



## How does Financial Reporting Quality Relate to Stock Price Crash Risk? Evidence from Indonesian Listed Companies

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### ABSTRACT

This study examines the influence of financial statement transparency, institutional investor stability, audit tenure, and conservatism on stock price crash risk. Using firms listed on the Indonesia stock exchange from 2011 to 2015 as research samples, 748 firm-year observations are available for data analysis and hypotheses tests. Employing multiple regressions analysis, the results show that institutional investor stability, audit tenure, and conservatism have a significant effect on stock price crash risk. However, a positive association between audit tenure and stock price crash risk is not supported in this study. Meanwhile, the transparency of financial statements has no significant effect on stock price crash risk. It may indicate that Indonesian investors tend to overlook the issues of financial report transparency while making equity investment decisions.

#### Keywords:

Stock price crash, conservatism, audit tenure, institutional investor, bad news

***Bagaimana hubungan antara kualitas laporan keuangan dengan Risiko Crash Harga Saham? Bukti Empiris dari Perusahaan yang Terdaftar di Pasar Saham***

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#### ABSTRAK

Penelitian ini menguji pengaruh transparansi laporan keuangan, stabilitas investor institusional, masa jabatan audit, dan konservatisme terhadap risiko crash harga saham. Dengan menggunakan perusahaan yang terdaftar di bursa efek Indonesia (dari 2011 hingga 2015 sebagai sampel penelitian, 748 pengamatan tahunan-perusahaan dianalisis untuk menentukan hipotesis yang diterima. Metode analisis regresi berganda digunakan untuk menganalisis data penelitian. Hasil penelitian menunjukkan bahwa stabilitas investor institusional, masa jabatan audit, dan konservatisme memiliki efek yang signifikan pada risiko crash harga saham. Namun, hubungan positif antara masa jabatan audit dan risiko crash harga saham tidak ditemukan dalam penelitian ini. Sementara itu, transparansi laporan keuangan tidak berpengaruh signifikan terhadap risiko crash harga saham yang menunjukkan bahwa investor Indonesia cenderung mengabaikan isu transparansi laporan keuangan dalam mengambil keputusan investasi modalnya.

#### Kata Kunci:

Risiko crash harga saham, konservatisme, masa jabatan audit, investor institusional, bad news

## 1. Introduction

A body of literature on financial reporting quality has employed different measures to assess a firm's economic reality. These measures include persistence, accruals, smoothness, timeliness, loss avoidance, investor responsiveness, and financial

restatements (Dechow, Ge, & Schrand, 2010). However, no single measure can perfectly capture the true economic of firms over periods. Dechow et al., (2010) suggest that earnings quality has to be seen in the context of decision making and largely depends on the firm's fundamental performance.

As such, researchers continually introduce new measures of financial reporting qualities. One related measure that has drawn many interests of academics was the R2 obtained from modified index-model regression which captures the extent to which firm-specific information is impounded in stock price (Morck, Yeung, & Yu, 2000). It has been argued that the firms with greater transparency should have lower R2. Jin & Myers (2006) extended the line of research by focusing on the second or higher moments of stock returns. They show that opaque stocks with higher R2s are more likely to crash. These results have triggered considerable interest in the association between opacity and stock price crash risks (Hutton, Marcus, & Tehranian, 2009).

Although the incidence of stock price crashes have been increasingly common, the question of why the market failed to anticipate still remains. A widely accepted argument in accounting literature is based on the idea of withholding bad news from the markets. The argument, commonly referred to bad news hoarding argument, says that managers tend to hide or withhold bad news disclosure from the market knowledge to avoid negative impact on their careers and short-term compensation (Kim, Li, & Zhang, 2011; Kothari, Wasley, & Wysocki, 2009). A survey in Graham, Harvey, & Rajgopal (2005) shows that managers tend to delay bad news announcement to avoid unexpected negative reaction. However, bad news concealment cannot last for a long period of time. When the accumulation of bad news passes a certain threshold, managers are forced to reveal it at once. A sudden revelation of bad news triggers stock price crashes and causes asymmetrical distribution of stock returns (Hutton et al., 2009).

Institutional ownership structure may determine a firm course of operation and financial decision. A large body of research has examined the role of institutional investors in safeguarding firm resources. Shleifer & Vishny (1997) state that investors with large ownership in a firm's equity are more enthusiastic about how managers run the

company relative to small stockholders. This stems from the fact that the welfare of investors with large ownership are very much affected by firm stock performance. Large investors are willing to spend more time and effort in evaluating investment and operating policies of a particular company to ensure that managers apply sound business policies. If deemed necessary, they can use voting rights to force managers to work harder for the best interest of stockholders. In addition, intense monitoring by large stockholders will suppress dysfunctional behavior and help align goal congruence. A lack of control encourages managers to exploit firm resources and manage to hide the negative consequences of their action from reported financial statements. In effect, financial statements are no longer able to reflect the economic reality of firms and lose their ability to affect investment decision-making. In turn, the unreliable financial statement increases the incidence of stock price crashes.

The role of the auditors in ensuring the integrity of financial statements has received considerable support from analytical and empirical studies. Callen & Fang (2017) argue that long audit tenure threatens auditor independence and reduces manager motivation to reveal bad news. It follows that lack of motivation and independency to uncover potential fraud and bad business practices lower the quality of audited financial statements, leading to stock price crashes. On the other hand, long audit engagement enables auditors to identify potential misstatements and apply proper audit procedures to uncover the material misstatement (Beck & Wu, 2006). In this sense, longer audit tenure may lower the likelihood of stock price crashes. Given the two conflicting arguments, it is difficult to assess the effect of audit tenure on stock price crashes.

Conservative financial reporting practices are expected to reduce the opportunistic behavior of managers and improve the reliability of financial statements. Applying conservative accounting requires companies to recognize bad news faster

than good news, forcing managers to reveal bad news immediately. However, Kothari et al., (2009) provide empirical evidence showing that managers tend to release negative information more slowly than good news. A managerial tendency to hide bad news from investors adversely affects financial statements quality, and in turn, triggers stock price crashes.

The purpose of this study is to examine the effect of financial reports transparency, institutional investor stability, audit tenure, and accounting conservatism on stock price crash. The underlying motivation is that the phenomena of sharp stock price declines in Indonesia Stock Exchange, which are increasingly common, provide better research setting to study stock price crash risk relative to prior studies (Andreou, Antoniou, Horton, & Louca, 2016; Callen & Fang, 2013, 2017; J. B. Kim & Zhang, 2016). During 2013, stock prices of PT Sepatu Bata Tbk., PT Sumber Alfaria Trijaya Tbk. and PT Nipress Tbk. plummeted down to 98.2%, 91.2%, and 91% respectively (Kusuma, 2013). In 2015, stock prices of PT Golden Eagle Energy Tbk., PT Express Trasindo Utama Tbk. and PT Bumi Resources Minerals plunged as much as 91.03%, 90.85%, and 84.12% respectively (Asworo, 2015). Stock prices of PT Polaris Investama Tbk. recorded a staggering decline with almost 88% in 2017, and PT Capitol Nusantara Indonesia Tbk. with an 80% decline at the same year (How money indonesia, 2017).

This study contributes to the growing evident of stock price crash risk that have been documented worldwide. Results from developing markets such as Indonesia add to our understanding on how the market participants make use of publicly available information in comparison with those from developed capital markets. This study is built upon a premise that firms with lower financial report qualities are more likely to experience stock price crashes. In light of the evident found in this study, it is interesting to note that investors seem to overlook the merit of financial report transparency when making equity investment decision. In

addition, the results suggest that investors should consider institutional investor stability, audit tenure, and accounting conservatism when assessing return on investment. This study also provides additional support of bad news hoardings argument that has been widely used to link financial reporting quality and stock price crash risk.

## **2. Literature review and hypotheses development**

Habib, Hasan, & Jiang (2017) state that agency theoretical framework underpin the bulk of empirical research on the determinants of stock price crash risk. Referring to Jin & Myers (2006), they argue that information asymmetries between corporate insiders and external stakeholders contribute to stock crash risk. Following agency theory framework, information asymmetries between managers and stockholders would result in opportunistic behavior on the part of managers. Information asymmetry produces agency conflicts. Having more access to all financial and operational information and full knowledge of firm's prospect relative to outside parties has put managers in a better position to exploit the information for personal gain. Knowing that bad news will have a negative impact on the firm value, managers are more likely to withhold and hide the information from the market. The ability to withhold and hide information cannot go for a long period of time. As time elapses, accumulation of bad news has passed a certain threshold and must be released at once. When the market is aware of the accumulated bad news and responds negatively, the stock price should fall and stock price crash risk increases (Hutton et al., 2009; Kothari et al., 2009).

### **Financial report transparency and stock price crashes**

Most prior studies on stock price crash risk have been built upon the concept of bad news hoarding proposed by Jin & Myers, 2006. Conceptually, stock price crashes reflect the inability of managers to hide bad news that has

accumulated over time (Habib et al., 2017). When bad news accumulation has been so large and can no longer be kept from the markets, firms will have to release them at once. The sudden revelation of bad news result in a negative skewed return distribution (Hutton et al., 2009; Zhu, 2016). Specifically, Jin & Myers (2006) argue that less transparent firms will regularly attempt to withhold bad news as they come along periodically. But the ability of managers to hide bad news has a limit. When the accumulated bad news passes a certain threshold, no strategies left to escape from the markets' attention, and firms will have to release them immediately. Following the release, the markets will react negatively causing stock prices to crash.

Prior studies documented a great deal of evidence in support of the bad news hoarding argument. Using earnings management as a proxy for financial report transparency, Hutton et al. (2009) show that transparent firms are less likely to experience stock price crash in the future. Kim et al., (2011) examine the relationship between CFO incentives and stock price crash risk. They find that CFO incentive is positively related to stock price crash risk. The findings indicate that the sensitivity of portfolio option value to stock prices encourage CFOs to hide bad news. Consistent results were also reported in (Benmelech, Kandel, & Veronesi, 2010). Other study finds that weaknesses in internal control and frequency of management forecasts are significantly associated with stock price crash risk (Kim, Yeung, & Zhou, 2017).

A lack of reporting transparency hinders investors to make an informed decision on firm's prospect. Jin & Myers (2006) point out that a lack of transparency is perceived as a manager's covert effort to capture a portion of cash flow, and manage to hide it from investors. Limiting the amount of information available for investors causes disproportionate risk sharing between managers and investors. Investors would not be able to fully discern the changes in the firm's cash flow unless

adequate firm-specific information is available for external users.

Opportunistic managers intentionally confine the amount of information disclosed to outsiders and tend to exploit the information advantage to their best interest. For instance, when the actual firm's cash flow is higher than what investors expected, managers are motivated to take a larger portion of the cash flow. They will then deliberately reduce the amount of information available to outside parties to cover up the expropriation. But Jin & Myers (2006) argue that the amount of bad news a manager is willing to absorb is not unlimited. When a certain threshold passes, managers have no other option but to reveal all the bad news at once. Jin & Myers (2006) examine the effect of reporting transparency on stock price crash risk in various capital markets world wide. They find that less transparent firms are more likely to experience stock price crashes.

In general, the concepts of transparency developed in Jin & Myers (2006) apply to all types of information. A more specific concept pertaining to financial statements is developed in (Kirschenheiter & Melumad, 2002). It is assumed that operating cash flows consist of transitory and permanent components. Transitory components occur only in the current year while permanent components recur for several years. Kirschenheiter & Melumad (2002) argue that firms with higher reported earnings enjoy increasing stock prices because investors perceive the higher earnings contain permanent cash flow.

When reported earnings is higher than expected, investors perceive it as bad news for the quality of reported earnings is in question. As a consequence, investors revise their belief in a firm future prospect, causing firm value to decrease. On the other hand, the market considers reported earnings to be of high quality if the reported earnings matches market expected earnings. Being aware of the negative consequences of failing to meet market-expected earnings, managers are compelled to report earnings that are close to

market expectations. Similarly, Hutton et al., (2009) argue that opaque financial reports contain less firm-specific information and only a small portion of that information affects firm values. Stock return of less transparent firms are less volatile than market-wide variation because managers are willing to absorb temporary bad news.

The association between financial reports transparency and stock price crash risk is stated in the following hypothesis:

H<sub>1</sub>: Financial report transparency is negatively associated with stock price crash risk.

### **Institutional ownership stability**

While institutional investors play a significant role in corporate decisions and stock price behavior (An & Zhang, 2013), concentrated ownership may alter the monitoring role of institutional investors (Hamdani & Yafeh, 2013). In the presence of dominant shareholders, the ability of institutional investors to exercise their voting rights to discipline managers is limited. The potential conflicts are now shifted to controlling and minority shareholders. Using a sample of life insurance firms in Israel, Hamdani & Yafeh (2013) find that institutional investors rarely use their voting rights against insider-sponsored proposals even when the law empowers the minority. Instead, they use their voting rights more often against compensation-related proposals when minority shareholders do not influence outcomes. They conclude that empowering minority shareholders without addressing conflicts of interests is ineffective.

In the context of institutional ownership in Indonesia, Wardhana & Tandelilin (2011) states that the majority of stockholders in Indonesia are institutional investors with an average portion of 60% of the ownership. They investigate the role of institutional investors on firm performance as measured by asset utility and Tobin's Q. Note that their study focuses on potential expropriation of a firm's resources by controlling shareholders at the expense of minority shareholders. They show that

the monitoring role of controlling institutional investors is at best when they own a significant number of shares.

In addition to concentrated ownership, monitoring effectiveness of institutional investors is also contingent on its stability (X. Chen, Harford, & Li, 2007; Gaspar, Massa, & Matos, 2005; Koh, 2007). Chen et al., (2007) show that long-term institutional investors with concentrated holdings are more willing and motivated to monitor managers and thus mitigating agency problems. They argue that more stable institutional investors have informational advantage over other investors and are more determined to influence a firm's strategic decision and future cash flow.

Elyasiani, Jia, & Mao (2010) find that stable institutional investors have more motivation and capability to exercise monitoring function effectively. Koh (2007) finds that stable institutional investors restrict aggressive earnings management. Taken together, these prior studies suggest that institutional investor stability may lower the propensity of managers to hide bad news from the market and decrease the likelihood of stock price crashes.

However, Callen & Fang (2013) argue and find that stable institutional investors do not function effectively in disciplining managers when the focus is on short-term results. Effective monitoring can only be expected from institutional investors when they act as monitors. If institutional investors only care about short-term results, they tend to undermine monitoring efforts leading to increasing dysfunctional behavior of managers. Specifically, Callen & Fang (2013) call institutional investors with short-term perspective as short-termism. When institutional investors rely on current performance, less control induces managers to exploit company resources for personal gain (Gaspar et al., 2005). Yan & Zhang (2009) find that short-term-institutional investors are more active in trading stocks by exploiting informational advantage against other investors. In sum, when a manager's opportunistic behavior is present, stable

institutional investors with short-term interest should increase future price crash risk for letting bad news hoarding undetected.

Since the effect of stable institutional investors on stock price crashes cannot be clearly depicted, the following hypothesis is stated with no direction:  
H<sub>2</sub>: Institutional investor stability is associated with stock price crashes

### **Audit tenure**

A regulation released by Indonesian Ministry of Finance (PMK) No. 17 / PMK.01 / 2008 concerning Public Accountant Services dated 5 February 2008, Article 3 paragraph (1) stipulated that: provision of general audit services for financial statements by accounting firms are 6 (six) consecutive years maximum and 3 (three) consecutive years for Auditors. The regulation was later changed under PP 20/2015, which states that the provision of public accounting services by accounting firms has no limit. In addition, auditor tenure is extended up to 5 consecutive years.

Prior studies on audit tenure have found mixed results (Ghosh & Moon, 2005; Louwers, 1998; Myers, Myers, & Omer, 2003; Stanley & DeZoort, 2007). In sum, long audit tenure increases audit quality which is reflected in the going-concern opinion given by auditors (Louwers, 1998). Audit tenure has a positive association with earnings response coefficient (Ghosh & Moon, 2005). Audit tenure is negatively associated with the incidence of restatement, suggesting that longer audit tenure improves audit quality (Stanley & DeZoort, 2007). On the other hand, Fortin & Pittman (2007) failed to identify the relationship between long audit tenure and cost of debt.

Collectively, these prior studies suggest that auditor knowledge of business environments is very helpful in detecting and preventing bad news hoarding. In early years of assignment, auditors may spend a lot of time and effort to learn the potential channels to hide the bad news (Callen & Fang, 2017). But over time, auditors have a deeper understanding of a client's business and financial

reporting issues and become knowledgeable of potential errors which require special attention (Johnson et al. 2002; Beck & Wu, 2006) Thus, auditors with long audit tenure are expected to have the ability to prevent bad news hoardings and lower the price crash risks.

On the other hand, Carey & Simnett (2006) find that long audit tenure reduces audit quality as reflected in going concern opinions. Similarly, Davis, Soo, & Trompeter (2009) find that longer auditor tenure is associated with higher earnings managements. Callen & Fang (2017) argue that long relationships between auditors and clients may reduce auditor independence, leading to similar interest between clients and accounting firms. In such a situation, it is less likely to expect the auditor to do his professional skepticism and impartiality during audit engagement. As audit tenure increases, auditors are more likely to submit to client pressure, especially towards the use of inappropriate accounting choices that fail to reflect a client's economic reality, making accumulation of bad news hoardings go undetected. Less independent auditors provide a great opportunity for firms to conceal negative information from the market leading to higher price crash risk.

Since the arguments for and against longer audit tenure are equally reasonable, the following hypothesis is stated with no direction.

H<sub>3</sub>: Audit tenure is associated with stock price crash risk.

### **Conservatism**

Conservatism is an accounting concept of recognizing bad news faster than good news. Application of the concept would result in asymmetric timeliness for gains and losses (Basu, 1997). Givoly, Hayn, & Natarajan (2007) define conservative reporting as recognizing promptly an unfavorable outcome and deferring recognition of expected favorable events. Conservative accounting emerges to mitigate the negative effect of information asymmetry between managers and shareholders (LaFond & Watts,

2008). Although conservative accounting would result in asset under-statement, it is a natural mechanism to prevent managers from overstating earnings to meet contract requirements (Watts, 2003).

Kothari et al., (2009) provide empirical evidence of a manager's inclination toward releasing bad news slower than good news. Since accounting conservatism reduces the amount of bad news, then stock price crash risk can be reduced. Kim & Zhang (2014) find that stock price crash is more likely to occur when firms frequently withhold bad news from investors. Conservatism can also reduce the possibility of price crashes because it improves decision-making quality. Recognizing losses faster than gains are early warning mechanism that allows stockholders and board of directors to identify unfavorable projects and forcing managers to stop them (Ball & Shivakumar, 2005; J -B Kim & Zhang, 2014).

Based on the above arguments, the relationship between conservatism and stock price crash risk can be stated in the following hypothesis:

H<sub>4</sub>: Conservatism is negatively associated with stock price crash risk.

### 3. Research method

The firm samples were collected from Indonesia Stock Exchange official website and other sources on the internet. To be included in the sample, firms must have listed for five consecutive years from 2011 to 2015 and disclosed complete data to measure variables. The sample firms are restricted to this particular period because a number of firms had experienced a large decrease in stock prices during this period. Five consecutive years restriction is imposed for the purpose of measuring

institutional investor stability variable. This study uses standard deviation of institutional ownership as proxy for institutional investor stability. Calculating standard deviation of institutional ownership requires firms to have five consecutive annual reports.

The financial data are primarily gathered from Indonesia Stock Exchange. When annual reports are not available in Indonesia Stock Exchange official website, additional search was carried out with Google search engine or looking through company official website. A firm will be excluded from sample if no financial statements available from the data sources. Information on stock prices are collected from yahoo finance. As much as 1065 firm observations were collected during the period of study.

### Measure of variables

#### *Stock price crash risk*

Stock price crash is widely defined as large drop in stock prices for a period of time (Zhu, 2016). Specifically, stock price crash risk is related to negative skewness in the distribution of returns for individual stocks (Chen, Hong, & Stein, 2001; Habib et al., 2017; Kim & Zhang, 2014). The initial step to measure price crash risk is to obtain residuals from expanded market model (Andreou et al., 2016; J -B Kim & Zhang, 2014). Unlike the original market model, two-week lead and lag of market index are included in the expanded market model. Two weeks lead and lag are included in the market model to anticipate non-synchronous trading suggested in (Dimson, 1979). The residuals obtained from expanded market model reflect firm-specific information.

$$R_{jt} = \alpha_j + \beta_1 R_{m,t-2} + \beta_2 R_{m,t-1} + \beta_3 R_{m,t} + \beta_4 R_{m,t+1} + \beta_5 R_{m,t+2} + \epsilon_{j,t} \quad (1)$$

Where  $r_{j,t}$  is the return for firm  $j$  week  $t$  and  $r_{m,t}$  is the return on JCI in week  $t$ .

Following Andreou et al., (2016) the residuals from the expanded market model ( $\epsilon_{j,t}$ ) are

added by 1 and transformed into natural logarithms ( $w_{j,t} = \ln(1 + \epsilon_{j,t})$ ). Transformed residuals ( $w_{j,t}$ ) reflect all information related to firm-specific information and are used as input to compute price

crash risk. Note that the residuals are converted into a natural logarithmic to mitigate the tendency for positive return distribution to skew and to maintain a symmetrical return distribution.

More specifically, this study uses two measures of price crash risk. The first measure of price crash risk is the absolute value of the difference between the minimum of weekly return ( $W_{jt}$ ) and its mean, divided by its standard deviation (Zhu, 2016). The second measure of price crash risk is the negative conditional return skewness

$$\text{NCSKEW} = -[n(n-1)^{3/2}\Sigma w_{j,t}^3]/[(n-1)(n-2)(\Sigma w_{j,t}^2)^{3/2}] \quad (2)$$

Where  $w_{j,t}^3$  is a firm-specific weekly return raised to the third power. The measure is multiplied by minus (-) for ease of interpretation. The higher value reflects greater price crashes risk.

#### *Transparency of financial statements*

Several transparency measures have been introduced in accounting literature. One alternative measure is to use factor analysis to isolate two distinct factors from a range of measures capturing countries' firm-specific information environments (Bushman, Piotroski, & Smith, 2004). Another alternative measure of transparency is reported in Zhong (2018) where six firm level-measures were used to capture three key aspects of transparency: financial reporting quality, the use of global accounting standards, and the quality of the external information environment. In addition, Hutton et al., (2009) employ a simple but intuitive

$$\text{Transp} = \text{Abs} (\text{DiscAccr}_{t-1} + \text{DiscAccr}_{t-2} + \text{DiscAccr}_{t-3}) \quad (3)$$

According to Hutton et al., (2009), firms generally manipulate earnings from one to three years before being detected. They argue that firms with large absolute value of discretionary accruals will tend to manage earnings and try to hide it by providing less-firm-specific information to investors. Therefore, earnings management that

(NCSKEW) introduced by (Kim et al., 2011). NCSKEW is computed by taking the negative of the third moment of firm-specific weekly returns for each sample year and dividing it by the standard deviation of firm-specific weekly returns and then raising to the third power. In this study, the second measure of price crash risk suggested by Kim et al., (2011) is used as a robustness check. Specifically, NCSKEW for each firm  $j$  in year  $t$  is computed as follows:

measure of transparency using three-year moving sum of the absolute value of annual discretionary accruals. Due to its simplicity, this study follows Hutton et al., (2009) model to measure financial report transparency.

Hutton et al., (2009) argue that firms attempt to delay or hide bad news are reflected in the discretionary accruals. The longer a company delays bad news from the market, the greater is discretionary accruals. Firms with higher value of discretionary accruals are more opaque than those of lower value. However, for ease of interpretation and to maintain consistency with hypothesis one, absolute value of three years accumulated discretionary accruals is multiplied by -1. Thus, higher value reflects higher transparency. Specifically, financial statement transparency is calculated by the following equation:

lasts several years is better captured by using a three-year sum of absolute value of discretionary accruals. Meanwhile, the model specification to estimate discretionary accruals (DiscAccr) follows (Kothari, Leone, & Wasley, 2005). The model is stated as follows:



$$ACCR_{j,t}/TA_{j,t-1} = \beta_0 + \beta_1(\Delta SALE_{j,t}/TA_{j,t-1}) + \beta_2(PPE_{j,t}/TA_{j,t-1}) + \beta_3(ROA_{j,t}/TA_{j,t-1}) \quad (4)$$

Where  $ACCR_{i,t}$  denotes total accrual for firm  $j$  in year  $t$  measured as the difference between earnings before extraordinary items and discontinued operations and cash flows,  $TA_{j,t-1}$  is the total asset for firm  $j$  in year  $t-1$ ,  $\Delta SALE_{j,t}$  is a change in sales for firm  $j$  in year  $t$ ,  $PPE_{j,t}$  denotes property, plant and equipment for firm  $j$  in year  $t$ , and  $ROA_{j,t}$  is the ratio of earnings before extraordinary items and discontinued operations for firm  $j$  in year  $t$  to total assets. The model is estimated cross-sectionally for each industry based on *Jakarta Stock Industrial Classification (JASICA)* which was released by Indonesian Stock Exchange. Discretionary accruals are the residual value of the estimation model. The residual from the model is a measure of DiscAccr.

$$Inst = \sum_{j=1}^J Std(p)_{i,t} / N_i \quad (5)$$

Where  $(p)$  is the proportion of firm  $i$  held by investor  $j$  at year  $t$  and  $N$  is the number of institutional investors in the firm  $j$ . The higher the  $Inst$ , the less stable is the institutional investors in a particular firm.

#### *Audit Tenure*

Audit tenure is defined as the number of years audit firm has been involved in audit engagement for one client. Prior to 2015, the maximum audit tenure for an Indonesian accounting firm was six years. But starting from 2015 onward, the restriction is relaxed and accounting firms is allowed to offer audit services to a client without time constraints.

#### *Conservatism*

At present, there are at least five alternatives measures of conservatism proposed in the accounting literature (Wang, Hogartaigh, & Zijl, 2009). These measures include: 1) Basu's (1997) asymmetric timeliness measure 2) Ball &

#### *Institutional investor stability*

A measure of institutional investor stability follows Elyasiani et al., (2010) and Callen & Fang (2013) More specifically, institutional investor stability is defined as the average standard deviation of institutional ownership over a five-year period including sample period and four preceding years. Following is the procedure to calculate institutional investor stability. First, get the standard deviation of institutional ownership of a firm for a particular year. For instance, a company has four different institutional investor with different ownership. Calculate the standard deviation of the institutional ownership. Second, add the standard deviation of institutional ownership of that particular company for a five-year period and divide it by five. Specifically, the formula is stated as follows:

Shivakumar's (2005) asymmetric cash flow to accruals measure. 3) Market to book ratio based on Feltham & Ohlson's (1995) analytical study. 4) Penman & Zhang (2002) hidden-reserve measure. 5) Givoly & Hayn's (2000) negative accruals measure.

Each measure has its own weakness. For example, Basu (1997) asymmetric timeliness measure is criticized due to inconsistent results found in various studies using the same measure. Asymmetric timeliness and asymmetric cash flow model of (Ball & Shivakumar (2005) basically contain the same weakness as Basu's (1997) for conservatism is estimated using similar procedure. Market to book value of equity measure is criticized because economic rents are generally not recognized in the book value of equity. Although conservative financial reporting is being adopted by a firm, the existence of economics rents will always cause book value to be less than market value (Roychowdhury & Watts, 2007). The negative accruals measure is criticized because it requires

researchers to accumulate accruals for several periods starting from a base year. Problems arise when determining the base year. Different sample periods require different base year, making generalization difficult to attain. In addition, negative accruals ignore depreciation. Finally, measure of conservatism using hidden reserves has its difficulty in collecting research and development expenditures data.

Considering the weaknesses inherent in five measures of accounting conservatism, this study employs Market to Book value ratio (MTB) as a proxy for conservatism because it has strong theoretical basis. As described, the measure is

$$MTB = \frac{\text{Market value of equity}}{\text{Book value of equity}} \quad (6)$$

### Control variables

Control variables are included in the test of hypothesis to reduce the effect of extraneous variables on stock price crash risk. The four control variables are firm size, profitability, leverage, and sales growth. These control variables were reported to have an effect on stock price crash risk (Chen et al., 2001; Hutton et al., 2009; Jin & Myers, 2006). Firm size is measured using a natural logarithm of

derived from analytical study of (Feltham & Ohlson, 1995). They argue that application of accounting conservatism suppresses book value of equity downward relative to its market value. As a result, the use of conservative accounting will tend to reduce book value of equity. Higher value of MTB ratio indicates higher application of conservative accounting in financial reporting. Another advantage of MTB as a proxy for conservatism is the ease of computation. Study conducted by Wang et al. (2009) revealed that MTB is one of the most popular measure of conservatism among researchers. MTB ratio is computed as follows:

total asset and profitability is the ratio of net income to total assets. Sales growth is current sales minus last year sale, divided by current sale and leverage is the ratio of total debt to total assets.

### Model specifications

The following model is employed to test the hypothesis.

$$\text{Crashes}_{jt} = \beta_0 + \beta_1 \text{Transp}_{jt} + \beta_2 \text{Inst}_{jt} + \beta_3 \text{Tenur}_{jt} + \beta_4 \text{Conser}_{jt} + \beta_5 \text{Size}_{jt} + \beta_6 \text{Growth}_{jt} + \beta_7 \text{ROA}_{jt} + \beta_8 \text{LEV}_{jt} + \varepsilon_{jt} \quad (7)$$

Where:

- Crashes = Stock price crash risk
- Transp = Transparency of financial statements
- Inst = Stability of institutional ownership
- Tenure = audit engagement period
- Conser = Conservatism
- Size = firm size
- Growth = Sales growth
- ROA = Profitability.
- LEV = leverage

Hypothesis one (H1) predicts that transparency is negatively associated with stock price crash risk. If coefficient  $\beta_1$  is negative and significant at less 5%, then it is concluded that H1 is statistically supported. Hypothesis two (H2) predicts that institutional investors' stability is associated with stock price crash risk. H2 is statistically supported if coefficient  $\beta_2$  is either negative or positive and significant at less than 5%. Hypothesis three (H3) predicts that audit tenure is associated with stock price crash risk. H3 is statistically supported if coefficient  $\beta_3$  is either negative or positive and significant at less than

5%. Hypothesis four (H4) predicts that conservatism is negatively associated with stock price crash risk. If coefficient  $\beta_4$  is negative and significant at less than 5%, then it is concluded that H4 is statistically supported.

#### 4. Results and discussion

##### Descriptive statistics

As described in the previous section, the number of observations available for hypothesis testing is 1,065 firm-year observations. However, as much as 276 observations are eliminated because of falling outside three standard deviations from its mean. Extreme values might adversely affect the validity of results. The elimination process results in a final sample of 748 firm-year observations. Table 2 reports descriptive statistics for all variables.

As shown in Table 1, the mean of 2,614 for stock price crash suggests that the magnitude of the worst weekly return is 2.614 times the standard deviation below the mean. The figure is close to (Zhu, 2016). As for financial reporting transparency (TRANSP), the mean value is 0.151. Note that the proxy for financial reporting

transparency is the absolute value of three-years discretionary accruals.

The greater the absolute value of discretionary accruals, the less transparent a firm's financial reporting. Financial reporting is considered to be transparent if the number of absolute accruals discretionary is close to zero. Accordingly, sample firms have less transparent financial reporting. Institutional investors stability (INST) tends to be stable over time as reflected by a mean of 0.049. As described earlier, institutional investor stability is measured by taking the average of standard deviation of the institutional ownership for a minimum of three years. The higher values reflect unstable institutional investors.

Audit tenure (TENUR) has a mean of 3.13 years and the mean for conservatism (CONSER) is 1.447. Note that conservatism is measured by comparing market value of equity and book value of equity. Hence, market value of firm-samples is 44.7% higher than book value of equity, suggesting that firm-samples use more conservative accounting policies. Descriptive statistics for control variables show considerable differences in firms' characteristics.

Table 1. Descriptive statistics

Variables	Mean	Median	Minimum	P75	Maximum
CRASHES	2.614	2.52	0.04	3.100	5.100
TRANSP	0.151	0.11	0.01	0.19	2.09
INST	0.049	0.018	0.00	0.064	0.404
TENUR	3.13	3.000	1.00	5.00	7.00
CONSER	1.447	1.035	-4.193	2.043	9.820
SIZE	7.649	7.596	1.099	8.933	12.411
GROWTH	0.189	0.106	-1.000	0.234	8.727
ROA	0.056	0.040	-1.082	0.086	0.846
LEV	0.478	0.452	0.000	0.616	3.615

##### Correlation matrix

Table 2 presents correlation coefficients for all variables. The focus is on the association between stock price crash risk and independent variables depicted in research hypotheses. Contrary to the prediction, the correlation between financial statement transparency and stock price crash risk is positive (0.004) and statistically

insignificant (two-tailed). Institutional investor stability and stock price crash risk are negatively related (-0.072) at 5% level (two-tailed). This is consistent with prediction. Audit tenure and stock price crash risk are positively related at 5% level and consistent with prediction. Note, however, that correlation between audit tenure and stock price crash risk is hypothesized with no direction.

As for conservatism and stock price crash risk, both are negatively related (-0,100) at 1% level and consistent with prediction. Overall, the results

presented in Table 2 provide preliminary evidence to support H2 and H4 but not for H1 and H3.

Table 2. Correlation matrix

	CRASHES	TRANSP	INST	TENUR	KONSER	SIZE	GROWTH	ROA	LEV
CRASHES	1								
TRANSP	0.004	1							
INST	-0.072*	0.042	1						
TENUR	0.077*	-0.013	-0.062	1					
KONSER	-0.100**	0.003	-0.005	0.050	1				
SIZE	-0.094*	0.076*	-0.063	0.106**	0.199**	1			
GROWTH	-0.128**	-0.062	0.021	-0.015	0.118**	-0.024	1		
ROA	-0.069	-0.046	0.003	0.049	0.113**	0.026	0.087*	1	
LEV	0.085*	-0.017	-0.062	0.000	-0.075*	0.039	-0.053	-0.009	1

\*Significant level at 0.05; \*\*Significant level at 0.01

### Multiple regressions results

Table 3 reports the test of hypotheses results. Following Kim et al. (2017), year dummies are included in the regression model to control for time-variant that could potentially change regression coefficients over time. The results show that while audit tenure and institutional investor stability are significantly associated with stock price crash risk at 1% and 5% level respectively, no significant association between transparency and stock price crash risk. On the other hand,

conservatism has weak association with stock price crash risk (significant at less than 10%). Taken as a whole, the results reported in Table 3 support H2 and H4 and reject H1 and H3. All control variables, except for ROA, are associated with stock price crash risk. While leverage is significantly associated with stock price crashes, the direction is not consistent with prediction. The significant effect of control variables on stock price crash risk suggests that the inclusion of these variables are justifiable.

Table 3. Regression results

Variables	Expected Signs	Coefficients	P-value
TRANSP	-	-0.073	0.488
INST	-	-0.657	0.049
TENUR	+	0.049	0.003
KONSER	-	-0.034	0.060
SIZE	+/-	-0.053	0.001
GROWTH	-	-0.130	0.003
ROA	-	-0.257	0.137
LEV	-	0.161	0.034
N	748		
Year dummies	Included		

Hypothesis one predicts that transparency of financial reporting is significantly associated with stock price crash risk. But the evidence is not consistent with the prediction. It also contradicts the evidence reported in Hutton et al., (2009) and Kim & Zhang (2014). As described before, this

study follows Hutton et al., (2009) of transparency. They argue that earnings management can last for multiple years and three years of accumulated discretionary accruals may capture years of earnings management activities. This study adopts the assumption and uses the sum

of three-year discretionary accruals to capture earnings management. However, the findings of this present study suggest that the assumption may not hold in Indonesian context due to different culture and business practices. The measure of transparency employed by (Hutton et al., 2009) appears to be unable to capture earnings management activities among Indonesian firms. Thus, the results of this study should be interpreted cautiously.

An alternative explanation is that investors in Indonesia Stock Exchange seem to be largely dependent on market-specific information rather than firm-specific information. The lack of belief in firm-specific information urges them to seek other types of information to make equity investment decisions. Conceptually, financial reports should be an indicative of future prospects and useful in assessing potential gains or losses from equity investment. However, the benefit of financial statements in making investment decisions depends on investor's belief in the credibility of financial reporting. In light of these findings, capital market authorities must take necessary steps to increase investor confidence in financial reports. One way is to issue regulations that effectively increase the monitoring process of financial reporting disclosure.

Subsequent research should consider the use of annual discretionary accruals as a measure of transparency instead of three-year accumulated discretionary accruals. In Kim & Zhang's study (2014) four different transparency measures are employed. The first measure is similar to Hutton et al., (2009), The second measure is financial restatement. The third and fourth use irregularity and error in financial statements as proxies for transparency. They report that three of four measures are significantly related to stock price crash risk.

Hypothesis two predicts that institutional investor stability is associated with stock price crash risk. Note again that this study employs deviation standard of institutional ownership as a

proxy for institutional investor stability. Higher scores suggest unstable institutional investors. Accordingly, a negative correlation presented in table 3 indicates that the likelihood of stock price crashes increases with stable institutional investors. In light of two opposing views introduced earlier, the findings are consistent with a view that institutional investors in Indonesia are more short-termism than monitors. Institutional investors with short-term perspective tend to overlook monitoring functions causing bad news hoardings to go undetected. As previously described, stable institutional investors with long investment horizon have significant influence on the decision to allocate resources and set business strategies.

However, when stable institutional investors with concentrated holdings merely focus on short-term results, they are unable to curb dysfunctional behavior of managers leading to increased propensity of stock price crash risk. A negative correlation between the two variables reported in this study is inconsistent with evidence documented in Callen & Fang (2013) in which they examine the role of institutional investors in mitigating stock price crash risk by using two different measures of institutional investor stability. The first measure is standard deviation of institutional ownership as used in this study. The second is the percentage of shares owned by dedicated investors relative to the number of outstanding shares, and the third is the percentage of shares owned by institutional investors with short-term insight (institutional transient investors). Using deviation standard of institutional ownership as a proxy for institutional investor stability, they find that institutional investor stability is positively associated with stock price crash risk.

Hypothesis three states that audit tenure is associated with stock price crash risk. Note that the previous section describes the association between the two variables cannot be stated convincingly in a particular direction, and thus H3

is stated with no specific direction. A positive relationship between audit tenure and stock price crashes reported in Table 3 indicates that auditors with long audit engagement are more likely to overlook bad news hoarding activities which lead to higher stock price crash risk in the future. A long relationship between the auditor and the client causes the auditor to become reckless and tend to overlook bias contained in financial reports. The knowledge and experience of auditors from long audit engagements are supposedly enabling them to detect potential misuse of a firm's resource. But this is not the case. It appears that long audit tenure causes auditors to fail to exercise their professional judgment diligently. Lack of professional skepticism stemming from personal attachment toward a client ultimately erodes the ability of auditors to detect and prevent bad news hoarding activities and increases the likelihood of stock price crashes. In light of the audit tenure regulation in Indonesia that took place in 2005, the results of this study suggest that the regulation fails to achieve its purpose. By relaxing audit tenure restrictions, auditors seem to lose independence and competence which leads to higher propensity of stock price crashes.

The positive association between audit tenure and stock price crash risk also contradicts with evidence reported in Callen & Fang (2017). In their study, three alternative proxies for stock price crash were employed. Using three different measures of stock price crashes, they find that audit tenure is negatively related to stock price crash.

Hypothesis four predicts less conservative firms are more prone to stock price crashes. Although the correlation is weak (at 10% level), the results reported in Table 3 appear to be consistent with the prediction. The negative relationship between conservatism and stock price crash risk indicates that conservative accounting practices prevent bad news accumulation and reduces price crash risk. The result is consistent with Kim & Zhang (2016) where they find that the

relationship between conservatism and stock price crashes is stronger in companies with high asymmetry information. As widely described in accounting literature, principal-based standard advocated by the accounting profession is heavily reliant on manager's discretions that may induce aggressive financial reporting practice. Aggressive accounting policies provide more opportunities for managers to hide bad news which leads to higher propensity of stock price crash. Thus, the findings seem to contradict with the goal of accounting profession to embrace fair market value as a major valuation method to be applied in preparing financial statements.

### **Sensitivity test**

The test results reported in Table 3 measure stock price crash risk as an absolute value of the difference between the minimum of weekly return and its mean, divided by its standard deviation. Additional test is carried out using an alternative measure of stock price crash risk to assess the robustness of the results. The second proxy for stock price crashes, as previously described, is adopted from Kim et al., (2011) by taking firm-specific negative of the third moment weekly returns for each sample year and dividing it by the standard deviation of firm-specific weekly returns. The results are reported in Table 4.

As presented in Table 4, two of four hypotheses are supported and qualitatively consistent with the previous results reported in Table 3. Institutional investor stability and audit tenure have significant effects on stock price crashes at 1% and 5% respectively. As before, audit tenure and stock price crashes are positively associated. The weak association between conservatism and stock price crash risk (at 10% level of significant) is also observed. On the other hand, no significant correlation is detected for transparency and stock price crash risk. Overall, employing two different measures of stock price crash generally produces consistent results.

Table 4. Sensitivity test results

Variables	Expected Signs	Coefficients	P-value
TRANSP	-	-0.041	0.442
INST	-	-1.369	0.009
TENUR	+	0.056	0.012
KONSER	-	0.001	0.487
SIZE	+/-	0.033	0.091
GROWTH	-	-0.215	0.001
ROA	-	-0.238	0.241
LEV	-	0.149	0.118
N	748		
Year dummies	Included		

## 5. Conclusions

This study demonstrated that institutional investor stability, audit tenure, and conservatism have a significant effect on stock price crash risk, but financial report transparency has no effect on on stock price crash risk. Institutional investor stability is negatively associated with stock price crash risk. Future research in Indonesian capital market should consider different proxy for price crash risk such as negative slope coefficients (Callen & Fang, 2017), employ expanded market model of weekly return in measuring stock price crash risk. In addition, future studies should also consider different proxies for financial report transparency and institutional investor stability. Restatements and other irregularities can be alternative measures for transparency. The percentage of shares held by institutional investors with short-term insight can be used as a proxy for institutional ownership (Callen & Fang, 2013).

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