The Long-run Performance of Chinese Private Firm IPOs

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Abstract

This paper examines the three-year long run performance of Initial Public Offerings (IPOs) in the Chinese stock markets from 2002 to 2012. We find that private firm IPO long-term returns are significantly higher than those of non-private firms, measured by both cumulative abnormal returns (CARs) and buy-and-hold abnormal returns (BHARs). Furthermore, the long-term performance of IPOs in the Chinese stock markets seems to have a significant upward tendency after the Non-tradable share (NTS) reform launched in 2005. However, private firm IPO long-run outperformance has experienced a diminishing increase after the NTS reform. This result indicates that state-owned enterprises turn to be more market-oriented after the NTS reform.

Keywords: Initial public offerings, Long-run performance, Private firms, Non-tradable share reform, China

JEL Codes: G32, G38

1. Introduction

Long-term performance of Initial Public Offerings (IPOs) has been a focus of finance research, and in general studies have found that IPOs underperform in the long-run up to three-year after listing (Ritter, 1991; Loughran & Ritter, 1995). However, different methods of measuring the long-run performance and different types of sample firms lead to different results (Lyon, Barber & Tsai, 1999; Megginson, Netter & Schwartz, 2000). IPOs in China, the second largest world economy, have their unique characteristics. Although most Chinese IPOs were Share Issue Privatizations (SIPs) of state-owned enterprises (SOEs) in 1990s after the establishment of the two Chinese stock markets, recently there is a new powerful group emerging - the private firm IPOs. Existing literature on Chinese IPO long-term performance mainly focuses on SIPs (Chan, Wang & Wei, 2004; Chi, Wang, & Young, 2010). To our knowledge, there is very limited research on the long-term performance of Chinese private firm IPOs. This paper fills in this gap.

This paper aims to investigate up to three-year long term performance of Chinese private and non-private IPOs which were listed between 2002 and 2012, using both buy-and-hold abnormal return (BHAR) and cumulative abnormal return (CAR) methods. The cross sectional analysis is used to examine the determinants of the IPO long-run performance. We particularly explore the impact of the Non-tradable share (NTS) reform on the IPO long-run performance, given that the NTS reform launched in 2005 is expected to change the ownership structure of Chinese listed firms significantly on one hand, and turn firms more market-oriented on the other. As most companies were state-owned companies before the establishment of the Chinese stock exchanges, to keep the control of these companies by the government, the majorities (roughly 60%) of the shares of Chinese listed firms were held by the government or by government controlled companies after SIPs. These government controlled shares are non-tradable shares, as they cannot be traded on the secondary markets. This split share structure has caused conflicts of interests between the controlling shareholders and minority shareholders and other problems in the Chinese markets, such as low liquidity, high volatility and difficulties of market innovation (Liu & Tian, 2012; Hou, Lee, Stathopoulos & Tong, 2013). The NTS reform launched in 2005 aims to make all the non-tradable shares become tradable gradually and provide further possibility of privatization (Liao, Liu & Wang, 2014).

We find that the long-run IPO performance of private firms outperforms that of non-private firms throughout one-, two- and three-year after listing. The results also show that IPOs which are listed on the venture board (also called ChiNext board) outperform those listed on the main board, while IPOs with high initial returns, high leverage and high P/E ratio at offering perform worse in the long-run. In addition, this paper provides evidence that the overall

Chinese IPO long-run performance increases significantly after the NTS reform. However, this increase is mainly driven by the non-private (or state-owned) firms, while the comparative performance advantage of private firm IPOs is disappearing after the reform.

This paper provides two major contributions to the literature. First, we compare the IPO long-run returns between private firms and non-private firms in China. To our knowledge, there is only limited study on this area, given that the development of private firm IPOs in China is a recent phenomenon. Second, we use the NTS reform as a natural shock on ownership arrangement and study the impact of the NTS reform on the IPO long-run performance of private vs. non-private firms. We find a positive impact of the reform on the IPO long-run performance, especially on non-private firm IPOs. This result is in line with the proposal that state ownership is less efficient at the firm-level (Shleifer & Vishny, 1997).

The remainder of this paper is organized as follows. Section 2 provides the literature review and hypothesis development. Section 3 describes the data and the methodology. Section 4 shows the empirical results and the impact of the NTS reform on the IPO long-run performance. Section 5 concludes.

2. Literature Review and Hypothesis Development

2.1 IPO long Run Performance of Private and State-owned Firms in Other Countries

Many empirical studies report that the long run performance of IPOs is underperformed. Using a sample of 1,526 US IPOs over 1975-84, Ritter (1991) reports that investing in IPOs at the end of the first trading day and holding them for 3 years would leave investors only 83 percent relative to each dollar in comparison with investing in a group of matching firms. Ritter (1991) also finds that small offers, firms with high-excess initial returns and young firms underperform more in the long-run. Levis (1993) examines the long-run performance of 712 UK IPOs issued during 1980 and 1988 and finds that underperformance is between 8% and 23% depending on the benchmark used; that IPO long-run underperformance in the UK market extends beyond 36 months; and that the firms with the higher initial returns have the worse subsequent performance. Besides evidence on the US and UK markets, significant underperformance has also been documented in many other countries with the exception of Korea (Kim, Krinsky & Lee, 1995) and Sweden (Loughran, Ritter & Rydqvist, 1994) where IPO companies outperform the market by 91.6% and 1.2% respectively.

Other matters found in the recent literature which could increase the IPO long-run performance include venture backed features in the US from 1972-1992 in Brav and Gompers (1996), private equity backed features in London and Paris between 1994 and 2004 in Bergstrom, Nilsson and Wahlberg (2006), more financing opportunity after IPOs in Germany for the period from 1977 to 1995 in Bessler and Thies (2007), and high level of multinationality in the UK from January 1991 to June 1995 in Goergen, Khurshed and Mudambi (2007).

As for the long-run performance of privatization IPOs (PIPOs) or share issue privatizations (SIPs), researchers find a different picture from that of private IPOs. Boubakri and Cosset (2000) study 120 SIPs from 26 developing countries, and document significantly positive long-run returns. Megginson, Netter and Schwartz (2000) examine the long-run buy-and-hold returns on 158 SIPs from 33 countries from 1981-1997. They compute one, three, and five-year net returns with respect to a variety of benchmarks, and find statistically significant positive net returns for all the SIPs for all holding periods against all benchmarks.

The long-run stock performance of PIPOs is consistent with the significant improvement of the financial and operating performance of PIPOs found in Megginson, Nash and Randenborgh (1994), Boubakri and Cosset (1998) and D'Souza and Megginson (1999), which all document economically and statistically significant increase in sales (output), profitability, efficiency and capital spending, coupled with significant declines in leverage after privatization.

2.2 Chinese IPO Long Run Performance and Hypothesis Development

Although most of Chinese IPOs in the early stage of the stock market development were state-owned firms before listing, the long-run performance of Chinese IPOs is mixed and overall less positive than the results found on PIPOs in the developed and other developing countries.

Chan, Wang and Wei (2004) investigate the long-term performance of 570 A- and 39 B-share IPOs in China during the 1993 and 1998 period. Their results show that Chinese A-share IPOs are underperformed, while B-share IPOs are slightly outperformed compared to the benchmark portfolios. However, Chi, Wang, and Young (2010) study the long term performance of 897 Chinese IPOs from 1996 to 2002, using CARs, BHARs and the Fama-French three-factor model, and find consistent positive long-run returns of the sample IPOs. Liu, Uchida and Gao (2012) study the

long-run stock performance of Chinese IPOs between 2000 and 2007, and find that IPO firms with political connections experience better long term performance as connections could bring firms preferential benefits. Finally, using the calendar-time factor-regression method and 245 monthly IPO portfolios from July 1992 to December 2012, Shen, Chen and Sun (2014) find that their measure for post-IPO three-year abnormal returns (the alpha) can vary from -1.15% to 0.49% per month, depending on factor and weighting specifications in the portfolio formation, and almost all alpha estimates do not differ from zero after correcting for the new listing bias, showing that Chinese IPOs do not underperform in the long run compared with their non-IPO counterparts.

The mixed results on long-run stock performance of Chinese IPOs are similar to those on operating performance change of these firms after listing. Sun and Tong (2003) study 634 SIP firms from 1994 to 1998 and find that there are improvements in absolute earnings, real sales and employee productivity after SIPs, while both return on sales and earnings on sales decrease significantly, which is known as the "profitability puzzle" in China. Moreover, based on 149 SIP firms from 1998 to 2003, Jiang, Yue and Zhao (2009) confirm that the absolute level of SIP firm profitability decreases after the privatization.

In recent years, private firms have developed into an important part of China's economy and more and more Chinese IPOs are private firms, rather than SIPs. From 2002 to 2010, the proportion of non-state controlled firms among all public companies in China increased from approximately 18% to more than 70% (Wang, Cao, Liu, Tang, and Tian, 2015). Although studies on these private firm IPOs are limited to our knowledge, some researchers investigate the performance of Chinese private listed firms and find in general private firms outperform state-owned listed firms.

Hess, Gunasekarage and Hovey (2010) study the relationship between the ownership structure and firm value (measured by Tobin's Q) of Chinese listed firms during 2000 and 2004 and find a positive relationship between large private block-holdings and firm's value. Tong and Junarsin (2013) examines the characteristics of board structure that affect Chinese listed firm's financial performance using a sample of 871 firms with 699 observations of previously private firms and 1,914 observations of previously SOE firms. Their main finding is that previously private firms outperform previously SOE firms in China after IPOs, as previously SOE firms might face difficulties adjusting to professional business practices with less government support after listing. On the other hand, professional acumen, combined with efficiency and favorable business climate created by the government have probably led the previously private firms to improve their values stronger and faster after listing. Finally, using a sample of Chinese manufacturing firms from 2000 to 2005, Li, Lin and Selover (2014) compare the performance of Chinese SOEs and private firms in terms of rates of return, productivity, growth, costs and investment. They find that Chinese industrial SOEs are, indeed, less efficient than private firms and pay less attention to costs, inventories, accounts receivables, investment, employee welfare, financing and administration, leading to poorer performance of these SOEs.

Given that these papers find that private firms perform better and more efficiently than state-owned firms in China, we propose our null and alternative hypotheses as follows.

H_0: Private firm IPOs perform similarly in the long-run as state-owned IPOs in the Chinese stock markets.

H_a: Private firm IPOs perform better in the long-run than state-owned IPOs in the Chinese stock markets.

3. Data and Methodology

3.1 Data

The purpose of this research is to analyze the long run performance of Chinese private firms' IPOs vs. non-private firms' IPOs. Given the complexity of the ownership structure in Chinese listed firms, we want to make sure our private firm IPO sample is strictly privately owned. In this paper, we define a private firm as a firm's largest shareholder at the IPO is an independent individual or a family which also remains as the ultimate controller of this firm at the end of 2013.

The sample consists of 1,408 IPOs firms in China from 2002-2012. The data is collected from the CSMAR (China Stock Market & Accounting Research) Database. The companies are listed on the Shanghai Stock Exchange (SHSE), the Shenzhen Stock Exchange (SZSE), the Small and Medium Enterprises (SME) board and the Venture Board (also called ChiNext). 121 firms are omitted due to missing data. The final sample consists of 1,287 IPOs.

Table 1. The distribution of our sample based on listing years, industries and listing boards

Panel A		**Panel B**	
Year-dummy	Numbers	Industry-dummy	Numbers
		Finance	24
2002	55	Utilities	195
2003	65	Real estate	38
2004	96	Integration	38
2005	14	Manufacturing	958
2006	60	Business	34
2007	121	Total	1,287
2008	72	**Panel C**	
2009	94	Broad-dummy	Numbers
2010	337	SHSE	287
2011	238	SZSE	1
2012	135	CHINEXT	659
Total	1,287	SME	340
		Total	1,287

Table 1 provides the distribution of our sample based on listing years, industries and listing boards. Panel A shows a rapid increase of IPOs after the year of 2009, which is due to the founding of the venture board in China. Panel C indicates the majorities of IPOs during the sample period are listed in the SME or ChiNext board. In comparison with the main board (SHSE and SZSE), SME and ChiNext boards have much higher proportion of private firms than state-owned listed firms.

3.2 Calculating IPO Long-run Performance

Following Ritter (1991), we first calculate three-year (36 months excluding the first trading month) cumulative abnormal returns and buy-and-hold abnormal returns for our sample firms. The monthly return is the difference between the closing price on the last trading day of the month and that of the previous month. The benchmark-adjusted return for stock *i* in event month *t* is defined as:

$$ar_{it} = r_{it} - r_{mt} \tag{1}$$

Where r_{it} is the monthly stock return; and the r_{mt} is the monthly corresponding market index return. We use the Shanghai and Shenzhen A-share composite indexes as our benchmarks. The average benchmark-adjusted return on a portfolio of n stocks for the event month *t* is the arithmetic average of the benchmark-adjusted returns:

$$AR_t = \frac{1}{n}\sum_{i=1}^{n} ar_{it} \tag{2}$$

The cumulative abnormal return from event month *s* to event month *k* is the sum of the average benchmark-adjusted returns:

$$CAR_{s,k} = \sum_{t=s}^{k} AR_t \tag{3}$$

The market adjusted buy-and-hold return is defined as:

$$BHAR_{iT} = \prod_{t=1}^{T}(1+r_{it}) - \prod_{t=1}^{T}[1+r_{mt}] \tag{4}$$

The mean BHARs is considered as the arithmetic average of BHARs.

$$\overline{BHAR} = \frac{1}{n}\sum_{i=1}^{n} BHAR_{iT} \tag{5}$$

3.3 The Regression Method

To examine the conceivable explanations for the long-run performance of Chinese IPOs, we use a cross-sectional model. The regression model we use to evaluate the long-run IPO performance is demonstrated as follows:

$$BHAR_i \text{ or } CAR_i = a_i + b_1*PRIVATE_i + b_2*AGE_i + b_3*IR_i + b_4*LEV_i + b_5*PE_i + b_6*ROA_i + b_7*OFFERING\_SIZE_i + b_8*CHINEXT_i + b_9*SME_i + b_{10}*YEAR_i + b_{11}*INDUSTRY_i + e_i \quad (6)$$

Table 2. Description of variables

Variables	Excepted Sign	Description
PRIVATE	+	It equals to one when the firm is private, and equals to zero otherwise.
AGE	+	It is the number of years that the firm had existed before an IPO. It reflects the operating history of the IPO firm.
IR	-	It is the market adjusted initial return on listing day.
LEV	-	The amount of debt used to finance a firm's assets, which refers to debt divided by assets before the IPO.
PE	-	It refers to the P/E ratio of offering price.
ROA		It is return on assets in the year prior to an IPO; it equals to Net Income/Total Assets.
OFFERING_SIZE		It refers to the logarithm of the offering size (number of shares * offering price) of the IPO.
CHINEXT	+	It equals to one, when a firm is listed on the ChiNext board, otherwise equals to zero.
SME	+	It equals to one, when a firm is listed on the SME board, otherwise equals to zero.
Year dummy		It refers to the year of listing (from 2002 to 2013)
Industry dummy		It refers to the industry of a firm (Finance, Utilities, Real estate, Integration, Manufacturing, Business)
REFORM	+	It equals to one, when a firm is listed after 2006 (include 2006), otherwise equals to zero.

Table 2 reports the variable descriptions and their expected signs in the regression. The private dummy (PRIVATE) is our main variable in the regression, which equals to one when a firm is privately owned, and zero otherwise. Based on our alternative hypothesis, we believe that there is a positive relationship between the private dummy and the long run IPO performance.

The firm age (AGE) refers to the difference between the year of the founding and the year of going public. Ritter (1991) and Bhabra and Pettway (2003) find that younger firm IPOs perform worse than old firms in the long run as young firms generally have more ex ante risk than established firms. Similarly, we expect a positive relationship between AGE and the long-run IPO returns.

The initial returns (IR) on the listing day are utilized as a measure of over optimism. In general, researchers find a negative relationship between initial returns and long-term performance of IPOs (Ritter, 1991; Sahoo and Rajib, 2010), as the higher the initial returns, the more frequent is the subsequent correction in prices, resulting in lower long-run performance. Thus, we expect that initial returns are negatively related to the IPO long-run performance.

Leverage (LEV) measures the risk of firms. We measure leverage as total debt to total assets one year prior to IPOs. Obreja (2006) states that a high leverage would lead to a reduction of IPOs' long term returns, as it increases the firm risk and with high cost of capital the productivity of the firm would reduce. Therefore, we expect that the leverage of the sample firms would have a negative relation with the IPO firms' long term returns.

P/E ratio (PE) is a valuation ratio of a company's offering price compared to its per-share earnings, which represents investors' willingness to pay for per dollar earnings and their optimistic expectations on the growth of firms. Purnanandam and Swaminathan (2004) find that "overvalued" (high offer price - to - value) IPOs often generate low long-run returns. Therefore, we expect that there is a negative relation between P/E ratio and IPO long term returns.

We use return on assets (ROA) prior to IPOs and offering sizes (OFFERING_SIZE) to control for the operating performance and size effect of IPOs. However, given the stock returns are for three-year after IPOs, the relationship between ROA prior to IPOs and IPO long-run performance could be weak.

Other control variables include listing board dummies, year dummies and industry dummies. We use CHINEXT and

SME dummies to examine whether there is any difference of long run performance of IPOs which are listed on the ChiNext broad or the SME board. The year dummies show the listing year of IPOs from 2002 to 2012, and the industry dummies control for the industry that an IPO belongs to.

4. Empirical Results and the Impact of the NTS Reform on IPO Long-run Performance

4.1 Empirical Results

We report the empirical results of the study in this section.

Table 3. A comparison of long-run performance (BHAR and CAR) of private vs. non-private firms in three-year after listing

	Variable	No.	Mean	Mean Difference (t-test)	Median	Median Difference (Wilcoxon test)
1-year						
BHAR	Non-private	880	-0.1122		-0.1237	
	Private	511	0.8955	1.0077***	0.7952	0.9189***
CAR	Non-private	880	-0.0063		-0.0094	
	Private	511	0.0007	0.0070***	-0.0037	0.0057***
2-year						
BHAR	Non-private	874	-0.0377		-0.1274	
	Private	502	1.1446	1.1823***	0.9994	1.1268***
CAR	Non-private	874	-0.0003		-0.0025	
	Private	502	0.0065	0.0068***	0.0032	0.0057***
3-year						
BHAR	Non-private	777	0.011		-0.1315	
	Private	411	0.4819	0.4709***	0.6004	0.7319***
CAR	Non-private	777	0.0022		0.0003	
	Private	411	0.0075	0.0053***	0.0061	0.0058***

A superscript *, ** or *** indicates significance at the 10%, 5% or 1% level, respectively.

Table 3 presents the mean and median BHAR and CAR during the three-year after listing for private and non-private IPOs. Due to some sample firms not having 36 months' returns, the observations reduce from the first year returns to the third year. We can see that most mean and median BHARs and CARs of our private IPO sample are positive, while those of our non-private sample are negative. It is evident that all the mean and median return differences between private and non-private IPOs are positive and statistically significant (we use t-test for mean difference and the Wilcoxon test for median difference), indicating our private IPO sample outperforms our non-private IPO sample in one-, two- and three-year after listing.

Table 4. Statistical summary of the independent variables from the period between 2002 and 2012

	Mean	Median	Maximum	Minimum	Std. Dev.
PRIVATE	0.3730	0	1	0	0.4838
AGE	7.4429	6.8137	27.4411	0.2247	4.6472
IR	0.6716	0.4499	6.0802	-0.1864	0.7666
LEV	0.5487	0.5615	1.1371	0.0465	0.1720
PE	61.9618	54.9	223.1100	7.2300	32.0149
ROA	0.1185	0.0977	0.7893	0.0009	0.0817
OFFERING_SIZE	8.7673	8.716	10.8359	7.5877	0.3933
CHINEXT	0.2642	0	1	0	0.4411
SME	0.5120	1	1	0	0.500
REFORM	0.8213	1	1	0	0.3833

Table 4 displays the statistical summary of the independent variables for the period between 2002 and 2012. The results show that the private IPOs account for 37.3 percent of the total sample. The average age of IPO firms is 7.44 years, and the average initial return is 0.67 with a minimum value of -0.19, indicating that not all firms have positive initial returns in China. The average leverage ratio is 0.55; the mean value of offering P/E ratio is 61.96 and the average ROA is 0.12.

Table 5. Correlation coefficients of the independent variables in the regression analysis

		A	B	C	D	E	F	G	H	I
AGE	A	1								
PRIVATE	B	0.079	1							
Initial returns	C	-0.156	-0.119	1						
P/E Ratio	D	-0.048	0.075	0.489	1					
LEV	E	-0.008	-0.098	-0.023	-0.065	1				
ROA	F	-0.036	0.224	-0.131	0.048	-0.561	1			
Offering size	G	0.100	-0.07	-0.386	-0.005	0.241	-0.021	1		
ChiNext	H	0.153	0.267	-0.257	0.161	-0.223	0.257	-0.027	1	
Reform	I	0.275	0.259	-0.132	0.168	0.018	0.136	0.282	0.280	1

A superscript *, ** or *** indicates significance at the 10%, 5% or 1% level, respectively.

Table 5 reports correlation coefficients of the independent variables. Our results show that there is no evidence of multicollinearity issue in our regression.

Table 6. Regression analysis of BHARs and CARs within three years after IPOs

Variable	BHAR1	BHAR2	BHAR3	CAR1	CAR2	CAR3
Constant	-1.2418	0.1693	0.5642	-0.0551*	0.0469***	0.0885***
PRIVATE	0.9985***	1.0585***	0.2808*	0.0054***	0.0042***	0.0011
AGE	-0.0029	0.0001	0.0057	0.0000	0.0000	0.0000
IR	-0.0364	0.0701*	-0.1083	-0.0014	-0.0023*	-0.0027**
LEV	-0.1790**	-0.3197**	-0.0851	-0.0067	-0.0061	-0.0067*
PE	-0.0017***	-0.0024***	-0.0010	-0.0001***	-0.0001***	0.0000
ROA	-0.0846	-0.6125**	-0.6572	0.0038	-0.0087	0.0047
OFFERING_SIZE	0.1537***	0.0462	-0.0037	0.0070**	-0.0025	-0.0071***
CHINEXT	0.1274**	0.4218***	0.9256**	0.0093**	0.0052**	0.0010
SME	0.0956	0.3060***	0.1600	0.0076**	0.0028	-0.0013
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummy	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.5245	0.5764	0.1203	0.1462	0.2170	0.1693
Observations	1,287	1,286	1,275	1,287	1,286	1,275

A superscript *, ** or *** indicates significance at the 10%, 5% or 1% level, respectively.

Table 6 demonstrates the regression results of the BHAR and CAR for one to three years after listing. BHAR1 (2, 3) stands for the BHAR of one (two, three) year(s) after listing, while CAR1 (2, 3) stands for the CAR of one (two, three) year(s) after listing. The coefficient standard errors of heteroscedasticity are all adjusted by the white test (1980). We can see that the coefficients of the private dummy are consistently positive and statistically significant, indicating that our alternative hypothesis is supported and private firm IPOs outperform non-private firm IPOs in one-, two- and three-years after listing measured by both BHARs and CARs. Our results are consistent with Tong and Junarsin (2013), although their focus is the financial performance of private vs. state-owned firms after IPOs.

Another variable with consistently significant and positive coefficients is the ChiNext dummy, showing that the IPOs listed on the ChiNext board outperform IPOs listed on other boards in China. The companies listed on the ChiNext board are mainly small or high-tech firms. With higher level of risk these firms face, the higher stock returns are expected. Our results are similar to Chi, Wang and Young (2010), which find that IPO companies that have high-tech features perform better in the long run than other companies in China. They attribute this result to the high risk and good future prospects related to high-tech firms.

In contrast, Table 6 shows that the coefficients of initial returns, leverage and offering P/E ratio variables are statistically negatively significant in most regressions, indicating that high initial returns, high leverage and high offering P/E ratio lead to low long-run performance of IPOs. These results are similar to our expectations and results in Ritter (1991), Obreja (2006) and Purnanandam and Swaminathan (2004).

4.2 The NTS Reform and Long-run Performance of Chinese IPOs

After obtaining the basic results on how private IPO firms perform in the long-run in comparison with non-private IPO firms and the factors that influence Chinese IPO long-run performance, we further study the impact of a recent important regulation change in the Chinese markets (the NTS reform) on IPO long-run performance.

In the Chinese stock markets, due to the features of partial privatization and partial trading of the first round SIPs, the shares of listed firms are classified into two types, tradable and non-tradable shares. Non-tradable shares normally refer to state-owned shares, legal-person shares, management shares and employee shares, which count for about two thirds in the early stage of the Chinese stock markets. As the purchasing value of non-tradable shares is much lower than that of tradable shares, the non-tradable shares cannot be traded in the secondary market, and they can only be transferred or auctioned with the approval of the government at discounted prices. Tradable shares count for one third of total shares of firms, and are owned by individual shareholders and institutional shareholders and can be traded in the secondary market. As the Chinese economy was centrally planned economy controlled by the government before the founding of the two stock markets in China, the government deliberately chooses to control listed companies through non-tradable shares in order to achieve some social or political goals (Hou and Lee, 2012). However, this split share structure leads to many problems in the Chinese markets. As Beltratti, Bortolotti and Caccavaio (2012) point out, there are several drawbacks of this split share structure: 1) the management decisions are made by few controlling shareholders who hold non-tradable shares; 2) due to the trading restriction, the non-tradable shareholders do not care much about the market price changes (or value maximization) of the tradable shares of this firm; 3) the split share structure causes excessive volatility and illiquidity in the Chinese stock markets; and 4) the poor market environment has led big companies issuing shares in overseas markets and choosing overseas listing. Therefore, to solve these severe problems in the Chinese stock markets, the Chinese government carried out the NTS reform in 2005 during which non-tradable shareholders pay certain compensations to tradable shareholders in exchange of the non-tradable shares becoming tradable gradually.

Some research finds that the NTS reform has improved market liquidity, corporate performance and corporate governance in the Chinese markets. Hou, Kuo and Lee (2012) claim that the asymmetric information risk has been reduced as the result of the NTS reform and investors of the Chinese listed firms benefit from this reform. Liao, Liu and Wang (2014) and Chi, Liao and Li (2014) compare the changes in output, profitability, employment and productivity of Chinese listed firms before and after the NTS reform, and both studies find that the NTS reform increases firm output, profitability and employment. Kuo, Ning and Song (2014) study the impacts of the NTS reform on Chinese firm corporate governance, and find that the reform creates an incentive alignment between the controlling and minority shareholders and strengthens the firm corporate governance in a weak investor protection environment.

Therefore, we believe that Chinese IPO long-run performance would overall increase after the NTS reform, due to the improvement of the firm corporate governance and operating performance and the development of the market orientation. However, we also expect that the increase of the IPO long-run performance will be more obvious among non-private firms than private firms, given that the main target of this reform is non-private (or state-owned) firms (Liao, Liu & Wang, 2014).

In order to test the relationship between the reform and the IPO long run performance, we employ a reform dummy, which equals one if firms issued IPOs in or after 2006, otherwise zero. We expect a positive coefficient for this reform dummy in the regression analysis. We also use an interaction variable (private × reform) to see how private firm IPO long-run performance changes after the reform, and we do expect that private firm IPOs' long-run outperformance reduces after the reform.

The new regression model is demonstrated in the following. Taking into account of the multicollinearity issue, we exclude the year dummies in this model.

$$BHAR_i \text{ or } CAR_i = a_i + b_1*PRIVATE_i + b_2*REFORM_i + b_3*(PRIVATE \times REFORM_i) + b_4*AGE_i + b_5*IR_i + b_6*LEV_i + b_7*PE_i + b_8*ROA_i + b_9*OFFERING\_SIZE_i + b_{10}*CHINEXT_i + b_{11}*SME_i + b_{12}*INDUSTRY_i + e_i \quad (7)$$

Table 7. Regression analysis of BHARs and CARs within three years after IPOs (with added NTS reform dummy and the interaction)

	BHAR1	BHAR2	BHAR3	CAR1	CAR2	CAR3
Constant	-1.7583***	0.4373	1.785	-0.0722**	0.0460**	0.0744***
PRIVATE	0.7308***	1.3636***	3.3113***	0.0246***	0.0215***	0.0091**
REFORM	-0.1689**	0.2141*	0.3682	-0.0021	0.0097***	0.0126***
PRIVATE*REFORM	0.2944***	-0.2809	-3.2263***	-0.0195***	-0.0180***	-0.0073**
AGE	-0.0004	0.0062*	0.0132	0.0001	0.0002*	0.0002
IR	-0.0007	0.1654***	-0.0752	0.0014	0.0016	-0.0003
LEV	-0.143	-0.3177**	-0.2809	-0.0057	-0.007	-0.006
PE	-0.0019***	-0.0047***	-0.0036**	-0.0002***	-0.0002***	-0.0001***
ROA	0.0881	-0.4920*	-1.0284	0.009	-0.0067	0.0052
OFFERING_SIZE	0.1914***	-0.031	-0.1756	0.0075**	-0.0044**	-0.0075***
CHINEXT	0.1936***	0.2846***	0.6690**	0.0112***	0.004	-0.0001
SME	0.1353**	0.0787	-0.2399	0.0065**	-0.0012	-0.0042**
Industry dummy	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.481	0.4685	0.1384	0.0534	0.1081	0.0873
Observations	1,287	1,286	1,275	1,287	1,286	1,275

A superscript *, ** or *** indicates significance at the 10%, 5% or 1% level, respectively.

Table 7 shows the regression results with the added reform dummy and the interaction variables. All coefficients of the private dummy variable still remain significantly positive at the 5% or 1% level. The results show that most coefficients of the reform dummy are positive and statistically significant, particularly in the two- and three-year return regressions, indicating that Chinese IPO long-run performance overall improves after the NTS reform. However, most coefficients of the interaction variable are significantly negative, showing that the comparative advantage of the long-run performance of private IPO sample disappears after the reform. These results are the same as our expectations.

Hou, Kuo and Lee (2012) claim that the NTS reform improves the informative-ness of share prices for firms with high state-owned shares and leads to a decline in the cost of capital and a better firm performance. Liao, Liu and Wang (2014) find that the NTS reform increases firm output, profitability and efficiency and the improvement was more obvious in the state-owned firms. Similar to their findings, our paper shows that the overall Chinese IPO long-run performance has increased after the NTS reform, and comparatively speaking, the improvement has shown more obviously within the non-private firms.

In addition, Table 7 shows that the results on other independent variables remain similar to those in Table 6.

5. Conclusion

This study examines the long run performance of 1,287 A-share Chinese IPOs which were listed during the period from 2002 to 2012. We find that the mean and median differences of BHARs and CARs between private firm IPOs and non-private firm IPOs in three-year after listing are all positive and statistically significant at the one percent level, indicating that private firms have significantly higher long-run returns than non-private firms after IPOs.

We further analyzed the determinants of the IPO long term performance. The results of the cross-sectional regression analysis show that the private and high-tech features of listed firms and the NTS reform launched in 2005 all have significant and positive impact on the three-year long run returns of Chinese IPOs measured by both BHARs and

CARs. However, initial returns, leverage and offering P/E ratios have partially significantly negative impact on the long run performance of Chinese IPOs. The results from this study also provide the evidence that private firms outperform non-private firms in the long term after IPOs, but this trend is lessening after the NTS reform. Our results indicate that state ownership is less efficient compared to private ownership, and the NTS reform has turned SOEs more market-oriented.

While we find some interesting results in this paper, there are several limitations which could be addressed in the future research. First, the measurements of IPO long-run performance can be various. Barber and Lyon (1997), Lyon, Barber and Tsai (1999), Loughran and Ritter (2000) and Cooli, L'Her and Suret (2006) argue that the size of the abnormal returns and the power of the statistical tests are affected by measurement techniques of IPO long-run performance, including CAR vs. BHAR, equally-weighted vs. value-weighted returns, and the use of portfolio or control firms. Future research can use alternative measurements to confirm the robustness of the results. Nevertheless, as pointed out by Fama (1998), all estimations of abnormal returns in the long-run are subject to problems arising from the poor specification of the models and there is no optimal method which can minimize all these problems. Second, with more data available, future research could consider investigating the impact of change of state-ownership after the NTS reform on IPO long-run performance to provide more detailed analysis on this research area.

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The Effects of CEO Power on Firm Value: Evidence from the Financial Crisis of 2008

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Abstract

We examine the impact of Chief Executive Officer (CEO) power on the variability of firm value under an exogenous financial crisis. We apply our analysis to 298 financial service firms and find that financial service firms with more powerful CEOs influence higher firm value under the financial crisis by developing sophisticated measures of CEO power. Our interpretation is that firms with powerful CEOs invest more efficiently, and thus generate greater profitability when firms are exposed to the harsh shock and need sophisticated decision making of CEOs. Finally, powerful CEOs are likely to connect the government for TARP funding under the crisis and increase more positive impact on firm value for TARP firms than non-TARP firms. Our study contribute to the discussion about the importance of powerful CEOs with individual decision-making power in a post-crisis period where policy makers, analysts, and investors are concerned.

Keywords: CEO power, Firm value, Financial crisis, TARP, Individual decision making

1. Introduction

Chief Executive Officer (CEO) managerial power has attracted attention since the global financial crisis, because CEO specific-effect matters for firm policies and investment management (Bertrand and Schoar, 2003; Koo, 2015). Agency theorists provide that CEO power influences the board of directors for managerial compensation strongly (Bebchuck and Fried, 2004). Bebchuk, Cremers, and Peye (2011) argue that CEO power reduces firm performance negatively. The general consensus is that powerful CEOs extract their compensation from firms and reduce the relation between firm performance and their compensation when CEOs have abnormal power (Bebchuk and Fried, 2004; Landier, Sraer, and Thesmar, 2008). Another argument provides the contrasting view of the effect of CEO power. Powerful CEOs with higher ownership are likely to manage firms in align with shareholder interests (Jensen and Meckling, 1976). Adams, Almeida and Ferreira (2005) provide that positive performance variabilities are more severe by powerful CEOs. Given the importance of CEO power, it is surprising that such little research exists about the potential effects of CEO power. Thus, we examine the impact of CEO power on firm value under an exogenous shock.

Business environment influences top executive's managerial discretion, and the firm outcomes (Finkelstein and Hambrick, 1996). Outside shocks could impel CEOs to behave more efficiently for long-term survivals. Dowell, Shackell, and Stuart (2011) provide that CEO power positively influences the firm outcomes when firms face a negative shock. CEO power can bring more benefits in non-stable periods than in stable times (Haleblian and Finkelstein, 1993). The net potential effects of powerful CEOs are likely to have benefits of individual decision-making to dismiss sudden negative firm performance without inputs from the board because collective decision-making with a balanced power facilitate costly information sharing in non-stable times. Thus, firms facing a financial turmoil are likely to need powerful CEOs for the positive variabilities of firm value. Despite the corporate finance literature on CEO power, and the growing literature on the financial crisis, the impact of powerful CEOs on firm outcomes under negative outside shocks has been ignored. Thus, the goal of this study is to provide the impact of powerful CEO effectiveness under the financial shock by examining the CEO power on firm value on setting in which the financial service firms have industry downturns. More specifically, we hypothesize that firms with powerful CEOs exert positive firm value when firms face unanticipated negative shocks or the extreme situations. In

our empirical analyses, we construct our variables to capture the CEO power and firm characteristics during the financial crisis.

The recent financial crisis provides a good opportunity to investigate the effect of CEO power under a negative shock. The financial crisis leads to increase uncertainty and illiquidity in financial institutions (Ivashina and Sharfstein 2010). It constrains investment and more debt for investment purposes, thus reducing firm value in financial institutions unexpectedly. It has severe consequences on management (Campello, Graham, and Harvey, 2010). This means that such shock is out of the control of any CEO in the financial industry. Firms may face cash shortages and overdue debt repayments. The application and management of a powerful CEO is much different in financial distress compared to in stable times. Thus, financial institutions need more CEO power during the financial crisis, because powerful CEOs would exert extreme management to get successful certification of management by motivating firms' investment and dictating higher internal control without collective decision-making.

The TARP recipients have attracted attention because of the CEO excessive risk-taking and bank rescue attempts during the crisis period in 2007-2009. Therefore, many investors and professionals are curious about whether powerful CEOs in firms in the financial industry would relate to TARP firms getting the TARP funds from the U.S. Treasury which was signed into law on October 3, 2008 after Lehman's collapse (Note 1). To investigate the impact of CEO power on firm value under a negative shock, we focus on financial service firms including TARP firms during the 2007-2009 period. This setting allows us to help our empirical questions.

Many officials have acknowledged a little of transparency in the TARP funds' decisions (Note 2). Thousands of financial institutions applied for TARP funds (Note 3). It's implausible that TARP applications are randomly assigned to financial institutions. As a result, powerful CEOs in TARP firms with strong politically connecting the government are positively related to the likelihood of receiving TARP funds. In other words, CEO power is likely to enhance the probabilities of receiving TARP money and amplifying firm value, and then is very critical during the financial crisis. Using a sample of financial service firms, our study split the subsample between the TARP recipients and non-TARP recipients. To recognize the net effect of powerful CEOs, we also compare the subsamples of powerful CEOs and non-powerful CEOs in the financial service firms.

Consistent with our hypotheses, our results show that CEO power positively influence firm value by using resources and political connection. More specifically, the results provide that financial service firms with powerful CEOs exert more positive variabilities of firm value and TARP funding. In robustness analyses, we consider alternative explanations that powerful CEOs extract more managerial compensation due to agency theory. This rationalize why powerful CEOs would earn more compensation. To confirm the evidence, we examine the analysis including CEO total compensation. The results do not change our hypotheses. We also consider alternative measures of firm value and CEO power. To confirm our findings we investigate the analysis after including firm performance and individual CEO power measures. The finding remain similar.

In summary, we makes two main contributions to the literature by showing that CEO power influences firm outcomes and extending Dowell et al. (2011) (Note 4). First, to the best of our knowledge, this paper is the first empirical analysis that firms with more powerful CEOs influence firm value positively under a negative shock by quantifying measures of CEO power. More specifically, under the concentrated versus collective decision-making debate, firms with concentrated powerful individual overcome a negative crisis better than firms with balanced power board. We add to extant literature by exploring the powerful CEOs' management under an exogenous shock. Second, the study provides the effect of CEO power on the TARP recipients which those probably are the weighted reason of getting the TARP funds under the global financial crisis. We investigate the net impact of CEO power between TARP firms and non-TARP firms in terms of firm value. Thus, this study contributes to an understanding of the benefits of CEO power with political connection in regulated industries for investment funding. The remainder of this paper is organized as follows. Section 2 presents a literature review and develops hypotheses. Section 3 discusses data and research designs. Section 4 provides empirical results. Section 5 conclude.

2. Literature review and Hypothesis

Powerful CEOs could be prone to have the professional knowledge, experience and change ongoing firm management by overconfidence of their own abilities. Thus, this study for impact of CEO power is related to two streams of research. The first stream of research examines whether CEO idiosyncrasies influence the variabilities of firm value. Within this literature, we focused on CEO power as one of important characteristics, because CEO characteristics matter for a wide range of firm ongoing management (Bertrand and Schoar, 2003; Koo, 2015). Second, in the light of the importance of CEO power, this study consider the specific environment as an exogenous financial crisis, because firm environments limit the scope of management (Hannan and Freeman, 1977).

An important characteristics of powerful CEO is the sole decision-making discretion. Firms with collective decision-making power make moderate decision as a consequence of the social dynamics. The result of group decision-making is predictable by a compromise (Adams and Ferreira, 2010). But, firms with powerful individuals are more likely to make extreme decisions positively or negatively without a cooperation, because powerful individuals is not unchallenged by other executive members (Adames et al., 2005). As a result, CEO power should influence greater variance of firm outcomes.

Powerful CEOs strongly affect the management of firms under the global financial crisis, and this topic is the motivation to this paper. In stable times, the net effect of CEO power could be insignificant or negatively significant but in turmoil times the benefits (or costs) of a CEO power become important. When firms face a turbulent shock, CEO power may be overturned. Firms in turbulent times need more urgent managerial discretion than firms in stable times because collective decision-making facilitate information sharing slowly and discordantly (Haleblian and Finkelstein, 1993). When firms need powerful CEOs' quick judgements, CEO power can have a positive impact on performance (Harris and Helfat, 1998; Coles, Daniel, and Naveen, 2008). The more a firm has CEO power, the getter its public attention under the economic shock, and then the net effect of a powerful CEO for firm value will be revealed when business environment deteriorate. Thus, we focus on the global financial crisis in which CEOs have difficulty of predicting or managing the sudden changing environment when a huge exogenous shock is out of control of any CEO or firm.

Hambrick and Mason (1984) argue that top management leadership power drive organizations evolutionally. The more firms have powerful CEOs, the more the CEO have managerial discretion to influence critical decisions which directly affect firm outcomes under the economic shock (Fast, Sivanathan, Mayer, and Galinsky, 2012). We assume that powerful CEOs could weigh the costs and benefits of the crucial decision early, and then they exert high-quality decisions under the industry crisis. To extend the above literature, we argue that CEO power is likely to influence positive variability of firm value in regulated industries when firms face a negative exogenous shock. Therefore, we hypothesize that CEOs who hold great power are more likely to increase firm values positively in unstable times. We also hypothesize that CEOs who hold greater power in the market are more likely to increase firm values by infusing the TARP funds from the government. In this section, we review the literature and our central hypotheses.

2.1 The role of CEO power on firm value under a financial crisis

Managerial power theory explains that powerful CEOs are able to influence their compensation schemes by using their marketability in the financial communities (Jensen and Meckling, 1976). Powerful CEOs are interested in building their own reputations to convey firm value more credibly to directors and third parties, such as bondholders and shareholders by developing relationships, because they would extract more compensation (Malmendier and Tate 2005). Reputed powerful CEOs are likely to make highly sophisticated decisions without compromising with other top management in non-stable times. Zahra and Pearce (1989) argues that large top management is less likely to run management for a more complex organization due to diversification of interests. Higher quality of decisions and greater resources may help financial service firms to improve firm value during the financial crisis. Consequently, powerful CEOs do sophisticated management and help firms to secure more resources when firms experience an exogenous crisis. To the extent that CEO power play a role for a financial service firm under an exogenous shock, we propose the following hypothesis.

H1: Under the global financial crisis (exogenous shock), the CEO power will have a positive effect on firm value for financial service firms when the industry experiences a negative shock.

2.2 Powerful CEOs and TARP recipients

We now develop CEO power hypothesis related to government funding for firm value under a financial crisis. The literature on the importance of CEO power with political connections on firm value relatively investigate the opportunity of government funding and corporate governance. For example, Shleifer and Vishny (1994) suggests that federal capital would be used to accommodate powerful politicians, such as transferring resources to favored institutions by political connection. Faccio, McConnell, and Masulis (2006) also shows that politically connected firms are more likely to be bailed out by the government. But, Fisman (2001), Faccio (2006), and Faccio and Parsley (2009) only document the impact of CEOs with political links on firm value in countries with weak legal systems. Previous study does not have any implications on whether powerful CEOs with government funding create higher firm value. To add the literature on the role of CEO power to firms, we investigate whether distinctive powerful CEOs play critical roles for firm value of TARP firms under the financial shock. Specifically, the second hypothesis refers to the relation between CEO power and firm value for between TARP firms and non-TARP firms during the period of crisis:

H2: Under the financial crisis (exogenous shock), the CEO power will have more positive effects on firm value for TARP firms than for non-TARP firms.

3. Data and Methodology

3.1 Why financial service firms?

Our central hypothesis is the impact of CEO power on firm value under an exogenous financial shock. If powerful CEOs exert major high quality of decisions, stronger CEO power will increase higher firm values. The financial service firms provide a valuable and interesting opportunity for a negative industry shock for the following reasons.

First, we discuss the negative industry shock or the crisis in the introduction. The 2008 financial crisis is a global exogenous shock and then the crisis strongly influences the financial industry than any other industries. Thus, CEO should exert their most managerial discretion to overcome the shock for survival. Campello et al. (2010) provides that the financial crisis is a severe shock which it is hard to resolve the risk for banks. This specific setting needs high quality of internal control to dictate extreme management for overcoming a negative shock. In these situations, we assume that the financial crisis constrain firms in the financial industry, and then firms with powerful CEOs would recover more firm value than firms with non-powerful CEOs by managing and controlling resources.

Second, during the financial crisis period where investment and government funding is constraint, only TARP firms get funding from the government. The crisis cause reduce investment and liquidity due to the uncertainty (Ivashina and Sharfstein, 2010). Banks and some other financial service firms are regulated to a higher degree than non-financial service firms during the crisis. These traits enable powerful CEOs to make political connection for the funding and firm value in the financial industry. Yet it remains unclear whether CEO power still matter in the regulated financial services industry for firm value in financial distress. If powerful CEOs improve firm value in the regulated industry, the financial crisis is a good opportunity for the net impact of CEO power because it makes firms have difficulties of restructuring management. We expect that the results may provide a much better evidence by investigating the financial service industry during the financial crisis.

3.2 Sample

We begin with financial institutions on publicly-traded firms (SIC codes 6000-6999) between 2007 and 2009. For our analysis, we obtain data of firm value and financial information from Execump/Compustat merged database, then interest the dataset with Center for Research in Security Prices (CRSP). To test the second hypothesis, we differentiate between TARP recipients and non-TARP recipients by ProPublica, and independent journalism corporation (Note 5). We restrict our sample to publicly-traded firms. We also delete over-the-counter-traded firms, resulting in a sample of 252 TARP recipients. To obtain the final data we intersect our sample with our hand-collecting data for CEO power from Yahoo Finance. Finally, we supplemented the data with manual searches of SEC proxy statements. The final sample consist of 298 financial institutions, giving us a total of 894 observations.

We control for the financial strength of the firm to determine valuation and performance. We also include year dummies as well as controlling for time-invariant firm heterogeneity by using firm fixed-effects. Table 1 provide summary statistics along several control variables for our sample of TARP participants as well as non-TARP participants. We have a main independent variable, CEO power, which capture CEO managerial structural power. The CEO power has a mean 1.6 with standard deviation of 0.95, while the 25 th percentile is 0.89 and the 75 th percentile is 2.86. We control for these variables in all subsequent regressions.

Table 1. Descriptive Statistics

Panel A. CEO Characteristics

Variable	Mean	Standard deviation	Q1	Median	Q3
CPS	0.40	0.14	0.25	0.38	0.50
Tenure	9.50	7.31	5.22	7.90	13.87
Ownership	0.03	0.04	0.00	0.01	0.06
Duality	0.70	0.50	0.00	1.00	1.00
CEOPowerIndex(0-4)	1.69	0.95	0.89	2.00	2.86
CEOage	58.50	7.60	52.35	57	62.50

Panel B. Firm Characteristics

Variable	Mean	Standard deviation	Q1	Median	Q3
M/B	1.91	0.71	1.17	1.45	2.15
Δ*M/B*	-0.29	0.71	-2.01	-0.38	1.07
Size(billions)	98.13	224.51	54.51	80.158	319.64
Income(millions)	-156.51	113.15	-554.16	1.54	295.17
ROA	0.46	0.57	0.17	0.50	0.65
Return	-18.50	16.85	-31.62	-16.14	5.14
Sales(millions)	4,051	7,631	107	261	15,622
Sales Growth	5.78	3.61	-2.51	3.54	8.75
Capex	0.09	0.02	0.07	0.09	0.18
Leverage	0.28	0.19	0.16	0.22	0.42
Volatility	0.05	0.02	0.02	0.04	0.06

This table reports descriptive statistics for the full sample. The sample is 298 financial service firms (894 observations) for the period from 2007 to 2009.

3.3 Empirical measure of CEO power and our research focus

CEO power (Note 6) is hard to be observed directly. Thus, one of the problems in this stream of research has a lack of objectivity in the measures (Finkelstein, 1992). To maintain objectivity of measures, we combine four proxies of CEO power (Adams et al., 2005).The first measure of CEO power is the CEO Pay Slice (CPS) which captures the relative importance of the CEO in top management (Bebchuk et al., 2011). The second measure is the duality. Previous studies have used the duality where one person jointly serves as CEO and chairman of the board (Adams et al., 2005; Pathan, 2009). CEOs with greater stock ownership (Hermalin and Weisbach, 1998; Finkelstein, 1992), possess greater tenure (Bertrand and Mullainathan, 2001; Linck, Netter, and Yang, 2008) are likely to have greater power.

CEO Pay Slice (CPS): the CEO's total compensation as a fraction of the combined total compensation of the top-five executives (including the CEO) in a given firm. We create an indicator variable that takes the value one if CPS is above the sample median.

Duality: We create an indicator variable that takes the value one if the CEO is also the Chair of the firm's board of directors.

Tenure: We create an indicator variable that takes the value one if CEO tenure is above the sample median.

Ownership: We construct an indicator variable that takes the value one if the CEO's ownership is above the sample median.

CEO Power: Above indicators determine the CEO power index as the sum of each indicator variables from 0 to 4. We construct a CEO power indicator variables that takes the value one if total number of index is above the sample median.

3.4 Research design

To teste our hypotheses, we estimate the following regression with TARP firms and non-TARP firms due to unobservable firm characteristics. We use the financial crisis as our setting, and then reduce endogeneity issue. Our main dependent variable is the change in the Market-to-book ratio (Note 7). Furthermore, the change in the Market-to-book ratio could provide the direction to reflect the net impact of CEO power.

$$FirmValue_{it} = \alpha + \beta_1\ CEO\ Power_{it} + \beta_2\ Financial\ Crisis_{it} + \beta_3 CEO\ Power * Financial\ Crisis_{it} + \beta_4 Ln(income)_{it} + \beta_5\ Capex_{it} + \beta_6 Leverage_{it} + \beta_7\ Volatility_{it} + \beta_8\ Size_{it} + \sum_t \text{Year}_t + \sum_k \text{Firm}_k + \varepsilon \quad \text{----(1)}$$

Independent variables are as follows.

Financial Crisis is the binary indicator takes the value of one for the 2008 year and zero otherwise

Ln(income) is the log of net income

Capex is a the ratio of capital expenditures to total assets

Volatility is the standard deviation of a firm's daily stock

Sales Growth is the annual change in revenue defined as $(Sales_t - Sales_{t-1})/Sales_{t-1}$

Leverage defined as total long-term liabilities (LT) divided by total assets (AT)

Size is the natural log of the firm's asset

The coefficient on CEO power (β1) captures the effect of CEO power on firm value after controlling for fundamental financial service firms characteristics associated with firm value. We predict β1 to be positive (negative) if powerful CEOs report positive (negative) firm value. To test the second hypothesis, we partition the sample into TARP firms and non-TARP firms and examine the models separately for these two groups.

4. Results

4.1 The mean values of powerful CEOs and Correlations

Panel A of Table 2 presents the mean values of the variables separately for firms with powerful CEOs and non-powerful CEOs. All of the measure of firm value (i.e., M/Bt, ΔM/Bt) are significantly greater for the powerful CEOs group than for the non-powerful CEOs group, providing evidence consistent with H1, in which we expect higher firm value by powerful CEOs compared to firm value by non-powerful CEOs. Firms with powerful CEOs characterized by bigger size (Size, Sales), higher growth (Sales growth, Income), more volatile firm (Volatility), higher firm performance (ROA, Return) and higher capital expenditure (Capex). Panel B of Table 2 provides correlations between CEO power, dependent variables, and control variables. Our primary main variables, CEO power, is positively and significantly related to our measure of firm value. While most variables are significantly correlated with one another, most of them are relatively small. We do not find significant multicollinearity problem for our analysis.

Table 2. Means of the Variables across High and Low CEO power and Correlation Matrix

Panel A. CEO Characteristics

	Powerful CEOs only (N=448)	Non-Powerful CEOs only (N=448)	Difference
Variable	Mean	Mean	
CEOage	60.50	56.50	4.00*
M/B	2.01	1.87	0.14*
ΔM/B	-0.27	-0.32	0.05**
Size(billions)	106.58	89.68	16.90**
Income(millions)	-149.84	-163.18	13.34*
ROA	0.47	0.46	0.00
Return	-9.63	-27.37	17.74***
Sales(millions)	4,563	3,539	1,024*
Sales growth	5.98	5.57	0.41
Capex	0.10	0.09	0.01*
Leverage	0.35	0.30	0.05
Volatility	0.07	0.06	0.01*

Panel B. Correlation Matrix

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
1.CEO power	1.00	0.05***	0.01***	0.10*	0.11	0.10***	0.01*	0.07***	0.41***
2. M/B		1.00	0.42***	0.30***	0.32***	0.12***	-0.27***	0.14***	-0.04
3. ΔM/B			1.00	0.46***	0.57***	-0.05*	0.01*	-0.07***	-0.01*
4. Return				1.00	0.43***	0.12***	0.02***	0.03***	0.01
5. Sales					1.00	0.18***	0.20**	0.07**	0.05*
6. Capex						1.00	0.05***	-0.02***	-0.01
7. Leverage							1.00	-0.15***	-0.01**
8. Volatility								1.00	0.01
9.CEO age									1.00

Panel A of this table reports the mean value of each variable separately for powerful CEOs and non-powerful CEOs groups. The sample is 894 observations for the period from 2007 to 2009. Panel B presents the Pearson correlation coefficients between CEO power and firm value. The significance is designated by '*** 'at 1%, '**' at 5% and '*' at 10%.

4.2 Main Regression Results

Table 3 discuss our multivariate tests, report main results for our hypothesis (H1). In column 1, we report an insignificant coefficient on CEO power (-0.012, p-value= 0.114) before the financial crisis. This result imply that CEO power do not seems to influence firm value. In column 2, we re-estimate equation (1) separately for the sample of 2008 year and 2009 year. We report that the coefficient on CEO power (0.051) is positive and significant. In column 3, financial crisis variable not surprisingly has a significantly negative effect on firm value. In column 4, we report that the coefficient on CEO power (0.011, p-value =0.035) for the entire sample is positively significant, after including the financial crisis dummy. We report a negative and significant coefficient on the two-way. This means that CEO power minimize the impact of the financial crisis shock. The results support our prediction that the impact of strong powerful CEOs on firm value is greater after the financial crisis. These findings are consistent with the notion that powerful CEOs use their discretion to make sophisticated decisions and help firms to increase firm value by securing more resources when firms experience an exogenous shock.

Table 3. Test of Impact of CEO Power on Firm Value

	M/B	*M/B*	*M/B*	*M/B*
	Pre-Crisis	Crisis	Entire	Entire
Intercept	1.032***	0.985***	0.914***	0.975***
	(0.001)	(0.001)	(0.000)	(0.000)
CEO Power	-0.012	0.041*	0.027**	0.011**
	(0.114)	(0.090)	(0.026)	(0.035)
Financial Crisis			-0.523***	-0.285***
			(0.001)	(0.010)
*CEO Power * Financial Crisis*				-0.125*
				(0.096)
Ln(Income)	0.134***	0.106	0.115**	0.101***
	(0.001)	(0.134)	(0.015)	(0.010)
Capex	-0.335***	-0.171	-0.302**	-0.294**
	(0.000)	(0.120)	(0.016)	(0.012)
Leverage	0.122	0.204**	0.094	0.097
	(0.175)	(0.027)	(0.141)	(0.154)
Volatility	-0.513	0.631	-1.152	-1.205
	(0.181)	(0.243)	(0.139)	(0.171)
Size	0.069**	0.127***	0.073**	0.077**
	(0.047)	(0.002)	(0.034)	(0.022)
Year indicators	Excluded	Included	Included	Included
Firm Fixed Effect	Yes	Yes	Yes	Yes
Adj. R^2	10.43%	10.58%	14.51%	14.98%
N	298	596	894	894

This table reports the regression results of firm value (*M/B*) on CEO power by year. The binary indicator Financial Crisis takes the value of one for the 2008 year and zero otherwise. All tests are two-tailed. *, ** and *** denote significance at the 0.1, 0.05 and 0.01 levels, respectively.

In table 4, we investigate the difference in change to estimate the direction of causality from CEO power to firm

value. We repeat the test by controlling for the change in the same independent variables of the sample firms. We find no significant effect of the change in CEO power on the changes in firm value, which means that a firm's choice of CEO power is independent of increase in the firm value.

Table 4. Causality for the Effect of CEO Power

	$\Delta M/B$
	Entire
Intercept	-0.729***
	(0.004)
Δ*CEO Power*	0.011
	(0.127)
Financial Crisis	-0.150***
	(0.000)
Δ*CEO Power * Financial Crisis*	-0.108***
	(0.004)
Δ*Ln(Income)*	0.215**
	(0.025)
Δ*Capex*	-0.307
	(0.226)
Δ*Leverage*	0.101
	(0.193)
Δ*Volatility*	2.034
	(0.275)
Δ*Size*	0.113***
	(0.001)
Firm Fixed Effect	Included
Adj. R^2	15.43%
N	894

This table reports the causality results of CEO power on firm value ($\Delta M/B$) and controls. The binary indicator Financial Crisis takes the value of one for the 2008 year and zero otherwise. ***, **, and * denote the significance at 1%, 5%, and 10% confidence level, respectively.

Having corroborated prior findings, we next investigate whether firm performance and firm characteristics affect directly or indirectly CEO power. We argue that powerful CEOs amplify firm value and minimize managerial self-interest for stakeholders' interest and firm survival when they face a negative financial shock. To alleviate concerns for endgeneity, table 5 provide the 2SLS results. This method requires instrumental variables that relate to CEO power but cannot be related to firm value except through CEO power (John and Kadyrzhanova, 2008). Firm value of each firm is likely to influence the CEO power of that particular firm. But, firm-level firm values might not be related to industry-level CEO power. The logic is that CEOs may influence their own firms weakly when outside forces affect other firms. Thus, we choose industry-median CEO power as the instrumental variable. Industry-median CEO power exhibits a positive and significant coefficient. As we discussed, industry-level CEO power significantly explains firm-level CEO power. In the second-stage regression, we replace CEO power with predicted CEO power from the first-stage regression. The estimate β1 of Predicted CEO power (0.057, p-value =0.063) is positively significant. Overall, these results still provide consistent evidence on the role of CEO power as a means to influence firm value in firms that face strong financial shock.

Table 5. 2 SLS Estimation of Impact of CEO power on Firm Value

	CEO power	*M/B*
	Entire	Entire
Intercept	0.194**	1.009***
	(0.027)	(0.007)
Predicted CEO Power		0.057*
		(0.063)
Industry-Median	0.615***	
CEO Power	(0.005)	
Financial Crisis		-0.341**
		(0.018)
*CEO Power * Financial Crisis*		-0.106*
		(0.057)
ROA	0.126**	
	(0.017)	
Return	0.084**	
	(0.034)	
Capex	-0.019	-0.213**
	(0.164)	(0.031)
Leverage	-0.028	0.074
	(0.119)	(0.184)
Volatility	-0.716	-1.038
	(0.207)	(0.163)
Size	0.021	0.081***
	(0.117)	(0.009)
Year indicators	Included	Included
Adj. R^2	9.15%	19.81%
N	894	894

This table reports the simultaneous 2SLS estimation of CEO power and firm value (*M/B*). The dependent variable is CEO power in the first model and firm value in the second model. The binary indicator Financial Crisis takes the value of one for the 2008 year and zero otherwise. All other control variables are defined the same as in Tables 3 and 4. *, ** and *** denote significance at the 0.1, 0.05 and 0.01 levels, respectively.

To investigate whether the positive impact of powerful CEOs is more pronounced for TARP firms (H2), we partition the sample into TARP firms and non-TARP firms and report results in Table 6. We report that the estimate β1 of CEO power (0.023, p-value =0.009) and the estimate β1 of CEO power (0.009, p-value =0.087) are positively significant. Column (3) report that the difference of CEO power for both groups is positively significant (p-value=1.6 %). This finding suggests that powerful CEOs of TARP firms are more likely to influence firm value. Overall, these findings provide corroborating evidence that powerful CEOs use their managerial discretion to connect the government for firm value.

Table 6. Impact of CEO Power on Firm Value across TARP Firms and Non-TARP Firms

	Dependent variable =Δ*M/B*		
	TARP Firms	Non-TARP Firms	Difference: (1)-(2)
	(1)	(2)	(3)
Intercept	0.810***	0.714**	0.096**
	(0.005)	(0.029)	(0.012)
CEO Power	0.023***	0.009*	0.014**
	(0.009)	(0.087)	(0.016)
Financial Crisis	-0.238***	-0.191**	-0.047**
	(0.001)	(0.016)	(0.043)
*CEO Power*Financial Crisis*	-0.110**	-0.092*	-0.018
	(0.045)	(0.097)	(0.113)
Ln(Income)	0.118**	0.139**	-0.021*
	(0.031)	(0.014)	(0.081)
Capex	-0.274	-0.207	-0.067
	(0.199)	(0.253)	(0.159)
Leverage	0.132	0.094	0.038***
	(0.184)	(0.202)	(0.009)
Volatility	-1.412	-0.811	-0.601*
	(0.168)	(0.237)	(0.079)
Size	0.076***	0.043***	0.033**
	(0.001)	(0.003)	(0.026)
Year indicators	Included	Included	
Adj. R^2	16.07%	12.15%	
N	756	138	

This Table reports the regression results of CEO power on firm value (Δ*M/B*) across TARP firms (252 firms) and Non-TARP firms (46 firms). All tests are two-tailed. The binary indicator Financial Crisis takes the value of one for the 2008 year and zero otherwise. *, ** and *** denote significance at the 0.1, 0.05 and 0.01 levels, respectively.

4.3 Robustness Checks

We conduct several additional analyses to further corroborate our results. We do not tabulate these additional results to conserve space in this paper. We briefly discuss the robustness checks relating to the definition of firm value and CEO power below.

- Agency theory allows us to consider that powerful CEOs extract more wealth from firms. Therefore, we made a robustness test with respect to CEO wealth including CEO total compensation. The results do not change our hypotheses.
- We use industry-adjusted historical stock returns and industry-adjusted historical ROA as alternative measures of firm value. We find that the coefficients are positively significant in the regression although the p-values are lower in comparison with our original estimations. The results confirm our main findings that powerful CEOs improve firm value through their managerial discretions.
- We use individual CEO power measures (CPS, Tenure, Ownership, and Duality) instead of the CEO power indicator and find that results are similar except for Duality.
- We use the CEO power index instead of the CEO power indicator and find that results are similar although the p-values are lower in comparison with our original estimations.

5. Conclusion and Summary

Previous literature investigate the effect of CEO power on managerial compensation and also studies the effects of CEO power. However, these studies always exclude the financial industries and a negative industry shock as an outside force. In light of recent research on how CEO characteristics affect corporate outcomes, we attempt to solve the puzzle of the impact of CEO power on firm value by focusing on the global financial crisis of 2008.

We investigate whether powerful CEO strongly influence firm value under the financial shock. We find CEO power has a positive effect on firm value when the industry experiences a negative shock. We also find that powerful CEOs have incremental effects on firm value relative to less powerful CEOs. This means that the results are not caused by CEO risk-taking behavior. Furthermore, we also investigate whether CEO power is an important determinant of the government fundings for firm value when a firm faces a negative distress. Our results support that the impact of CEO power on firm value is greater for TARP firms under an exogenous financial crisis. In all robustness tests our conclusions are similar to results to tabulated results.

We contribute to the literature on the positive impact of individual decision-making power by providing evidence that the influence of CEO power not only adepts at management but also controls strategic decision for surviving the extreme business environment. Firms with more centralized decision-making structure can get benefits when the industry faces a severe crisis. We also contribute to the literature on the impact of CEO power in market by providing evidence that CEO power may has the great implications for government funding in regulated industries. We believe that powerful CEOs may have political connection with government for funding during a financial crisis easily and our results are very instructive for investors, executives, and policy makers.

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Notes

Note 1. Sarah N.Lynch, 2009, " SEC Votes to change proxy rules" The Wall Street Journal

Note 2. We have known that the distribution of TARP funds is overseen by several monitors: the Financial Stability Oversight Board (FSOB), the Congressional Oversight Panel, the Office of the Special Inspector General (SIGTARP), and the Comptroller General. But, the Treasury does not provide specific guidelines on how it evaluates a financial service's TARP application, we don't know exactly about the list of TARP applicants. The Treasury has also made it very clear that they are not going to disclose names of TARP applicants.

Note 3. The fact sheet on the Treasury's website.

Note 4. They provide that CEO power brings benefits to firms under a crisis in internet firms, though the results were insignificant by using broad measure of CEO power. But, they only focus on internet industry.

Note 5. Data available at http://projects.propublica.org/bailout/list/index.

Note 6. There are four dimensions to the concept of CEO power, some of which are not easily observable: structural power, ownership power, expert power, and prestige power (Finkelstein, 1992). Like Adams et al. (2005), our study focuses on structural power to get a proximal measure of CEO power.

Note 7. It is computed by $M/B_t - M/B_{t-1}$. It is a common valuation method in the literature (Bebchuk, Cremers, and Peyer, 2011; Crossland and Hambrick, 2011).

Modern Tools to Evaluate the Performance of Business Organizations between Theory and Practice -The Case of Public Cement Companies in Algeria

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Abstract

Through this research, we reviewed the most important modern tools currently known at the global level in the field of management control. We found that most of them tried to bypass the traditional view in the evaluation, which was confined to the financial dimension. By proposing modern philosophies seeking to be knowledgeable in all dimensions and aspects of the organization performance. Whether, are these economic, social or environmental, etc.. According to the analysis of the survey, the result became clear to us that most of public cement company's tools and traditional methods used in the field of management control is the absence of most basic accounting information systems and of analytical accounting. As we found out through the analysis of the results of the questionnaire that the vast majority of the respondents are not familiar with the evolution of what is happening in the field of management and governance in general, and in the modern tools of management control in particular.

Keywords: Management control tools, Comprehensive performance, Performance evaluation, Performance indicators, Public companies

1. Introduction

Some researchers point out that in spite of the development of production methods and the use of modern technology, but the performance evaluation systems have lagged behind this development dramatically. In addition, the rapid change in the latest production technology has a significant impact on the required information, as well as control systems within the organizations. The challenge has to be faced in this area by provide appropriate information in a timely manner. Which has led to question the possibility of performance evaluation systems currently used to keep up with the modern environmental variables and developments. In this context Cooper (2000), has noted that the problem of these systems is still working until the beginning of the nineties of the last century at the same ideas and methods that existed since 1920. The researcher says that, "The generally accepted performance evaluation systems derives its principles and concepts of scientific management principles penned by Frederick Taylor. The researcher adds that these principles have appeared under different conditions than it is now (in 2000); and the organizations are