	3.37%	−6.16 ***	6.16%	3.07%	−6.17 ***
<i>n</i>	3,428	8,259		3,828	7,859		4,912	6,775		3,428	3,556	

STATOWN refers to the proportion of outstanding stock held directly by the PRC state or affiliated parties (see Table 2 for variable definitions).
 = “Number of State-Owned Shares” (Nshrstt)/“Total Number of Shares” (Nshrttl). Where codes and the labels (“.”) are as specified in the [GTA-CG \(2008\)](#) and [GTA-FS \(2009\)](#) database.
n = number of observations (i.e., for year 2000, there are 261 firms with state ownership level of 5.00% or below and 742 with state ownership levels above this threshold).
 The total number of available firm-year observations (for 2000–8) fell from 11,690 to 11,687 due to the exclusion of three firm-year observations. Two of these relate to extreme values pertaining to TRADFLO (see Table 2) and to one stock case (in 2007) with large amounts of missing financial statement data.
 Descriptive statistics for STATOWN for whole sample (*n* = 11,687, min = 0%; max = 97%; mean = 31.34%; and Std. dev. = 25.52%).
 ***, **, and * indicate significant differences in means Z tests (for 2-tails) for a non-parametric Mann–Whitney test for 1%, 5% and 10% significance levels, respectively.

management and boards. Significantly, Adams and Ferreira (2009) suggest that the gender diversity-firm performance relation hinges on a firm's capacity to ward-off takeover. They remark that, "... diversity has a positive impact on performance in firms that otherwise have weak governance, as measured by their abilities to resist takeovers. In firms with strong governance ... enforcing gender quotas in the boardroom could ultimately decrease shareholder value." (Adams et al., 2009, page 308). Findings for non-U.S. companies also exhibit considerable variation (see Smith et al., 2006; Rose, 2007 for Danish companies; Campbell and Minguez-Vera, 2008 for Spanish firms; and Francoeur et al., 2007 for Canadian entities). Interestingly, recent evidence in Gul et al. (2011) points to a positive association between voluntary corporate disclosure levels in the United States and the presence of women in the board room.

The recurrent theme in the present investigation is that in order to overcome discriminatory pressures, female CEOs need to demonstrate strong core competencies (Becker, 1957; Huang and Kisgen, 2009). Fan et al.'s (2007) study of the "political connections" of mainland Chinese CEOs provides some empirical backing. They remark that, "...women are more likely appointed to boards for their specialized expertise than for their managerial or political roles." (Fan et al., 2007, page 351). This claim is predicated on a female CEO's success in overcoming discriminatory challenges (Becker, 1957; see Huang and Kisgen, 2009, p. 5 for brief review of arguments counter to the Becker, 1957 view). The acquisition of such "expertise" should better equip women for positions of corporate leadership, and enable them to steer companies to greater profitability (Hypothesis 5a).

H5a. Corporate profitability is higher in Chinese-listed enterprises where the CEO is female.

The precise measurement of an intangible like "expertise" (Fan et al., 2007) is obviously problematic. A further complication arises from a possible 'Glass Cliff' effect (Ryan and Haslam, 2005). Proponents of the 'Glass Cliff' assert that women are more likely to secure CEO positions in distressed companies. CEO tenure is therefore vital in controlling for the validity of such an outcome. A 'Glass Cliff' effect is suggestive of situations where a female CEO has only recently taken up the cudgels of executive control. Assuming the relevance of both the Becker (1957) and 'Glass Cliff' effects in China, the interaction term $INTENURE*WCEO$ should have a higher correlation with firm profitability than $WCEO$ alone.

This last area helps refine the extant literature on the Chinese firm performance-executive compensation nexus (see Kato and Long, 2005, 2011; Firth et al., 2006a,b, 2007; Zhu, 2007; Ke et al., 2008; Chi and Zhang, 2010) by considering the conditioning role of CEO gender. It also complements existing studies examining the role of senior executive officer gender on earnings quality (Ye et al., 2010) and CFO gender on the use of discretionary accruals (Wei and Xie, 2010).

Finally, we examine in a related hypothesis, Hypothesis 5b, whether CEO gender has a greater impact on firm performance in cases where the CEO serves a dual role as both CEO and company chairperson.

H5b. Corporate profitability is higher in Chinese-listed enterprises where the female CEO serves a dual role as chief executive and company chairperson.

Accounts like Cheng et al.'s (2010) suggest that the chairperson is often involved in approving major CEO decisions. A CEO may therefore have greater opportunity to effect strategic change in firms where he/she serves as both CEO and corporate chairperson. Nonetheless, evidence for Chinese-listed firms in the 1990s (see Peng et al., 2007) points to a weak connection between duality and firm performance. However, regulatory and institutional changes in recent years beg further investigation of this effect. Accordingly, we include dummy $CEO*CHAIR$ to capture a possible duality effect.

4. Data and empirical methodology employed

4.1. Sample selection

We employ data from two different sources. First, the 'CSMAR® China Stock Market Financial Statements Database' (GTA_FS, 2009) is used for the construction of financial variables. This database provides financial data for companies with share listings, on either the Shanghai or Shenzhen Stock Exchanges, for part or all of the 9-year period of interest, 2000–2008. The 'China Listed Firm's Corporate Governance Research Database' (GTA_CG, 2008 database) serves as the second data source.

Companies quoted on either of the two mainland Chinese exchanges (Shanghai or Shenzhen) are only able to list A and B shares. The majority of companies on the Shanghai and Shenzhen exchanges are present in A-listed form (see Table 1B). A small minority list A and B shares. An even smaller minority list exclusively in B share form. For companies with A and B shares outstanding, the shares' par value, voting rights, dividend entitlements and other benefits rank on equal terms. However, a difference in trading rights drives a wedge between the secondary market prices of the two share types. The same principle applies to an elite group of A-listed companies meted-out for offshore listing in Hong Kong as H shares (see McGuinness (2009) for background on A, B and H shares).

Access to the two data sources allows for the extraction of information on 219,676 executives across the 9-year period, 2000–2008. Only a small number of listed companies explicitly refer to the leading executive using the term “CEO”. The most commonly used title is ‘General Manager’. In a number of other cases, the leadership role carries the label ‘President’ and very occasionally ‘Acting General Manager’. For simplicity and convenience, the term CEO in the following is synonymous with any individual carrying-out the executive leadership role, whether or not that person formally holds the title or not. In a minority of cases, the leading executive also carries the title ‘Board Chairman’. However, this study's focus is on the pivotal role played by constituent companies' executive leaders (i.e., CEOs).

The GTA database allowed for the collection of 12,186 firm-year CEO observations. However, an incomplete description of the CEO in 418 firm-year cases, as well as missing data on other critical items, resulted in a final sample of 11,690 firm-year (CEO) observations. Thirty-six firm-year observations are lost due to incomplete data on total shares outstanding, one because of incomplete financial statement data and 40 due to missing tradable A and/or B share numbers (19 for 2006 and 21 for 2007). Analysis of the final data sample points to 4,223 different individuals carrying-out the role of CEO or its equivalent (see Table 1C). To ensure the robustness of the identification process, reporting year, age and CEO gender feature as important crosschecks.

Due to incomplete CEO data, for certain years and companies, we adopt an unbalanced data panel approach with relevant regression estimates determined using *Eviews 7 software*.

4.2. Regression forms and principal variables

The first part of this study's analysis features dependent variable **WCEO**. For any given firm-year, this dummy variable is assigned value one for a female CEO and zero for a male CEO. Eq. (1) sets out the specific regression form (see Table 2 for summary description of variables).

$$\begin{aligned} WCEO_{j,t} = & \beta_0 + \beta_1 \cdot WDIRECT_{j,t} + \beta_2 \cdot AGE_{j,t} + \beta_3 \cdot LNTENURE_{j,t} + \beta_4 \cdot ACAD_{j,t} + \beta_5 \cdot LNASSETS_{j,t} \\ & + \beta_6 \cdot STATEOWN_{j,t} + \beta_7 \cdot CROSSLIS_{j,t} + \beta_8 \cdot Y2001_{j,t} + \beta_9 \cdot Y2002_{j,t} + \beta_{10} \cdot Y2003_{j,t} \\ & + \beta_{11} \cdot Y2004_{j,t} + \beta_{12} \cdot Y2005_{j,t} + \beta_{13} \cdot Y2006_{j,t} + \beta_{14} \cdot Y2007_{j,t} + \beta_{15} \cdot Y2008_{j,t} \\ & + \beta_{16} \cdot UTIL_{j,t} + \beta_{17} \cdot REALEST_{j,t} + \beta_{18} \cdot CONGL_{j,t} + \beta_{19} \cdot IND_{j,t} + \beta_{20} \cdot COMM_{j,t} + e_{j,t} \end{aligned} \quad (1)$$

In relation to the second part of the analysis, which deals with the determinants of executive compensation, we employ **LNREW** as our dependent variable, defined as the natural logarithm of “Total Rewards” (Table 2) after due adjustment for inflation (Gabaix and Landier, 2008). Substitution of the **WCEO** dependent variable by **LNREW**, and the addition of a return-on-assets (ROA) firm performance variable, results in Eq. (2):

$$\begin{aligned} LNREW_{j,t} = & \beta_0 + \beta_1 \cdot WCEO_{j,t} + \beta_2 \cdot AGE_{j,t} + \beta_3 \cdot LNTENURE_{j,t} + \beta_4 \cdot ACAD_{j,t} + \beta_5 \cdot (CEO \cdot CHAIR)_{j,t} \\ & + \beta_6 \cdot LNASSETS_{j,t} + \beta_7 \cdot STATEOWN_{j,t} + \beta_8 \cdot CROSSLIS_{j,t} + \beta_9 \cdot LTDEBT_{j,t} + \beta_{10} \cdot ROA_{j,t} \\ & + \beta_{11} \cdot Y2000_{j,t} + \dots + \beta_{18} \cdot Y2008_{j,t} + \beta_{19} \cdot UTIL_{j,t} + \beta_{20} \cdot REALEST_{j,t} + \beta_{21} \cdot CONGL_{j,t} \\ & + \beta_{22} \cdot IND_{j,t} + \beta_{23} \cdot COMM_{j,t} + e_{j,t} \end{aligned} \quad (2)$$

A characteristic of the executive compensation environment in China is the general absence of employee stock options (Firth et al., 2006a). For an interesting comparison of the structure of executive compensation across Asian-Pacific countries, see Sun et al. (2010).

The variable **STATEOWN** captures the proportion of outstanding stock held directly by the state. This is a critical variable in testing H1. Based upon the extant evidence for Chinese-listed firms (Firth et al., 2007; Chen et al., 2011; Conyon and He, 2011), one might anticipate an inverse relation between executive compensation and **STATEOWN**. This literature is silent on how state ownership interacts with CEO gender

in influencing gender. If female and male CEOs receive similar levels of remuneration in state-owned firms, one would expect an insignificant association between **WCEO*STATEOWN** and **LNREW**.

To explore the effects of cross-listing (H2), we include dummy variable **CROSSLIS**, which takes on value one for companies with concurrent A and H listings. The number of companies with such pairings rose from 18 in 2000 to 57 in 2008 (Table 1B). The cross-listed firms represent some of China's largest and most important entities.

The key explanatory variable in relation to H3, **WDIRECT**, emerges from two variables in [GTA_CG, 2008](#): "Gender" (D0301b) and "Position Description" (D0201b). **WDIRECT** takes on value one in firm-year cases where at least one female director is present and zero otherwise. Eq. (2) also includes important controls for CEO age ([Barro and Barro, 1990](#); [Burruss and Zucca, 2004](#)) and tenure ([Barro and Barro, 1990](#); [Paul and Sahni, 2010](#)). As CEO compensation may well be enhanced in cases where the chief executive also serves as company "Chairman," we include a separate interaction term **CEO*CHAIR** in Eq. (2).

Studies such as [Adams et al. \(2007\)](#) and [Jalbert et al. \(2011\)](#) suggest that women CEOs in the West often outshine their male peers in terms of the academic credentials they bring to bear. A priori, one might expect the same to be true in Chinese companies (H4). Two alternative variable approaches feature in this regard, the first one utilizing **ACAD**, which takes on values of 1, 2, 3, 4 or 5, with the level of education received increasing in the value of **ACAD**. The second approach utilizes three separate dummy variables, **ACAD1**, **ACAD2** and **ACAD3**. Valuations of one apply to **ACAD1**, **ACAD2** and **ACAD3** in cases where the CEO's highest degree is, respectively, a PhD, masters or bachelor level qualification. Although they do not explicitly examine CEO compensation, [Chen et al. \(2011\)](#) also measure education across such dimensions and report a strong positive association with senior executive compensation.

Firm size is also likely to be a major factor in the determination of executive compensation levels (see [Conyon and He, 2011](#)). Accordingly, variable **LNASSETS**, the natural logarithm of a firm's total assets ([Merhebi et al., 2006](#)), enters Eq. (2) as a separate and important control variable. Controls for **time** and **industry** effects also figure. For specific **industry** effects ([Guthrie and Roth, 1999](#), and [King and Cornwall, 2007](#)), five dummies, covering six major sectors, feature.

The present study utilizes two measures of firm performance. The first of which is a firm's return-on-assets (**ROA**), configured as the ratio of net profit to total assets ([Wang et al., 2004](#); [Ng et al., 2009](#)). A second measure (**ROE**) provides a return-on-equity measure, defined as net profit divided by net assets (owners' equity). Accordingly, Eq. (3) takes on the following form:

$$\begin{aligned} \text{ROA}_{j,t} \text{ or } \text{ROE}_{j,t} = & \beta_0 + \beta_1 \cdot \text{WCEO}_{j,t} + \beta_2 \cdot \text{AGE}_{j,t} + \beta_3 \cdot \text{LNTENURE}_{j,t} + \beta_4 \cdot (\text{CEO} \cdot \text{CHAIR})_{j,t} \\ & + \beta_5 \cdot \text{LNASSETS}_{j,t} + \beta_6 \cdot \text{STATEOWN}_{j,t} + \beta_7 \cdot \text{CROSSLIS}_{j,t} + \beta_8 \cdot \text{LTDEBT}_{j,t} \\ & + \beta_9 \cdot \text{Y2000}_{j,t} + \dots + \beta_{16} \cdot \text{Y2008}_{j,t} + \beta_{17} \cdot \text{UTIL}_{j,t} + \beta_{18} \cdot \text{REALEST}_{j,t} \\ & + \beta_{19} \cdot \text{CONGL}_{j,t} + \beta_{20} \cdot \text{IND}_{j,t} + \beta_{21} \cdot \text{COMM}_{j,t} + \epsilon_{j,t} \end{aligned} \quad (3)$$

In relation to H5, a negative and significant β_1 coefficient (on **WCEO**) would be consistent with a 'Glass Cliff' effect, as in [Ryan and Haslam's \(2005\)](#) account of female executives in UK-listed FTSE-100 companies. Interestingly, [Adams et al. \(2009\)](#) find little evidence of such an effect in the United States. Within the Chinese market context, [Cheng et al. \(2010\)](#) make it clear that strategic corporate decisions often require the approval of the chairperson. We control for this possible mediating effect through inclusion of variable **CEO*CHAIR**. This variable takes on value one in cases where the CEO is also the firm's chairperson.

[Chen et al. \(2008\)](#) suggest that the 'bonding' (see [Coffee, 1999](#); [Stulz, 1999](#)) of governance standards, as required by Hong Kong listing standards, promotes stronger operating performance. The offshore listing variable (**CROSSLIS**) captures this possible effect. Separately, [Chen et al. \(2008\)](#) demonstrate that foreign ownership correlates with operating performance.

The degree of state ownership is also likely to be important. As argued in [Le and O'Brien \(2010\)](#), "State ownership may enhance some opportunities ... but it may also present acute agency costs" ([Le and O'Brien, 2010, p. 1301](#)). [Ng et al.'s \(2009\)](#) recent study of Chinese firms demonstrates that performance is enhanced for firms with either very low or very high levels of state ownership. In effect, strong control, whether private or state-based, correlates with above-average performance. Many of the entities with strong state control are likely to be of strategic importance to the government ([Wei and Varela, 2003](#)) and have oligopolistic market leadership positions. Even in the presence of significant agency costs, this may enable such entities to capture

Table 2

Summary description of variables employed.

<i>Dependent variables featured in Eqs. (1)–(3)</i>	
WCEO	Dummy variable assigned value one in cases where the CEO is female and zero male. CEOs are identified from the variable “Position Description” (D0201B) and the gender of the executive from the variable “Gender” (D0301b).
LNREW	Natural logarithm of “Total Reward” (D1001b), as adjusted for inflation. See the “CG Individual Profile (CG_Director)” section of GTA.CG2008 data for details of D1001b.
ROA	Return-on-Assets, defined as “Operating Profits” (B001300000) divided by “Total Assets” (A001000000).
ROE	A firm’s Return-on-Equity (ROE), defined as “Operating Profits” (B001300000)/“Total Shareholders’ Equity” (A003000000)
<i>Explanatory variables featured in Eqs. (1)–(3)</i>	
WDIRECT	Dummy variable assigned value one for a firm-year observation in which the company has one or more women on its board of directors. Determinations made from variables “Position Description” (D0201B) and “Gender” (D0301b).
AGE	Chief Executive Officer age (D0401B).
LNTEURE	The natural logarithm of the number of years of employment served by the executive in the company where presently situated. Defined as the natural logarithm of “End of Current Tenure” (D0702b) less “Start of Current Tenure” (D0701b), all divided by 365.
ACAD	This variable (D0501b, “Academic Education”) is determined with the following categories according to GTA.CG (2008): “1 = technical secondary school and below”; 2 = “associate degree”; 3 = “bachelor”; 4 = “Masters”; 5 = “phd,” 6 = “other” (education announced in other form)” (see Page 28, GTA.CG, 2008 User Guide). The present article only considers categories 1–5.
ACAD1	Dummy variable assigned value one where the executive has a Ph.D.
ACAD2	Dummy variable assigned value one where the executive’s highest degree is a Masters.
ACAD3	Dummy variable assigned value one where the executive’s highest degree is at Bachelor level.
CEO*CHAIR	Dummy variable coded 1 where the CEO is also defined as “Chairman” (see GTA variable D0201B).
LNASSETS	Natural logarithm of “Total Assets” (A001000000), where \$ assets are duly adjusted for inflation
TRADFLOT	This is the proportion of a firm’s outstanding stock in tradable float form, calculated as follows: [(“Number of Negotiable A Shares” (Nshra) + “Number of Negotiable H Shares” (Nshrh) + “Number of Negotiable B Shares” (Nshrb))/“Total Number of Shares” (Nshrttl)].
STATOWN	Proportion of outstanding stock held directly by the PRC state or affiliated parties. = “Number of State-Owned Shares” (Nshrstt)/“Total Number of Shares” (Nshrttl).
CROSSLIS	Dummy variable assigned value one where a company is listed in both the A- and H-share markets. In other words, companies that in a given year have with positive values for both Nshra and Nshrh.
LTDEBT	Long-term Debt ratio. The variable is calculated based on the variable “Long-Term Debts” (A002201000) divided by “Total Assets” (A001100000).
Y2001...	Dummy variable controls for year of disclosure, as based on variable “Announcement Deadline” (Reptdt).
Y2008	Disclosures coded in relation to the year of “Announcement Deadline”. For the nine years, 2000 to 2008, the present study adopts eight dummy year variables (as consistent with earlier studies, see Barron and Waddell, 2003; Grinstein and Hribar, 2004).
UTIL	Dummy variable assigned value one where the company is from the “Public Utility” sector.
REALEST	Dummy variable assigned value one where the company is from the “Financial Building” sector.
CONGL	Dummy variable assigned value one where the company is from the “Conglomerate” sector.
IND	Dummy variable assigned value one where the company is from the “Industry” sector.
COMM	Dummy variable assigned value one where the company is from the “Commercial” sector.

Notes:

The alphanumeric codes and the labels (“_”) in the above refer to the specific variable codes and labels utilized by the GTA.CG (2008) and GTA-FS (2009) database.

- (1) In relation LNREW, inflation adjustments are made using National Bureau of Statistics of China (NBSC) data. Relevant data items are obtained from ‘General’ under ‘Consumer Price Indices and Retail Price Indices by Region’ (<http://www.stats.gov.cn/tjsj/ndsj/2009/indexeh.htm>).
- (2) We use variable (D0301b) in the GTA.CG (2008) database to determine CEO gender. To control for job title, we utilize variable D0301b (“position description”). This allows us to create a categorical variable to capture specific job function (CEO, Board Chairman, Board Chairman and CEO/Chairman and general manager, president, vice-president, director).
- (3) Information was not available for around two-thirds of firm-year cases in respect of variable D0501B, “Academic Education”.
- (4) Variable ‘Indnme’ (“Industry Name A”) is categorized into six broad sectors: “Public Utility”; “Industry”; “Financial Building”; “Conglomerate”; “Commercial”; and “Real estate”.

above-average rents. Accordingly, variable **STATEOWN** appears as a further explanatory variable in Eq. (3). We also specify variable **TRADFLO** as an alternative to **STATEOWN**. The former captures the proportion of a firm's shares in tradable float form.

To capture a possible gearing effect, we include variable **LTDEBT** in Eq. (3), measured as the ratio of the firm's long-term debt to total assets levels. The literature suggests that debt financing should be positively related to firm performance due to banks' careful selection of projects and firms (Ross, 1977) and the role of debt covenants and monitoring in mitigating agency costs (for review of the relevant theoretical and empirical literature, see Dhardwadkar et al., 2000, p. 663). However, as argued in Dhardwadkar et al. (2000), such effects may not necessarily play-out in emerging markets, where bankruptcy laws, investor protection and overall governance mechanisms may be weak. Le and O'Brien's (2010) study of Shanghai/Shenzhen listed firms offers support for this position. However, they show that high levels of debt can help resolve some of the attendant agency issues when state ownership is also at high levels. In effect, they show that the state, as controller of the Chinese banking system, is more likely to monitor firms in cases where it has both significant lending exposure and strong equity (voting) rights in the borrower.

Finally, Table 2 provides a summary of all variables present in Eqs. (1)–(3).

5. Empirical results

5.1. Findings relevant to hypotheses H1a–H4a

Table 3 reports regression results relating to Eq. (1). The principal issues of interest relate to whether female CEO participation rates are higher in firms with (1) lower levels of state ownership (H1a), (2) offshore cross-listing (H2a), (3) boards containing at least one female director (H3a) and (4) in situations where the CEO possesses strong academic credentials (H4a). Critically, the regressions reveal a strong negative association between **WCEO** and **STATEOWN**. This finding offers strong support for this study's central hypothesis (H1a). As such, female CEOs are more likely to emerge in privately controlled Chinese firms (i.e., ones with relatively little or no state ownership). This is also borne out by our descriptive statistics in Table 1D.

The results in Table 3 offer little support for the contention in hypothesis H2a that overseas listing raises the likelihood of female CEO participation. It is instructive that firms selected for H listing tend to be some of China's most important concerns, where strong state ownership is the norm. The countervailing effect of strong state control may help explain the absence of a cross-listing effect. This resonates with Fan et al. (2007, p. 350–351) where male executives' superior “political connections” give them an advantage in procuring leadership positions. This effect is likely to be even more telling in China's most strategic (often cross-listed) issuers. We conduct further investigation of foreign investor participation effects through specification of additional dummy variables for foreign legal-person (**FLP**) and B share holdings (**BSHARE**). As with **CROSSLIS**, female CEO participation rates appear slightly lower for firms with **FLP** and **BSHARE** holdings. Again, such findings run counter to H2a.

As shown by the strong conditioning role of **WDIRECT** on **WCEO** in regression forms a–e in Table 3, results strongly support hypothesis 3a. The same does not apply for H4a, given the general absence of a link between a CEO's gender (**WCEO**) and academic qualifications. This is apparent from examination of the various academic categorical variable measures (**ACAD** and **ACAD1-3**) specified. Quantification of female CEOs' skill-sets and their associated level of “expertise” (in the sense of Fan et al., 2007) likely requires a more precise and sophisticated measurement metric. In any event, missing data on around two-thirds of all firm-year cases for measures **ACAD** and **ACAD1-3** seriously limit the interpretation of results. In light of such missing data, results in columns c–e of Table 3, where more than 10,000 firm-year observations feature, provide more robust coefficient estimates.

Interestingly, in all regressions (columns a–e), firm size (**LNASSETS**) has little or no association with the **WCEO** dependent variable. With the exception of companies in the ‘commercial’ sector, industry effects also have little bearing on results.

5.2. Findings relevant to hypotheses H1b–H4b

Table 4 documents the second stage of results featuring the dependent CEO compensation variable (**LNREW**). The key considerations are whether female CEO compensation correlates with (1) the level of

Table 3

Panel regression results of WCEO against pertinent explanatory variables

$$\text{WCEO}_{j,t} = \beta_0 + \beta_1 \cdot \text{WDIRECT}_{j,t} + \beta_2 \cdot \text{AGE}_{j,t} + \beta_3 \cdot \text{LNTENURE}_{j,t} + \beta_4 \cdot \text{ACAD}_{j,t} + \beta_5 \cdot \text{LNASSETS}_{j,t} + \beta_6 \cdot \text{STATEOWN}_{j,t} \\ + \beta_7 \cdot \text{CROSSLIS}_{j,t} + \beta_8 \cdot \text{Y2001}_{j,t} + \beta_9 \cdot \text{Y2002}_{j,t} + \beta_{10} \cdot \text{Y2003}_{j,t} + \beta_{11} \cdot \text{Y2004}_{j,t} + \beta_{12} \cdot \text{Y2005}_{j,t} + \beta_{13} \cdot \text{Y2006}_{j,t} \\ + \beta_{14} \cdot \text{Y2007}_{j,t} + \beta_{15} \cdot \text{Y2008}_{j,t} + \beta_{16} \cdot \text{UTIL}_{j,t} + \beta_{17} \cdot \text{REALEST}_{j,t} + \beta_{18} \cdot \text{CONGL}_{j,t} + \beta_{19} \cdot \text{IND}_{j,t} + \beta_{20} \cdot \text{COMM}_{j,t} + e_j$$

(1)

	Col. a	Col. b	Col. c	Col. d	Col. e
	WCEO	WCEO	WCEO	WCEO	WCEO
Intercept	0.117 (1.352)	0.087 (1.020)	−0.011 (−0.193)	−0.011 (−0.183)	−0.014 (−0.207)
WDIRECT	0.027*** (3.485)	0.028*** (3.558)	0.033*** (6.302)	0.033*** (6.294)	0.033*** (6.170)
AGE	−0.001 (−1.134)	−0.0007 (−1.104)	0.0003 (0.808)	0.0003 (0.800)	0.0004 (0.923)
LNTENURE	−0.005 (−0.493)	−0.005 (−0.482)	0.002 (0.300)	0.002 (0.301)	0.001 (0.230)
ACAD	−0.008* (−1.697)	−	−	−	−
ACAD1	−	−0.056*** (−2.737)	−	−	−
ACAD2	−	−0.011 (−0.871)	−	−	−
ACAD3	−	−0.009 (−0.729)	−	−	−
LNASSETS	0.001 (0.610)	0.002 (0.891)	0.0009 (0.517)	0.0008 (0.447)	−0.0001 (−0.046)
STATEOWN	−0.037** (−2.277)	−0.041** (−2.487)	−0.048*** (−4.047)	−0.047*** (−4.132)	−0.046*** (−3.960)
TRADEFLO	−	−	−0.005 (−0.271)	−	−
CROSSLIS	−0.009 (−0.387)	−0.011 (−0.465)	−	0.002 (0.094)	0.008 (0.369)
LTDEBT	−	−	−	−	−0.001 (−0.039)
UTIL	−0.029 (−0.735)	−0.030 (−0.763)	0.010 (0.330)	0.009 (0.306)	0.029 (0.674)
REALEST	−0.006 (−0.152)	−0.006 (−0.156)	0.047 (1.539)	0.047 (1.514)	0.068 (1.571)
CONGL	−0.024 (−0.612)	−0.024 (−0.620)	0.021 (0.681)	0.019 (0.654)	0.040 (0.937)
IND	−0.032 (−0.853)	−0.033 (−0.882)	0.006 (0.216)	0.006 (0.191)	0.026 (0.622)
COMM	0.056 (1.399)	0.054 (1.335)	0.077 ** (2.502)	0.076 ** (2.477)	0.098** (2.257)
<i>n</i>	3,432	3,432	10,382	10,382	10,223
Adj. R-squared	0.0215	0.0231	0.0217	0.022	0.0219

For reasons of brevity the (eight) year dummy variables (Y2001–Y2008) and their coefficients are not reported in the above table. However, the results in the above reflect the inclusion of the respective year dummies.

Notes:

- (1) See Table 2 for variable definitions;
- (2) Available observations fell from 11,690 to 11,687 due to the exclusion of three firm-year observations. Two of these relate to extreme values pertaining to TRADFLO and to one stock case (in 2007) with large amounts of missing financial statement data;
- (3) Available observations in (a)–(e) fall below 11,687 due to missing values on other explanatory variables.
- (4) The estimated standard errors, and therefore *t* statistics, reflect Huber/White adjustments.
- (5) *, **, and *** indicate significant coefficients at the 1%, 5%, and 10% levels, respectively.
- (6) As we do not use predictive Probabilities for WCEO for out-of-Sample testing, we adopt a Linear Probability Model (OLS) approach. As explained in Pohlman and Leitner (2003), such an approach tends to Yield Similar effects of significance as logistic regression. When running logistic regression, we note a Similar Pattern of Significant effects to Table 3.

Table 4

Panel regression results of LNREW against pertinent explanatory variables

$$\text{LNREW}_{j,t} = \beta_0 + \beta_1 \cdot \text{WCEO}_{j,t} + \beta_2 \cdot \text{AGE}_{j,t} + \beta_3 \cdot \text{LNTENURE}_{j,t} + \beta_4 \cdot \text{ACAD}_{j,t} + \beta_5 \cdot (\text{CEO} * \text{CHAIR})_{j,t} + \beta_6 \cdot \text{LNASSETS}_{j,t} + \beta_7 \cdot \text{STATEOWN}_{j,t} + \beta_8 \cdot \text{CROSSLIS}_{j,t} + \beta_9 \cdot \text{LTDEBT} + \beta_{10} \cdot \text{ROA} + \beta_{11} \cdot \text{Y2000}_{j,t} + \dots + \beta_{18} \cdot \text{Y2008}_{j,t} + \beta_{19} \cdot \text{UTIL}_{j,t} + \beta_{20} \cdot \text{REALEST}_{j,t} + \beta_{21} \cdot \text{CONGL}_{j,t} + \beta_{22} \cdot \text{IND}_{j,t} + \beta_{23} \cdot \text{COMM}_{j,t} + \epsilon_{j,t}.$$

(2)

	(Col. a)	(Col. b)	(Col. c)	(Col. d)	(Col. e)	(Col. f)
	LNREW	LNREW	LNREW	LNREW	LNREW	LNREW
Intercept	6.777 *** (13.630)	7.057*** (14.301)	5.917*** (22.041)	6.013*** (21.581)	5.975*** (18.343)	6.125*** (21.723)
WCEO	−0.024 (−0.053)	−0.155* (−1.498)	−0.116* (−1.806)	−0.115* (−1.796)	−0.107* (−1.664)	−0.680 (−0.980)
WDIRECT	–	–	–	–	–	−0.040 (−1.484)
WDIRECT*WCEO	–	–	–	–	–	0.049 (0.321)
AGE	0.018*** (4.856)	0.018*** (4.787)	0.013*** (6.043)	0.013*** (6.003)	0.013*** (6.020)	0.011*** (5.009)
AGE*WCEO	–	–	–	–	–	0.027*** (2.598)
LNTENURE	0.332*** (4.905)	0.326*** (4.821)	0.282*** (7.570)	0.283*** (7.598)	0.296*** (7.955)	0.265*** (6.933)
LNTENURE*WCEO	–	–	–	–	–	0.198 (1.177)
ACAD	0.109*** (3.637)	–	–	–	–	–
ACAD*WCEO	−0.041 (−0.309)	–	–	–	–	–
ACAD1	–	0.348*** (2.894)	–	–	–	–
ACAD2	–	0.192*** (2.598)	–	–	–	–
ACAD3	–	0.048 (0.636)	–	–	–	–
CEO*CHAIR	–	–	–	–	–	0.069* (1.760)
LNASSETS	0.130*** (9.838)	0.129*** (9.684)	0.179*** (22.352)	0.174*** (20.252)	0.204*** (20.001)	0.175*** (19.878)

LNASSETS*WCEO	–	–	–	–	–	–0.046 (–1.530)
STATEOWN	–0.299*** (–3.010)	–0.286*** (–2.854)	–0.394*** (–6.568)	–0.378*** (–6.589)	–0.404*** (–6.987)	–0.383*** (–6.527)
STATEOWN *WCEO	–	–	–	–	–	0.344 (1.244)
TRADEFLO	–	–	–0.083 (–1.001)	–	–	–
CROSSLIS	0.176 (1.458)	0.172 (1.431)	–	0.130 (1.407)	0.072 (0.744)	0.127 (1.335)
CROSSLIS*WCEO	–	–	–	–	–	0.003 (0.007)
LTDEBT	–	–	–	–	–0.187 (–1.363)	–
ROA	–0.006 (–0.684)	–0.006 (–0.679)	–0.003 (–0.342)	–0.002 (–0.270)	–0.005 (–0.711)	–0.003 (–0.388)
ROA*WCEO	–	–	–	–	–	0.426*** (2.686)
UTIL	0.105 (0.471)	0.107 (0.482)	0.375*** (2.673)	0.345** (2.454)	–0.229 (–1.078)	0.316** (2.238)
REALEST	0.229 (1.006)	0.226 (0.994)	0.325** (2.273)	0.301** (2.104)	–0.263 (–1.233)	0.284** (1.979)
CONGL	–0.043 (–0.198)	–0.044 (–0.201)	0.223* (1.623)	0.197 (1.435)	–0.376* (–1.796)	0.167 (1.207)
IND	–0.160 (–0.759)	–0.158 (–0.751)	0.138 (1.027)	0.111 (0.831)	–0.460** (–2.217)	0.082 (0.605)
COMM	0.038 (0.169)	0.038 (0.166)	0.367*** (2.567)	0.340** (2.387)	–0.236 (–1.108)	0.310** (2.164)
N	1,870	1,870	5,138	5,138	5,059	5,138
R²_{adj}	0.303	0.304	0.409	0.409	0.398	0.411

For reasons of brevity the (eight) year dummy variables (Y2001–Y2008) and their coefficients are not reported in the above table. However, the results in the above reflect the inclusion of the respective year dummies.

Notes:

- (1) See Table 2 for variable definitions;
- (2) The total number of available observations fell from 11,690 to 11,687 due to the exclusion of three firm-year observations. Two of these relate to extreme values pertaining to TRADFLO and to one stock case (in 2007) with large amounts of missing financial statement data;
- (3) *n* in regressions (a)–(f) fell below 11,687 due to missing values on some explanatory variables, and especially on dependent variable LNREW;
- (4) The number of observations in regressions (a) and (b) is severely reduced due to missing values on variables ACAD and ACAD1-3.
- (5) We adopt a “Period SUR” approach for regressions in the above. The SUR approach allows for standard error corrections for both heteroskedasticity and autocorrelation effects.
- (6) *, **, and *** indicate significant coefficients at the 10%, 5% and 1% levels, respectively.

Table 5

Panel regression results of ROA and ROE against pertinent explanatory variables: Winsorized results (excluding top and bottom 1% of dependent variables).

$$\text{ROA}_{j,t} \text{ or } \text{ROE}_{j,t} = \beta_0 + \beta_1 \cdot \text{WCEO}_{j,t} + \beta_2 \cdot \text{AGE}_{j,t} + \beta_3 \cdot \text{LNTENURE}_{j,t} + \beta_4 \cdot (\text{CEO} * \text{CHAIR})_{j,t} + \beta_5 \cdot \text{LNASSETS}_{j,t} + \beta_6 \cdot \text{STATEOWN}_{j,t} + \beta_7 \cdot \text{CROSSLIS}_{j,t} + \beta_8 \cdot \text{LTDEBT} + \beta_9 \cdot \text{Y2000}_{j,t} + \dots + \beta_{16} \cdot \text{Y2008}_{j,t} + \beta_{17} \cdot \text{UTIL}_{j,t} + \beta_{18} \cdot \text{REALEST}_{j,t} + \beta_{19} \cdot \text{CONGL}_{j,t} + \beta_{20} \cdot \text{IND}_{j,t} + \beta_{21} \cdot \text{COMM}_{j,t} + e_{j,t}. \quad (3)$$

	Col. (a)	Col. (b)	Col. (c)	Col. (d)	Col. (e)	Col. (f)
	ROA	ROA	ROA	ROE	ROE	ROE
Intercept	−18.004*** (−8.840)	−17.754*** (−8.576)	−16.351*** (−7.904)	−23.871*** (−7.101)	−19.877*** (−4.168)	−17.605*** (−3.685)
WCEO	0.969** (2.283)	−20.664** (−2.252)	−20.310** (−2.225)	0.890 (0.924)	−67.946*** (−3.457)	−67.446*** (−3.439)
WDIRECT	−0.138 (−0.836)	−0.144 (−0.857)	−0.102 (−0.611)	−0.419 (−1.100)	−0.339 (−0.877)	−0.260 (−0.674)
WDIRECT*WCEO	–	−0.072 (−0.075)	−0.085 (−0.089)	–	−0.140 (−0.064)	−0.221 (−0.101)
AGE	0.005 (0.418)	0.004 (0.320)	0.008 (0.667)	−0.020 (−0.707)	−0.027 (−0.959)	−0.017 (−0.577)
LNTENURE	1.741*** (7.800)	1.727*** (7.580)	1.762*** (7.749)	2.514*** (4.750)	2.219*** (4.109)	2.281*** (4.226)
LNTENURE*WCEO	–	0.368 (0.329)	0.271 (0.242)	–	6.884*** (2.659)	6.755*** (2.613)
CEO*CHAIR	–	–	−0.149 (−0.599)	–	–	−0.573 (−1.000)
LNASSETS	0.815*** (11.784)	0.806*** (11.436)	0.754*** (10.677)	1.357*** (8.661)	1.263*** (7.879)	−1.169*** (7.261)
LNASSETS*WCEO	–	1.004** (2.303)	0.982** (2.265)	–	2.959*** (3.156)	2.925*** (3.126)
STATEOWN	0.013*** (3.700)	0.013*** (3.591)	−0.064*** (−5.699)	0.011 (1.394)	0.008 (1.048)	−0.128*** (−4.985)

STATEOWNSQ	–	–	0.001*** (6.977)	–	–	20.847*** (5.560)
STATEOWN *WCEO	–	0.010 (0.560)	0.016 (0.939)	–	0.003 (0.074)	0.016 (0.392)
CROSSLIS	–2.615*** (–4.205)	–1.106 (–0.814)	–0.637 (–0.470)	–5.240*** (–3.702)	–4.594 (–1.455)	–3.855 (–1.222)
CROSSLIS*STATEOWN	–	–0.033 (–1.204)	–0.039 (–1.408)	–	–0.024 (–0.367)	–0.030 (–0.465)
LTDEBT	–0.049*** (–5.355)	–0.049*** (–5.328)	–0.060*** (–4.318)	–0.0006 (–0.030)	–0.004 (–0.193)	–0.004 (–0.112)
LTDEBT*STATEOWN	–	–	0.0004 (1.286)	–	–	0.0001 (0.144)
UTIL	4.801*** (3.679)	4.839*** (3.703)	4.681*** (3.600)	–	1.388 (0.455)	1.171 (0.385)
REALEST	2.062 (1.567)	2.092 (1.588)	2.024 (1.544)	–	–1.879 (–0.611)	–1.944 (–0.634)
CONGL	2.786** (2.163)	2.814** (2.182)	2.692** (2.098)	–	–1.448 (–0.481)	–1.567 (–0.522)
IND	2.840** (2.225)	2.861** (2.240)	2.738** (2.155)	–	–1.511 (–0.506)	–1.637 (–0.550)
COMM	2.009 (1.537)	2.059 (1.573)	2.139 (1.644)	–	–1.869 (–0.612)	–1.622 (–0.532)
N	10,030	10,030	10030	10021	10021	10021
R Square Adjusted	0.054	0.053	0.059	0.020	0.022	0.025

For reasons of brevity the (eight) year dummy variables (Y2001–Y2008) and their coefficients are not reported in the above table. However, the results in the above reflect the inclusion of the respective year dummies.

Notes:

- (1) See Table 2 for variable definitions and the Notes to Tables 3 and 4;
- (2) All observations relating to the top and lower percentiles of the dependent variables are excluded from regression results;
- (3) Data for STATEOWN and LTDEBT all appear in % form;
- (4) STATEOWNSQ is equal to the square of STATEOWN; and
- (5) As in Table 4, we apply a “Period SUR” approach in all regressions to allow for standard error corrections to adjust for both heteroskedasticity and autocorrelation effects.
- (6) *, **, and *** indicate significant coefficients at the 10%, 5% and 1% levels, respectively.

state ownership (**H1b**), (2) the offshore listed-status of the company (**H2b**), (3) the participation of one or more female directors (**H3b**) and (4) the CEO's educational level.

As background, and as general confirmation of a gender earnings pay gap, a significant negative association exists between **LNREW** and **WCEO**. This finding is not altogether too surprising given evidence of a resilient gender pay gap internationally and, in particular, **Chen et al.'s (2011)** recent confirmation of such an outcome in respect of Chinese-listed entities' top-three executives.

The **STATEOWN*WCEO** interaction effect is pertinent to **H1b**. This variable has a positive (albeit weak) association with **LNREW**. This result suggests that female CEOs do not necessarily suffer in terms of take-home pay when holding leadership positions in state-owned enterprises. This outcome could be due to the overarching role of the state in 'correcting-for' or constraining gender pay differences. Ordinarily, one might expect a female CEO compensation premium, given the small number of women that make the ascent to the pinnacle of state-owned enterprise firms. However, correlations of **STATEOWN*WCEO** with variables for academic background, age and tenure appear relatively weak, and therefore offer little support for this contention.

In relation to a possible cross-listing effect, as postulated through **H2b**, the interaction term **CROSSLIS*WCEO** is pertinent. **Table 4(e)** suggests the absence of such an effect. However, the relatively small number of companies with offshore listings, allied to the preponderance of male CEOs across the whole sample, means that relatively few observations are available to examine this issue. Despite the rejection of **H2b**, the results offer some indication of a positive (though insignificant) association between offshore listing (**CROSSLIS**) and **LNREW**. This finding supports evidence in **Firth et al. (2007)** and **Chen et al. (2011)** in relation to 'foreign' share ownership. However, unlike prior studies, the present analysis focuses on foreign ownership exclusively through offshore listing and not via domestic B share listing.

The general evidence in **Table 4** runs broadly counter to **H3b**. Specifically, the **WCEO*WDIRECT** interaction effect appears to have little bearing on general CEO compensation levels. Despite higher levels of female CEO participation in companies where at least one female director is present, a coalescence of female leaders does not appear to drive increased female CEO remuneration.

Results in **Table 4** also fail to support hypothesis **H4b**. The lack of a significant association between interaction term **ACAD*WCEO and LNREW** runs counter to hypothesis (**H4b**). The data therefore offer little evidence to support the proposition that female CEOs benefit materially in compensation terms from incremental educational achievement. However, and as noted earlier, interpretation of this finding is limited by missing data items on the proxy variables for academic qualification.

Overall findings in **Table 4** also suggest that compensation (**LNREW**), across all CEOs (i.e., male and female) is increasing in the academic credentials (**ACAD**, **ACAD1** and **ACAD2**) and **AGE** of the CEO. These results also confirm recent findings in **Chen et al. (2011)**. In addition, a significant tenure effect (**LNTENURE**) emerges. Decisively, executive compensation appears significantly higher when the CEO also concurrently serves as chairperson. This helps extend findings in **Peng et al. (2007)** and **Cheng et al. (2010)** in relation to the role of the chair person on firm performance.

In keeping with international norms, and the recent Chinese evidence on the subject (**Firth et al., 2007; Chen et al., 2011; Conyon and He, 2011**), firm size (**LNASSETS**) and state ownership (**STATEOWN**) yield strong associations with **LNREW**. Specifically, executive compensation is significantly higher (lower) in larger (state-owned) firms. In addition, executive compensation appears to have a somewhat weak association with the underlying firm's return-on-assets (ROA). Despite this finding, the interaction term **ROA*WCEO** has a significant positive association with **LNREW**. This outcome suggests that women receive additional compensation when the firms they oversee register above-average profitability. Finally, overall results point to a marked increase in general CEO remuneration levels over the more recent 2005–8 period.

5.3. Findings relevant to hypothesis H5

Table 5 presents results relevant to hypothesis 5, which posits a positive association between CEO gender and firm performance. The results across the two performance measures (**ROA** and **ROE**) point to a mixed set of associations. Some evidence of a negative **WCEO**-firm performance association is apparent, but only in regressions including the important **WCEO*WDIRECT** and **WCEO*LNTENURE** interaction terms.

There is no evidence of a significant performance effect for firms with female CEO and at least one female director (WDIRECT*WCEO). This result provides an interesting twist on Miller and Triana's (2009) recent evidence for U.S. boards. Specifically, after controlling for the moderating effects of "innovation" and "reputation," they detect a positive association between the number of female board members and firm performance. The positive and significant coefficient on the **TENURE*WCEO** interaction term in relation to regressions featuring ROE in Table 5 (columns d and e) provides evidence consistent with a 'Glass Cliff' effect (Ryan and Haslam, 2005). In other words, greater corporate profitability is apparent in firms with a longstanding female CEO. The overall negative effect of the main WCEO effect, after controlling for the tenure interaction effect, is indicative of and consistent with the 'Glass Cliff' effect. However, certain reservations about the robustness of the effect are appropriate given the lack of significance of the **TENURE*WCEO** interaction term in regressions featuring the ROA dependent variable.

The desultory nature of results for **WCEO**, in regressions (a)–(f) of Table 5, points to only a limited gender–firm performance effect. Such findings strike a chord with the "mixed" results on offer in Cheng et al.'s (2010, p. 273) study of the effects of the chairperson's gender on the performance of Chinese-listed entities. In addition, we find no evidence of improved firm performance where the leading executive is both CEO and chairperson. This runs counter to results on the issue in relation to Peng et al.'s (2007) 1992–96 study frame. However, significant changes to China's corporate governance regime since likely account for the changing pattern of results. As suggested by Peng et al. (2007), were the juxtaposition of the two roles to give rise to improved firm performance, support for a "stewardship" (rather than "agency") effect would be signalled.

The present study's findings are however inconclusive in relation to the firm performance–state ownership (**STATEOWN**) association. Significant associations emerge when using the **ROA** dependent variable, but disappear when using **ROE**. Conventional agency cost arguments, as well as expropriation of minorities (in the form of "principal–principal" conflicts, see Young et al., 2008), would suggest a negative association. At the same time, Ng et al.'s (2009) empirical evidence informs us that very high state ownership levels translate to above-average performance in the China-market context. This is consistent with the state retaining the largest equity stakes in its most strategic and lucrative assets. As in Ng et al.'s (2009) study, we specify the square of a firm's state ownership percentage (**STATEOWNSQ**) as a separate explanatory variable. In regressions (Table 5, columns c and f), where both **STATEOWN** and **STATEOWNSQ** figure, a significant negative performance effect is apparent for **STATEOWN**. At the same time, the significant positive coefficient on **STATEOWNSQ** suggests that firms with very strong state control generate above-average levels of performance. The two findings together reaffirm Ng et al.'s (2009) earlier evidence of a convex association between state ownership and firm performance levels in Chinese-listed entities.

The present findings also offer some evidence of a negative cross-listing (**CROSSLIS**) effect on performance. This observation broadly corroborates Huang and Song's (2005) work on the post-IPO profitability of H-listed firms. A strongly positive firm size (**LNASSETS**) effect is also evident in relation to both performance measures.

Results for the **ROA** performance measure also suggest that firms with greater amounts of long-term debt tend to underperform. This could be due to the Chinese state's overarching role in the allocation of debt funding. The state's role in stabilizing employment and promoting regional harmony may mean that poorly performing firms, with established and sizeable pools of labour, receive priority in accessing bank funds. This outcome contradicts the conventional Ross (1977) signalling effect ascribed to bank lending. It also suggests that conventional agency arguments breakdown when applied to emerging markets, where bankruptcy laws, investor protection and governance mechanisms function at sub-optimal levels (Dhardwadkar et al., 2000; Le and O'Brien, 2010). Inclusion of the **LTDEBT*STATEOWN** interaction terms makes specific control for Le and O'Brien's (2010) contention that the Chinese state is likely to be more decisive in purging agency costs when it serves as both banker and owner. However, the lack of significance of the estimated coefficient on this interaction term (in Table 5, columns c and f) offers little support for this contention in the present set of results.

In summary, the present study's examination of the CEO gender–firm performance relation appears somewhat inconclusive, given the mixed results on offer. Notwithstanding the obvious endogeneity issue that plagues such assessments,⁷ a number of study limitations are also apparent. First, by using an unbalanced data

⁷ Resolution of this issue is potentially available through a Two-Stage Least Squares (2SLS) approach. However, the general robustness of such an approach hinges on the quality of instrument specified. This is especially problematic in the present context given the relatively low explanatory power associated with regressions featuring WCEO as dependent variable. Specifying a robust instrument for WCEO would therefore likely prove elusive.

panel, the present investigation only focuses on absolute performance levels (rather than year-on-year performance changes). A further limitation stems from the lack of assessment of senior officer interactions in Chinese-listed enterprises. However, [Kato and Long's \(2011\)](#) recent application of “tournament theory” to the issue of Chinese executive officer compensation provides some insight into this area. They conclude that, “the performance effect of the winner's prize is greater for China's listed firms that are less controlled by the state” ([Kato and Long, 2011, p. 1](#)). Arguments of this kind also beg the question as to how the ‘political connections’ of female CEOs impact on executive compensation levels. The absence of data on the CEO's equity stake and his or her relevant ties and relationships with other senior executives in the company, especially with the chairperson, also limit the interpretation of findings.

6. Conclusions

Based on a 9-year timeframe, 2000–8, the present study reveals that almost 4.5% of CEOs in China are women. This compares favourably to the U.S. picture, where around 4% of “Fortune 1000” firms boast a female CEO (see [Catalyst, 2012](#); and Note 2). This study uncovers a rising trend in the female participation rate in China, with women making up around 5.5% of Chinese CEOs in the most recent year of analysis (2008). This raises a profound question. Is China's relatively high (by international standards) female CEO rate reflective of Chinese authorities' attempts to promote gender-neutral hiring policies or is it one borne out of competitive processes unleashed by China's burgeoning private sector?

The rapid transformation of China's economy, and its evolving socio-political environment, suggests the interaction of two separate forces. The first one stems from the lingering protocols and direct interventions of the state; the second from competition instilled by a thriving private sector. The broad findings in this study suggest that women are much more likely to surface in firms with lower levels of state ownership. In addition, a female CEO is more likely to emerge where the firm in question has at least one female director on its board. However, a clear link between the gender of the CEO and offshore listing proved elusive. The same applies in regard of gender and academic credentials, though interpretation of this latter finding is limited somewhat by missing data items.

In terms of executive compensation, female CEOs in Chinese-listed firms receive less remuneration than males. This finding is consistent with [Chen et al.'s \(2011\)](#) recent evidence on top-executive pay in Chinese-listed firms. Another noteworthy result of the present endeavour is the inverse association between CEO compensation and state ownership (see [Firth et al., 2007](#); [Chen et al., 2011](#); [Conyon and He, 2011](#)). Some evidence of a positive executive compensation effect is also apparent in relation to international cross-listings and the CEO's general academic credentials. Interpretation of the positive association between a CEO's academic bona fides and gender is nonetheless limited by missing data on the academic background of many CEOs in our sample. Finally, overall results reveal a mixed and therefore inconclusive association between CEO gender and firm performance.

As an overview, the present study offers several important and decisive contributions. First, findings suggest that not only is female CEO representation in China at a relatively high level (by global standards), it is also on an upward trajectory. Second, China's private sector appears pivotal in nurturing this trend. Third, women are more likely to secure CEO positions in entities where other women hold directorship positions. Fourth, while a gender compensation gap is apparent, increasing levels of state ownership do not appear to have an adverse effect on female CEO compensation levels. Fifth, overseas listing does not appear to enhance female CEO participation, at least relative to non cross-listed firms; nor does it appear to foster increased female compensation. However, there is some limited evidence that cross-listing has a positive effect on overall CEO compensation levels. Sixth, and in contrast to international findings, we are unable to demonstrate (perhaps due to missing data) support for the notion that female CEOs have stronger academic bona fides than their male counterparts. Seventh, a decisive link between academic standing and the differential compensation of male and female CEOs proved elusive. Eighth, while a clear CEO gender–firm performance link is not apparent, firm performance in mainland Chinese-listed enterprises is strongly tied to factors relating to the balance of private/state ownership, firm size, debt position and, importantly, the tenure of the constituent CEO.

Acknowledgements

The authors would like to thank David Ahlstrom, Michael A. Firth, Richard D. F. Harris, Oliver M. Rui and Jay Ritter for their comments on earlier drafts of this paper. The authors also wish to acknowledge helpful

comments made by Ngo Hang Yue, during the initial stages of this study project, as well as the valuable comments of an anonymous reviewer.

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