CEOs' Decision-making Power and Stock Price Crash Risk: Evidence from Iran

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ABSTRACT

This paper aims to examine how the chief executive officer's (CEO) decision-making power affects stock price crash risk. Using an index that encompasses CEO duality, ownership power, and CEO tenure as the sources of CEO power and negative conditional return skewness to measure stock price crash risk, empirical findings sufficiently reveal that there is a significant and inverse relationship between CEOs' decision-making power and stock price crash risk. The results prove that among three determinant of CEOs' decision-making power, CEO tenure has the most significant impact on decision-making power. The paper reliably provides sufficient evidence of CEOs' decision-making power implications and progressively expands the academic literature on stock price crash risk. These findings provide further insights on the importance of CEO power in driving stock price crash risk and emphasize that improving CEOs' decision-making power mitigates stock price crash risk in the context of Iran as a developing country.

Keywords: CEO Duality, CEOs' Tenure, Ownership Power, Stock Price Crash Risk.

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1. Introduction

In recent years, due to huge financial scandals of global corporations such as Enron and WorldCom as well as considerable uncertainty in accounting figures that instantly make up the most crucial part of financial statements, the trust of investors has been reduced on those financial statements provided adequately by the management. Unexpected stock price fluctuation that occurs as both crash and mutation in price fluctuations may cause a lack of investor confidence (Adams et al., 2005). Given the practical importance of stock returns for investors, the modern phenomenon of stock price crash which leads to a sharp decline in stock returns is more likely to be promptly taken into account than price mutation. Stock price crash refers to a huge and unusual negative change in stock prices that occurs without a notable economic event and is considered as a synonymous phenomenon with a negative skewness on stock returns (Hatton et al., 2009). Managers receive a strong incentive to withhold bad news from active investors (e.g. Al Mamun et al., 2016; Ball, 2009; Kothari et al., 2009). Once the accumulated bad news reaches an overwhelming level, managers give up and release it all together which leads to a stock price crash (Jin and Myers, 2006). Meantime, Kim et al. (2011a) reveal that managers use earnings management and tax avoidance, respectively, to hoard bad news, which in turn, leads to the stock price crash. Dichev et al. (2013) interview CFOs of U.S. companies and reveal that earnings management invariably occurs in a conscious attempt to influence the stock price because of outside and inside pressure to hit earnings benchmarks and to carefully avoid adverse compensation and career consequences for senior executives.

Following the findings obtained by Dichev et al. (2013) and Al Mamun et al. (2016), the current paper attempts to expand the academic literature on the stock price crashes by considering the key managers of companies, named CEOs. Central discussions here point to the success of managers in withholding bad news hinges critically on their power to influence decisions. Actually, CEO's power cause justification to divert companies' resources in direct line with their personal gain and intentionally withhold bad news from potential investors, naturally resulting in stock price crashes. The paper provides further insights into the powerful CEO's role in stock price crash risk by addressing the paper question that whether CEO power leads to stock price crash risk or not. As in recent decades, stock price crash risk has become a critical issue for investors, regulators, practitioners, and researchers, Jin and Myers (2006) reveal that corporate managers have incentives to withhold firm-specific bad news from public disclosure for an extended period, resulting in a severe overvaluation of the firm's price. However, once the accumulated bad news reaches a certain tipping point, all bad news is suddenly released at once, leading to a stock price crash. It has been well documented in the prior studies that certain factors can predict future stock price crash risk, such as financial reporting opacity, equity-based compensation, corporate tax avoidance, conditional accounting conservatism, institutional ownership and political connections (Hutton et al., 2009; Kim et al., 2011a, 2011b; Kim and Zhang, 2016; Callen and Fang, 2013; Hu and Wang, 2018; Haider et al., 2018); thus in the current paper, we are about to extend the line of research by investigating whether the CEOs' decision-making power effects stock price crash risk. Furthermore, the primary difference of the current paper, compared with the results of Al Mamun et al. (2016) represents the environment of the research that shapes the recent and different samples for further investigation. The current paper is conceptualizing the spirit of TSE as an emerging market in a developing country. Another key difference signifies the variables for measuring CEO power as we employ an index that encompasses CEO duality, ownership power and CEO tenure which is different from the procedure taken by Al Mamun et al. (2016). Moreover, the result of the current paper varied as it is noticed

CEO tenure receives the most significant impact on decision-making power in Iran. Indeed, earlier researches on CEO power and stock price crash risk (e.g.: the research by Al Mamun et al., 2016) are frequently performed in the specific context of advanced countries that maintain a developed market with a completely diverse market features. We assume the distinctive characteristic of Iranian capital market, like the presence of significant shareholders and certain political conditions which affect politics and capital market in the same way, will contribute extra and valuable insights to the association between CEO power and stock price crash risk. Also, the current paper contributes generously via developing the academic literature as we reasonably suppose CEO power does not only originate from their ownership power as an approved parameter examined in recent researches. Moreover, for accurately measuring the CEO's power, following Finkelstein (1992), structural power is considered. We thus have taken into account CEO duality and CEO tenure in measuring CEO power. Hence, the current paper measures CEO power from multi-dimensions sources of power. Furthermore, we positively affirm CEO tenure as the most appropriate parameter, which best represents the CEO power in Iran.

The remainder of the paper is structured as follows. Section 2 outlines theoretical foundations and hypothesis development. Section 3 presents the empirical approach and typically describes the key data, parameter measurements, and testing models. Section 4 discusses model estimation and hypothesis testing while desired results addressing endogeneity and firm fixed effect using alternative proxies of CEO power and crash risk, thereby the possible impact of CEO power on the crash is analyzed controlling for CEO power. Section 5 reasonably concludes the academic paper.

2. Literature Review and Research Hypotheses

In recent years, corporate governance literature has indicated that governance mechanisms are important determinants of stock price crash risk. Callen and Fang (2013) find that strong monitoring, measured by institutional investor stability, alleviates future stock price crash risk. Rather than focusing on an individual monitoring mechanism, Andreou et al. (2016) investigate broad dimensions of monitoring mechanisms, such as ownership structure, accounting opacity, board structure, and managerial incentives. They observed that strong board monitoring mechanisms mitigate future stock price crash risk. Managers tend to conceal information about their bad performance from shareholders to prevent their personal wealth (Ball, 2009). Prior studies document factors that contribute to corporate managers' incentives to hoard bad news, such as formal compensation contracts and career concerns (Kothari et al., 2009; LaFond and Watts, 2008), managerial opportunism (Kim et al., 2011a), and option portfolio value (Kim et al., 2011b). If managers withhold bad news for an extended period, negative information will be accumulated within a firm. Once the amount of accumulated bad information reaches a certain threshold, however, the accumulated negative information is released to the stock market at once, resulting in stock price crashes (Jin and Myers, 2006).

On the other hand, forecasting future stock price crash risk has drawn substantial attention in both academia and practice, especially after the most recent financial crisis. Due to the concerns on career development or compensation package, firm managers are inclined toward incentives to overstate financial performance and preserve an inflated stock price by strategically withholding bad news and accelerating the release of good news. Once the accumulation of bad news is beyond a certain threshold, the bubble of overvalued stock price will burst and a sudden stock price crash will occur (Hutton et al., 2009; Jin and Myers, 2006). To identify the determinants of crash risk, the current literature mainly focuses on various accounting mechanisms such as CEO duality, ownership power (founding family) and CEO tenure (Gao et al., 2017) to investigate the

impact of CEOs' decision-making power on the stock price crash risk.

2.1. CEOs' Decision-Making Power

CEO power has attracted researchers from many areas of economics, finance, management and social psychology (Sheikh, 2018). The position of a CEO is regarded as a source of power (Hamori and Kakarika, 2009) and CEOs are generally perceived as chief architects of a firm's innovation strategy (Berger et al., 2008) and leaders in creating value (wealth) for stakeholders (Papadakis, 2006; Quinn, 1985). The agency theory postulates that a raise in CEO power intensifies agency difficulties by enhancing managerial entrenchment which results in the conflict of the concerns between managers and shareholders (Jensen and Meckling, 1976). It argues that CEO power heightens managerial strength to evoke individual gains at the expense of shareholders and remains negatively linked with firm value. The organizational theory asserted that CEO power is not harmful in all conditions and can be profitable in particular circumstances. Powerful CEOs produce the profit applying real-time decision-making method and quickly adapt to changes in the capital market. (Boyd, 1995). Powerful CEOs, however, tend to be more confident about the consequence of their decisions and generate imperative decisions in absolute disregard of acknowledged and skillful advice which may direct to harmful and misaligned judgmental and ultimate performance and is an empirical question (Sah and Stiglitz, 1986; Sheikh, 2018).

Companies are required to create value and increase shareholder's wealth eventually, which is associated with the company's performance in terms of the proper administration of the business. In this regard, the company's executives and particularly CEO as the head of the company, play a critical role, because the success and failure of the company depend on the decision-making process of the managers (Sheikh, 2018). The company's CEO plays an essential role in team performance as a key leader in the company's progress toward goals. Undoubtedly, executive power is typically the charming manner in which an elected leader and active manager can penetrate the responsible behavior of their devoted followers. Executive power is naturally an initial characteristic of a successful manager that results in optimal efficiency in a successful business. Managers are policymakers and the company's performance is linked to their power. Managers can generously provide the specific context in which the company can grow tremendously or collapse using power sources, contingent on the essential nature of existence and the manner power is properly applied and valuable resources are efficiently utilized (Walls and Berrone, 2017).

The empirical evidence on the relation between CEO power and stock price crash risk is also mixed. Some studies like Agrawal and Knoeber (1996), Yermack (1996), Rosenstein and Wyatt (1997), Bhagat and Black (2002), Bebchuk et al. (2011) and Landier et al. (2013) find that powerful CEOs are associated with lower performance which may result in stock price crashes. Others like Weisbach (1988), Brickley et al. (1994) and Cotter et al. (1997) find that CEO power has a positive effect on firm value which has a simultaneous influence on stock price crash risk. A few others like Baysinger and Butler (1985), Hermalin and Weisbach (1991) and Mehran (1995) find no relation at all. Still others like Adams et al. (2005) find that CEO power is associated with both the best or the worst performance as well as with the more volatile stock. These studies suggest that the relationship between CEO power and stock price crash risk is still an open question and needs further empirical investigation.

2.2. Determinants of CEOs' Decision-Making Power

There is no consensus concerning the definition of CEO power in either economics or management literature. Generally, CEOs are perceived as powerful if they can influence

**CEOs'
Decision-
making Power
and Stock
Price Crash
Risk: Evidence
from Iran**

33

strategic decisions despite potential opposition from other executives and board members. Most of the previous studies use CEO status as founder/chair of the board to measure CEO power (Weisbach, 1988; Brickley et al., 1994; Yermack, 1996; Agrawal and Knoeber, 1996; Rosenstein and Wyatt, 1997; Adams et al., 2005; Villalonga and Amit, 2006; Fahlenbrach, 2009). Finkelstein (1992) argues that CEOs acquire power over time through four broad dimensions: structural, ownership, expert and prestige. Structural power is the influence related to the formal hierarchical organizational structure. Ownership power is based on CEO relationship with the founding family. Expert power is gained when the CEOs use their expertise for successfully managing their firms over a long period of time. Prestige power emanates from overall CEO reputation. Tang et al. (2011) argue that the prestige dimension of CEO power is not a proximal measure relative to other dimensions and should not be included in the measurement of CEO power. They do not include prestige in their proxy of CEO dominance. We follow Finkelstein (1992) and construct CEO power index based on three variables that encompass structural, ownership, and expert sources of power. Structural power is measured using CEO duality/triality. Ownership power is measured with CEO status as a founder. CEO tenure is used to measure expert power (Sheikh, 2018).

CEO Duality. Theories of corporate governance correctly argue that essential separation of direct ownership and management leads to agency problems; necessary actions that can reconcile the specific interests of CEO and shareholders, will carefully make CEO urge more attempt to increase shareholders' equity (Li, 2012). CEO-Chair duality restricts the information flow to other board directors and hence reduces a board's independent oversight of a manager (Jensen, 1994). Hermalin and Weisbach (1998) argue that a CEO who also holds the chair position tends to have more decision-making power (Sariol and Abebe, 2017).

While CEO naturally directs the operational aspects of a company, the board properly oversees the company as a whole, and the elected leader of the board is called the board director. The board has the power to overrule CEO's ultimate decisions, but the board director has no power to overrule the board (Qiao, and Fung, 2016). CEO duality enhances information asymmetry between CEO and board of directors, which may cause agency problems. The combination of CEO and the board director will not justify the particular transfer of critical information between CEO and board of directors; meaning that CEO who is the chairman can simultaneously control the information available to other members in the board of directors, effectively, thus CEO duality can influence the decision-making process through the board of directors. This structural arena may further mitigate the board's ability to monitor and control management plans, therefore, this combination of duality increases the cost of agency problems (Kim et al., 2009; Li et al., 2017).

Ownership power (Founding family). CEOs who are either founders or familiar with founding family firms tend to exert more power and influence on their boards and enjoy greater discretion in making key strategic decisions. Founders or founding family CEOs establish powerful relations with their boards over a period of time. They are also more likely to appoint their own directors and other executives to the team (Li et al., 2017; Sheikh, 2018).

CEO tenure. CEO tenure determines the effectiveness of CEO in managing the business. Regarding CEO tenure, Jensen (1994), as well as Hermalin and Weisbach (1998), argue convincingly that CEO controls the composition of the board, which mitigates the monitoring ability of the board. In terms of increasing CEO tenure, he/she typically experiences more stability and strength. Therefore, a strong CEO may influence more on others and has more ability to maintain position longer than when CEO maintains less power (Liu & Jiraporn, 2010). Managers do not merely move towards shareholders'

interests because of short-term tenure anticipation, thus take their own interests. A logical contradiction between company's active manager and stakeholders is undoubted that the managers' decision-making horizon for business is shorter than shareholder investment horizons. Managers' claim toward the company is confined to their tenure which mitigates shareholders' interests and the company's worth (Sheikh, 2018).

Longer tenures indicate the history of success and CEOs with longer tenures tend to have a greater influence on their boards (Simsek, 2007). Longer tenures are also correlated with less independent boards, higher likelihood for CEO to be the board director, and higher compensation (Graham et al., 2017). Like CPS and CEO tenure, board independence decreases CEO influence and ability to make strategic decisions without resistance from the board (Ryan and Wiggins, 2004; Morse et al., 2011). Although Li et al. (2017) include CEO *Soft Power* measured by the fraction of executives/directors appointed during the CEO's tenure, this proxy measures CEO connectedness and is not directly related to the board's independence and its monitoring power.

2.3. Stock Price Crash Risk

In recent decades, stock price crash risk has become increasingly important to regulators, academics, and investors. Research on stock price crash risk has intensified since the 2008 financial crisis. So far, most of the studies have focused on the U.S. setting, where the potential correlates investigated have included corporate governance (Andreou et al., 2016), financial reporting quality (Francis et al., 2016; Kim and Zhang, 2016), management style and compensation (Kim et al., 2016), and informal institutions, such as religion (Callen and Fang, 2015; Yeung and Lento, 2018).

The definition of stock price crash risk traditionally includes three identified characteristics: Stock price crash is a huge and unusual change in stock prices that occurs without a significant economic event. Hong and Stein (2003) state that great fluctuations which have typically taken place in the market after the world war - especially market collapse in October 1987, has not occurred due to the pertinent disclosure of a significant event. In the same way, French and Roll (1986) emphasize in many cases, clarifying stock price variation is tough through publishing information about a particular event.

A stock price crash typically signifies an adverse change that modifies a firm's capital stock to lower prices (Hutton et al., 2009). Before-mentioned changes decrease portfolio returns and undoubtedly enhance the portfolio's risk. Following several firms scandals in the early 2000s and the credit crisis in 2008, investors and regulators care more about this specific kind of risk and the crisis provided a robust reason for the extra investigation into the key issues related to stock price crash risk. Recent papers sufficiently reveal the possibility that stock price crashes are more pronounced with firms that have wider agency risks (Callen and Fang, 2015; Kim and Zhang, 2016). In such firms, managers may utilize information asymmetry to hide unfavorable information, as in practicing vague discretionary accruals to efficiently manage potential earnings (Kothari, et al., 2009), or offer investments that include market attitudes with less concern for long-term prospects, to maximize their own stock-based compensation. Therefore, managers receive multiple chances to evade their specific obligations towards key shareholders without being vigilantly monitored (Bebchuk and Stole, 1993; Stein, 1989; Yeung and Lento, 2018).

These are huge changes in a negative manner, which is due to an empirical asymmetry and significant change in market returns, that is to say, enormous stock price changes have been emerged to be more declining and less rising.

Stock price crash represents an epidemic phenomenon in the market; it means that

**CEOs'
Decision-
making Power
and Stock
Price Crash
Risk: Evidence
from Iran**

35

stock price crashes are unconstrained to a single stock, but all kinds of stocks in the market (Chen et al., 2001). Duffee (1995) expresses that in the possible course of stock price crashes, the correlation among all types of stocks on the market enhances. Some scholars interpret cautiously the leading cause of stock price crashes through the intellectual framework of agency theory. In this context, it is argued passionately that managers, in direct line with their personal incentives and interests, such as compensation contracts and job positions, include strong incentives to withhold bad news from investors (Ball, 2009). Once the accumulated bad news reaches an overwhelming level, the active managers give up and release it all together, typically leading to stock price crashes (Jin and Myers, 2006; Hutton et al., 2009).

Relevant studies define stock price crashes as a rare phenomenon in the capital market with negative skewness of stock returns. In spite of negative skewness in stock, market return is generally agreed by leading experts, yet economic mechanisms that lead to this phenomenon are still not explicitly stated. Consistent theories, including the leverage effect, stock market bubble, and inverse variation around stock price crashes have been presented. Pertinent studies on the stock price crash sufficiently reveal two preeminent issues, which increment the potential risk of stock price crashes: management operations and accounting systems. The first apparent reason is that management attempts to mislead investors using earnings management; he/she struggles valiantly to show that the company's earnings are higher than real value, which leads to investor optimism about the company's regular income and ultimately promotes the company's share price, which results in price bubble phenomenon. Another affirmative action is that management efforts invariably to hide bad news until it is reached to a certain level and then it is suddenly disclosed. Meanwhile, stock price crashes are naturally going to happen significantly. The second key issue is accounting systems that play a critical role in managing such behaviors (Kim et al., 2016).

2.4. Determinants of Stock Price Crash Risk

A growing body of research has investigated the external and internal determinants of stock price crash risk. Chen et al. (2001) test a model in which investor heterogeneity in opinions, coupled with short sale constraints for some investors, leads to stock price crashes. The underlying cause for stock price crashes in their model is the accumulation of bad news induced by an external financial market characteristic, short sale constraints, rather than a firm's internal causes. In contrast, Jin and Myers (2006) develop and test a model where a firm's internal characteristics, such as agency conflicts between corporate insiders and outside investors, combined with the opaqueness of the firm to outside investors, lead to stock price crashes. They find that information opaqueness increases the likelihood of stock price crashes, consistent with their model predictions (Bon Kim et al., 2018).

Jin and Myers (2006) measure opaqueness at the country-year level, i.e., the average opaqueness of all firms in a country in a year. Their opaqueness measure, therefore, is not a firm-specific variable. Hutton et al. (2009) extend Jin and Myers (2006) by examining the relationship between the crash risk of individual firms and a firm-specific measure of financial reporting opaqueness the sum of absolute discretionary accruals in prior three years. They find that firm's financial reporting opacity increases the probability of stock price crash occurrence (Bon Kim et al., 2018).

According to Hutton et al. (2009), a growing body of research has investigated firm-level determinants of crash risk. First, Kim et al. (2011a) find that tax avoidance provides managers with masks and tools to hide bad news from shareholders and thus increases crash risk. Second, Kim et al. (2016) find that financial statement comparability alleviates bad news hoarding and thus reduces crash risk. Hong et al. (2017) show that the deviation

of ownership rights from control rights in dual class firms, combined with financial reporting opacity, increases stock price crash risk because opaque firms with a higher ownership-control deviation can withhold bad news more aggressively. Third, Callen and Fang (2015) argue that religion, as a set of social norms, helps curb managerial bad news hoarding and find that firms headquartered in counties with higher religiosity are less prone to stock price crashes. To summarize, the above studies identify determinants of stock price crashes that are related to bad news hoarding (Bon Kim et al, 2018).

2.5. Linking CEOs' Decision-Making Power and Stock Price Crash Risk

Kim et al. (2011a) reveal that managers use earnings management and tax avoidance, respectively to accumulate bad news, which in turn, leads to the stock price crash. Graham et al. (2005) interview CFOs of U.S. companies and assuredly find that managers naturally tend to sacrifice economic value to reasonably manage financial reporting perceptions. Even, 80percent of the respondents report that they would decrease discretionary spending on R&D, advertising, and essential maintenance to willingly meet an earnings target. The academic literature on firm-specific determinants of stock price crash risk is intentionally built on the agency theory of accumulating bad news (Al Mamun et al., 2016). Kothari et al. (2009) reveal that management, on average, delays the release of bad news to investors. However, when it is impossible for managers to hide bad news, the sudden release of accumulated bad news leads to a significant decline in stock price or stock price crash (Hutton et al., 2009; Jin and Myers, 2006). Prior research shows that discretionary accrual-based earnings management (Hutton et al., 2009), tax avoidance (Kim et al., 2011a), option incentives for chief financial officers (Kim et al., 2011b), stock liquidity (Chang et al., 2016), CEO age (Andreou et al., 2016), inefficient governance (Andreou et al., 2016) and CEO overconfidence (Kim et al., 2016) lead to future stock price crash (Al Mamun et al., 2016). In contrast, dedicated institutional ownership (An & Zhang, 2013), institutional ownership by public pension funds (Callen and Fang, 2013), industry-specific auditors (Robin and Zhang, 2015), religiosity in the firm headquarters' country (Callen and Fang, 2015), and accounting conservatism (Kim and Zhang, 2016) minimize the expressive possibility of hoarding bad news, which result in mitigating future stock price crash risk (Al Mamun et al., 2016). Relevant studies on CEO power humbly propose that CEO power typically has a negative effect on earnings and shareholder's wealth. Grinstein and Hribar (2004) assuredly find that CEOs with the persuasive power to influence board decisions to receive significantly more rewards, engage in larger acquisition deals about the apparent size of their companies, and experience more negative price reaction to their acquisition announcements. Feng et al. (2011) sufficiently prove that powerful CEOs with high equity incentives exert significant pressure on CFOs to engage in accounting manipulation for companies that were subject to SEC enforcement actions compared to matched companies with the same size and industry but not subject to SEC enforcement actions. Friedman (2014) shows earnings management does not appear in isolation and companies with powerful CEOs can potentially pressure CFOs to enthusiastically promote biased performance measures to intensify compensation incentives (Al Mamun et al., 2016). By synthesizing the mentioned evidence, intended prediction at this point represent a significant relationship between CEO power and stock price crash risk which is built on the relevant literature that powerful CEOs are self-motivating, divert companies' resources for their apparent gains, pressure CFOs to engage in accounting manipulation, and receive a negative impact on firm value (Al Mamun et al., 2016). Taken as one, based on theoretical arguments and literature review, a single critical hypothesis and three sub-hypotheses are presented in the alternative form as follows:

H1: There is a significant relationship between CEOs' decision-making power and

**CEOs'
Decision-
making Power
and Stock
Price Crash
Risk: Evidence
from Iran**

37

stock price crash risk.

H1a: There is a significant relationship between CEOs' tenure and stock price crash risk.

H1b: There is a significant relationship between the ownership power in the board of directors and stock price crash risk.

H1c: There is a significant relationship between CEOs' duality and stock price crash risk.

3. Methodology

Given the fact that the current paper data are typically related to the financial information of real companies and the practical results can be used wisely to make better decisions on capital market participants, the author(s) implemented an applied research context through a descriptive correlational method. The population of the paper includes listed companies on TSE. The apparent reason for choosing TSE to examine is adequately monitoring of relevant organizations like the ministry of finance and the Central Bank over TSE. In addition, since financial statements of listed companies on TSE are subject to be approved by trusted auditors, thereby more reliability is expected. Besides, since listing companies on TSE are traditionally required to submit their financial statements uniformly, there will be more comparability. Therefore, TSE is the best place for extracting financial information of companies and can lead the paper to reliable results.

Indeed, using the direct observation method, financial statement of companies is utilized in the text analysis approach. Also, to collect theoretical foundations and literature review, library sources are used. Financial data are carefully extracted from comprehensive databases such as Rahavard Novin which hold financial data of Iranian companies listed on TSE. Then the collected data are classified through Microsoft Excel and final analysis is performed utilizing econometric software, named Eviews.

3.1. Research population and sample

The research population included all listed companies on TSE during 2014-2017. In the study, sampling is carried out through the systematic elimination method and the sample includes those companies that satisfy the following conditions:

- Listed before 2013 on TSE and have been active until the end of the fiscal year 2016.
- In terms of increasing comparability, their fiscal year must be ended in March and remain unchanged during 2012-2016 fiscal year.
- Listed companies, including banks and financial institutions, investment companies, financial intermediaries, holding companies, which ordinarily have separate reporting structures, will be excluded from the final sample.
- The required financial and management information (in particular, board reports and explanatory notes of financial statements) should be available for five years.
- During 2014-2017, except for the regular period of holding general assembly, the trading stock should not be stopped.

After imposing the above restrictions, selected samples reduced to 78 companies during 2014-2017; therefore, there would be 312 observations.

3.2. Variables and Measurement Methods

In the current paper, following Sheikh (2018) and Li et al. (2017) CEOs' decision-making power is considered as independent parameter including 3 components of CEO duality, ownership power and CEO tenure. Finally, by calculating the average for three mentioned dimensions, decision-making the power of company's CEO obtain a general score.

Explanatory parameter:

CEO duality/triality. Previous studies on CEO power use the concentration of titles in CEO position as a measure of power (Adams et al., 2005; Tang et al., 2011; Morse et al., 2011). Concentration of the titles of "CEO", "chair" of the board, and "president" of the company reduces board's monitoring power and increases CEO power (Hayward and Hambrick, 1997). Duality is the concentration of the titles of "CEO" and "chair" of the board and triality is the concentration of titles of "CEO", "chair" of the board and "president" of the company. we create a variable duality/triality power that equals 1 if the CEO holds two or three titles and 0 otherwise (Li et al, 2017; Sheikh, 2018).

Ownership power. This index is measured using CEO status as founder or relation with the founding family. we construct a variable family power that equals 1 if the CEO is either founder or related to the founding family and 0 otherwise (Li et al, 2017; Sheikh, 2018).

CEO tenure. CEOs that stay on their jobs for a long time tend to weaken the monitoring ability of their boards by building influential relations (Hermalin and Weisbach, 1988; Goyal and Park, 2002; Ryan and Wiggins, 2004; Graham et al., 2017). Longer tenures may also indicate a history of successful performance and value creation (Simsek, 2007). We construct tenure power that equals 1 if CEO tenure is greater than the sample median tenure and 0 otherwise.

Responding parameter: Responding parameter is the stock price crash risk in which following Hutton et al. (2009) "monthly price fall" is traditionally used for company-year meaning that when the company experiences one or more falling 3.2 standard deviations below the mean company-specific monthly returns over the fiscal year. This operational definition is scientifically based on the statistical concept that assuming normal distributions of company-specific monthly returns are through marked fluctuations which are precisely in the mean range plus-minus 3.2 standard deviations considered as ordinary fluctuations, otherwise abnormal. Given that stock price crash represents an abnormal fluctuation, 3.2 standard deviations obtain the boundary between ordinary and abnormal fluctuations (Hatton et al., 2009). In this academic paper, to accurately measure stock price crash risk following Chen et al. (2001), Hatton et al. (2009), and Al Mamun et al. (2016) negative conditional return skewness is knowingly used, which is accurately calculated using empirical equation (1):

$$NCSKEW_{i,t} = -[n (n-1)^{3.2} \Sigma W_{i,t}] / [(n-1)(n-2)(\Sigma W_{i,t})^{3.2}] \qquad (1)$$

In the mentioned equation, W_{it} accurately represents the specific monthly return of company (i) for the month (t), and (n) is the monthly return observed for each fiscal year. In the above model, the greater the amount of negative conditional return skewness, the more company will be knowingly exposed to stock price crash risk (the visible symbol t in this formula for W represents individually the month and for NCSKEW represents the year). The specific monthly returns of a company with a natural log of number one plus the remainder ε_t are calculated by the equation (3).

$$W_{i,t} = \ln(1+\varepsilon_{i,t}) \qquad (2)$$
$$r_{i,t} = \alpha_j + \beta_1 r_{m,t-2} + \beta_2 r_{m,t-1} + \beta_3 r_{m,t} + \beta_4 r_{m,t+1} + \beta_5 r_{m,t+2} + \varepsilon_{i,t} \qquad (3)$$

In empirical equation (3), $r_{i,t}$ is typically the stock return of company (i) in the month (t), and $r_{m,t}$ is the monthly return of the market (based on the market index). The required data for negative conditional return skewness will be carefully collected utilizing developed Rahavard Novin software as an Iranian database.

Control variables: To measure the relation betweenship CEOs' decision-making power

**CEOs'
Decision-
making Power
and Stock
Price Crash
Risk: Evidence
from Iran**

and stock price crash risk more accurately, it is necessary to handle a set of potential variables of relevant studies. In present study, 11 control variables are utilized following Al Mamun et al (2016):

NCSKEW: The negative skewness of company-specific monthly returns in the fiscal year.

SIGMA: Standard deviation of company-specific monthly returns in the fiscal year.

RET: Average company-specific monthly in the fiscal year.

ROA: Income before extraordinary items divided by lagged total assets in the fiscal year.

DTURN: The average annual share turnover over the fiscal year minus the average yearly share turnover over the last fiscal year in which average yearly share turnover is the ratio of the monthly trading volume of total shares outstanding during the month.

LEV: Leverage, or total long-term debt scaled by total assets in the fiscal year.

LMVE: Company size which is calculated by log of the market value of equity on the balance sheet in the fiscal year.

MTB: The market value of equity divided by the book value of equity in the fiscal year.

OPAQUE: The moving sum of the absolute value of discretionary accruals in the last three-year period, where discretionary accruals are calculated based on the modified Jones model (Dechow, Sloan, and Sweeney, 1995).

$\Sigma_t DYEAR$: Time variables with a value of 1 and zero. A vector of indicator variables by year. This parameter is selected to control the effect of variations over time on the responding parameter.

$\Sigma_t DFIRM$: Firm's variables with a value of 1 and zero. A vector of indicator variables by company. This parameter is selected to control the effect of corporate changes on the responding parameter.

Finally, following Al Mamun et al. (2016), the intended models for each of the hypotheses are as follows; the main hypothesis is stated by model (4):

$$(4)$$

$$Crash_{i,t} = \beta_0 + \beta_1 CEO\_Power_{i,t-1} + \beta_2 NCSKEW_{i,t-1} + \beta_3 SIGMA_{i,t-1} + \beta_4 RET_{i,t-1} + \beta_5 ROA_{i,t-1} + \beta_6 DTURN_{i,t-1} + \beta_7 LEV_{i,t-1} + \beta_8 LMVE_{i,t-1} + \beta_9 MTB_{i,t-1} + \beta_{10} OPAQUE_{i,t-1} + \sum_t YEAR + \sum_j FIRM + \varepsilon_{it}$$

The H1a is stated by model (5):

$$(5)$$

$$Crash_{i,t} = \beta_0 + \beta_1 CEO\_TENURE_{i,t-1} + \beta_2 NCSKEW_{i,t-1} + \beta_3 SIGMA_{i,t-1} + \beta_4 RET_{i,t-1} + \beta_5 ROA_{i,t-1} + \beta_6 DTURN_{i,t-1} + \beta_7 LEV_{i,t-1} + \beta_8 LMVE_{i,t-1} + \beta_9 MTB_{i,t-1} + \beta_{10} OPAQUE_{i,t-1} + \sum_t YEAR + \sum_j FIRM + \varepsilon_{it}$$

The H1b is stated by model (6):

$$(6)$$

$$Crash_{i,t} = \beta_0 + \beta_1 CEO\_OP_{i,t-1} + \beta_2 NCSKEW_{i,t-1} + \beta_3 SIGMA_{i,t-1} + \beta_4 RET_{i,t-1} + \beta_5 ROA_{i,t-1} + \beta_6 DTURN_{i,t-1} + \beta_7 LEV_{i,t-1} + \beta_8 LMVE_{i,t-1} + \beta_9 MTB_{i,t-1} + \beta_{10} OPAQUE_{i,t-1} + \sum_t YEAR + \sum_j FIRM + \varepsilon_{it}$$

The H1c is stated by model (7):

$$(7)$$

$$Crash_{i,t} = \beta_0 + \beta_1 CEO\_DUAL_{i,t-1} + \beta_2 NCSKEW_{i,t-1} + \beta_3 SIGMA_{i,t-1} + \beta_4 RET_{i,t-1} +$$

$\beta_5 ROA_{i,t-1} + \beta_6 DTURN_{i,t-1} + \beta_7 LEV_{i,t-1} + \beta_8 LMVE_{i,t-1} + \beta_9 MTB_{i,t-1} + \beta_{10} OPAQUE_{i,t-1}$
$+ \sum_t YEAR + \sum_j FIRM + \varepsilon_{it}$

Where

$CEO\_TENURE_{i,t-1}:$ CEO tenure represents years in which CEO manage the company.

$CEO\_OP_{i,t-1}:$ equal to one if CEO is the only insider executive member of the board, otherwise equal to zero.

$CEO\_DUAL_{i,t-1}:$ CEO duality equal to one, if CEO is also the chairman or of the board, otherwise equal to zero.

The required data for these variables are collected by text analyzing approach using the report of the companies. Other variables were described before.

4. Data Analysis

To provide an overview of the key features among variables, the concepts of descriptive statistics of such variables including the number of observations, mean, median, standard deviation, of skewness and kurtosis coefficient, are presented in Table (1). As Table 1 shows, company size (LMVE) and stock price crash risk (CRASH) as well as negative conditional return (NCSKEW) have the highest and lowest average values. CEO tenure (CEO_TENURE) and stock price crash risk (CRASH) include the highest and lowest standard deviations, respectively. Also, considering the mean and median values of company's CEO_POWER that are equal to 1 and 1.28, sufficiently indicates that sample companies are subject to CEO management power at a relatively modest level.

Table 1. Descriptive Statistics

Variables	Mean	Median	S.D	Skewness	Kurtosis
CRASH	-0/60	-0/60	0/01	-0/90	3/66
CEO_POWER	1/28	1	0/94	1/80	6/50
CEO_TENURE	3/23	2	2/77	1/87	6/46
CEO_OP	0/43	0	0/50	0/28	1/08
CEO_DUAL	0/18	0	0/39	1/64	3/70
NCSKEW	-0/60	-0/60	0/01	-1/01	4/06
SIGMA	0/57	0/19	0/96	2/91	11/52
RET	0/00	0/01	0/20	-1/54	15/62
ROA	0/18	0/17	0/15	0/41	3/27
DTURN	0/02	0/00	0/78	-0/46	13/33
LEV	0/06	0/03	0/08	2/40	9/74
LMVE	14/18	14/14	1/49	0/91	4/61
MTB	3/78	2/90	2/74	0/96	3/06
OPAQUE	0/03	0/02	0/08	0/46	2/86

In the following, using statistical modeling, we are about to carefully analyze research regression models and adequately consider significant variables coefficients analysis to confirm or reject the hypotheses. A significant level of 5percent intended. The econometric technique with panel data approach has been used wisely for properly estimating empirical models during 2014-2017.

According to the econometric analysis of panel data, it is necessary to properly test the data homogeneity using F-limer test, then testing panel data analysis. The Hausman test should be used to determine precisely the appropriate estimation method and carefully differentiate among the fixed effects model and the random effects model in panel data analysis. The direct results of the F-limer and Hausman tests for all hypothesis are presented in table 2, sufficiently proving that for all models, using panel data analysis

**CEOs'
Decision-
making Power
and Stock
Price Crash
Risk: Evidence
from Iran**

instead of ordinary least squares (OLS) method is significant. Moreover, the direct results of Hausman tests reveal that the fixed effects model is precisely significant, compared to the random effects model.

Table 2. Results of F-limer and Hausman Tests

Researc h Model	F-Limer Test			Hausman Test		
	F	P	result	K^2	P	result
H1	1/65	0/00	panel	110/62	0/00	Fixed
H1a	1/62	0/00	panel	108/65	0/00	Fixed
H1b	1/42	0/02	panel	95/82	0/00	Fixed
H1c	1/48	0/01	panel	99/52	0/00	Fixed

The results of first hypothesis testing model are presented in Table 3.

Table 3. The Results of First Model Estimation

Variables	beta	t-Statistic	Prob.
CEO_POWER	-0/0036	-6/3935	0/0000
NCSKEW	-0/3350	-5/9711	0/0000
SIGMA	0/0000	0/2933	0/7696
RET	0/0003	0/1924	0/8476
ROA	-0/0092	-2/4419	0/0154
DTURN	-0/0015	-3/6927	0/0003
LEV	0/0051	0/5502	0/5827
LMVE	-0/0026	-5/4716	0/0000
MTB	-0/0002	-1/2087	0/2280
OPAQUE	-0/0126	-1/8500	0/0656
C	-0/7620	-21/5804	0/0000
F-Value	5/0269	Prob. (F)	0/0000
Adjusted R^2	0/5297	D-W	2/2157

Based on Table 3, CEOs' decision-making power (CEO_POWER) as explanatory variables, maintain a significant relationship with stock price crash risk (CRASH), which according to the negative beta coefficient, the relationship is promptly confirmed. Expressly, the greater the decision-making power, the less is stock price crash risk. As a desired result, the first hypothesis of the paper reveals the existence of a significant relationship between CEOs' decision-making power and stock price crash risk with 95 percent confidence. In fact, more CEOs' decision-making power result in less stock price crash risk.

Also, control variables of negative conditional return skewness (NCSKEW), return on assets (ROA), difference of average annual share turnover (DTURN) and company size (LMVE) have a significant relationship with stock price crash risk (CRASH) at 95 percent confidence level, which according to beta coefficient, an inverse relationship is confirmed.

The results of sub-hypotheses testing models are presented in Table 4.

Table 4. The Results of Sub-Hypotheses Testing Models

Sub-Hypotheses / Variables	H1a Beta (Prob.)	H1b Beta (Prob.)	H1c Beta (Prob.)
CEO_TENURE	-0.0013 (0.0000)	-----------	-----------
CEO_OP	-----------	0.0018 (0.1141)	-----------
CEO_DUAL	-----------	-----------	-0.0027 (0.0704)

NCSKEW	-0.3233 (0.0000)	-0.3709 (0.0000)	-0.3908 (0.0000)
SIGMA	0.0001 (0.6606)	0.0002 (0.3382)	0.0001 (0.5331)
RET	0.0002 (0.9208)	0.0007 (0.6684)	0.0009 (0.5922)
ROA	-0.0096 (0.0081)	-0.0134 (0.0002)	-0.0127 (0.0006)
DTURN	-0.0016 (0.0001)	-0.0017 (0.0002)	-0.0015 (0.0022)
LEV	0.0048 (0.6116)	0.0122 (0.1413)	0.0101 (0.2230)
LMVE	-0.0027 (0.0000)	-0.0010 (0.0295)	-0.0011 (0.0156)
MTB	-0.0002 (0.1423)	0.0000 (0.7874)	0.0000 (0.8782)
OPAQUE	-0.0135 (0.0472)	-0.0149 (0.0513)	-0.0135 (0.0794)
C	-0.7546 (0.0000)	-0.8121 (0.0000)	-0.8213 (0.0000)
F-statistic (Prob.)	5.2910 (0.0000)	3.1392 (0.0000)	2.9411 (0.0000)
D-W	2.2384	2.3071	2.2545
Adjusted R^2	0.5455	0.3744	0.3519

As shown in table 4, CEO tenure (CEO_TENURE) as explanatory of H1a maintains a significant relationship with stock price crash risk (CRASH), which due to a negative beta coefficient, an inverse relation is confirmed, while there is no significant relationship between the ownership power (CEO_OP) and CEO duality (CEO_DUAL) as explanatory variables of H1b and H1c with stock price crash risk (CRASH). Thereby, H1a is confirmed, but H1b and H1c are rejected. Meaning that CEO tenure affects stock price crash risk (CRASH) with 95 percent confidence. These results emphasize that, among CEOs decision-making power determinants, CEO tenure has the greatest impact on CEOs' decision-making power.

Also, control variables of negative conditional return skewness (NCSKEW), return on assets (ROA), difference of average annual share turnover (DTURN) and company size (LMVE) sustain a significant relationship with stock price crash risk (CRASH) at 95 percent confidence level in all sub-hypothesis models, which according to the negative beta coefficient, an inverse relationshi is confirmed.

Given that the significance level of F statistic is less than 5 percent for all intended and the fitted regression model is also generally significant, it is indicated that the explanatory variables provide a significant effect on the responding parameter. Regarding the relatively moderate adjusted coefficient of determination (R^2_{Adj}) of models, explanatory variables explain the percentage of variations in stock price crash risk. The Durbin-Watson of fitted regression models proves no serious autocorrelation.

5. Conclusions
The results of the statistical method indicate a significant and inverse relationship between CEOs' decision-making power as explanatory parameter and stock price crash risk. That is, CEOs' decision-making power mitigates stock price crash risk. Besides, the proper relationship between CEO tenure, ownership power, and CEO duality and stock price crash risk is considered through H1a, H1b and H1c, respectively. Thereby, among the three mentioned determinants, only CEO tenure invariably have a significant and inverse relationship with stock price crash risk.

**CEOs'
Decision-
making Power
and Stock
Price Crash
Risk: Evidence
from Iran**

43

However, as noted in the literature review, no research has been conducted in the specific field of CEOs' decision-making power and stock price crash risk in Iran as a developing country. In addition, there are few papers investigating the impact of CEOs' decision-making power on stock price crash risk internationally. However, the result of the major research hypothesis is in apparent contradiction with Al Mamun et al. (2016). Also, the results of sub-hypotheses testing of all three CEOs' decision-making power dimensions including CEO tenure, ownership power, and CEO duality are in contrast to Chen et al. (2015) and Al Mamun et al. (2016). Al Mamun et al. (2016) find that having powerful CEOs leads to the stock price crash. Chen et al. (2015) reveal that there is a direct correlation between CEO duality and stock price crash risk. Thereby, findings are in contradiction with theoretical foundations in the current paper, but there are possible reasons which may verify such outlines. Based on theoretical foundations, it is reasonable to reasonably expect that longer CEO tenure results in less accountability to the board of directors, due to leading decision-making power and influence of CEOs, which may cause greater freedom of action. CEOs hide and accumulate bad news, because of personal gains or maintaining their interests; notwithstanding, due to practical considerations of cost-benefit or other conditions, they may willingly be surrendered against the hoarding of bad news in a certain point, thereby bad news is disclosed by the company and causes a sharp stock price crash. Logically affirming the veracity of the empirical findings is on the grounds that longer CEO tenure, and hence higher decision-making power tend to maintain the current company's conditions. Also, CEO successes in implementing intended plans initially may advise him/her systemic change resistance, in such a way that CEO uses a steady pattern in management. Indeed, long CEO tenure may lead to risk aversion; in this case, CEO avoids non-disclosure of bad news to prevent stock price crashes in the company.

Generally, the present paper progressively expands the academic literature on the stock price crash risk of companies and provides relevant evidence of CEOs' decision-making power consequences. In particular, findings sufficiently emphasize that enhancing CEOs' decision-making power mitigates the stock price crash risk of companies. Regarding to current paper findings, some mechanisms could be established for monitoring CEOs' decisions and financial reporting . Furthermore, it is instantly reminded to investors that exploring CEO tenure is applicable to demonstrate the stock price behavior of listing companies on TSE.

Limitation of Research: Similar studies in developed countries, employed the huge sample (e.g. over 1,000 companies), considered a longer period, but we cannot follow such a trend due to data limitation, because there is no organized database in developing countries like Iran and we are supposed to consume considerable time for collecting data. For instance, in some companies, relevant data of CEO tenure and ownership power are not confined in details particularly prior to 2014 in the directors' report which naturally reduces the sample size.

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**CEOs'
Decision-
making Power
and Stock
Price Crash
Risk: Evidence
from Iran**

45

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**CEOs'
Decision-
making Power
and Stock
Price Crash
Risk: Evidence
from Iran**

47

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